6. BASELINE RISK ASSESSMENT

A baseline human health risk assessment was conducted to determine the potential for adverse effects associated with exposure to chemicals present at the 12 sites under investigation at Fort McClellan. Baseline risks are the risks to human health and the environment in the absence of remediation or institutional controls at the site.

The human health risk assessment was conducted in accordance with the process recommended by U.S. Environmental Protection Agency (EPA) guidance in *Risk Assessment Guidance for Superfund (RAGS): Human Health Evaluation Manual, Part A* (EPA 1989a) and the facility-wide work plan (IT 1998). The methods used to characterize risk are consistent with guidance from EPA Headquarters and EPA Region IV, as specified in the following documents:

- *Risk Assessment Guidance for Superfund (RAGS): Human Health Evaluation Manuals Part A* (EPA 1989a)
- *Exposure Factors Handbook* (EPA 1989b)
- *Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors* (EPA 1991a)
- *Dermal Exposure Assessment: Principles and Applications* (EPA 1992a)
- *Superfund's Standard Default Exposure Factors for the Central Tendency and Reasonable Maximum Exposure,* Draft (EPA 1993a)
- *Supplemental Guidance to RAGS: Region IV Bulletins – Human Health Risk Assessment* (EPA 1995a)
- *RAGS: Human Health Evaluation Manuals Part D* (EPA 1998a).

Other pertinent guidance documents are referenced throughout the text.

In the time that has elapsed since Science Applications International Corporation (SAIC) originally collected the Remedial Investigation (RI) data, a facility-wide work plan has been prepared. To formalize the process and methods to be used to investigate potential waste sites at Fort McClellan (IT 1998). The process and methods used in this report are consistent with the facility-wide work plan. The facility-wide work plan (IT 1998) establishes a standard approach for evaluating human health risks at Fort McClellan. The approach consists of a step-wise planning process to be used in the collection and use of site investigation data. The process begins with the development of a site-specific conceptual site model (CSM) and preparation of a work plan for the human health risk assessment based on the information presented in the CSM. Following the development of the work plan, the facility-wide work plan (IT 1998) presents the approach for identifying site-related chemicals and developing source-term concentrations. The final step is conducting a streamlined human health risk assessment.

The assumptions used in the streamlined human health risk assessment specified in the facility-wide work plan (IT 1998) are the same as would be used in a conventional baseline human health risk assessment. The results of either approach are identical. The methods used to calculate risk estimates differ, in that the streamlined approach changes the order of operations by constructing facility-specific risk factors, which then can be used to calculate risk. The difference is that much of the work is done up front, which simplifies the subsequent calculation of risk estimates. This provides a screening-style format that could be used to screen sites.

The results of the risk assessment follow the recently introduced RAGS Part D (EPA 1998a) guidance for formatting standardized tables in risk assessments. The facility-wide work plan was written prior to the introduction of the RAGS Part D guidance. The format of the standard tables presented in RAGS Part D (EPA 1998a) is not amenable to the format of the streamlined risk assessment. Consequently, the risk assessment follows the facility-wide work plan (IT 1998) as closely as possible, without diverging from required table format stipulated under RAGS Part D (EPA 1998a). As noted, the results of either approach are the same, it is the format that differs. The human health risk assessment has been organized into the following sections:

- Identification of Chemicals of Potential Concern (COPCs) (Section 6.1.1)
- Exposure Assessment (Section 6.1.2)
- Toxicity Assessment (Section 6.1.3)
- Risk Characterization (Section 6.1.4)
- Remedial Goal Options (Section 6.1.5)
- Uncertainty Analysis (Section 6.1.6)
- Summary and Conclusions of the Human Health Risk Assessment (Section 6.1.7).

6.1 IDENTIFICATION OF COPCS

COPCs are defined as "chemicals that are potentially site-related and whose data are of sufficient quality for use in the quantitative risk assessment" (EPA 1989a). COPCs were selected in accordance with EPA guidance (EPA 1989a), EPA Region IV guidance (EPA 1995a), the facility-wide work plan (IT 1998), and the *Human Health and Ecological Screening Values and PAH Background Summary Report* (IT 2000a).

The risk assessment incorporates data that were collected both for the Site Investigation (SI) (SAIC 1993), the RI, and a background study (SAIC 1998). The SI data were collected in 1992, the RI data were collected in 1994 and 1995, and additional background data were collected in 1997. Some discrepancies exist between the RI and SI data sets. In a few cases, analytes that were detected in the SI samples were not detected in the RI samples or were detected at decreased concentrations (or vice versa).

The following lists the sequence of steps in selecting COPCs:

- Data Aggregation
- Data Validation
- Frequency of Detection
- Background Comparison
- Essential Nutrient Screening
- Comparison with site-specific screening levels (SSSLs)

Each step is described in greater detail below. Chemicals remaining after completing each of these screening steps are considered COPCs and are evaluated subsequently in the baseline human health risk assessment.

6.1.1 Data Aggregation

The initial step of the COPC selection consisted of data aggregation. Data aggregation refers to the manner in which sample data are combined to calculate summary statistics for use in risk assessment.

Analytical data (soil, groundwater, surface water, and sediment) were aggregated by medium and by area. Soil data were aggregated further according to the depth at which the samples were collected.

Aggregation by Area—In order to aggregate the analytical data by area, the data are combined into exposure units. An exposure unit is a geographic area over which a receptor is likely to average his or her exposure (both spatially and temporally) and is defined on the basis of observed or assumed patterns of behavior and the nature and extent of contamination. In defining an exposure unit, it might not be realistic to assume that a receptor would be simultaneously exposed to contaminants in areas that are remote or distant from one another, or that are isolated by a physical barrier.

Each site area was considered prior to definition of the exposure units. For the human health risk assessment, the exposure units are equivalent to the sites. This reasonable approach facilitates decisions regarding the need for further action for each site. The exposure units identified on the Main Post of Fort McClellan are as follows:

- Detection and Identification (D&I) Area
- Area T-4, Biological Simulant Test Area
- Area T-5, Toxic Hazards Detection and Decontamination Training Area
- Area T-24A, Chemical Munitions Disposal Training Area
- Area T-38, Technical Escort Reaction Area
- Former Landfill #1
- Former Landfill #2
- Former Landfill #3.

Exposure units also were identified at Pelham Range. These exposure units are as follows:

- Range J Training Area
- Range K Training Area
- Range L (Lima Pond) Chemical Munitions Disposal Area
- Old Water Hole.

Aggregation by Depth—In the RI, risk assessment of soil contamination focuses on two depths: surface soil and subsurface soil. In the baseline risk assessment, the following designations are made:

- ***Surface Soil***—collected from 0 to < 1 foot below land surface (BLS)
- ***Shallow Subsurface Soil***—collected from 1 to 12 feet BLS.

Both surface and subsurface soil data are used for land use scenarios that might include soil intrusion (e.g., construction of buildings or residences). Only surface soil data are needed for land use scenarios that do not include soil intrusion (e.g., hunting). Soil samples greater than 12 feet BLS have been excluded from the risk assessment because soil deeper than this is generally below the construction zone and contact is unlikely. Assumptions concerning land use and exposure pathways are discussed in Section 6.1.2.

6.1.2 Data Validation

Prior to calculating summary statistics, a data quality assessment was conducted. Data used in the risk assessment have been validated in accordance with U.S. Army Environmental Center (USAEC) protocols (USAEC 1995, USATHAMA 1990). During the validation process, data may be qualified

based on the results of the quality assurance/quality control (QA/QC) samples (e.g., laboratory and field blanks). The validation methods and results are described in Appendix F.

After the validation process was completed, the following data were used in the human health and ecological risk assessments:

- Data for detected analytes that have no Installation Restoration Data Management Information System (IRDMIS) data qualifiers or flagging codes.
- Sample results having IRDMIS flags A, B, G, I, and U (which were treated as "not detected" and included in the risk assessment as one-half the reported value).
- Data for detected analytes that have IRDMIS flagging codes other than A, B, G, I, and U, and data qualifiers other than R.
- Field duplicates were averaged with their associated parent sample. These averaged values then were used in the calculation of the mean, standard deviation, and 95 percent upper confidence limit (UCL).

The IRDMIS flagging codes and data qualifiers, and the data to which these letters were applied, are discussed in Appendix F. In summary, the codes and qualifiers indicate the following:

- ***A***—Analyte found in the trip blank as well as in the field sample
- ***B***—Analyte found in the method blank or QC blank as well as in the field sample
- ***G***—Analyte found in the rinse blank as well as in the field sample
- ***I***—Low-spike recovery is high, indicating the potential for high bias
- ***U***—Result unconfirmed
- ***R***—Data rejected and are unusable.

6.1.3 Frequency of Detection

The frequency of detection was calculated for each analyte detected in each exposure unit (IT 1998). Analytes with detection frequencies less than 5 percent (i.e., detected in less than 5 percent of the samples) were eliminated as COPCs and excluded from the risk assessment. In this case, a minimum of 21 samples was required to conduct this screen. If 21 samples were not available, the screen was not conducted.

6.1.4 Background Comparison

Following the frequency of detection screen, a background comparison was conducted to determine if reported concentrations were site-related or indistinguishable from background. Analytes determined to be site-related were subject to subsequent screening steps and possibly risk assessment. The background comparison follows EPA Region IV guidance (EPA 1995a) and the process described in the facility-wide work plan (IT 1998).

This section presents the methodology for comparing site concentrations to those found in background. The background comparison was conducted only for inorganic substances. If an inorganic constituent was not detected in background samples or background data are not available, a background comparison was not conducted and the analyte was considered mission-related. It is assumed that all concentrations of organic compounds are mission-related, so no background screening for organics was conducted at the sites under investigation. However, some organic constituents might not be mission-related, as is often the case with constituents of anthropogenic origin such as polycyclic aromatic

hydrocarbons (PAHs). If organic constituents are found to be of concern at a given site, the constituent will be evaluated further to determine whether it is mission-related, reflective of ambient conditions, or from an offsite source. The background samples used in the comparison and their corresponding locations are presented in Section 4.4.

Background comparisons were conducted for soil using site and background data for surface soil samples obtained from 0 to < 1 foot BLS or shallow subsurface soils collected from 1 to 12 feet BLS, whichever was applicable. These depths were chosen because data in the risk assessment are aggregated according to these depths (see discussion in Section 6.1.1.1 concerning aggregation by depth). Different data sets were used for the two comparisons. Therefore, two lists of site-related chemicals in soil were developed (one for the 0- to < 1-foot soil data set and one for the 1- to 12-foot soil data set).

The background comparison used in the selection of COPCs was conducted for inorganic analytes in accordance with EPA Region IV guidance (EPA 1995a). The background criterion for a given analyte was equal to two times (2×) the mean background concentration of that analyte. If the maximum detected value in an exposure unit exceeded the background criterion, the analyte was designated as mission-related for that exposure unit. Analytes with maximum detected concentrations below the background criterion were screened out.

The facility-wide work plan (IT 1998) suggests that the 2× background screen may be followed with a nonparametric analysis of variance (ANOVA) using the Wilcoxon Rank Sum test (EPA 1992b). For this report, this additional analysis is conducted after calculating hazards and risks. The results for the second statistically based background comparison are presented with the interpretation of the results for each site in Section 6.1.4.4.

The discussion presented above summarizes the methods used to conduct the background comparison for the selection of COPCs. A more detailed discussion, including pertinent equations and references, is presented in Appendix H, Section H.1.

6.1.5 Essential Nutrient Screening

Calcium, magnesium, potassium, and sodium are considered essential nutrients in EPA Region IV guidance (EPA 1995a). These chemicals are essential to the proper functioning of the human body, are generally present at low concentrations, and are toxic only at very high doses. Concentrations of essential nutrients in site samples were compared to concentrations derived from recommended dietary levels. Unfortunately, the dietary values are not available in units of concentrations in environmental media. They are available only in units of dose (i.e., mg chemical/kg body weight × day). For this reason, these dietary concentrations were calculated using the U.S. Food and Drug Administration (FDA) dietary values, the exposure factors used in the human health risk assessment, and rearranged intake equations. These calculations assume that inadvertent ingestion of soil and ingestion of groundwater is the only source of the nutrient in a receptor's diet. If the site concentrations were less than the calculated dietary concentrations, the analyte was eliminated as a COPC. Pertinent equations and calculations are shown in Appendix H.

6.1.6 Comparison with Site Specific Screening Levels

As described in the facility-wide work plan (IT 1998) and the *Human Health and Ecological Screening Values and PAH Background Summary Report* (IT 2000a), SSSLs were used in place of EPA Region III risk-based concentrations (RBCs) (EPA 1998b) to complete the selection of COPCs for soil, groundwater, surface water, and sediment. RBCs are recommended by Region IV to select COPCs, but

SSSLs were used because they are site specific and could be used in conducting a streamlined risk assessment. Like RBCs, SSSLs are chemical concentrations corresponding to fixed levels of risk or hazard (i.e., a lifetime cancer risk of 1×10^{-6} or a hazard quotient [HQ] of 0.1, or, whichever occurs at a lower concentration). An HQ of 0.1 was used (rather than 1) to account for potential noncarcinogenic additive effects.

The primary difference between SSSLs and RBCs is the reliance upon site-specific exposure assumptions rather than defaults. SSSLs are essentially risk assessments run in reverse for a single contaminant, in a single medium, using site-specific exposure assumptions. SSSLs were developed for all of the land-use scenarios evaluated in the risk assessment (Section 6.1.2) and were derived for many compounds in the facility-wide work plan (IT 1998). Additional SSSLs were needed to screen analytes detected at sites under evaluation in this report. They were derived using the same approach. The methods and assumptions are described in Appendix H.

For a given analyte, the screening was conducted by comparing the maximum detected concentration in the exposure unit to the SSSL. If the maximum detected value was less than the SSSL, the analyte was eliminated as a COPC and excluded from the risk assessment. If the maximum detected value was equal to or greater than the SSSL, or if an SSSL was not calculated, the analyte was designated as a COPC and carried through the risk assessment. Tables 6-1 through 6-31, entitled *Occurrence, Distribution, and Selection of Chemicals of Potential Concern*, present the COPCs and the information used to select the COPCs.

6.2 EXPOSURE ASSESSMENT

The objective of the exposure assessment is to estimate the type and magnitude of potential human exposures to COPCs. For a given receptor group, this results in an estimate of chronic daily intake or dose of COPCs from environmental media at Fort McClellan. The exposure assessment, in conjunction with the subsequent toxicity assessment (discussed in Section 6.1.3), supports the characterization of potential risks to human health (discussed in Section 6.1.4). The exposure assessment consists of the following principal components:

- Characterization of current and future land uses and identification of potentially exposed receptors
- Identification of potential exposure pathways
- Derivation of exposure point concentrations
- Development of chemical intake or dose estimates.

EPA guidance (EPA 1989a and 1992c) specifies that a reasonable maximum exposure (RME) scenario should be developed. The RME is a conservative exposure case that is in the high end of the range of possible exposures.

6.2.1 Land Use Assumptions and Potentially Exposed Receptors

The following section describes land uses at the sites under investigation and the receptor populations that may potentially be exposed to contaminants. The risk assessment evaluates current, current/future (i.e., current land use will not likely change in the future), and future land use scenarios. The *Fort McClellan Comprehensive Reuse Plan* (EDAW, Inc. 1997) was used for determining land uses at each site.

Current Land Use—Current land use of the 12 sites is industrial. Although the Army may, on a rare occasion, conduct training activities at or near the sites under investigation, the sites are mostly inactive. Despite this inactive status, a current industrial scenario has been evaluated in which the receptor is a groundskeeper (facility-wide work plan, IT 1998). This receptor previously had been referred to as an industrial worker. Current maintenance activities are assumed to involve only surface contact with the soil (i.e., no soil intrusion). Therefore, the industrial worker is assumed to be exposed only to surface soil and not subsurface soil.

Current/Future Land Use—Access to the Main Post at Fort McClellan and Pelham Range is not restricted (e.g., by a fence or patrols). Four of the RI sites within the Main Post and Pelham Range (Range L, Range J, Area T-24A, and Area T-38) are fenced and locked, making access difficult although not impossible. Members of the public occasionally may trespass on the sites and be exposed to contaminated media. A recreational site user scenario has been developed to represent a member of the public playing, hiking, wading, or trespassing at the sites under investigation (IT 1998). Since the post is open to hunters during the hunting season, a hunter scenario also has been developed to represent a nearby resident who may harvest deer and consume the venison. In the risk assessment, the hunter is exposed indirectly to surface soil. The recreational site user is exposed to surface soil, surface water, and sediment. Exposure to subsurface soil has not been evaluated because recreational site use is assumed to involve only surface contact with soil. In addition, the venison consumption is based on biotransfer of chemicals found only in surface soil (i.e., not subsurface soil).

Future Land Use—The *Fort McClellan Comprehensive Reuse Plan* (EDAW, Inc. 1997) has defined the intended future land uses of the Main Post. They are as follows:

- ***Area T-4***—Remediation Reserve, recreation
- ***Area T-5***—Remediation Reserve, recreation/development reserve
- ***Area T-24A***—Remediation Reserve, recreation
- ***Area T-38***—Remediation Reserve, industrial/ recreation
- ***D & I Area***—Remediation Reserve, recreation/development reserve
- ***Landfill #1***—Residential, recreation
- ***Landfill #2***—Remediation Reserve, industrial/recreation
- ***Landfill #3***—Business/Industrial, recreation.

Pelham Range will be licensed to the Army National Guard. It therefore is assumed that current land uses are not likely to change. They are as follows:

- ***Range J***—Same as current
- ***Range K***—Same as current
- ***Range L***—Same as current
- ***Old Water Hole***—Same as current.

In accordance with EPA Region IV guidance (EPA 1995a), a residential scenario has been included at all 12 sites because there is no strong reason or evidence to justify exclusion of this scenario. Although most of the sites are not designated for future residential use, Fort McClellan is on the Base Realignment and Closure (BRAC) list and residential development, although unlikely, cannot be ruled out. Under this scenario, subsurface soils may be redistributed at the surface during excavation. In this manner, residents may be exposed to either surface or subsurface soil.

In addition, a construction worker scenario has been evaluated in which a worker might construct buildings or build roads. Exposure assumptions for the construction worker scenario differ from the

industrial worker scenario (e.g., soil ingestion rate, exposure frequency, and exposure duration). Furthermore, the construction worker is assumed to be exposed to subsurface soil in addition to surface soil. Sections 6.1.2.3 and 6.1.2.4 discuss the exposure point concentrations and exposure assumptions used in the risk assessment.

Potentially Exposed Receptors—Under the current land use scenario, the receptor at potential risk is the industrial worker. The industrial worker is an adult and includes those who practice training exercises at the sites under investigation or in their vicinity.

Under current/future land use scenarios, recreational site users and hunters are the receptors at potential risk of exposure. Both the recreational site user and the hunter are defined as 45 kilogram adolescents between the ages of 7 and 16 years (IT 1998).

Under future land use scenarios, industrial workers, construction workers, and residents (including adults and children) are the receptors at potential risk of exposure. The construction worker is an adult and is expected to work on jobs of shorter duration (although higher exposure frequencies) than the industrial worker, and is exposed to both surface and subsurface soil (industrial workers are assumed to be exposed only to surface soil). Since the resident child provides the more conservative assessment of exposure to soil, exposure of the adult resident to soil has not been evaluated. The resident child is defined as a 15-kilogram child between the age of 1 and 6 years (IT 1998).

It is assumed that groundwater may be developed as a future source of drinking water. Therefore, the industrial worker and the resident (both child and adult) exposures to groundwater have been evaluated. The industrial worker is assumed to use the groundwater for drinking, cleaning tools, irrigation, or washing (but not bathing) (IT 1998). The inhalation of volatiles while showering is evaluated for the resident adult, but not for the resident child (children are assumed to take baths). For noncancer hazards, separate results are reported for the child and the adult. For cancer risk, the resident child and adult are evaluated as a single integrated receptor, with the exception of the noted showering exposures. For cancer risks, the same results are reported under the child and adult headings for ingestion and dermal contact exposures. Groundwater inhalation risks (i.e., either noncancer or cancer) only are presented for the adult.

6.2.2 Identification of Potential Exposure Pathways

Exposure pathways describe "the course a chemical or physical agent takes from the source to the exposed individual" (EPA 1989a). Four components comprise an exposure pathway:

- A source and mechanism of chemical release
- A retention or transport medium (or media)
- A point of potential human contact with the contaminated medium (the exposure point)
- An exposure route (e.g., ingestion, dermal contact, and inhalation).

The exposure pathways evaluated in the risk assessment are presented in a graphical form as a CSM (Figure 6-1). As shown in the CSM, soil, groundwater, surface water, and sediment pathways were considered in the human health risk assessment. Table 6-32 presents the exposure pathways evaluated for each of the 12 sites.

Soil Pathways—Soil ingestion and dermal contact with soil were evaluated for each receptor (except the hunter, who was evaluated only for ingestion of venison). Inhalation of suspended soil particulates was evaluated for both the industrial worker and construction worker.

At some sites, soil samples were analyzed for fewer parameters than at other sites (e.g., only agent breakdown products). If the analyses did not detect any of the targeted analytes, risk assessment for soils was not conducted at those sites. If surface soil data were not collected, soil pathways were not evaluated under current land use in the risk assessment because soil pathways under current land use assume exposure only to surface soil. The resident child provides the more conservative assessment of exposure to soil; therefore, the resident adult exposures to soil were not evaluated.

Groundwater Pathways—Groundwater pathways were evaluated for the future residential and industrial worker land use scenarios. Use of groundwater in the home exposes residents to contaminants through ingestion, dermal contact, and inhalation of volatiles while showering. As noted, children are assumed not to shower, so inhalation exposures are not evaluated for children. In addition, only resident children are evaluated for non-carcinogenic effects because their assessment is considered to be more conservative. The inhalation pathway is not evaluated for the industrial worker because that individual is assumed not to take showers at work.

The Main Post at Fort McClellan currently obtains its drinking water from the city of Anniston, which is supplied by Coldwater Spring. Although four drinking water wells are located on Pelham Range, these wells are not located in proximity to any RI site. If future land use of Fort McClellan remained industrial, groundwater would most likely continue to be supplied by Coldwater Spring. Even under future residential land use, groundwater would likely be supplied by the city. However, because it is possible for a resident to install a well on private property, groundwater exposures are evaluated for future residents and industrial workers (groundskeepers).

Surface Water and Sediment Pathways—At sites where data are available, surface water and sediment pathways have been evaluated in the risk assessment for the current/future recreational site user. The pathways evaluated are surface water dermal contact, sediment ingestion, and sediment dermal contact. The creeks and ponds associated with the RI sites from which the samples were collected are not considered conducive or attractive for swimming (e.g., they are shallow and often swampy). Therefore, surface water and sediment exposures are limited to a wading rather than a swimming scenario. Incidental ingestion of surface water was not included in the risk assessment because incidental ingestion of surface water is consistent with swimming, but not wading.

6.2.3 Derivation of Exposure Point Concentrations

Exposure point concentrations are the concentrations of chemicals in a given medium to which human receptors are exposed at the point of contact. Exposure point concentrations for the risk estimates were developed from environmental sampling data, which were aggregated as discussed in Section 6.1.1.1. These concentrations have been calculated in accordance with EPA guidance (EPA 1992c).

Methods used to derive exposure point concentrations are dependent upon the underlying shape of the distribution of the data set. The data were first tested to determine if they were normally or lognormally distributed using the Shapiro-Wilk test of normality (EPA 1992c) (see discussion in Appendix H, Section H.1). If the data were found to be normally distributed, the exposure point concentration was calculated as the 95 percent UCL on the arithmetic mean of the data using the Student's t-statistic. If the data were found to be lognormally distributed, the exposure point concentration was calculated as the 95 percent UCL using the H-statistic (EPA 1992b). If the data were found to fit both normal and lognormal distributions, the 95 percent UCL was calculated for the distribution that provided the best fit (IT 1998). If a distribution could not be defined, the 95 percent UCL of the median concentration (Gilbert 1987) was calculated. One exception exists for the previous

statements: if the 95 percent UCL exceeded the maximum value observed at the site, the maximum value was used as the exposure point concentration.

"Not detected" results were treated as one-half the limit of detection and included in the calculations of the mean and UCL values. Results of duplicate analyses were averaged and also used in the calculations of the mean and UCL.

Surface soil data from 0 to < 1 foot BLS were used to calculate exposure point concentrations for receptors under current land use (i.e., industrial worker) and current/future land use (i.e., recreational site users and hunters). For exposures to future receptors (i.e., industrial workers, residents, and construction workers), both surface and subsurface soils (0 to 12 feet BLS) were used in the risk assessment.

Groundwater monitoring data are available for all but four sites (Area T-4, Area T-5, D&I Area, and Range K). Risk assessment for groundwater has not been conducted at sites where monitoring data are not available. The exposure point concentrations calculated from monitoring data and used in the human health risk assessment are included in Appendix H in the standard RAGS Part D table 3 format for each site.

6.2.4 Development of Chemical Intakes

This section provides information concerning the equations and exposure factors (i.e., assumptions) used to calculate chemical intakes. The risk assessment used intake equations that were developed and applied in accordance with methods presented by EPA in RAGS (EPA 1989a).

The oral and inhalation intake estimates are expressed as the administered dose of a chemical (i.e., the amount of chemical at an exchange boundary, such as the skin or the intestinal wall, that is available for absorption). However, dermal doses are estimates of absorbed dose (the amount of chemical actually absorbed into the blood stream). All chemicals are assumed not to transform or degrade over the period of exposure (i.e., the concentration in the medium of concern remains the same).

Exposure Equations—Intake estimates (in mg/kg-day) were developed for each COPC using the corresponding exposure point concentration. Chemical intakes (or absorbed dose for dermal contact pathways) are estimated by means of the following general equation:

$$\text{Intake} = \frac{C \times IR \times EF \times ED \times CF}{BW \times AT}$$

where:

C = Chemical concentration (exposure point concentration)
IR = Intake rate
EF = Exposure frequency
ED = Exposure duration
CF = Conversion factor (to attain units of mg/kg-day)
BW = Body weight
AT = Averaging time for noncancer or cancer effects.

Pathway-specific intake equations are presented in Appendix H, Section H.2.

Exposure Factors—The exposure factors are combined with the exposure point concentrations to calculate intake or dose. The exposure factors and corresponding guidance or rationale used in this risk assessment are presented in Tables 6-33, 6-34, and 6-35. The assumptions are based on EPA guidance documents (EPA 1989a, 1989b, 1991a, 1991b, 1992a, and 1993a) and are consistent with the assumptions presented in the facility-wide work plan (IT 1998). Risk has been calculated separately for each exposure unit because the receptor is assumed to spend all of his or her time during a given exposure event in a single exposure unit.

6.3 TOXICITY ASSESSMENT

The objectives of the toxicity assessment are to evaluate the inherent toxicity of the compounds under investigation and to identify and select toxicity values for use in risk characterization. For the assessment of human health risks from exposure to chemicals, the following toxicity values are of principal importance:

- Reference doses (RfDs) for oral exposure—acceptable intake values for chronic exposure (noncancer effects)
- Reference concentrations (RfCs) for inhalation exposure—acceptable intake values for chronic exposure (noncancer effects); these have been converted to inhalation RfDs by multiplying by 20 m^3/day and dividing by 70 kg
- Cancer slope factors (CSFs) for oral exposure
- CSFs for the inhalation route.

Discussion concerning EPA's approach to evaluating noncancer and cancer health effects and the derivation of these toxicity values is presented in Appendix H, Section H.3. The primary source of chemical-specific information for these toxicity values is the EPA Integrated Risk Information System (IRIS) data base (EPA 1998c). IRIS is a computer-based catalog of EPA risk assessment and risk management information for chemical substances. Data in the IRIS system are regularly reviewed and updated monthly. If toxicity values are not available on IRIS, EPA recommends use of the EPA Office of Research and Development (ORD) Health Effects Assessment Summary Tables (HEAST) (EPA 1997a) as the second current source of information.

The toxicity values used in the human health risk assessment are presented in Appendix H. Priority is given to the values obtained from the IRIS data base because they have been verified by the EPA RfD/RfC Work Group for noncarcinogens or the Carcinogen Risk Assessment Verification Endeavor (CRAVE) Work Group.

Toxicity profiles summarize the most important information regarding adverse human health and ecological effects associated with exposure to different chemicals and radionuclides. These profiles also describe the primary fate and transport mechanisms to aid risk assessors in developing CSMs. Toxicity profiles are provided for all COPCs in the *Human Health and Ecological Screening Values and PAH Background Summary Report* (IT 2000a).

The toxicity assessment process is complicated by the fact that toxicity values are not readily available for all exposure routes or all chemicals. However, EPA has provided guidance for the following: the dermal route, lead, PAHs, provisional toxicity values, iron, and chromium.

Dermal Route—EPA toxicity values are available only for the oral and inhalation routes. In addition, most of these toxicity values are based on administered rather than absorbed dose. (The administered dose is the amount of chemical at an exchange boundary, such as skin, that is *available* for absorption; the absorbed dose is the amount of chemical actually absorbed into the blood stream.) As presented in Section 6.1.2.4, the intake equations for dermal contact exposures calculate absorbed dose (by incorporating a dermal absorption factor or a permeability coefficient). Thus, it is necessary to convert the administered dose toxicity value to an absorbed dose toxicity value to calculate risk.

In accordance with RAGS (EPA 1989a), absorbed-dose toxicity values were derived from the oral administered-dose toxicity values to estimate risk associated with the dermal contact route. Adjustment of the oral administered-dose toxicity values from absorbed-dose toxicity values requires sufficient data from the principal laboratory studies on oral absorption efficiency (i.e., gastrointestinal absorption factors) in the species on which the toxicity values are based.

Using these data, the administered-dose toxicity value was multiplied (if it is an RfD) or divided (if it is a CSF) by the gastrointestinal absorption factor to derive a toxicity value based on the absorbed-dose. The gastrointestinal absorption factors used in this risk assessment, including the toxicity values used to evaluate the dermal pathway, dermal permeability coefficients, and dermal absorption factors, are included in Appendix H.

Lead—EPA does not provide a verified RfD or CSF for lead. The evaluation of lead is conducted by first comparing the exposure point concentration for each exposure unit to the following action level: 400 mg/kg in soil (EPA 1994a) or 15 µg/L in drinking water (EPA 1996a). If the exposure point concentration is less than or equal to these levels, no further evaluation is conducted. If the exposure point concentration is greater than these levels, exposures are evaluated using models to estimate blood lead levels in human receptors.

Currently, EPA has provided models for children in a residential setting (LEAD 0.99d, EPA 1994b) and for adult workers in an occupational setting. EPA's Technical Review Workgroup for Lead (1996b) developed the model for adult workers. The model is not typically applied to adults in a residential setting because conclusions about exposures to lead in such a setting are based on the most sensitive receptor, a child in this case. A discussion of the methodology and application of this model is presented in Section 6.1.4.2.

Polycyclic Aromatic Hydrocarbons—Most carcinogenic PAH (cPAH) compounds do not have published RfDs for noncancer effects, and only benzo(a)pyrene has a published slope factor for cancer effects. Therefore, EPA has provided interim guidance for evaluating exposure to several cPAHs (EPA 1993b). EPA Region IV (EPA 1995b) recommends converting concentrations of cPAHs using toxicity equivalence factors (TEFs) and substituting "benzo(a)pyrene" for the name of the cPAH (i.e., they become equivalent to benzo[a]pyrene). The TEFs are related to the toxicity of benzo(a)pyrene and are based on reliable studies in which PAHs caused cancer after repeated exposures to mouse skin. These TEFs have been incorporated into the risk assessment and are listed in the table of toxicity values included in Appendix H.

Following EPA Region IV guidance (EPA 1995b), dermal contact and inhalation exposures have been evaluated for benzo(a)pyrene and cPAHs. The same procedure described above for oral exposures to cPAHs (i.e., converting concentrations and expressing the cPAH as a benzo(a)pyrene equivalent) also have been applied to dermal and inhalation exposures. However, the oral slope factor listed in IRIS (using the adjustment procedure for dermal toxicity described earlier) and an inhalation slope factor of

3.1 mg/kg-day have been used instead. The inhalation slope factor is a provisional toxicity value, which is based on an inhalation study on hamsters. For PAHs exhibiting noncancer effects without EPA-approved RfDs, the RfD for pyrene was used as a surrogate because it has the lowest RfD of the noncarcinogenic PAHs.

Provisional Toxicity Values—Provisional toxicity values are available for some chemicals that have no current EPA-verified RfD or CSF. These values are issued by EPA's Superfund Health Risk Technical Support Center-National Center for Environmental Assessment of EPA (SHRTSC-NCEA).

Risk managers should recognize that the provisional toxicity values that are used have not undergone the same level of review as EPA-verified toxicity values. For example, trichloroethylene could be identified as a chemical with human health effects exceeding EPA targets when using provisional toxicity values. The decision to remediate either of these substances should be made in the light of understanding that the toxicity value is provisional and has not undergone adequate review relative to EPA-verified toxicity values. Appendix H presents the toxicological data used in the risk assessment.

Iron—In order to maintain consistency with *Human Health and Ecological Screening Values and PAH Background Summary Report* (IT 2000a), the provisional toxicity value was used only in the screening phase of the RI. Cases where the maximum detected concentrations exceeded the SSSL and the results of the ANOVA are described in Section 6.1.4.4.

Chromium—EPA Headquarters have not provided guidance in cases where chromium speciation (delineation of total chromium as chromium III versus chromium VI) was not conducted. Under direction from EPA Region IV, the risk assessment has assumed that all chromium is present in its hexavalent form. This is a conservative assumption because hexavalent chromium is a carcinogen by inhalation (whereas the trivalent form is not) and has a more stringent (i.e., lower) RfD than trivalent chromium (chromium III).

Based on the known history of past practices at the 12 sites under investigation, assuming that all chromium is in the hexavalent form is also very conservative because there were no processes at the sites in which hexavalent chromium was produced. In soil, trivalent chromium and its complexes are generally very stable, whereas hexavalent chromium is highly unstable. Hexavalent chromium is readily reduced to trivalent chromium in the presence of organic matter and by residual amounts of iron in weathering minerals (Eary and Rai 1989).

6.4 RISK CHARACTERIZATION

Risk characterization combines the exposure and toxicity assessments by comparing estimates of intake or dose with appropriate toxicity values. The objective of risk characterization is to determine whether exposure to chemicals associated with the exposure units poses risks that exceed target levels for human health effects. The results of the risk assessment thus may support the determination of the need for site remediation.

The facility-wide work plan (IT 1998) for the risk assessment called for using a streamlined approach. Although they differ in approach, the resulting risk estimates are the same using either the streamlined or more conventional baseline risk assessment methods. The streamlined risk assessment relies on the SSSLs to estimate hazards and risks, and the same factors used in the derivation of the SSSLs are used in the estimation of baseline risks. The primary benefit to using the streamlined risk assessment process is that much of the work is completed in the derivation of the SSSLs. Using a

two-step process, much of the work is completed in the first step. The second step, in which multiple chemicals are accounted for, requires calculation and this appears to be streamlined. Conventional baseline risk assessment calculations are conducted in one step. Because the two-step process is actually more cumbersome than the conventional method, the risk calculations for the investigation are based on the conventional methods, and do not rely on SSSLs (other than for selection of COPCs). The conclusions do not differ, so there is no effect of diverging from the streamlined risk assessment process presented in the facility-wide work plan (IT 1998).

6.4.1 EPA Methods for Risk Characterization

This risk characterization presents a separate evaluation of noncancer and cancer effects. EPA methods distinguish cancer from noncancer effects because organisms typically respond differently following exposure to noncarcinogenic or carcinogenic agents.

The cancer risk is the probability of excess (incremental) lifetime cancer risk (ELCR) for an individual that can be attributed to long-term exposure to chemicals. To derive an estimate of risk, the CSF is multiplied by the estimated chronic daily dose (intake) experienced by the exposed individual. For multiple carcinogens, the risk for each compound has been summed to provide an overall estimate of risk for cancer effects (EPA 1989a).

For noncarcinogens, the RfD is divided by the chronic daily intake or dose experienced by the exposed individual. The resulting value is the HQ and is a measure of the possibility of adverse noncancer effects. To evaluate exposure from more than one noncarcinogen, the HQs are summed for all chemicals under evaluation to obtain the hazard index (HI). Separate HIs then may be calculated based on segregation of HQs affecting particular target organs.

After individual pathway risks are calculated, risks or HIs may be combined across pathways for each receptor. A more detailed discussion of EPA's methods for risk characterization is presented in Appendix H, Section H.4.

6.4.2 Risk Characterization Methods for Lead

Health effects associated with low-level lead exposures include reproductive effects, nervous system effects, and learning disorders. At the present time, toxicological studies indicate that there may be no threshold of exposure to lead below which adverse effects do not occur. Given the uncertainty surrounding an acceptable exposure below which there would be no adverse effects for lead, EPA has withdrawn the RfD for lead from IRIS and HEAST. Lead also is classified as a B2 carcinogen (probable human carcinogen), but has no EPA-verified CSF.

At exposure units where lead exceeded the 400 mg/kg screening level in soil (EPA 1994a) or the 15 μg/L action level in drinking water (EPA 1996a), models were used to estimate blood levels of lead in human receptors. Modeling is necessary because blood lead levels in exposed populations were not directly measured. Currently, EPA has provided models for children in a residential setting (LEAD 0.99d, EPA 1994b) and for adult workers in an occupational setting.

For adult workers, a model developed by EPA's Technical Review Workgroup for Lead (EPA 1996b) was used. The model assumes a baseline blood level and uses various exposure parameters along with a biokinetic slope factor to estimate blood lead levels. The model is designed to evaluate and protect the fetuses of pregnant working women and therefore incorporates a factor that converts the blood lead level in the mother to the blood lead level in the fetus. The basic equation uses the biokinetic slope

factor to relate total uptake of lead to blood lead. The equations used for evaluating lead exposures to adult workers are presented in Appendix H.

The adult worker model provides default values for most of the parameters. In general, the default values match those used in the risk assessment (e.g., maternal-fetal factor). Lacking site-specific information concerning the remaining parameters, the default values were used with the exception of the site-specific concentrations of lead, exposure frequencies, and ingestion rates. The model factors for the lead analyses for adult workers are presented in Appendix H.

6.4.3 Interpretation of Risk Assessment Results

EPA has established target risk levels for use in determining the need for remediation. In the risk characterization, risks are calculated and compared to these target levels. If these levels are exceeded, the chemicals of concern (COCs) contributing to the exceedances are identified. COCs are the chemicals that are carried into the Feasibility Study (FS) and upon which the remediation is focused. As opposed to COPCs, COCs are identified after the quantitative risk assessment has been conducted.

Using EPA Region IV guidance (EPA 1995a) and guidance presented in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (EPA 1991c), COCs in the human health risk assessment are defined as chemicals that significantly contribute to a pathway that exceeds a 1×10^{-4} risk or an HI of 1. Chemicals are not considered COCs if their individual carcinogenic risk is $< 1 \times 10^{-6}$ or their noncarcinogenic HQ is <0.1. For noncancer effects, if the pathway HI exceeds 1, chemicals are segregated according to which receptor organ is affected, and the pathway HI is recalculated. Chemicals contributing to target organ HIs (TOHIs) ≤ 1 may be eliminated as COCs. Tables presenting the segregation of noncancer effects according to target organ are included in this risk characterization section. COCs have been identified separately for each land use scenario and receptor, and may either independently exceed targets or combine to exceed targets.

Lead exposures are assumed to pose an unacceptable risk if the blood lead level of the resident child or the fetus of an adult female exceeds the proposed benchmark concentration developed by the Centers for Disease Control (CDC). (Note that the adult model is designed to evaluate and protect the fetuses of pregnant working women.) Under this guideline, there must be a 95 percent probability that blood lead levels will not exceed 10 μg/dL in the exposed population. If blood lead levels exceed this guideline, lead is identified as a COC.

If COCs are identified during risk characterization, remedial goal options (RGOs) are calculated for each COC in accordance with EPA Region IV guidance (EPA 1995a). RGOs based on protection of human health are developed and presented in the FS.

6.4.4 Results of Risk Characterization

The following subsections present the risk characterization for the 12 sites under investigation at Fort McClellan. Results are discussed separately for each site and for current and future land uses. The results are summarized in two tables: one presenting the RME risks and the other presenting the COCs and their contribution to the overall risk estimates. COCs are defined as the COPCs that significantly contribute to a pathway in a use scenario for a receptor that either (a) exceeds a 10^{-4} cumulative site cancer risk or (b) exceeds a noncarcinogenic HI of 1. Chemicals are not included as COCs if their individual carcinogenic risk contribution is less than 10^{-6} and their noncarcinogenic HQ is less than 0.1. If the pathway risk targets are exceeded (10^{-4} cancer risk or noncancer HI of 1), all chemicals with carcinogenic risks $\geq 10^{-6}$ and noncarcinogenic HQs ≥ 0.1 are COCs.

The RME summary tables present quantitative results of the risk assessment and a letter designator interpreting the estimates in light of EPA targets. Pathway risk estimates that are equal to or below the noncancer HI of 1 or a cancer risk of 1×10^{-4} are indicated with a "B." An "E" designates pathway risks that exceed the noncancer HI of 1 or a cancer risk of 1×10^{-4}. Following the RME tables are different tables that follow the RAGS Part D format. These tables provide more detail in providing cancer risks and HQs for each COPC. Also included in the same tables is information regarding noncarcinogenic effects upon specific target organs. These tables provide simple totals for cancer risks and HIs, and subtotals for HIs according to target organ. Results are discussed for both types of totals. The detailed risk characterization tables showing risk estimates for each COPC are provided in Appendix H.

6.4.4.1 Area T-4

Soil samples collected from Area T-4 were analyzed only for agent breakdown products. Because agent breakdown products were not detected in any sample, quantitative risk assessment was not conducted at Area T-4. Surface water and sediment are not present at this site. Soil and groundwater have not been evaluated for non-CWM chemical constituents at this study area.

6.4.4.2 Area T-5

Soil samples collected from Area T-5 were analyzed only for agent breakdown products. Because agent breakdown products were not detected in any of the soil samples, risk assessment for soil was not conducted at Area T-5. There were no COPCs for surface water and the only COPC in sediment is lead. Soil and groundwater have not been evaluated for non-CWM chemical constituents at this study area.

6.4.4.3 Area T-24A

Surface soil samples collected from Area T-24A were analyzed only for agent breakdown products. Because agent breakdown products were not detected in any of the samples, risk assessment for surface soils was not conducted at Area T-24A. There were no COPCs for surface water or sediment at Area T-24A. However, there were COPCs in the subsurface soils and groundwater. Because access to the site is restricted by fencing and there is no current use of groundwater at the site, risks were not estimated for these media for current land use. Risks were estimated for exposures to subsurface soil and groundwater under future land use. The future RME risk estimates for Area T-24A are summarized in Table 6-36. Tables 6-37 through 6-40 present the risk estimates for each of the COPCs evaluated and the summed HQs and cancer risks.

The maximum concentrations of iron in subsurface soil and groundwater exceeded the SSSLs. The results of the ANOVA indicate that iron is site-related in subsurface soil, but too few samples were collected to conduct the analysis for groundwater.

Current Land Use—All noncancer HIs and cancer risks are below EPA targets (i.e., HI< 1 and cancer risk $< 1 \times 10^{-6}$) at Area T-24A based on limited pathway evaluation.

Future Land Use—Under future land use, noncancer HIs exceed 1 for the exposures to soil for the resident child only. Noncancer COCs for the subsurface soil are aluminum and antimony. HIs exceed 1 for groundwater ingestion by all receptors evaluated and for showering by the resident adult. Noncancer COCs in groundwater (HQ > 1) are manganese and benzene. Aluminum is a lesser noncarcinogenic COC for groundwater.

There were no carcinogenic COPCs in subsurface soil; therefore, carcinogenic risks were not estimated to evaluate soil exposures. Cancer risks for the resident exposed to groundwater reach 2×10^{-4}. The carcinogenic COCs for groundwater are benzene, benzo(b)fluoranthene, bis(2-ethylhexyl)phthalate (B2EHP), hexachlorobenzene, and pentachlorophenol (PCP) (except benzene, all $1 \times 10^{-6} > 1 \times 10^{-4}$).

6.4.4.4 Area T-38

Limited, biased soil sampling has been conducted at Area T38 with the majority of the samples analyzed exclusively for CWM breakdown products. Surface water and sediment are not present in the site area. The RME risks calculated for soil and groundwater at Area T-38 are shown in Tables 6-41 (industrial scenario), 6-42 (recreational and hunter scenarios), 6-43 (future scenarios). In addition, Tables 6-44 to 6-50 present risk estimates for each of the COPCs and the summed HIs and cancer risks. The maximum concentrations of iron in surface soil, subsurface soil, and groundwater exceeded the SSSLs. The results of the ANOVA indicate that iron is site-related in groundwater, however too few samples are available to conduct the analysis for surface and subsurface soil.

All noncancer HIs are below EPA targets (i.e., HI< 1) at Area T-38 under current land use. The greatest cancer risk is 2×10^{-6} for exposures to surface soil. Under the scenarios for current/future land use all noncancer HIs are below EPA targets (i.e., HI< 1) at Area T-38. There were no carcinogenic COPCs.

Future Land Use—Noncancer HIs for exposure to surface soil (0 to < 1 foot BLS) and subsurface soil (1 to 12 feet BLS) exceed 1 for the construction worker. The only noncancer based COC is aluminum based on exposures to the construction worker. The HQ for aluminum equals or exceeds 1 via the inhalation route in surface and subsurface soil. To a lesser extent, chromium in surface soil contributes to the noncancer hazard.

For groundwater, HIs exceed 1 for the resident adult and child and the industrial worker. HIs for dermal exposures to groundwater are equal to or below 1 for all receptors. The noncancer-based COCs, consist primarily of manganese, 1,1,2,2-tetrachloroethane, carbon tetrachloride, chloroform, and trichloroethene (TCE). Each of these COCs has an HQ greater than or equal to 1 for at least one receptor. Aluminum, barium, nickel, and 1,2-dichloroethene all contribute with HQs greater than 0.1 but less than 1.

When the total HIs (i.e., all constituents, all exposure routes, and all media) are segregated according to target organ, COCs are identified for effects to the central nervous system and to the liver. These principal effects are the result of exposure to groundwater. The COC based on segregated noncancer effects to the central nervous system is manganese, and the COCs for effects to the liver are 1,2-dichloroethene (DCE) and carbon tetrachloride.

Cancer risks are between 1×10^{-6} and 1×10^{-4} for the soil exposures. Cancer risks are above 1×10^{-4} for the groundwater exposures (ingestion, dermal contact, and inhalation). For the resident, the cancer-based COCs for groundwater are primarily 1,1,2,2-tetrachloroethane and carbon tetrachloride, each with individual cancer risks of 1×10^{-4} or greater. Benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, 1,1,2-TCE, tetrachloroethene (PCE), TCE, chloroform, and B2EHP are also COCs with cancer risks between 1×10^{-4} and 1×10^{-6}.

6.4.4.5 Range K

Soil samples collected from Range K were analyzed only for explosives and agent breakdown products. Because agent breakdown products were not detected in any sample, quantitative risk assessment was not conducted at Range K. Surface water and sediment are not present at this site. Soil and groundwater have not been evaluated for non-CWM chemical constituents at this study area.

6.4.4.6 Range J

Soil samples collected from Range J were analyzed only for chemical agent breakdown products. Because agent breakdown products were not detected in any of the samples, risk assessment for soils was not conducted at Range J. Soil was not evaluated for non-CWM chemical constituents at this study area. There is no surface water or sediment present in the vicinity of the fenced enclosure at Range J.

The RME risks calculated for the groundwater pathway at Range J are summarized in Table 6-51. In addition, Tables 6-52 through 6-54 present the risk estimates for each COPC as well as the summed risk estimates for each receptor and exposure unit.

Current Land Use—Risks for current land use were not calculated at Range J because CWM breakdown products were not detected in the soil, non-CWM chemical constituents were not investigated in the soil, and there is no current groundwater usage at the site.

Future Land Use—Under future land use, noncancer HIs exceed 1 for the groundwater ingestion, dermal contact, and vapor inhalation pathways. The two COCs for noncancer effects are carbon tetrachloride and chloroform. Cancer risks reach 1×10^{-4} for the industrial worker. The cancer risks are above 1×10^{-4} for the residents. The COC for cancer effects is carbon tetrachloride, although chloroform, PCE, and 1,1,2,2-tetrachloroethane (1,1,2,2-PCA) are lesser COCs.

6.4.4.7 Detection & Identification (D&I) Area

Soil samples collected from the D&I Area were analyzed for metals and CWM breakdown products. There is no surface water or sediment present in the vicinity of the study area. Groundwater has not been evaluated for non-CWM chemical constituents at this site. The RME risks calculated for exposures to subsurface soil at the D&I Area are summarized in Table 6-55. In addition, Tables 6-56 through 6-58 present HQs and cancer risks for each COPC and the summed HIs and cancer risks for each receptor and exposure unit. The maximum concentrations of iron in subsurface soil exceeded the SSSL. However, too few samples were collected to conduct the ANOVA.

Current Land Use—There are no COPCs in any of the currently sampled media at the D&I Area based on limited sampling.

Future Land Use—All noncancer HIs and cancer risks are at or below the EPA targets (i.e., HI < 1 and cancer risk < 1×10^{-4}) for all receptors based on limited sampling.

6.4.4.8 Range L

Soil, sediment, surface water, and groundwater at Range L were evaluated for CWM breakdown products and a comprehensive suite of non-CWM chemical constituents. The RME risks calculated for Range L are summarized in Table 6-59 through 6-61. In addition, Tables 6-62 through 6-68 present the

risk estimates for the COPCs and the summed risk estimates for each receptor and exposure unit. COPCs are identified in soil, sediment, surface water, and groundwater.

The maximum concentrations of iron in surface soil, subsurface soil, and groundwater exceeded the SSSLs. The results of the ANOVA indicate that iron is site-related in groundwater, but too few samples were collected to conduct the analysis for surface and subsurface soil.

Current Land Use—All noncancer HIs are below the target HI of 1. The greatest cancer risk is for exposure to surface soil (0 to 1 foot BLS) is 1×10^{-6}.

Current/Future Land Use—All noncancer HIs and cancer risks are below EPA targets (i.e., HI < 1 and cancer risk < 1×10^{-6}) at Range L.

Future Land Use—Under future land use, noncancer HIs for soil exposures to the industrial worker, the resident, and construction worker exceed 1. The HIs for groundwater exposures to the industrial worker and resident also exceed 1. The noncancer-based COCs in surface soil are primarily aluminum and manganese, and, to a lesser extent, chromium, nickel, and vanadium; whereas, in subsurface soil the COCs are aluminum, chromium, and vanadium. For groundwater, the primary noncancer COC is manganese with aluminum, cadmium, nickel, heptachlor epoxide, nitrate, and B2EHP as lesser COCs (i.e., with HQs of less than 1). When noncancer effects are segregated by target organ, manganese is identified as a COC based on central nervous system effects resulting from exposure to soil and groundwater.

The greatest cancer risks for exposure to soil is 2×10^{-5} for inhalation exposures to chromium in surface and subsurface soil. For groundwater exposures, the cancer risk reaches 4×10^{-4}, primarily attributable to an isolated concentration of polychlorinated biphenyl (PCB) 1248. Lesser carcinogenic COCs for the groundwater are benzo(a)anthracene, benzo(b)fluoranthene, heptachlor, heptachlor epoxide, indeno(1,2,3-cd)pyrene, Royal Demolition Explosive (RDX), and B2EHP.

ANOVA indicates that the detected concentrations of manganese in the groundwater at Range L are indistinguishable from background. Based on the ANOVA and consideration of likely mission-related constituents, manganese is eliminated as a COC for groundwater at Range L.

6.4.4.9 Landfill #1

Soil, sediment, surface water, and groundwater at Landfill #1 were evaluated for CWM breakdown products and a comprehensive suite of non-CWM chemical constituents. The RME risks calculated for Landfill #1 are summarized in Tables 6-69 (recreational and hunter scenarios) and 6-70 (resident, industrial and construction scenarios). In addition, Tables 6-71 through 6-75 present the risk estimates for each COPC evaluated as well as the summed HIs and cancer risks for each receptor and exposure unit. COPCs are identified in surface water, groundwater, and subsurface soil (1 to 12 feet BLS). The maximum concentrations of iron in subsurface soil and groundwater exceeded the SSSLs. The results of the ANOVA indicate that iron is not site-related in groundwater, but too few samples were collected to conduct the analysis for subsurface soil. No COPCs were identified in sediment.

Current/Future Land Use—All noncancer HIs and cancer risks are below EPA targets (i.e., HI < 1 and cancer risk < 1×10^{-6}) at Landfill #1.

Future Land Use—Under future land use, noncancer HIs do not exceed 1 for any receptors exposed to subsurface soil. Noncancer HIs exceed 1 for the groundwater ingestion pathway, but only for

the resident. The primary COC for noncancer effects from exposure to groundwater is manganese. Lesser noncancer COCs for the groundwater are aluminum, barium, 1,3-dinitrobenzene, and nitrate. When HIs are segregated according to principal health effects, manganese is identified as a COC for effects to the central nervous system. ANOVA indicates that the detected concentrations of manganese in the groundwater at Landfill #1 are indistinguishable from background.

6.4.4.10 Landfill #2

Sediment, surface water, and groundwater were evaluated for VOCs, SVOCs, pesticides/PCBs, metals, explosives and CWM breakdown products. Soil sampling was not conducted at Landfill #2 and is identified as a data gap. The RME risks calculated for Landfill #2 are summarized in Tables 6-76 and 6-77. In addition, Tables 6-78 through 6-81 present the risk estimates for the COPCs evaluated and the summed risk estimates for each receptor and exposure unit. Although samples were collected and analytes were detected, no COPCs were identified in surface water. COPCs are identified in sediment and groundwater. The maximum concentrations of iron in groundwater exceeded the SSSL. However, too few samples were collected to conduct the ANOVA.

Current/Future Land Use—All noncancer HIs for the sampled pathways are below the target HI of 1 for current/future land use. Cancer risks are all below 1×10^{-6}.

Future Land Use—Under future land use, noncancer HIs exceed 1 for groundwater exposures to residents. The primary noncancer COC in groundwater is manganese, with aluminum, beryllium, and chromium as lesser COCs. The greatest cancer risk for exposure to groundwater is 8×10^{-6}, mostly attributable to one carcinogenic COPC (aldrin).

6.4.4.11 Landfill #3

Sediment, surface water, and groundwater at Landfill #1 were evaluated for CWM breakdown products and a comprehensive suite of non-CWM chemical constituents. Soil samples were evaluated for VOCs, SVOCs, pesticides/PCBs, metals, and explosives. The RME risks calculated for Landfill #3 are shown in Tables 6-82 (industrial scenario), 6-83 (recreational and hunter scenarios), and 6-84 (future scenarios). In addition, Tables 6-85 through 6-91 present the risk estimates for each COPC evaluated and the summed risk estimates for each receptor and exposure unit. COPCs are identified in soil, sediment, surface water, and groundwater. The maximum concentrations of iron in surface soil and groundwater exceeded the SSSLs. The results of the ANOVA indicate that iron is site-related in groundwater and subsurface soil.

Current Land Use—All noncancer HIs and cancer risks are below EPA targets (i.e., HI < 1 and cancer risk $< 1 \times 10^{-6}$) at Landfill #3.

Current/Future Land Use—All noncancer HIs and cancer risks are below EPA targets (i.e., HI < 1 and cancer risk $< 1 \times 10^{-6}$) at Landfill #3.

Future Land Use—Under future land use, noncancer HIs exceed 1 for exposure to surface and subsurface soil. The primary COC for noncancer effects related to exposure to the surface soil is manganese (HQ > 1), and aluminum, chromium, and vanadium are lesser COCs (HQs < 1). Because the noncarcinogenic hazards are overwhelmingly related to manganese, these COCs are not combined or otherwise segregated according to similar noncancer effects. ANOVA indicates that the concentrations of manganese detected in the surface soil at Landfill #3 are indistinguishable from background. Based on

the ANOVA and consideration of likely mission-related constituents, manganese is eliminated as a COC for the surface soil at Landfill #3.

For groundwater, HIs exceed 1 for all receptors evaluated. Noncancer COCs are primarily aluminum, chromium, manganese, vanadium, and trichloroethylene. Lesser COCs (HQs < 1) are barium, beryllium, cadmium, cobalt, copper, mercury, nickel, 1,1,2,2-PCA, 1,2-DCE, acetone, aldrin, dieldrin, endrin, PCP, vinyl chloride, and B2EHP. When the COCs are evaluated by noncancer effect, aluminum, manganese, and endrin are identified as COCs for effects to the central nervous system. Barium, cadmium, mercury, and acetone are identified as COCs for effects to the kidney. 1,2-DCE, acetone, aldrin, dieldrin, endrin, PCP, and B2EHP are identified as COCs for effects to the liver.

The greatest summed cancer risk for soil exposures is for the industrial worker, and is below 1×10^{-4}. For exposures to the groundwater, the cancer risk reaches 3×10^{-3} for the resident. Carcinogenic COCs for groundwater are primarily (cancer risk > 1×10^{-4}) 1,1,2,2-PCA, dibenzo(a,h)anthracene, PCP, and vinyl chloride. Lesser carcinogenic COCs (cancer risk > 1×10^{-6}) for the groundwater are 1,1,2-TCA, 1,4-dichlorobenzene, aldrin, benzene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, dieldrin, heptachlor, heptachlor epoxide, indeno(1,2,3-cd)pyrene, PCB 1248, PCE, TCE, alpha-BHC, beta-BHC, B2EHP, and lindane. Dieldrin and 4,4′-DDT were detected in the SI data but not in the RI data. In addition, alpha-BHC and endrin were detected at higher concentrations in the SI data than in the RI data.

Comparison of Unfiltered to Filtered Groundwater—At Landfill #3, filtered groundwater samples were collected to assess which contaminants are bound to particulates and which are dissolved in the groundwater. As a point of comparison, risk assessment was conducted using the filtered groundwater results (Tables 6-92 through 6-95). The filtered risks are similar in magnitude to the unfiltered risks. Manganese is responsible for almost all of the noncancer hazard. Lead was not detected in any of the unfiltered samples, indicating that the lead is primarily in particulate form. With the exception of lead, the metals responsible for the majority of the risks are dissolved in the groundwater and not bound to particulates.

6.4.4.12 Old Water Hole

Soil and groundwater were evaluated for CWM breakdown products and a comprehensive suite of non-CWM chemical constituents at the Old Water hole site. Surface water and sediment are not present in the vicinity of the site. The RME risks calculated for the Old Water Hole are summarized in Table 6-96. In addition, Tables 6-97 through 6-100 present the risk estimates for the COPCs evaluated and the summed risk estimates for each receptor and exposure unit. The maximum concentrations of iron in subsurface soil and groundwater exceeded the SSSLs. The results of the ANOVA indicate that iron is not site-related in groundwater, but too few samples were collected to conduct the analysis in subsurface soil.

Current Land Use—Because there were no COPCs in surface soil and groundwater is not used in the vicinity of the site, risks were not calculated for current land use at the Old Water Hole.

Future Land Use—Under future land use, noncancer HIs fall below 1 for the soil exposures to the resident. There were no carcinogenic COPCs to evaluate in soil. For groundwater exposures, HIs exceed 1 for the resident's exposures. The primary noncarcinogenic COC (HQ > 1) is manganese. Lesser noncarcinogenic COCs (HQs < 1) include aluminum, barium, and aldrin. By grouping the noncancer COCs according to similar toxic effect, manganese is identified as a COC for effect to the central nervous system.

Cancer risks for exposure to the groundwater are greatest for the resident, reaching 3×10^{-4}. The cancer risk for groundwater exposures to the industrial worker reaches 1×10^{-4}. The primary carcinogenic COC for groundwater is dibenzo(a,h)anthracene. Aldrin, benzo(a)anthracene, benzo(b)fluoranthene, heptachlor, indeno(1,2,3-cd)pyrene, PCB 1248, RDX, alpha-BHC, and B2EHP are lesser carcinogenic COCs.

6.4.5 Results of the Lead Risk Characterization

The LEAD model version 0.99d (EPA 1994b) was used to project blood lead levels in hypothetical residential children. In addition, a model developed and recommended by EPA was used to determine blood lead levels in residential adults and in workers. The results (i.e., tables, and figures of model output) are presented in Appendix H. Lead was identified as a COPC in groundwater at three sites, Landfill #1, Landfill #2, and Landfill #3. Blood lead levels for residential children exceed the CDC guideline (i.e., 95 percent probability that blood lead levels will not exceed 10 μg/dL) at Landfill #2 and Landfill #3 due to the concentrations of lead in groundwater. At Landfill #2, there is a 27 percent probability of exceeding the guideline with a geometric mean blood lead level of 7.7 μg/dL. At Landfill #3, there is a 20 percent probability of exceeding the guideline with a geometric mean blood lead level of 6.9 μg/dL. Projected blood lead levels were below the limit at Landfill #1. Lead was not detected in filtered groundwater samples collected at Landfill #3, indicating that the lead in the groundwater is in particulate form. For adults and workers, blood lead levels do not exceed the CDC guideline. At most of the sites, lead was eliminated as a COPC and excluded from the risk assessment because it was indistinguishable from background.

6.5 REMEDIAL GOAL OPTIONS

RGOs are health-based concentrations target for constituents that may require remediation, based on the findings of the RI report. RGOs will be developed as part of the feasibility study evaluation of the RI sites.

6.6 UNCERTAINTY

Uncertainty is inherent in the selection of key input parameters and in every step of the risk assessment process. The results of risk assessment may be understood only in light of the assumptions and methods used in the evaluation. The sources of uncertainty in the baseline human health risk assessment and the relative influence of these sources on the risk assessment results are discussed below and summarized in Table 6-43. In keeping with EPA guidance (EPA 1989a), the table is a qualitative (order of magnitude) assessment incorporating simple relative influences of principal sources of uncertainty on the overall results of risk assessment.

6.6.1 Uncertainty in Analytical Data

Uncertainty will always surround estimates of environmental concentrations at waste sites. Uncertainty in the analytical data may be linked to sample density and distribution, collection procedures in the field, accuracy of the sample analyses, and scope of the analytical methods.

Procedures relating to sample collection were established to reduce uncertainty surrounding sample results. For example, multiple rounds of groundwater samples were collected to account for variability due to factors such as seasonal fluctuation. Standard QA/QC measures (e.g., proper decontamination of equipment and collection of trip blanks, field blanks, and matrix spike/matrix spike

duplicates [MS/MSDs]) were followed to reduce uncertainty associated with the analytical data. The uncertainty associated with sample collection procedures has the potential for either over or underestimating risks to receptors.

Uncertainty also may be introduced at the laboratory. To reduce this uncertainty, the laboratory follows a complicated set of procedures. For example, these procedures include the use of surrogate spikes to monitor chemical recovery, internal standards to monitor instrument sensitivity, and laboratory blanks to determine if laboratory preparation has introduced contamination to the sample. These issues are explained in the data quality assessment (Appendix F).

In addition, compounds for which laboratory standards were not used were detected in some samples. As such, the identity and quantity of these compounds is highly uncertain (EPA categorizes these compounds as tentatively identified compounds (TICs). Because of the high uncertainty associated with TICs and the limited availability of EPA-verified toxicity values, these compounds were not quantitatively evaluated in the risk assessment.

Extensive field screening was conducted by U.S. Army Technical Escort Unit (USATEU) at Fort McClellan to investigate high priority locations (based on historical maps and information) for the presence of mustard (HD) and other agents. The screening not only protected field samplers from exposure, but also provided the best protection against sending an agent-laden sample to civilian laboratories and potentially exposing laboratory personnel to the effects of agents. Once the samples were cleared for sampling in the field, the screened samples were forwarded to the civilian laboratory for analysis of agent breakdown products. At the time of this RI (1993 to 1994), only an Army surety laboratory was approved for the analysis of chemical agent-laden samples. The most significant finding is that neither the MINICAM analyses nor the laboratory analyses for chemical warfare agent (CWM)-breakdown products indicated the potential presence of CWM or CWM-breakdown products.

6.6.2 Uncertainty in Exposure Assessment

Different types of uncertainty have been identified regarding the exposure assessment:

- ***Scenario Uncertainty***—Missing or incomplete information needed to define the exposure scenario or pathway
- ***Model Uncertainty***—Inability to quantify all assumptions in model variables
- ***Parameter Uncertainty***—Inadequate information to quantify an exposure variable or parameter.

Scenario uncertainty arises when pathways were not included in or were eliminated from the assessment. The pathways that have been included in the human health risk assessment and corresponding rationale are presented in Section 6.1.2.2. A future residential scenario has been evaluated in which residents are exposed to groundwater from onsite wells. Fort McClellan currently obtains the majority of its drinking water from the city of Anniston. If future land use is residential, inhabitants will most likely continue to obtain their drinking water from the city rather than from a well drilled on their property. Such conservative scenarios have the potential to overestimate risks to receptors.

Assumptions about the future land uses are speculative. In attempting to predict future exposures, assumptions must be made concerning contaminant fate and transport, future site activities, and receptor behavior. In particular, it was assumed that contaminant concentrations will be the same in the future as at present and that the contaminants themselves are immobile and will not decompose.

Model uncertainty may arise in cases where site-specific sample data are unavailable to confirm the model. For example, the LEAD 0.99d biokinetic model was used to predict blood lead levels in children. Without site-specific blood samples from children, the accuracy of the LEAD 0.99d model predictions cannot be verified.

Parameter uncertainty results partly because many of the exposure parameters (i.e., exposure factors) used in the risk assessment are default values recommended by EPA. These default parameters, which are generally conservative, do not necessarily reflect actual behavior and have been used in the absence of site-specific information.

Each of the exposure parameters is commonly treated as a single point estimate. However, none of these parameters is truly a single value. Instead, a range or distribution of values would more accurately represent exposures. Defining a range of values for any given parameter is a measure of variability or uncertainty in the risk assessment. Quantitative uncertainty analysis may be used to propagate the uncertainty/variability in each input parameter. This analysis may be difficult to perform because of the quantity and quality of data available, as well as requiring a major commitment of time and resources. The uncertainty associated with the exposure assumptions used in the risk assessment most likely overestimates the actual risks.

6.6.3 Uncertainty in Toxicity Data

Although EPA provides toxicity values that are point estimates, a significant amount of uncertainty may surround these point estimates. Identification of the sources of this uncertainty is a step toward establishing the degree of confidence associated with the toxicity values.

Uncertainty is inherent within the toxicity assessment and is primarily due to differences in study design, species, sex, routes of exposure, or dose-response relationships. A major source of uncertainty involves the use of toxicity values based on experimental studies that substantially differ from typical human exposure scenarios. The derivation of the toxicity values must take into account such differences as: using dose-response information from animal studies to predict effects in humans, using dose-response information from high-dose studies to predict adverse health effects from low doses, using data from short-term studies to predict long-term (chronic) effects, and extrapolating from specific populations to general populations.

The CSFs in particular are based on studies that may differ greatly from realistic situations. Experimental cancer bioassays typically expose animals to very high levels of chemicals (i.e., the maximum tolerated dose) for their entire lifetime. After the appropriate studies have been identified, the slope factor is calculated as the 95 percent UCL of the slope of the dose-response curve. This introduces conservatism into the risk assessment.

The derivation of RfDs generally involves the use of animal studies. Uncertainty factors ranging from 1 to 10,000 are incorporated into the RfD to provide an extra level of public health protection. The factors used depend on the type of study from which the value has been derived (e.g., animal or human, long-term or short-term). The scientific basis for this practice is somewhat uncertain. In general, high uncertainty factors are meant to bias the results conservatively so that exposures at the RfD level will not result in adverse health effects.

Toxicity values are not available from EPA for the dermal route. Therefore, oral toxicity values have been adjusted for the dermal pathway by using chemical-specific gastrointestinal absorption factors

to adjust the oral toxicity value from an administered value to an absorbed value. Once adjusted to an absorbed value, the value may then appropriately be used to evaluate dermally absorbed doses.

For some chemicals, chemical-specific gastrointestinal absorption factors were not available. In such cases, the unadjusted oral toxicity value was used to evaluate the dermal pathway (EPA 1992a). This introduces uncertainty into the risk assessment that varies for different chemicals. For chemicals that are well-absorbed in the gut, the uncertainty in the adjusted toxicity value is minimal, since the adjustment would be minimal. Greater uncertainty is associated with chemicals that are poorly absorbed in the gut, since the toxicity value would be adjusted in direct proportion to the absorption.

In addition, no adjustments have been made for the medium of exposure (e.g., when the medium of exposure in the site differs from the medium of exposure assumed by the toxicity value). The uncertainty associated with using the absorbed dose toxicity values for the dermal pathway is moderate and the bias unknown.

There are many chemicals for which no toxicity value exists and for which little information is available. Therefore, a quantitative risk estimate cannot be calculated for these chemicals. For example, many chemicals are not evaluated for the inhalation pathway because of limited inhalation-based toxicological information. The lack of toxicity information for some chemicals may contribute to the underestimation of risks.

Toxicity values are not available for most of the PAHs. Only one cPAH (benzo(a)pyrene) has a toxicity value for use in risk assessment. When evaluating oral exposure to PAHs, the approach used in the risk assessment was to relate the toxicity of PAHs to that of benzo(a)pyrene. The factors used to relate the toxicity are called relative potency values. This approach, although currently under review by EPA, is based on scientific studies, and is thought to be more realistic than the alternative method of assuming that all carcinogenic PAHs have a potency factor equal to that of benzo(a)pyrene.

PAHs are known to be dermally active compounds. However, carcinogenic effects from dermal exposure to PAHs have not been quantitatively assessed. Without quantifying cancer risks from PAHs by the dermal route, the cancer risk for PAHs may be underestimated. Quantification of these risks may contribute to the cancer risk to the same extent or more than the oral cancer risk for PAHs.

6.6.4 Uncertainty in Hazards and Cancer Risks for Chromium

Chromium was designated as a COC at several exposure units in this investigation. The risk estimates are biased overestimates, and this supports the decision to eliminate chromium as a COC. A conservative assumption was made regarding the form of chromium reported in the environmental samples collected during this investigation. In any given sample reported as total chromium, it is the proportion of these forms of chromium that may vary. More chromium^{+6} (Cr^{+6}) relative to chromium^{+3} (Cr^{+3}) is likely to be found in samples affected by various chemical processes used in industry, such as electroplating. More Cr^{+3} is likely to be found in natural samples or in samples that have been weathered in the environment. Because the chromium samples are reported as total chromium, there is no way to distinguish the relative proportions of chromium (i.e., Cr^{+3} or Cr^{+6}). For this reason, all detected chromium was assumed to be in the form of Cr^{+6}, which is more toxic and less stable than Cr^{+3}. There is no reason to believe that the chromium detected in the samples is enriched with Cr^{+6}. Cr^{+6} is not known to be a mission-related constituent, and in most cases, the chromium is exposed to the weather and other environmental conditions that would not favor formation of Cr^{+6}.

6.6.5 Uncertainty in Multiple Chemical Exposures

Uncertainties in any phase of the risk analysis are reflected in the risk estimates. Some uncertainty is associated with the summation of risks and HQs for multiple chemical contaminants. As stated in RAGS (EPA 1989a), "The assumption of dose additivity ignores possible synergisms or antagonisms among chemicals, and assumes similarity in mechanisms of action and metabolism."

Cancer and noncancer risks are summed in the risk characterization process (separately for carcinogens and noncarcinogens) to estimate potential risks associated with the simultaneous exposure to multiple chemicals. In the case of carcinogens, this approach gives carcinogens with a Class B or Class C weight-of-evidence the same weight as carcinogens with a Class A weight-of-evidence. It also equally weighs CSFs derived from animal data with those derived from human data. Uncertainties in the combined risks also are compounded because RfDs and CSFs do not have equal accuracy or levels of confidence and are not based on the same severity of effect.

6.7 SUMMARY AND CONCLUSIONS OF THE HUMAN HEALTH RISK ASSESSMENT

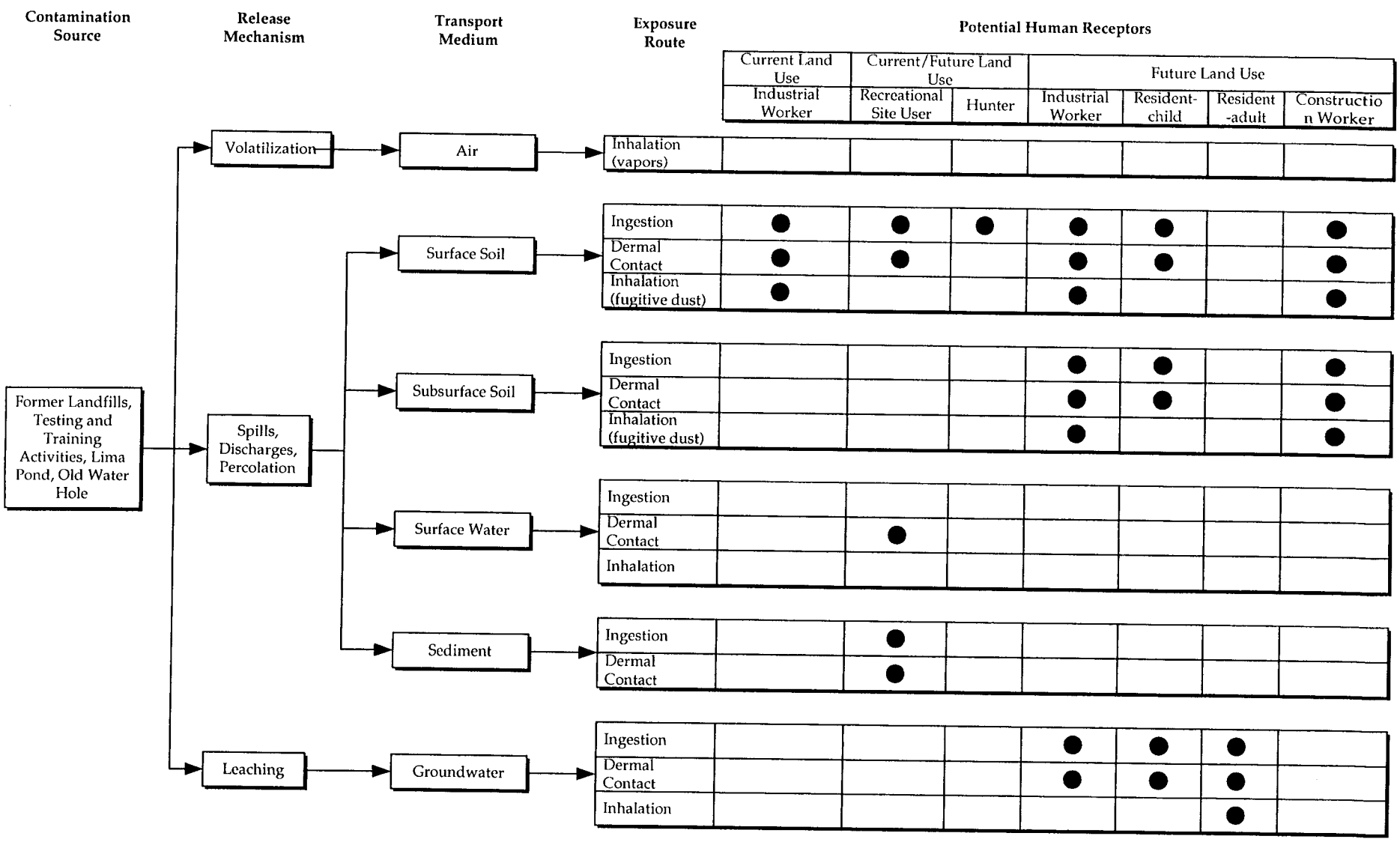
The purpose of the baseline risk assessment for the Fort McClellan RI sites is to assess the potential for adverse health effects to humans that could result from contact with inorganic and organic contaminants identified at the 12 sites under investigation. Because the RI study was conducted at a time when the installation was to remain under U.S. Army control, the investigation for many of the former chemical warfare agent training areas was focused on the identification of CWM at high probability sampling locations. In many instances, this focused sampling did not include evaluations of potential non-CWM chemical constituents or pathways that were not identified as problematic for the continued government use of the property. These data gaps are important to resolve to refine the risk estimates that are necessary for the present BRAC process prior to transfer of the RI properties.

The present risk assessment provides health-based information which, along with other information developed in the investigation, is used to make decisions with regard to site remediation. Table 6-101 summarizes the total noncancer and cancer risk estimates for each of the 12 sites included in this investigation.

Noncancer and cancer risks to humans were estimated for both current and future land uses. Under current land use, occasional visits by trespassing children, adults, and military personnel were considered reasonably likely. Under future land use, higher levels of exposure to residents and construction workers were evaluated on a hypothetical basis. Residential development of the sites is not currently planned.

Based on the information presented in this report, there is no current or imminent hazard present at any of the sites evaluated. Under current land use, none of the combined noncancer HIs are greater than 1. The greatest total cancer risk is 2×10^{-6} (at Range L), and the greatest HI is 0.5 (at Range L). The cancer risk at Range L is due to inhalation of chromium (generally assumed to be Cr^{+6}).

The risk estimates are attributable to exposures to both metal and organic substances. Exposure to contaminants in groundwater was hypothetically assumed in the future industrial and residential scenario. Groundwater accounts for the overwhelming majority of the hazard and risk. Soil and sediment do not represent a significant portion of the total site risk. Chromium was designated as a COC at several exposure units in this investigation. The risk estimates for chromium are overestimates that are biased toward protection of health.



Conceptual Site Model for Human Health

Fort McClellan RI, Annison, Alabama

Figure: 6-1

TABLE 6-1.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Area T5

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	721		1,450		µg/L	T5-W03	2/2	- -	1,450	5,689	15	Res-N	N/A	N/A	NO	BKG
7440-39-3	Barium	24		26		µg/L	T5-W02	2/2	- -	26	78	0.992	Res-N	N/A	N/A	NO	BKG
7440-70-2	Calcium	2,060		5,000		µg/L	T5-W02	2/2	- -	5,000	26,633	N/A		N/A	N/A	NO	BKG,BSL
7439-89-6	Iron	1,130		2,310		µg/L	T5-W03	2/2	- -	2,310	21,130	4.50	Res-N	N/A	N/A	NO	BKG
7439-95-4	Magnesium	1,070		1,330		µg/L	T5-W02	2/2	- -	1,330	11,077	N/A		N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	142		161		µg/L	T5-W02	2/2	- -	161	604	0.316	Res-N	N/A	N/A	NO	BKG
7440-23-5	Sodium	815	7	948	7	µg/L	T5-W02	2/2	- -	948	3,553	N/A		N/A	N/A	NO	BKG,BSL
7440-66-6	Zinc	27		29		µg/L	T5-W03	2/2	- -	29	41	4.56	Res-N	N/A	N/A	NO	BKG

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-2.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Area T5

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	4,820		6,330		mg/kg	T5-D02	2/2	- -	6,330	8,859	1.054E+06	Res-N	N/A	N/A	NO	BKG,BSL
7440-39-3	Barium	25		28		mg/kg	T5-D02	2/2	- -	28	103	69,849	Res-N	82	MIG	NO	BKG,BSL
7440-43-9	Cadmium	2.37		2.37		mg/kg	T5-D02	1/2	1.2 - 1.2	2.37	0.466	482	Res-N	0.4	MIG	NO	BSL
7440-70-2	Calcium	136		388		mg/kg	T5-D02	2/2	- -	388	1,139	N/A		N/A	N/A	NO	BKG,BSL
7440-47-3	Chromium	18		27		mg/kg	T5-D02	2/2	- -	27	32	N/A		N/A	N/A	NO	BKG
7440-50-8	Copper	16		59		mg/kg	T5-D02	2/2	- -	59	23	46,248	Res-N	N/A	N/A	NO	BSL
7439-89-6	Iron	12,900		20,400		mg/kg	T5-D02	2/2	- -	20,400	35,480	330,876	Res-N	N/A	N/A	NO	BKG,BSL
7439-92-1	Lead	16		260		mg/kg	T5-D02	2/2	- -	260	47	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	153		232		mg/kg	T5-D03	2/2	- -	232	970	N/A		N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	89		163		mg/kg	T5-D02	2/2	- -	163	1,071	21,119	Res-N	N/A	N/A	NO	BKG,BSL
7440-09-7	Potassium	262		262		mg/kg	T5-D03	1/2	131 - 131	262	1,076	N/A		N/A	N/A	NO	BKG,BSL
7440-62-2	Vanadium	16		26		mg/kg	T5-D02	2/2	- -	26	41	4,335	Res-N	54.75	RBC	NO	BKG,BSL
7440-66-6	Zinc	34		111		mg/kg	T5-D02	2/2	- -	111	54	338,678	Res-N	620	MIG	NO	BSL
100-51-6	Benzyl Alcohol	0.0560		0.0740		mg/kg	T5-D02	2/2	- -	0.0740	- -	296,145	Res-N	N/A	N/A	NO	BSL
84-74-2	Di-n-butyl phthalate	1.80		5.40		mg/kg	T5-D02	2/2	- -	5.40	- -	105,434	Res-N	270	MIG	NO	BSL

(1) Minimum/maximum detected concentration.

(2) Refer to Table H-1 for supporting information on flags and qualifiers.

(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.

(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)

Res = Resident	IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User	CnW = Construction Worker
Ven = Venison	Nut = Nutrient

(5) Rationale Codes

Selection Reason:	Above Screening Levels (ASL)
Deletion Reason:	Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-3.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Area T24A

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	13,600	D	27,300		mg/kg	T24A-S03	3/5	0 - 0	27,300	13,654	6,684	Res-C	N/A	N/A	YES	ASL
7440-36-0	Antimony	1.69	D	29		mg/kg	T24A-S05	2/5	1 - 1	29	1.42	3.03	Res-N	0.3	MIG	YES	ASL
7440-39-3	Barium	83	D	172		mg/kg	T24A-S03	3/5	0 - 0	172	271	543	Res-N	82	MIG	NO	BKG,BSL
7440-43-9	Cadmium	2.38	D	3.91		mg/kg	T24A-S03	1/5	1.2 - 1.2	3.91	0.305	7.36	Res-N	0.4	MIG	NO	BSL
7440-70-2	Calcium	805		8,530		mg/kg	T24A-S03	3/5	0 - 0	8,530	628	N/A		N/A	N/A	NO	BSL
7440-47-3	Chromium	9.41	D	34		mg/kg	T24A-S03	3/5	0 - 0	34	38	N/A		N/A	N/A	NO	BKG
7440-48-4	Cobalt	9.04		19		mg/kg	T24A-S04	3/5	0 - 0	19	17	469	Res-N	N/A	N/A	NO	BSL
7440-50-8	Copper	21		198		mg/kg	T24A-S03	3/5	0 - 0	198	20	312	Res-N	N/A	N/A	NO	BSL
7439-89-6	Iron	35,500	D	53,200		mg/kg	T24A-S05	3/5	0 - 0	53,200	44,936	2,337	Res-N	N/A	N/A	YES	ASL
7439-92-1	Lead	11	D	220	D	mg/kg	T24A-S03	3/5	0 - 0	220	43	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	454	D	1,720		mg/kg	T24A-S03	3/5	0 - 0	1,720	831	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	179		593		mg/kg	T24A-S04	3/5	0 - 0	593	1,322	71	Res-C	N/A	N/A	NO	BKG,BSL
7440-02-0	Nickel	6.45	D	17		mg/kg	T24A-S03	3/5	0 - 0	17	13	156	Res-N	N/A	N/A	NO	BSL
7440-09-7	Potassium	1,910		2,840		mg/kg	T24A-S05	3/5	0 - 0	2,840	723	N/A		N/A	N/A	NO	BSL
7440-23-5	Sodium	62		159		mg/kg	T24A-S03	3/5	0 - 0	159	711	N/A		N/A	N/A	NO	BKG,BSL
7440-62-2	Vanadium	12	D	22		mg/kg	T24A-S03	3/5	0 - 0	22	65	66	Res-N	54.75	RBC	NO	BKG,BSL
7440-66-6	Zinc	31		458		mg/kg	T24A-S03	3/5	0 - 0	458	33	2,339	Res-N	620	MIG	NO	BSL
91-57-6	2-Methylnaphthalene	7.60		50		mg/kg	T24A-S03	3/5	0 - 0	50	- -	233	Res-N	N/A	N/A	NO	BSL
120-12-7	Anthracene	3.70		10.00	D	mg/kg	T24A-S04	1/5	7 - 70	10.00	- -	2,327	Res-N	590	MIG	NO	BSL
86-73-7	Fluorene	2.00		2.00		mg/kg	T24A-S05	1/5	0.065 - 6	2.00	- -	309	Res-N	28	MIG	NO	BSL
85-01-8	Phenanthrene	3.00		30	D	mg/kg	T24A-S04	3/5	0 - 0	30	- -	233	Res-N	N/A	N/A	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
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RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-4.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T24A

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	59		4,190		µg/L	T24A-G01	3/3	- -	4,190	2,371	9.82	Res-C	N/A	N/A	YES	ASL
7440-39-3	Barium	8.40	D	114		µg/L	T24A-G01	3/3	- -	114	185	0.676	Res-C	255.5	RBC	NO	BKG
7440-41-7	Beryllium	1.49		1.63	D	µg/L	T24A-G01	1/3	0.2 - 1.12	1.63	1.17	0.0145	Res-C	4	MCL	YES	ASL
7440-43-9	Cadmium (water)	0.400		0.585	D	µg/L	T24A-G03	1/3	2 - 5	0.585	2.23	0.0102	Res-C	1.825	RBC	NO	BKG
7440-70-2	Calcium	822		21,200		µg/L	T24A-G01	3/3	- -	21,200	77,441	N/A		N/A	N/A	NO	BKG,BSL
16887-00-6	Chloride	1,250	D	1,270		µg/L	T24A-G03	1/1	- -	1,270	5,588	N/A		N/A	N/A	NO	BKG
7439-89-6	Iron	4,330	D	23,300		µg/L	T24A-G01	3/3	- -	23,300	7,102	2.98	Res-C	N/A	N/A	YES	ASL
7439-92-1	Lead	5.05		12	D	µg/L	T24A-G01	1/3	0.6 - 4.47	12	9.46	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	5,170	D	17,900		µg/L	T24A-G02	3/3	- -	17,900	27,087	N/A		N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	232	D	1,690		µg/L	T24A-G02	3/3	- -	1,690	826	0.222	Res-C	N/A	N/A	YES	ASL
7440-09-7	Potassium	1,110	D	8,980		µg/L	T24A-G01	3/3	- -	8,980	10,137	N/A		N/A	N/A	NO	BKG,BSL
7782-49-2	Selenium	3.57	D	5.00		µg/L	T24A-G01	1/3	2.2 - 2.53	5.00	- -	0.0506	Res-C	18.25	RBC	YES	ASL
7440-23-5	Sodium	1,140	D	3,420		µg/L	T24A-G02	3/3	- -	3,420	17,664	N/A		N/A	N/A	NO	BKG,BSL
14808-79-8	Sulfate	6,520		6,640	D	µg/L	T24A-G03	1/1	- -	6,640	120,582	N/A		N/A	N/A	NO	BKG
7440-66-6	Zinc	22		76		µg/L	T24A-G01	2/3	18 - 30	76	283	3.00	Res-C	N/A	N/A	NO	BKG
71-43-2	Benzene	100		200	D	µg/L	T24A-G01	1/3	1 - 1	200	- -	0.000923	Res-C	0	MCLG	YES	ASL
205-99-2	Benzo(b)fluoranthene	0.0866	B	0.0866	B	µg/L	T24A-G02	1/3	0.0402 - 0.0402	0.0866	- -	1.225E-06	Res-C	N/A	N/A	YES	ASL
--	Bicarbonate	25,000		25,000	D	µg/L	T24A-G03	1/1	- -	25,000	- -	N/A		N/A	N/A	YES	ASL
118-74-1	Hexachlorobenzene	0.133	ZC	0.133	ZC	µg/L	T24A-G02	1/3	0.031 - 12	0.133	- -	0.00300	Res-C	0	MCLG	YES	ASL
14797-55-8	Nitrate,Nitrite	35		36	D	µg/L	T24A-G03	1/1	- -	36	- -	N/A		N/A	N/A	YES	ASL
87-86-5	Pentachlorophenol	1.30	9	2.00	9	µg/L	T24A-G01	2/3	1 - 1	2.00	- -	0.000267	Res-C	0	MCLG	YES	ASL
108-95-2	Phenol	57		57		µg/L	T24A-G01	1/3	2.2 - 2.2	57	- -	0.930	Res-N	N/A	N/A	YES	ASL
--	Alkalinity	25,000	D	25,000		µg/L	T24A-G03	1/1	- -	25,000	- -	N/A		N/A	N/A	YES	ASL
319-84-6	alpha-BHC	0.00424	C	0.00424	C	µg/L	T24A-G01	1/3	0.0025 - 0.0025	0.00424	- -	N/A		N/A	N/A	YES	ASL
117-81-7	bis(2-Ethylhexyl)phthalate	12		19		µg/L	T24A-G01	2/3	7.7 - 7.7	19	- -	0.00370	Res-C	N/A	N/A	YES	ASL
58-89-9	Lindane	0.00432	Q	0.00432	Q	µg/L	T24A-G01	1/3	0.0025 - 0.0025	0.00432	- -	0.00289	Res-C	0.05151729	RBC	YES	ASL

(1) Minimum/maximum detected concentration.

(2) Refer to Table H-1 for supporting information on flags and qualifiers.

(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.

(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)

Res = Resident	IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User	CnW = Construction Worker
Ven = Venison	Nut = Nutrient

(5) Rationale Codes

Selection Reason:	Above Screening Levels (ASL)
Deletion Reason:	Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-5.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Area T24A

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	209		209		µg/L	T24A-W02	1/1	- -	209	5,689	15 Res-N	N/A	N/A	NO	BKG
7440-39-3	Barium	24		24		µg/L	T24A-W02	1/1	- -	24	78	0.992 Res-N	N/A	N/A	NO	BKG
7440-70-2	Calcium	1,900		1,900		µg/L	T24A-W02	1/1	- -	1,900	26,633	N/A	N/A	N/A	NO	BKG,BSL
7439-89-6	Iron	409		409		µg/L	T24A-W02	1/1	- -	409	21,130	4.50 Res-N	N/A	N/A	NO	BKG
7439-92-1	Lead	8.82		8.82		µg/L	T24A-W02	1/1	- -	8.82	9.61	N/A	N/A	N/A	NO	BKG
7439-95-4	Magnesium	1,110		1,110		µg/L	T24A-W02	1/1	- -	1,110	11,077	N/A	N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	20		20		µg/L	T24A-W02	1/1	- -	20	604	0.316 Res-N	N/A	N/A	NO	BKG
7440-09-7	Potassium	1,890		1,890		µg/L	T24A-W02	1/1	- -	1,890	2,603	N/A	N/A	N/A	NO	BKG,BSL
7440-23-5	Sodium	1,100		1,100		µg/L	T24A-W02	1/1	- -	1,100	3,553	N/A	N/A	N/A	NO	BKG,BSL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-6.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Area T24A

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	9,810		9,810		mg/kg	T24A-D02	1/1	- -	9,810	8,859	1.054E+06	Res-N	N/A	N/A	NO	BSL
7440-39-3	Barium	130		130		mg/kg	T24A-D02	1/1	- -	130	103	69,849	Res-N	82	MIG	NO	BSL
7440-70-2	Calcium	8,140		8,140		mg/kg	T24A-D02	1/1	- -	8,140	1,139	N/A		N/A	N/A	NO	BSL
7440-47-3	Chromium	27		27		mg/kg	T24A-D02	1/1	- -	27	32	N/A		N/A	N/A	NO	BKG
7440-48-4	Cobalt	3.77		3.77		mg/kg	T24A-D02	1/1	- -	3.77	13	71,531	Res-N	N/A	N/A	NO	BKG,BSL
7440-50-8	Copper	12		12		mg/kg	T24A-D02	1/1	- -	12	23	46,248	Res-N	N/A	N/A	NO	BKG,BSL
7439-89-6	Iron	50,400		50,400		mg/kg	T24A-D02	1/1	- -	50,400	35,480	330,876	Res-N	N/A	N/A	NO	BSL
7439-92-1	Lead	12		12		mg/kg	T24A-D02	1/1	- -	12	47	N/A		N/A	N/A	NO	BKG
7439-95-4	Magnesium	4,950		4,950		mg/kg	T24A-D02	1/1	- -	4,950	970	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	521		521		mg/kg	T24A-D02	1/1	- -	521	1,071	21,119	Res-N	N/A	N/A	NO	BKG,BSL
7440-02-0	Nickel	6.25		6.25		mg/kg	T24A-D02	1/1	- -	6.25	14	23,000	Res-N	N/A	N/A	NO	BKG,BSL
7440-09-7	Potassium	1,720		1,720		mg/kg	T24A-D02	1/1	- -	1,720	1,076	N/A		N/A	N/A	NO	BSL
7440-62-2	Vanadium	32		32		mg/kg	T24A-D02	1/1	- -	32	41	4,335	Res-N	54.75	RBC	NO	BKG,BSL
7440-66-6	Zinc	20		20		mg/kg	T24A-D02	1/1	- -	20	54	338,678	Res-N	620	MIG	NO	BKG,BSL
100-51-6	Benzyl Alcohol	0.0620		0.0620		mg/kg	T24A-D02	1/1	- -	0.0620	- -	296,145	Res-N	N/A	N/A	NO	BSL

(1) Minimum/maximum detected concentration.

(2) Refer to Table H-1 for supporting information on flags and qualifiers.

(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.

(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient

(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-7.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Area T38

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	18,500		38,700		mg/kg	T38-S09	2/3	0 - 0	38,700	16,447	3,337	Res-C	N/A	N/A	YES	ASL
7440-36-0	Antimony	1.35		1.35		mg/kg	T38-S09	1/3	1 - 1	1.35	2.04	3.03	Res-N	0.3	MIG	NO	BKG,BSL
7440-39-3	Barium	39	D	113		mg/kg	T38-S09	2/3	0 - 0	113	123	330	Res-C	82	MIG	NO	BKG,BSL
7440-70-2	Calcium	663		1,510	D	mg/kg	T38-S09	2/3	0 - 0	1,510	1,700	N/A		N/A	N/A	NO	BKG,BSL
7440-47-3	Chromium	17		150	D	mg/kg	T38-S09	2/3	0 - 0	150	37	N/A		N/A	N/A	YES	ASL
7440-48-4	Cobalt	8.89		8.89		mg/kg	T38-S09	1/3	2.5 - 6.12	8.89	14	469	Res-N	N/A	N/A	NO	BKG,BSL
7440-50-8	Copper	15		23	D	mg/kg	T38-S09	1/3	23.2 - 23.2	23	13	312	Res-N	N/A	N/A	NO	BSL
7439-89-6	Iron	20,500		180,000	D	mg/kg	T38-S09	2/3	0 - 0	180,000	34,371	2,337	Res-N	N/A	N/A	YES	ASL
7439-92-1	Lead	16	D	84		mg/kg	T38-S10	2/3	0 - 0	84	39	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	540	D	1,230		mg/kg	T38-S09	2/3	0 - 0	1,230	1,053	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	310	D	666		mg/kg	T38-S10	2/3	0 - 0	666	1,456	35	Res-C	N/A	N/A	NO	BKG,BSL
7440-02-0	Nickel	7.72		13	D	mg/kg	T38-S09	2/3	0 - 0	13	10	156	Res-N	N/A	N/A	NO	BSL
7440-09-7	Potassium	558		850	D	mg/kg	T38-S09	2/3	0 - 0	850	816	N/A		N/A	N/A	NO	BSL
7440-62-2	Vanadium	28		186	D	mg/kg	T38-S09	2/3	0 - 0	186	59	66	Res-N	54.75	RBC	YES	ASL
7440-66-6	Zinc	26		39		mg/kg	T38-S09	2/3	0 - 0	39	40	2,339	Res-N	620	MIG	NO	BKG,BSL

(1) Minimum/maximum detected concentration.

(2) Refer to Table H-1 for supporting information on flags and qualifiers.

(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.

(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient

(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-8.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Area T38

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	15,500		74,000		mg/kg	T38-S06	2/2	- -	74,000	13,654	6,684	Res-C	N/A	N/A	YES	ASL
7440-39-3	Barium	30		61		mg/kg	T38-S06	2/2	- -	61	271	543	Res-N	82	MIG	NO	BKG,BSL
7440-70-2	Calcium	255		287		mg/kg	T38-S06	2/2	- -	287	628	N/A		N/A	N/A	NO	BKG,BSL
7440-47-3	Chromium	26		54		mg/kg	T38-S06	2/2	- -	54	38	N/A		N/A	N/A	YES	ASL
7440-48-4	Cobalt	38		38		mg/kg	T38-S09	1/2	5.05 - 5.05	38	17	469	Res-N	N/A	N/A	NO	BSL
7440-50-8	Copper	62		62		mg/kg	T38-S09	1/2	20.3 - 20.3	62	20	312	Res-N	N/A	N/A	NO	BSL
7439-89-6	Iron	54,200		75,000		mg/kg	T38-S09	2/2	- -	75,000	44,936	2,337	Res-N	N/A	N/A	YES	ASL
7439-92-1	Lead	17		17		mg/kg	T38-S06	2/2	- -	17	43	N/A		N/A	N/A	NO	BKG
7439-95-4	Magnesium	1,050		1,090		mg/kg	T38-S09	2/2	- -	1,090	831	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	221		263		mg/kg	T38-S06	2/2	- -	263	1,322	71	Res-C	N/A	N/A	NO	BKG,BSL
7439-97-6	Mercury	0.266		0.266		mg/kg	T38-S06	1/2	0.05 - 0.05	0.266	0.0703	2.21	Res-N	N/A	N/A	NO	BSL
7440-02-0	Nickel	17		107		mg/kg	T38-S09	2/2	- -	107	13	156	Res-N	N/A	N/A	NO	BSL
7440-09-7	Potassium	827		2,090		mg/kg	T38-S09	2/2	- -	2,090	723	N/A		N/A	N/A	NO	BSL
7440-62-2	Vanadium	60		85		mg/kg	T38-S06	2/2	- -	85	65	66	Res-N	54.75	RBC	YES	ASL
7440-66-6	Zinc	55		230		mg/kg	T38-S09	2/2	- -	230	33	2,339	Res-N	620	MIG	NO	BSL
72-55-9	4,4'-DDE	0.00353	C	0.00353	C	mg/kg	T38-S09	1/2	0.0027 - 0.0027	0.00353	- -	1.84	Res-C	1.87860602	RBC	NO	BSL

(1) Minimum/maximum detected concentration.

(2) Refer to Table H-1 for supporting information on flags and qualifiers.

(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.

(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient

(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-9.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Area T38

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	436		2,620		µg/L	T38-G05	5/5	- -	2,620	2,371	9.82	Res-C	N/A	N/A	YES	ASL
7440-39-3	Barium	13		262		µg/L	T38-G08	5/5	- -	262	185	0.676	Res-C	255.5	RBC	YES	ASL
7440-41-7	Beryllium	1.14		2.84		µg/L	T38-G07	2/5	1.12 - 1.12	2.84	1.17	0.0145	Res-C	4	MCL	YES	ASL
7440-70-2	Calcium	921		7,180		µg/L	T38-G05	5/5	- -	7,180	77,441	N/A		N/A	N/A	NO	BKG,BSL
7439-89-6	Iron	1,460		12,800		µg/L	T38-G05	5/5	- -	12,800	7,102	2.98	Res-C	N/A	N/A	YES	ASL
7439-92-1	Lead	7.90		15		µg/L	T38-G07	3/5	4.47 - 4.47	15	9.46	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	408		4,260		µg/L	T38-G05	5/5	- -	4,260	27,087	N/A		N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	101		3,160		µg/L	T38-G08	5/5	- -	3,160	826	0.222	Res-C	N/A	N/A	YES	ASL
7439-97-6	Mercury	0.266		0.266		µg/L	T38-G05	1/5	0.1 - 0.1	0.266	- -	0.00217	Res-C	0.365	RBC	YES	ASL
7440-02-0	Nickel	35		46		µg/L	T38-G08	1/5	32.1 - 32.1	46	- -	0.201	Res-C	73	RBC	YES	ASL
7440-09-7	Potassium	2,610		7,650		µg/L	T38-G07	5/5	- -	7,650	10,137	N/A		N/A	N/A	NO	BKG,BSL
7440-23-5	Sodium	1,480		5,150	D	µg/L	T38-G09	5/5	- -	5,150	17,664	N/A		N/A	N/A	NO	BKG,BSL
7440-66-6	Zinc	22		321		µg/L	T38-G09	5/5	- -	321	283	3.00	Res-C	N/A	N/A	YES	ASL
79-34-5	1,1,2,2-Tetrachloroethane	95		2,000		µg/L	T38-G06	4/5	1.5 - 1.5	2,000	- -	0.000203	Res-C	N/A	N/A	YES	ASL
79-00-5	1,1,2-Trichloroethane	2.10		2.10		µg/L	T38-G05	1/5	1 - 1	2.10	- -	0.000715	Res-C	0.187849	RBC	YES	ASL
540-59-0	1,2-Dichloroethene (total)	31		93		µg/L	T38-G06	2/5	5 - 5	93	- -	0.0139	Res-N	N/A	N/A	YES	ASL
99-35-4	1,3,5-Trinitrobenzene	0.291	C	0.291	C	µg/L	T38-G08	1/5	0.21 - 0.281	0.291	- -	N/A		N/A	N/A	YES	ASL
67-64-1	Acetone	47		77		µg/L	T38-G07	2/5	8 - 8	77	- -	0.156	Res-N	N/A	N/A	YES	ASL
205-99-2	Benzo(b)fluoranthene	0.247	B	0.247	B	µg/L	T38-G09	1/5	0.0384 - 10	0.247	- -	1.225E-06	Res-C	N/A	N/A	YES	ASL
56-23-5	Carbon tetrachloride	11		53		µg/L	T38-G07	2/5	1 - 1	53	- -	0.000409	Res-C	0	MCLG	YES	ASL
67-66-3	Chloroform	6.80		9.20		µg/L	T38-G07	2/5	1 - 1	9.20	- -	0.000311	Res-N	N/A	N/A	YES	ASL
218-01-9	Chrysene	0.0509		0.0509		µg/L	T38-G09	1/5	0.0194 - 7.4	0.0509	- -	1.705E-06	Res-C	N/A	N/A	YES	ASL
193-39-5	Indeno(1,2,3-cd)pyrene	0.0810	D	0.0810	D	µg/L	T38-G09	1/5	0.0196 - 21	0.0810	- -	8.134E-07	Res-C	N/A	N/A	YES	ASL
55-63-0	Nitroglycerine	2.04		3.49	Q	µg/L	T38-G06	4/5	1.49 - 1.49	3.49	- -	0.00478	Res-C	N/A	N/A	YES	ASL
127-18-4	Tetrachloroethene	13		13		µg/L	T38-G06	1/5	1 - 1	13	- -	0.00126	Res-C	0	MCLG	YES	ASL
79-01-6	Trichloroethene	12		300		µg/L	T38-G06	4/5	1 - 1	300	- -	0.00451	Res-C	0	MCLG	YES	ASL
117-81-7	bis(2-Ethylhexyl)phthalate	11		34		µg/L	T38-G06	3/5	7.7 - 7.7	34	- -	0.00370	Res-C	N/A	N/A	YES	ASL

(1) Minimum/maximum detected concentration.

(2) Refer to Table H-1 for supporting information on flags and qualifiers.

(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.

(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient

(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-10.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range J

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
79-34-5	1,1,2,2-Tetrachloroethane	1.60		4.40		µg/L	RJ-G07	1/3	1.5 - 1.5	4.40	- -	0.000203	Res-C	N/A	N/A	YES	ASL
67-64-1	Acetone	27	D	27	D	µg/L	RJ-G06	1/3	8 - 8	27	- -	0.156	Res-N	N/A	N/A	YES	ASL
56-23-5	Carbon tetrachloride	6.60		2,000		µg/L	RJ-G07	2/3	1 - 1	2,000	- -	0.000409	Res-C	0	MCLG	YES	ASL
67-66-3	Chloroform	14		31		µg/L	RJ-G07	1/3	1 - 1	31	- -	0.000311	Res-N	N/A	N/A	YES	ASL
127-18-4	Tetrachloroethene	2.00		3.90		µg/L	RJ-G07	1/3	1 - 1	3.90	- -	0.00126	Res-C	0	MCLG	YES	ASL
79-01-6	Trichloroethene	1.40	D	5.00		µg/L	RJ-G07	2/3	1 - 1	5.00	- -	0.00451	Res-C	0	MCLG	YES	ASL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-11.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: DI Area

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	18,200		38,000		mg/kg	DIA-S01	2/3	0 - 0	38,000	13,654	6,684	Res-C	N/A	N/A	YES	ASL
7440-39-3	Barium	70	D	98		mg/kg	DIA-S01	2/3	0 - 0	98	271	543	Res-N	82	MIG	NO	BKG,BSL
7440-70-2	Calcium	109		1,060		mg/kg	DIA-S01	2/3	0 - 0	1,060	628	N/A		N/A	N/A	NO	BSL
7440-47-3	Chromium	30		42		mg/kg	DIA-S01	2/3	0 - 0	42	38	N/A		N/A	N/A	YES	ASL
7440-48-4	Cobalt	5.52		19	D	mg/kg	DIA-S01	2/3	0 - 0	19	17	469	Res-N	N/A	N/A	NO	BSL
7440-50-8	Copper	14		46		mg/kg	DIA-S02	2/3	0 - 0	46	20	312	Res-N	N/A	N/A	NO	BSL
7439-89-6	Iron	53,700		97,000	D	mg/kg	DIA-S01	2/3	0 - 0	97,000	44,936	2,337	Res-N	N/A	N/A	YES	ASL
7439-92-1	Lead	10		52		mg/kg	DIA-S01	2/3	0 - 0	52	43	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	757		1,600		mg/kg	DIA-S02	2/3	0 - 0	1,600	831	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	66		428		mg/kg	DIA-S02	2/3	0 - 0	428	1,322	71	Res-C	N/A	N/A	NO	BKG,BSL
7440-02-0	Nickel	12		25	D	mg/kg	DIA-S01	2/3	0 - 0	25	13	156	Res-N	N/A	N/A	NO	BSL
7440-09-7	Potassium	624		1,750		mg/kg	DIA-S01	2/3	0 - 0	1,750	723	N/A		N/A	N/A	NO	BSL
7440-62-2	Vanadium	34		58		mg/kg	DIA-S01	2/3	0 - 0	58	65	66	Res-N	54.75	RBC	NO	BKG,BSL
7440-66-6	Zinc	34		74		mg/kg	DIA-S01	2/3	0 - 0	74	33	2,339	Res-N	620	MIG	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-12.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Range L

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	8,690		42,100		mg/kg	RL-S08	2/2	- -	42,100	16,447	3,337	Res-C	N/A	N/A	YES	ASL
7440-36-0	Antimony	2.25		2.25		mg/kg	RL-S02	1/2	1 - 1	2.25	2.04	3.03	Res-N	0.3	MIG	NO	BSL
7440-39-3	Barium	18		78		mg/kg	RL-S08	2/2	- -	78	123	330	Res-C	82	MIG	NO	BKG,BSL
7440-70-2	Calcium	109		148		mg/kg	RL-S08	2/2	- -	148	1,700	N/A		N/A	N/A	NO	BKG,BSL
7440-47-3	Chromium	40		73		mg/kg	RL-S02	2/2	- -	73	37	N/A		N/A	N/A	YES	ASL
7440-48-4	Cobalt	15		94		mg/kg	RL-S08	2/2	- -	94	14	469	Res-N	N/A	N/A	NO	BSL
7440-50-8	Copper	23		48		mg/kg	RL-S08	2/2	- -	48	13	312	Res-N	N/A	N/A	NO	BSL
7439-89-6	Iron	43,800		80,000		mg/kg	RL-S02	2/2	- -	80,000	34,371	2,337	Res-N	N/A	N/A	YES	ASL
7439-92-1	Lead	19		110		mg/kg	RL-S02	2/2	- -	110	39	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	185		1,750		mg/kg	RL-S08	2/2	- -	1,750	1,053	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	485		5,600		mg/kg	RL-S08	2/2	- -	5,600	1,456	35	Res-C	N/A	N/A	YES	ASL
7440-02-0	Nickel	13		166		mg/kg	RL-S08	2/2	- -	166	10	156	Res-N	N/A	N/A	YES	ASL
7440-09-7	Potassium	197		3,000		mg/kg	RL-S08	2/2	- -	3,000	816	N/A		N/A	N/A	NO	BSL
7782-49-2	Selenium	0.838		0.838		mg/kg	RL-S02	1/2	0.449 - 0.449	0.838	0.445	39	Res-N	0.3	MIG	NO	BSL
7440-23-5	Sodium	78		78		mg/kg	RL-S08	1/2	38.7 - 38.7	78	630	N/A		N/A	N/A	NO	BKG,BSL
7440-62-2	Vanadium	51	JR	76		mg/kg	RL-S08	2/2	- -	76	59	66	Res-N	54.75	RBC	YES	ASL
7440-66-6	Zinc	26		160		mg/kg	RL-S08	2/2	- -	160	40	2,339	Res-N	620	MIG	NO	BSL
100-51-6	Benzyl Alcohol	0.110		0.110		mg/kg	RL-S08	1/2	0.032 - 0.032	0.110	- -	2,324	Res-N	N/A	N/A	NO	BSL

(1) Minimum/maximum detected concentration.

(2) Refer to Table H-1 for supporting information on flags and qualifiers.

(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.

(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient

(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-13.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Range L

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	24,100		52,000		mg/kg	RL-S04	3/3	- -	52,000	13,654	6,684	Res-C	N/A	N/A	YES	ASL
7440-39-3	Barium	55		89		mg/kg	RL-S04	3/3	- -	89	271	543	Res-N	82	MIG	NO	BKG,BSL
7440-70-2	Calcium	131		314		mg/kg	RL-S03	2/3	25.3 - 25.3	314	628	N/A		N/A	N/A	NO	BKG,BSL
7440-47-3	Chromium	41		88		mg/kg	RL-S04	3/3	- -	88	38	N/A		N/A	N/A	YES	ASL
7440-48-4	Cobalt	3.58		6.73		mg/kg	RL-S04	3/3	- -	6.73	17	469	Res-N	N/A	N/A	NO	BKG,BSL
7440-50-8	Copper	26		51		mg/kg	RL-S04	3/3	- -	51	20	312	Res-N	N/A	N/A	NO	BSL
7439-89-6	Iron	36,000		58,100		mg/kg	RL-S04	3/3	- -	58,100	44,936	2,337	Res-N	N/A	N/A	YES	ASL
7439-92-1	Lead	16		52		mg/kg	RL-S04	3/3	- -	52	43	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	891		2,200		mg/kg	RL-S04	3/3	- -	2,200	831	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	38		107		mg/kg	RL-S03	3/3	- -	107	1,322	71	Res-C	N/A	N/A	NO	BKG,BSL
7439-97-6	Mercury	0.0619		0.0777	H	mg/kg	RL-S04	2/3	0.05 - 0.05	0.0777	0.0703	2.21	Res-N	N/A	N/A	NO	BSL
7440-02-0	Nickel	14		104		mg/kg	RL-S04	3/3	- -	104	13	156	Res-N	N/A	N/A	NO	BSL
7440-09-7	Potassium	1,820		4,110		mg/kg	RL-S04	3/3	- -	4,110	723	N/A		N/A	N/A	NO	BSL
7782-49-2	Selenium	1.17		1.17		mg/kg	RL-S01	1/3	0.449 - 0.449	1.17	0.428	39	Res-N	0.3	MIG	NO	BSL
7440-23-5	Sodium	58		104		mg/kg	RL-S04	2/3	38.7 - 38.7	104	711	N/A		N/A	N/A	NO	BKG,BSL
7440-62-2	Vanadium	55	JR	116		mg/kg	RL-S04	3/3	- -	116	65	66	Res-N	54.75	RBC	YES	ASL
7440-66-6	Zinc	56		230		mg/kg	RL-S04	3/3	- -	230	33	2,339	Res-N	620	MIG	NO	BSL
100-51-6	Benzyl Alcohol	0.0740		0.0820		mg/kg	RL-S03	2/3	0.032 - 0.032	0.0820	- -	2,324	Res-N	N/A	N/A	NO	BSL

(1) Minimum/maximum detected concentration.

(2) Refer to Table H-1 for supporting information on flags and qualifiers.

(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.

(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient

(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-14.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Range L

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	222		6,800		µg/L	RL-G07	7/7	- -	6,800	2,371	9.82 Res-C	N/A	N/A	YES	ASL
7440-38-2	Arsenic	2.20		2.20		µg/L	RL-G01	1/7	2.35 - 2.35	2.20	17	0.00304 Res-C	N/A	N/A	NO	BKG
7440-39-3	Barium	13		174		µg/L	RL-G01	7/7	- -	174	185	0.676 Res-C	255.5	RBC	NO	BKG
7440-41-7	Beryllium	2.17		2.41		µg/L	RL-G07	3/7	0.222 - 1.12	2.41	1.17	0.0145 Res-C	4	MCL	YES	ASL
7440-43-9	Cadmium (water)	0.660	JP	6.00		µg/L	RL-G07	4/7	0.111 - 5	6.00	2.23	0.0102 Res-C	1.825	RBC	YES	ASL
7440-70-2	Calcium	3,550		56,500		µg/L	RL-G02	7/7	- -	56,500	77,441	N/A	N/A	N/A	NO	BKG,BSL
16887-00-6	Chloride	1,850		1,850		µg/L	RL-G01	1/1	- -	1,850	5,588	N/A	N/A	N/A	NO	BKG
7440-48-4	Cobalt	38		38		µg/L	RL-G07	1/7	20 - 25	38	24	0.610 Res-C	N/A	N/A	YES	ASL
7440-47-3	Hexavalent Chromium	20		20		µg/L	RL-G01	1/1	- -	20	29	0.0254 Res-C	N/A	N/A	NO	BKG
7439-89-6	Iron	149		20,300		µg/L	RL-G07	7/7	- -	20,300	7,102	2.98 Res-C	N/A	N/A	YES	ASL
7439-92-1	Lead	0.558		10.00		µg/L	RL-G03	2/7	4.47 - 4.47	10.00	9.46	N/A	N/A	N/A	YES	ASL
7439-95-4	Magnesium	280		1,420		µg/L	RL-G03	7/7	- -	1,420	27,087	N/A	N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	13		5,260		µg/L	RL-G07	7/7	- -	5,260	826	0.222 Res-C	N/A	N/A	YES	ASL
7440-02-0	Nickel	47		131		µg/L	RL-G07	1/7	15 - 32.1	131	- -	0.201 Res-C	73	RBC	YES	ASL
7440-09-7	Potassium	1,470		14,100		µg/L	RL-G06	4/7	1240 - 1240	14,100	10,137	N/A	N/A	N/A	NO	BSL
7440-23-5	Sodium	851		5,340		µg/L	RL-G06	7/7	- -	5,340	17,664	N/A	N/A	N/A	NO	BKG,BSL
14808-79-8	Sulfate	3,260		3,260		µg/L	RL-G01	1/1	- -	3,260	120,582	N/A	N/A	N/A	NO	BKG
7440-66-6	Zinc	20		65	M	µg/L	RL-G07	6/7	18 - 30	65	283	3.00 Res-C	N/A	N/A	NO	BKG
72-55-9	4,4'-DDE	0.0244	C	0.0244	C	µg/L	RL-G02	1/7	0.0039 - 0.0199	0.0244	- -	N/A	N/A	N/A	YES	ASL
56-55-3	Benzo(a)anthracene	0.0359		0.119		µg/L	RL-G02	3/7	0.0194 - 0.0196	0.119	- -	1.705E-06 Res-C	N/A	N/A	YES	ASL
205-99-2	Benzo(b)fluoranthene	0.0274	B	0.275	B	µg/L	RL-G05	7/7	- -	0.275	- -	1.225E-06 Res-C	N/A	N/A	YES	ASL
--	Bicarbonate	31,000		31,000		µg/L	RL-G01	1/1	- -	31,000	- -	N/A	N/A	N/A	YES	ASL
218-01-9	Chrysene	0.0347		0.0792		µg/L	RL-G01	5/7	0.01 - 0.0195	0.0792	- -	1.705E-06 Res-C	N/A	N/A	YES	ASL
76-44-8	Heptachlor	0.00731	C	0.167	C	µg/L	RL-G02	4/7	0.0025 - 0.0025	0.167	- -	0.00481 Res-C	0	MCLG	YES	ASL
1024-57-3	Heptachlor Epoxide	0.0143	C	0.129	C	µg/L	RL-G02	3/7	0.0063 - 0.00865	0.129	- -	0.000101 Res-C	0	MCLG	YES	ASL
193-39-5	Indeno(1,2,3-cd)pyrene	0.0781		0.0781		µg/L	RL-G06	1/7	0.01 - 0.0196	0.0781	- -	8.134E-07 Res-C	N/A	N/A	YES	ASL
465-73-6	Isodrin	0.120	BC	0.120	BC	µg/L	RL-G02	1/7	0.0025 - 0.0319	0.120	- -	N/A	N/A	N/A	YES	ASL
14797-55-8	Nitrate,Nitrite	205		205		µg/L	RL-G01	1/1	- -	205	- -	N/A	N/A	N/A	YES	ASL
55-63-0	Nitroglycerine	1.78	Q	2.49	Q	µg/L	RL-G02	2/7	1.49 - 1.49	2.49	- -	0.00478 Res-C	N/A	N/A	YES	ASL
12672-29-6	PCB 1248	0.525	CZ	4.74	ZC	µg/L	RL-G02	3/7	0.385 - 0.385	4.74	- -	N/A	N/A	N/A	YES	ASL
121-82-4	RDX	0.615	Q	0.615	Q	µg/L	RL-G07	1/7	0.416 - 0.416	0.615	- -	0.000608 Res-C	N/A	N/A	YES	ASL
--	Alkalinity	31,000		31,000		µg/L	RL-G01	1/1	- -	31,000	- -	N/A	N/A	N/A	YES	ASL
7723-14-0	Phosphorous	47		47		µg/L	RL-G01	1/1	- -	47	- -	N/A	N/A	N/A	YES	ASL
79-01-6	Trichloroethene	1.10		1.10		µg/L	RL-G05	1/7	1 - 1	1.10	- -	0.00451 Res-C	0	MCLG	YES	ASL
117-81-7	bis(2-Ethylhexyl)phthalate	22		34		µg/L	RL-G06	2/7	7.7 - 7.7	34	- -	0.00370 Res-C	N/A	N/A	YES	ASL
319-86-8	delta-BHC	0.00679	CB	0.00679	CB	µg/L	RL-G07	1/7	0.0034 - 0.0034	0.00679	- -	N/A	N/A	N/A	YES	ASL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-15.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Range L

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	137		1,440		µg/L	RL-W02	4/4	- -	1,440	5,689	15	Res-N	N/A	N/A	NO	BKG
7440-38-2	Arsenic	3.12		3.15		µg/L	RL-W03	2/4	2.35 - 2.35	3.15	2.29	0.000723	Res-C	N/A	N/A	YES	ASL
7440-39-3	Barium	11		32		µg/L	RL-W02	4/4	- -	32	78	0.992	Res-N	N/A	N/A	NO	BKG
7440-70-2	Calcium	798		6,140		µg/L	RL-W04	4/4	- -	6,140	26,633	N/A		N/A	N/A	NO	BKG,BSL
7439-89-6	Iron	2,040		7,040		µg/L	RL-W01	4/4	- -	7,040	21,130	4.50	Res-N	N/A	N/A	NO	BKG
7439-95-4	Magnesium	301		1,050		µg/L	RL-W04	4/4	- -	1,050	11,077	N/A		N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	44		975		µg/L	RL-W01	4/4	- -	975	604	0.316	Res-N	N/A	N/A	YES	ASL
7440-09-7	Potassium	1,460		1,870		µg/L	RL-W03	3/4	1240 - 1240	1,870	2,603	N/A		N/A	N/A	NO	BKG,BSL
7782-49-2	Selenium	3.41		3.41		µg/L	RL-W02	1/4	2.53 - 2.53	3.41	- -	0.0776	Res-N	N/A	N/A	YES	ASL
7440-23-5	Sodium	416		1,760		µg/L	RL-W04	4/4	- -	1,760	3,553	N/A		N/A	N/A	NO	BKG,BSL
71-55-6	1,1,1-Trichloroethane	2.70		2.70		µg/L	RL-W02	1/4	1 - 1	2.70	- -	0.480	Res-N	N/A	N/A	YES	ASL
118-96-7	2,4,6-Trinitrotoluene	0.918	C	2.20	C	µg/L	RL-W01	2/4	0.426 - 0.426	2.20	- -	0.00758	Res-N	N/A	N/A	YES	ASL
121-14-2	2,4-Dinitrotoluene	1.64	C	5.41	C	µg/L	RL-W01	2/4	0.397 - 0.397	5.41	- -	0.00157	Res-C	N/A	N/A	YES	ASL
606-20-2	2,6-Dinitrotoluene	0.819	C	2.28	C	µg/L	RL-W01	2/4	0.6 - 0.6	2.28	- -	0.00159	Res-C	N/A	N/A	YES	ASL
--	Biochemical Oxygen Demand	4.00		4.00		µg/L	RL-W01	2/4	2 - 2	4.00	- -	N/A		N/A	N/A	YES	ASL
319-84-6	alpha-BHC	0.00322	C	0.00328	C	µg/L	RL-W03	2/4	0.0025 - 0.0025	0.00328	- -	0.000157	Res-C	N/A	N/A	YES	ASL
319-86-8	delta-BHC	0.00673	C	0.00726	C	µg/L	RL-W03	2/4	0.0034 - 0.0034	0.00726	- -	N/A		N/A	N/A	YES	ASL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
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MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-16.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Range L

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	12,900		61,500		mg/kg	RL-D01	4/5	0 - 0	61,500	8,859	1.054E+06	Res-N	N/A	N/A	NO	BSL
7440-39-3	Barium	56		165		mg/kg	RL-D01	4/5	0 - 0	165	103	69,849	Res-N	82	MIG	NO	BSL
7440-70-2	Calcium	434		1,800		mg/kg	RL-D02	4/5	0 - 0	1,800	1,139	N/A		N/A	N/A	NO	BSL
7440-47-3	Chromium	30		80		mg/kg	RL-D04	4/5	0 - 0	80	32	N/A		N/A	N/A	YES	ASL
7440-48-4	Cobalt	6.67	D	92		mg/kg	RL-D03	4/5	0 - 0	92	13	71,531	Res-N	N/A	N/A	NO	BSL
7440-50-8	Copper	18		51		mg/kg	RL-D03	4/5	0 - 0	51	23	46,248	Res-N	N/A	N/A	NO	BSL
7439-89-6	Iron	20,100		49,200		mg/kg	RL-D04	4/5	0 - 0	49,200	35,480	330,876	Res-N	N/A	N/A	NO	BSL
7439-92-1	Lead	19		64		mg/kg	RL-D03	4/5	0 - 0	64	47	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	574		3,290		mg/kg	RL-D01	4/5	0 - 0	3,290	970	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	282	D	1,340		mg/kg	RL-D02	4/5	0 - 0	1,340	1,071	21,119	Res-N	N/A	N/A	NO	BSL
7440-02-0	Nickel	13		176		mg/kg	RL-D01	4/5	0 - 0	176	14	23,000	Res-N	N/A	N/A	NO	BSL
7440-09-7	Potassium	746		8,010		mg/kg	RL-D01	4/5	0 - 0	8,010	1,076	N/A		N/A	N/A	NO	BSL
7782-49-2	Selenium	0.775		1.51	D	mg/kg	RL-D04	2/5	0.449 - 0.449	1.51	0.593	5,871	Res-N	0.3	MIG	NO	BSL
7440-23-5	Sodium	98		222		mg/kg	RL-D01	2/5	38.7 - 38.7	222	681	N/A		N/A	N/A	NO	BKG,BSL
7440-62-2	Vanadium	38		111		mg/kg	RL-D01	4/5	0 - 0	111	41	4,335	Res-N	54.75	RBC	NO	BSL
7440-66-6	Zinc	57		247		mg/kg	RL-D03	4/5	0 - 0	247	54	338,678	Res-N	620	MIG	NO	BSL
60-57-1	Dieldrin	0.00358	C	0.00358	C	mg/kg	RL-D04	1/5	0.0016 - 0.00477	0.00358	- -	4.07	Res-C	0.0002	MIG	NO	BSL

(1) Minimum/maximum detected concentration.

(2) Refer to Table H-1 for supporting information on flags and qualifiers.

(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.

(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)

Res = Resident — IW = Industrial Worker (groundskeeper)
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Ven = Venison — Nut = Nutrient

(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
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COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
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MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-17.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Landfill #1

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	17,600		37,800		mg/kg	LF1-S03	8/9	0 - 0	37,800	13,654	6,684	Res-C	N/A	N/A	YES	ASL
7440-36-0	Antimony	8.33		8.33		mg/kg	LF1-S01	1/9	1 - 1	8.33	1.42	3.03	Res-N	0.3	MIG	YES	ASL
7440-39-3	Barium	53		204		mg/kg	LF1-S03	8/9	0 - 0	204	271	543	Res-N	82	MIG	NO	BKG,BSL
7440-70-2	Calcium	93		2,330		mg/kg	LF1-S04	8/9	0 - 0	2,330	628	N/A		N/A	N/A	NO	BSL
7440-47-3	Chromium	20		33		mg/kg	LF1-S03	8/9	0 - 0	33	38	N/A		N/A	N/A	NO	BKG
7440-48-4	Cobalt	6.11		28		mg/kg	LF1-S04	7/9	2.5 - 2.5	28	17	469	Res-N	N/A	N/A	NO	BSL
7440-50-8	Copper	16		53		mg/kg	LF1-S02	8/9	0 - 0	53	20	312	Res-N	N/A	N/A	NO	BSL
7439-89-6	Iron	10,800		80,000		mg/kg	LF1-S04	8/9	0 - 0	80,000	44,936	2,337	Res-N	N/A	N/A	YES	ASL
7439-92-1	Lead	15		34		mg/kg	LF1-S01	8/9	0 - 0	34	43	N/A		N/A	N/A	NO	BKG
7439-95-4	Magnesium	1,860		10,200		mg/kg	LF1-S03	8/9	0 - 0	10,200	831	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	22	D	248		mg/kg	LF1-S04	8/9	0 - 0	248	1,322	71	Res-C	N/A	N/A	NO	BKG,BSL
7440-02-0	Nickel	8.76		47		mg/kg	LF1-S04	8/9	0 - 0	47	13	156	Res-N	N/A	N/A	NO	BSL
7440-09-7	Potassium	1,040		3,810		mg/kg	LF1-S03	8/9	0 - 0	3,810	723	N/A		N/A	N/A	NO	BSL
7440-23-5	Sodium	106		383		mg/kg	LF1-S02	8/9	0 - 0	383	711	N/A		N/A	N/A	NO	BKG,BSL
7440-62-2	Vanadium	10		55		mg/kg	LF1-S03	8/9	0 - 0	55	65	66	Res-N	54.75	RBC	NO	BKG,BSL
7440-66-6	Zinc	34		154		mg/kg	LF1-S04	8/9	0 - 0	154	33	2,339	Res-N	620	MIG	NO	BSL
72-54-8	4,4'-DDD	0.0125	C	0.0125	C	mg/kg	LF1-S03	1/9	0.0027 - 0.0027	0.0125	- -	2.61	Res-C	0.8	MIG	NO	BSL
72-55-9	4,4'-DDE	0.00518	DC	0.0287	C	mg/kg	LF1-S03	2/9	0.0027 - 0.0027	0.0287	- -	1.84	Res-C	1.87860602	RBC	NO	BSL
50-29-3	4,4'-DDT	0.0181	C	0.0181	C	mg/kg	LF1-S03	1/9	0.0035 - 0.0035	0.0181	- -	1.84	Res-C	1.87860602	RBC	NO	BSL
56-55-3	Benzo(a)anthracene	0.170		0.170		mg/kg	LF1-S02	1/9	0.041 - 0.041	0.170	- -	0.0835	Res-C	0.08	MIG	YES	ASL
218-01-9	Chrysene	0.170		0.170		mg/kg	LF1-S02	1/9	0.032 - 0.032	0.170	- -	0.0835	Res-C	8	MIG	YES	ASL
206-44-0	Fluoranthene	0.190		0.190		mg/kg	LF1-S02	1/9	0.032 - 0.032	0.190	- -	307	Res-N	210	MIG	NO	BSL
85-01-8	Phenanthrene	0.250		0.250		mg/kg	LF1-S02	1/9	0.032 - 0.032	0.250	- -	233	Res-N	N/A	N/A	NO	BSL
129-00-0	Pyrene	0.280		0.280		mg/kg	LF1-S02	1/9	0.083 - 0.083	0.280	- -	230	Res-N	210	MIG	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
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Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
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(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
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SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-18.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Landfill #1

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	6,620		17,400		mg/kg	LF1-D01	2/3	0 - 0	17,400	8,859	1.054E+06	Res-N	N/A	N/A	NO	BSL
7440-39-3	Barium	47	D	247		mg/kg	LF1-D02	2/3	0 - 0	247	103	69,849	Res-N	82	MIG	NO	BSL
7440-70-2	Calcium	1,330		54,100	D	mg/kg	LF1-D02	2/3	0 - 0	54,100	1,139	N/A		N/A	N/A	NO	BSL
7440-47-3	Chromium	16	D	24		mg/kg	LF1-D02	2/3	0 - 0	24	32	N/A		N/A	N/A	NO	BKG
7440-48-4	Cobalt	6.32		9.67		mg/kg	LF1-D02	2/3	0 - 0	9.67	13	71,531	Res-N	N/A	N/A	NO	BKG,BSL
7440-50-8	Copper	12		15		mg/kg	LF1-D01	2/3	0 - 0	15	23	46,248	Res-N	N/A	N/A	NO	BKG,BSL
7439-89-6	Iron	24,300		38,600		mg/kg	LF1-D02	2/3	0 - 0	38,600	35,480	330,876	Res-N	N/A	N/A	NO	BSL
7439-92-1	Lead	14		17	D	mg/kg	LF1-D02	2/3	0 - 0	17	47	N/A		N/A	N/A	NO	BKG
7439-95-4	Magnesium	2,440		30,500	D	mg/kg	LF1-D02	2/3	0 - 0	30,500	970	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	103		1,600		mg/kg	LF1-D02	2/3	0 - 0	1,600	1,071	21,119	Res-N	N/A	N/A	NO	BSL
7440-02-0	Nickel	9.52		18		mg/kg	LF1-D01	2/3	0 - 0	18	14	23,000	Res-N	N/A	N/A	NO	BSL
7440-09-7	Potassium	294		1,510		mg/kg	LF1-D01	2/3	0 - 0	1,510	1,076	N/A		N/A	N/A	NO	BSL
7440-62-2	Vanadium	20	D	34		mg/kg	LF1-D02	2/3	0 - 0	34	41	4,335	Res-N	54.75	RBC	NO	BKG,BSL
7440-66-6	Zinc	42		50	D	mg/kg	LF1-D02	2/3	0 - 0	50	54	338,678	Res-N	620	MIG	NO	BKG,BSL
100-51-6	Benzyl Alcohol	0.0590	D	0.0640		mg/kg	LF1-D01	1/3	0.032 - 0.032	0.0640	- -	296,145	Res-N	N/A	N/A	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-19.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Landfill #1

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	202		7,070		µg/L	LF1-G02	4/4	- -	7,070	2,371	9.82	Res-C	N/A	N/A	YES	ASL
7440-39-3	Barium	27		629		µg/L	LF1-G04	4/4	- -	629	185	0.676	Res-C	255.5	RBC	YES	ASL
7440-41-7	Beryllium	1.31		3.54		µg/L	LF1-G02	3/4	0.2 - 2.5	3.54	1.17	0.0145	Res-C	4	MCL	YES	ASL
7440-43-9	Cadmium (water)	0.1000		0.1000		µg/L	LF1-G01	1/4	2.5 - 5	0.1000	2.23	0.0102	Res-C	1.825	RBC	NO	BKG
7440-70-2	Calcium	14,100		99,400		µg/L	LF1-G03	4/4	- -	99,400	77,441	N/A		N/A	N/A	NO	BSL
16887-00-6	Chloride	4,930		4,930		µg/L	LF1-G01	1/1	- -	4,930	5,588	N/A		N/A	N/A	NO	BKG
7439-89-6	Iron	122		14,700		µg/L	LF1-G02	4/4	- -	14,700	7,102	2.98	Res-C	N/A	N/A	YES	ASL
7439-92-1	Lead	1.40		7.21		µg/L	LF1-G04	4/4	- -	7.21	9.46	N/A		N/A	N/A	NO	BKG
7439-95-4	Magnesium	8,250		63,900		µg/L	LF1-G02	4/4	- -	63,900	27,087	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	85		1,440		µg/L	LF1-G03	4/4	- -	1,440	826	0.222	Res-C	N/A	N/A	YES	ASL
7440-09-7	Potassium	735		2,560		µg/L	LF1-G03	4/4	- -	2,560	10,137	N/A		N/A	N/A	NO	BKG,BSL
7440-23-5	Sodium	11,200		50,000		µg/L	LF1-G02	4/4	- -	50,000	17,664	N/A		N/A	N/A	NO	BSL
14808-79-8	Sulfate	36,000		36,000		µg/L	LF1-G01	1/1	- -	36,000	120,582	N/A		N/A	N/A	NO	BKG
7440-66-6	Zinc	22		41		µg/L	LF1-G02	3/4	18 - 30	41	283	3.00	Res-C	N/A	N/A	NO	BKG
71-55-6	1,1,1-Trichloroethane	1.60		2.10		µg/L	LF1-G04	1/4	0.5 - 1	2.10	- -	0.0533	Res-N	54.0880829	RBC	YES	ASL
99-65-0	1,3-Dinitrobenzene	0.570	C	0.570	C	µg/L	LF1-G01	1/4	0.1 - 0.458	0.570	- -	0.000156	Res-N	N/A	N/A	YES	ASL
67-64-1	Acetone	14		14		µg/L	LF1-G01	1/4	5 - 8	14	- -	0.156	Res-N	N/A	N/A	YES	ASL
--	Bicarbonate	70,000		70,000		µg/L	LF1-G01	1/1	- -	70,000	- -	N/A		N/A	N/A	YES	ASL
84-74-2	Di-n-butyl phthalate	2.70		12		µg/L	LF1-G03	3/4	33 - 33	12	- -	0.149	Res-N	N/A	N/A	YES	ASL
75-09-2	Methylene Chloride	0.450		0.490		µg/L	LF1-G01	2/4	0.5 - 1	0.490	- -	0.00783	Res-C	N/A	N/A	YES	ASL
14797-55-8	Nitrate,Nitrite	246		246		µg/L	LF1-G01	1/1	- -	246	- -	N/A		N/A	N/A	YES	ASL
55-63-0	Nitroglycerine	2.25	C	3.27	C	µg/L	LF1-G03	2/4	1.49 - 1.49	3.27	- -	0.00478	Res-C	N/A	N/A	YES	ASL
108-88-3	Toluene	0.180		0.220		µg/L	LF1-G01	3/4	1 - 1	0.220	- -	0.265	Res-N	74.7037702	RBC	NO	BSL
--	Alkalinity	70,000		70,000		µg/L	LF1-G01	1/1	- -	70,000	- -	N/A		N/A	N/A	YES	ASL
7723-14-0	Phosphorous	43		43		µg/L	LF1-G01	1/1	- -	43	- -	N/A		N/A	N/A	YES	ASL
319-85-7	beta-BHC	0.0348	C	0.0348	C	µg/L	LF1-G02	1/4	0.0099 - 0.025	0.0348	- -	N/A		N/A	N/A	YES	ASL
117-81-7	bis(2-Ethylhexyl)phthalate	12		21		µg/L	LF1-G01	2/4	5 - 7.7	21	- -	0.00370	Res-C	N/A	N/A	YES	ASL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-20.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Landfill #1

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	461		5,140		µg/L	LF1-W01	2/3	0 - 0	5,140	5,689	15	Res-N	N/A	N/A	NO	BKG
7440-38-2	Arsenic	4.78	D	5.48		µg/L	LF1-W02	2/3	0 - 0	5.48	2.29	0.000723	Res-C	N/A	N/A	YES	ASL
7440-39-3	Barium	37		104	D	µg/L	LF1-W01	2/3	0 - 0	104	78	0.992	Res-N	N/A	N/A	YES	ASL
7440-70-2	Calcium	9,190	D	23,100		µg/L	LF1-W02	2/3	0 - 0	23,100	26,633	N/A		N/A	N/A	NO	BKG,BSL
7439-89-6	Iron	910		10,700	D	µg/L	LF1-W01	2/3	0 - 0	10,700	21,130	4.50	Res-N	N/A	N/A	NO	BKG
7439-92-1	Lead	7.84		8.16	D	µg/L	LF1-W01	2/3	0 - 0	8.16	9.61	N/A		N/A	N/A	NO	BKG
7439-95-4	Magnesium	3,720	D	10,400		µg/L	LF1-W02	2/3	0 - 0	10,400	11,077	N/A		N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	22		162		µg/L	LF1-W01	2/3	0 - 0	162	604	0.316	Res-N	N/A	N/A	NO	BKG
7440-23-5	Sodium	1,490	D7	5,340	7	µg/L	LF1-W02	2/3	0 - 0	5,340	3,553	N/A		N/A	N/A	NO	BSL
7440-66-6	Zinc	41		42	D	µg/L	LF1-W01	1/3	18 - 18	42	41	4.56	Res-N	N/A	N/A	YES	ASL
71-55-6	1,1,1-Trichloroethane	1.50		1.50		µg/L	LF1-W02	1/3	1 - 1	1.50	- -	0.480	Res-N	N/A	N/A	YES	ASL
108-90-7	Chlorobenzene	1.90		1.90		µg/L	LF1-W02	1/3	1 - 1	1.90	- -	0.153	Res-N	N/A	N/A	YES	ASL

(1) Minimum/maximum detected concentration.

(2) Refer to Table H-1 for supporting information on flags and qualifiers.

(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.

(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)

Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient

(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-21.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Landfill #2

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	145		4,940		µg/L	LF2-G03	3/3	- -	4,940	2,371	9.82	Res-C	N/A	N/A	YES	ASL
7440-38-2	Arsenic	2.47	D	3.16		µg/L	LF2-G03	1/3	1.1 - 5	3.16	17	0.00304	Res-C	N/A	N/A	NO	BKG
7440-39-3	Barium	13		68		µg/L	LF2-G03	3/3	- -	68	185	0.676	Res-C	255.5	RBC	NO	BKG
7440-41-7	Beryllium	1.11		6.24		µg/L	LF2-G03	3/3	- -	6.24	1.17	0.0145	Res-C	4	MCL	YES	ASL
7440-43-9	Cadmium (water)	0.300		0.300		µg/L	LF2-G01	1/3	2.5 - 6.78	0.300	2.23	0.0102	Res-C	1.825	RBC	NO	BKG
7440-70-2	Calcium	4,680		163,000		µg/L	LF2-G03	3/3	- -	163,000	77,441	N/A		N/A	N/A	NO	BSL
16887-00-6	Chloride	7,910		7,910		µg/L	LF2-G01	1/1	- -	7,910	5,588	N/A		N/A	N/A	YES	ASL
7440-47-3	Chromium	22	D	23		µg/L	LF2-G03	1/3	5 - 16.8	23	- -	N/A		18.25	RBC	YES	ASL
7439-89-6	Iron	169		22,500		µg/L	LF2-G03	3/3	- -	22,500	7,102	2.98	Res-C	N/A	N/A	YES	ASL
7439-92-1	Lead	0.800		47		µg/L	LF2-G03	2/3	1.5 - 43.4	47	9.46	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	6,070		103,000		µg/L	LF2-G02	3/3	- -	103,000	27,087	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	29		2,080		µg/L	LF2-G03	3/3	- -	2,080	826	0.222	Res-C	N/A	N/A	YES	ASL
7440-09-7	Potassium	343		2,350		µg/L	LF2-G03	3/3	- -	2,350	10,137	N/A		N/A	N/A	NO	BKG,BSL
7440-23-5	Sodium	11,600		122,000		µg/L	LF2-G02	3/3	- -	122,000	17,664	N/A		N/A	N/A	NO	BSL
14808-79-8	Sulfate	23,900		23,900		µg/L	LF2-G01	1/1	- -	23,900	120,582	N/A		N/A	N/A	NO	BKG
7440-66-6	Zinc	23		165		µg/L	LF2-G03	3/3	- -	165	283	3.00	Res-C	N/A	N/A	NO	BKG
108-10-1	4-Methyl-2-pentanone	5.40		5.40		µg/L	LF2-G01	1/3	1.4 - 2.5	5.40	- -	0.0649	Res-N	N/A	N/A	YES	ASL
67-64-1	Acetone	100	GT	100	GT	µg/L	LF2-G02	3/3	- -	100	- -	0.156	Res-N	N/A	N/A	YES	ASL
309-00-2	Aldrin	0.0105	DC	0.0105	DC	µg/L	LF2-G03	1/3	0.0074 - 0.025	0.0105	- -	0.000303	Res-C	N/A	N/A	YES	ASL
--	Bicarbonate	36,000		36,000		µg/L	LF2-G01	1/1	- -	36,000	- -	N/A		N/A	N/A	YES	ASL
84-74-2	Di-n-butyl phthalate	2.70		6.20		µg/L	LF2-G03	3/3	- -	6.20	- -	0.149	Res-N	N/A	N/A	YES	ASL
75-09-2	Methylene Chloride	0.340		1.20		µg/L	LF2-G02	3/3	- -	1.20	- -	0.00783	Res-C	N/A	N/A	YES	ASL
14797-55-8	Nitrate,Nitrite	123		123		µg/L	LF2-G01	1/1	- -	123	- -	N/A		N/A	N/A	YES	ASL
55-63-0	Nitroglycerine	2.77	C	2.77	C	µg/L	LF2-G03	1/3	1.49 - 1.49	2.77	- -	0.00478	Res-C	N/A	N/A	YES	ASL
108-88-3	Toluene	0.160		0.170		µg/L	LF2-G01	3/3	- -	0.170	- -	0.265	Res-N	74.7037702	RBC	NO	BSL
--	Alkalinity	36,000		36,000		µg/L	LF2-G01	1/1	- -	36,000	- -	N/A		N/A	N/A	YES	ASL
7723-14-0	Phosphorous	19		19		µg/L	LF2-G01	1/1	- -	19	- -	N/A		N/A	N/A	YES	ASL
319-86-8	delta-BHC	0.00400	C	0.00400	C	µg/L	LF2-G01	1/3	0.0034 - 0.025	0.00400	- -	N/A		N/A	N/A	YES	ASL

(1) Minimum/maximum detected concentration.

(2) Refer to Table H-1 for supporting information on flags and qualifiers.

(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.

(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)

Res = Resident	IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User	CnW = Construction Worker
Ven = Venison	Nut = Nutrient

(5) Rationale Codes

Selection Reason:	Above Screening Levels (ASL)
Deletion Reason:	Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-22.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Landfill #2

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	157		201		µg/L	LF2-W01	2/2	- -	201	5,689	15	Res-N	N/A	N/A	NO	BKG
7440-39-3	Barium	16		19		µg/L	LF2-W02	2/2	- -	19	78	0.992	Res-N	N/A	N/A	NO	BKG
7440-70-2	Calcium	11,900		15,300		µg/L	LF2-W01	2/2	- -	15,300	26,633	N/A		N/A	N/A	NO	BKG,BSL
7439-89-6	Iron	255		329		µg/L	LF2-W01	2/2	- -	329	21,130	4.50	Res-N	N/A	N/A	NO	BKG
7439-95-4	Magnesium	6,730		8,650		µg/L	LF2-W01	2/2	- -	8,650	11,077	N/A		N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	14		23		µg/L	LF2-W01	2/2	- -	23	604	0.316	Res-N	N/A	N/A	NO	BKG
7440-09-7	Potassium	1,330		1,330		µg/L	LF2-W02	1/2	1240 - 1240	1,330	2,603	N/A		N/A	N/A	NO	BKG,BSL
7440-23-5	Sodium	902		1,130		µg/L	LF2-W02	2/2	- -	1,130	3,553	N/A		N/A	N/A	NO	BKG,BSL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-23.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Landfill #2

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	3,850		4,790		mg/kg	LF2-D01	2/2	- -	4,790	8,859	1.054E+06	Res-N	N/A	N/A	NO	BKG,BSL
7440-39-3	Barium	11		25		mg/kg	LF2-D02	2/2	- -	25	103	69,849	Res-N	82	MIG	NO	BKG,BSL
7440-70-2	Calcium	478		567		mg/kg	LF2-D01	2/2	- -	567	1,139	N/A		N/A	N/A	NO	BKG,BSL
7440-47-3	Chromium	15		51		mg/kg	LF2-D01	2/2	- -	51	32	N/A		N/A	N/A	YES	ASL
7440-48-4	Cobalt	3.63		3.63		mg/kg	LF2-D02	1/2	2.5 - 2.5	3.63	13	71,531	Res-N	N/A	N/A	NO	BKG,BSL
7440-50-8	Copper	7.56		10		mg/kg	LF2-D02	2/2	- -	10	23	46,248	Res-N	N/A	N/A	NO	BKG,BSL
7439-89-6	Iron	20,100		45,700		mg/kg	LF2-D01	2/2	- -	45,700	35,480	330,876	Res-N	N/A	N/A	NO	BSL
7439-92-1	Lead	10		18		mg/kg	LF2-D02	2/2	- -	18	47	N/A		N/A	N/A	NO	BKG
7439-95-4	Magnesium	530		735		mg/kg	LF2-D02	2/2	- -	735	970	N/A		N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	140		206		mg/kg	LF2-D02	2/2	- -	206	1,071	21,119	Res-N	N/A	N/A	NO	BKG,BSL
7440-02-0	Nickel	6.78		6.78		mg/kg	LF2-D02	1/2	2.74 - 2.74	6.78	14	23,000	Res-N	N/A	N/A	NO	BKG,BSL
7440-09-7	Potassium	289		482		mg/kg	LF2-D01	2/2	- -	482	1,076	N/A		N/A	N/A	NO	BKG,BSL
7782-49-2	Selenium	0.722		0.722		mg/kg	LF2-D01	1/2	0.449 - 0.449	0.722	0.593	5,871	Res-N	0.3	MIG	NO	BSL
7440-62-2	Vanadium	15		40		mg/kg	LF2-D01	2/2	- -	40	41	4,335	Res-N	54.75	RBC	NO	BKG,BSL
7440-66-6	Zinc	11		22		mg/kg	LF2-D02	2/2	- -	22	54	338,678	Res-N	620	MIG	NO	BKG,BSL
100-51-6	Benzyl Alcohol	0.0660		0.0780		mg/kg	LF2-D01	2/2	- -	0.0780	- -	296,145	Res-N	N/A	N/A	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-24.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Landfill #3

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	24,400		78,000	D	mg/kg	OLF-S22	5/6	0 - 0	78,000	16,447	3,337	Res-C	N/A	N/A	YES	ASL
7440-39-3	Barium	65		198		mg/kg	OLF-S22	5/6	0 - 0	198	123	330	Res-C	82	MIG	NO	BSL
7440-70-2	Calcium	306		6,610		mg/kg	OLF-S23	5/6	0 - 0	6,610	1,700	N/A		N/A	N/A	NO	BSL
7440-47-3	Chromium	28		68		mg/kg	OLF-S11	5/6	0 - 0	68	37	N/A		N/A	N/A	YES	ASL
7440-48-4	Cobalt	3.07		21	D	mg/kg	OLF-S22	5/6	0 - 0	21	14	469	Res-N	N/A	N/A	NO	BSL
7440-50-8	Copper	14		30		mg/kg	OLF-S21	5/6	0 - 0	30	13	312	Res-N	N/A	N/A	NO	BSL
7439-89-6	Iron	24,700		57,400	D	mg/kg	OLF-S22	5/6	0 - 0	57,400	34,371	2,337	Res-N	N/A	N/A	YES	ASL
7439-92-1	Lead	17		46	D	mg/kg	OLF-S22	5/6	0 - 0	46	39	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	2,560		4,300		mg/kg	OLF-S21	5/6	0 - 0	4,300	1,053	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	31		3,900		mg/kg	OLF-S22	5/6	0 - 0	3,900	1,456	35	Res-C	N/A	N/A	YES	ASL
7439-97-6	Mercury	0.0925		0.111	D	mg/kg	OLF-S22	1/6	0.05 - 0.05	0.111	0.0805	2.21	Res-N	N/A	N/A	NO	BSL
7440-02-0	Nickel	8.74		44	D	mg/kg	OLF-S22	5/6	0 - 0	44	10	156	Res-N	N/A	N/A	NO	BSL
7440-09-7	Potassium	3,210		5,550		mg/kg	OLF-S21	5/6	0 - 0	5,550	816	N/A		N/A	N/A	NO	BSL
7440-23-5	Sodium	60		127	D	mg/kg	OLF-S22	5/6	0 - 0	127	630	N/A		N/A	N/A	NO	BKG,BSL
7440-62-2	Vanadium	37		94	D	mg/kg	OLF-S22	5/6	0 - 0	94	59	66	Res-N	54.75	RBC	YES	ASL
7440-66-6	Zinc	21		128	D	mg/kg	OLF-S22	5/6	0 - 0	128	40	2,339	Res-N	620	MIG	NO	BSL
72-54-8	4,4'-DDD	0.00616	C	0.00616	C	mg/kg	OLF-S21	1/6	0.0027 - 0.0027	0.00616	- -	2.61	Res-C	0.8	MIG	NO	BSL
72-55-9	4,4'-DDE	0.00408	C	0.0139	C	mg/kg	OLF-S21	2/6	0.0027 - 0.0027	0.0139	- -	1.84	Res-C	1.87860602	RBC	NO	BSL
56-55-3	Benzo(a)anthracene	0.120		0.160		mg/kg	OLF-S21	2/6	0.041 - 0.041	0.160	- -	0.0835	Res-C	0.08	MIG	YES	ASL
57-74-9	Chlordane	0.568	C	0.568	C	mg/kg	OLF-S21	1/6	0.0684 - 0.0684	0.568	- -	1.77	Res-C	0.5	MIG	NO	BSL
218-01-9	Chrysene	0.0830		0.0910		mg/kg	OLF-S21	2/6	0.032 - 0.032	0.0910	- -	0.0835	Res-C	8	MIG	YES	ASL
206-44-0	Fluoranthene	0.120		0.190		mg/kg	OLF-S21	2/6	0.032 - 0.032	0.190	- -	307	Res-N	210	MIG	NO	BSL
85-01-8	Phenanthrene	0.0870		0.0870		mg/kg	OLF-S23	1/6	0.032 - 0.032	0.0870	- -	233	Res-N	N/A	N/A	NO	BSL
129-00-0	Pyrene	0.210		0.300		mg/kg	OLF-S21	2/6	0.083 - 0.083	0.300	- -	230	Res-N	210	MIG	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-25.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Landfill #3

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	19,000		51,300		mg/kg	OLF-S16	4/4	- -	51,300	13,654	6,684	Res-C	N/A	N/A	YES	ASL
7440-39-3	Barium	62		133		mg/kg	OLF-S13	4/4	- -	133	271	543	Res-N	82	MIG	NO	BKG,BSL
7440-70-2	Calcium	89		330		mg/kg	OLF-S13	4/4	- -	330	628	N/A		N/A	N/A	NO	BKG,BSL
7440-47-3	Chromium	15		32		mg/kg	OLF-S13	4/4	- -	32	38	N/A		N/A	N/A	NO	BKG
7440-48-4	Cobalt	3.61		5.15		mg/kg	OLF-S17	3/4	2.5 - 2.5	5.15	17	469	Res-N	N/A	N/A	NO	BKG,BSL
7440-50-8	Copper	8.66		16		mg/kg	OLF-S16	3/4	2.84 - 2.84	16	20	312	Res-N	N/A	N/A	NO	BKG,BSL
7439-89-6	Iron	3,650		35,800		mg/kg	OLF-S16	4/4	- -	35,800	44,936	2,337	Res-N	N/A	N/A	NO	BKG,BSL
7439-92-1	Lead	7.61		18		mg/kg	OLF-S13	4/4	- -	18	43	N/A		N/A	N/A	NO	BKG
7439-95-4	Magnesium	808		2,910		mg/kg	OLF-S16	4/4	- -	2,910	831	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	15		55		mg/kg	OLF-S16	3/4	9.87 - 9.87	55	1,322	71	Res-C	N/A	N/A	NO	BKG,BSL
7440-02-0	Nickel	4.29		13		mg/kg	OLF-S13	4/4	- -	13	13	156	Res-N	N/A	N/A	NO	BKG,BSL
7440-09-7	Potassium	990		4,750		mg/kg	OLF-S16	4/4	- -	4,750	723	N/A		N/A	N/A	NO	BSL
7440-23-5	Sodium	80		80		mg/kg	OLF-S13	1/4	38.7 - 38.7	80	711	N/A		N/A	N/A	NO	BKG,BSL
7440-62-2	Vanadium	17		47		mg/kg	OLF-S16	4/4	- -	47	65	66	Res-N	54.75	RBC	NO	BKG,BSL
7440-66-6	Zinc	12		29		mg/kg	OLF-S17	4/4	- -	29	33	2,339	Res-N	620	MIG	NO	BKG,BSL
72-55-9	4,4'-DDE	0.00376	C	0.00376	C	mg/kg	OLF-S13	1/4	0.0027 - 0.0027	0.00376	- -	1.84	Res-C	1.87860602	RBC	NO	BSL
100-51-6	Benzyl Alcohol	0.0530		0.0530		mg/kg	OLF-S17	1/4	0.032 - 0.032	0.0530	- -	2,324	Res-N	N/A	N/A	NO	BSL

(1) Minimum/maximum detected concentration.

(2) Refer to Table H-1 for supporting information on flags and qualifiers.

(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.

(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)

Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient

(5) Rationale Codes

Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
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MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-26.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Landfill #3

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	134		240,000		µg/L	OLF-G02	18/18	- -	240,000	2,371	9.82	Res-C	N/A	N/A	YES	ASL
7440-38-2	Arsenic	2.86		7.87	D	µg/L	OLF-G03	2/18	2.35 - 5	7.87	17	0.00304	Res-C	N/A	N/A	NO	BKG
7440-39-3	Barium	2.87	F	775		µg/L	OLF-G02	18/18	- -	775	185	0.676	Res-C	255.5	RBC	YES	ASL
7440-41-7	Beryllium	1.13		20		µg/L	OLF-G02	9/18	1.12 - 2.5	20	1.17	0.0145	Res-C	4	MCL	YES	ASL
7440-43-9	Cadmium (water)	7.18		7.18		µg/L	OLF-G10	1/18	2 - 6.78	7.18	2.23	0.0102	Res-C	1.825	RBC	YES	ASL
7440-70-2	Calcium	190		250,000		µg/L	OLF-G02	18/18	- -	250,000	77,441	N/A		N/A	N/A	NO	BSL
7440-47-3	Chromium	11		271		µg/L	OLF-G02	9/18	5 - 16.8	271	- -	N/A		18.25	RBC	YES	ASL
7440-48-4	Cobalt	26		151		µg/L	MW-1	4/18	25 - 109	151	24	0.610	Res-C	N/A	N/A	YES	ASL
7440-50-8	Copper	22		311		µg/L	MW-1	8/18	12.5 - 18.8	311	39	0.403	Res-C	N/A	N/A	YES	ASL
7439-89-6	Iron	103		271,000		µg/L	OLF-G02	18/18	- -	271,000	7,102	2.98	Res-C	N/A	N/A	YES	ASL
7439-92-1	Lead	3.70		1,470		µg/L	OLF-G02	13/18	1.5 - 43.4	1,470	9.46	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	499		280,000		µg/L	OLF-G02	18/18	- -	280,000	27,087	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	12		7,430		µg/L	MW-1	18/18	- -	7,430	826	0.222	Res-C	N/A	N/A	YES	ASL
7439-97-6	Mercury	0.102		2.10		µg/L	OLF-G04	7/18	0.1 - 0.1	2.10	- -	0.00217	Res-C	0.365	RBC	YES	ASL
7440-02-0	Nickel	33		239		µg/L	OLF-G02	6/18	20 - 32.1	239	- -	0.201	Res-C	73	RBC	YES	ASL
7440-09-7	Potassium	1,330		69,500		µg/L	OLF-G02	18/18	- -	69,500	10,137	N/A		N/A	N/A	NO	BSL
7782-49-2	Selenium	2.96		4.59		µg/L	OLF-G11	2/18	2.5 - 2.53	4.59	- -	0.0506	Res-C	18.25	RBC	YES	ASL
7440-23-5	Sodium	985		40,200		µg/L	OLF-G02	18/18	- -	40,200	17,664	N/A		N/A	N/A	NO	BSL
7440-62-2	Vanadium	32		390		µg/L	OLF-G02	6/18	25 - 27.6	390	15	0.0652	Res-C	N/A	N/A	YES	ASL
7440-66-6	Zinc	20		576		µg/L	OLF-G02	18/18	- -	576	283	3.00	Res-C	N/A	N/A	YES	ASL
71-55-6	1,1,1-Trichloroethane	2.40		2.40		µg/L	MW-1	1/18	0.5 - 12.5	2.40	- -	0.0533	Res-N	54.0880829	RBC	YES	ASL
79-34-5	1,1,2,2-Tetrachloroethane	22	D	400		µg/L	OLF-G12	2/18	0.5 - 12.5	400	- -	0.000203	Res-C	N/A	N/A	YES	ASL
79-00-5	1,1,2-Trichloroethane	0.930		3.10		µg/L	OLF-G12	2/18	0.5 - 12.5	3.10	- -	0.000715	Res-C	0.187849	RBC	YES	ASL
75-34-3	1,1-Dichloroethane	4.20		11		µg/L	OLF-G04	1/18	0.5 - 12.5	11	- -	0.154	Res-N	N/A	N/A	YES	ASL
540-59-0	1,2-Dichloroethene (total)	2.10		20		µg/L	OLF-G12	3/18	1 - 25	20	- -	0.0139	Res-N	N/A	N/A	YES	ASL
106-46-7	1,4-Dichlorobenzene	4.60		4.60		µg/L	OLF-G04	1/18	1.5 - 5	4.60	- -	0.00176	Res-C	N/A	N/A	YES	ASL
72-54-8	4,4'-DDD	0.0295	C	0.0295	C	µg/L	OLF-G04	1/18	0.00784 - 18	0.0295	- -	0.000167	Res-C	N/A	N/A	YES	ASL
50-29-3	4,4'-DDT	0.114	CD	0.114	CD	µg/L	OLF-G07	1/18	0.0025 - 18	0.114	- -	0.00145	Res-C	N/A	N/A	YES	ASL
106-47-8	4-Chloroaniline	1.80		1.80		µg/L	OLF-G11	1/18	1 - 5	1.80	- -	0.00614	Res-N	N/A	N/A	YES	ASL
108-10-1	4-Methyl-2-pentanone	3.90		3.90		µg/L	OLF-G05	1/18	1.4 - 60	3.90	- -	0.0649	Res-N	N/A	N/A	YES	ASL
67-64-1	Acetone	22		570		µg/L	OLF-G11	3/18	5 - 50	570	- -	0.156	Res-N	N/A	N/A	YES	ASL
309-00-2	Aldrin	0.0649	CD	0.0649	CD	µg/L	OLF-G07	1/18	0.0074 - 13	0.0649	- -	0.000303	Res-C	N/A	N/A	YES	ASL
71-43-2	Benzene	0.910		2.10		µg/L	MW-1	2/18	0.5 - 12.5	2.10	- -	0.000923	Res-C	0	MCLG	YES	ASL
56-55-3	Benzo(a)anthracene	0.0261		0.113		µg/L	OLF-G12	7/18	0.0194 - 9.8	0.113	- -	1.705E-06	Res-C	N/A	N/A	YES	ASL
50-32-8	Benzo(a)pyrene	0.0405		0.0405		µg/L	MW-1	1/18	0.0192 - 14	0.0405	- -	1.225E-06	Res-C	0	MCLG	YES	ASL
205-99-2	Benzo(b)fluoranthene	0.195	B	0.399	B	µg/L	OLF-G19	3/18	0.0384 - 10	0.399	- -	1.225E-06	Res-C	N/A	N/A	YES	ASL
207-08-9	Benzo(k)fluoranthene	0.0394		0.714	D	µg/L	OLF-G02	11/18	0.0193 - 10	0.714	- -	4.032E-07	Res-C	N/A	N/A	YES	ASL
75-15-0	Carbon disulfide	0.330		3.00		µg/L	OLF-G01	7/18	0.5 - 50	3.00	- -	0.148	Res-N	N/A	N/A	YES	ASL
108-90-7	Chlorobenzene	0.150		1.60		µg/L	OLF-G07	3/18	0.5 - 12.5	1.60	- -	0.0162	Res-N	N/A	N/A	YES	ASL
218-01-9	Chrysene	0.0427	D	0.0429		µg/L	OLF-G19	1/18	0.0194 - 7.4	0.0429	- -	1.705E-06	Res-C	N/A	N/A	YES	ASL
84-74-2	Di-n-butyl phthalate	1.90		6.90		µg/L	OLF-G01	15/18	5 - 40	6.90	- -	0.149	Res-N	N/A	N/A	YES	ASL
53-70-3	Dibenzo(a,h)anthracene	0.0509	D	0.144	D	µg/L	OLF-G02	3/18	0.0388 - 12	0.144	- -	5.878E-07	Res-C	N/A	N/A	YES	ASL
25321-22-6	Dichlorobenzene-nonspecific	2.30		2.30		µg/L	OLF-G04	1/18	2 - 2	2.30	- -	N/A		N/A	N/A	YES	ASL
60-57-1	Dieldrin	0.0298	C	0.249	CD	µg/L	OLF-G07	2/18	0.0074 - 26	0.249	- -	0.000452	Res-C	N/A	N/A	YES	ASL
84-66-2	Diethylphthalate	1.60		1.60		µg/L	OLF-G04	1/18	5 - 7	1.60	- -	1.24	Res-N	N/A	N/A	YES	ASL
959-98-8	Endosulfan I	0.00450	C	0.272	CD	µg/L	OLF-G07	2/18	0.0025 - 23	0.272	- -	0.0607	Res-C	N/A	N/A	YES	ASL
33213-65-9	Endosulfan II	0.0244	C	0.0244	C	µg/L	OLF-G04	1/18	0.0077 - 42	0.0244	- -	0.0607	Res-C	N/A	N/A	NO	BSL
72-20-8	Endrin	0.0580	C	0.240	CD	µg/L	OLF-G07	2/18	0.0156 - 18	0.240	- -	0.000716	Res-C	1.095	RBC	YES	ASL
76-44-8	Heptachlor	0.00696	C	0.0969	CD	µg/L	OLF-G07	4/18	0.0025 - 38	0.0969	- -	0.00481	Res-C	0	MCLG	YES	ASL

TABLE 6-26.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Landfill #3

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
1024-57-3	Heptachlor Epoxide	0.0170	C	0.0170	C	µg/L	OLF-G18	1/18	0.0063 - 28	0.0170	- -	0.000101	Res-C	0	MCLG	YES	ASL
77-47-4	Hexachlorocyclopentadiene	0.481	D	0.481	D	µg/L	OLF-G07	1/18	0.048 - 54	0.481	- -	0.0580	Res-C	0.01459166	RBC	YES	ASL
193-39-5	Indeno(1,2,3-cd)pyrene	0.0341		0.0387		µg/L	OLF-G18	2/18	0.0194 - 21	0.0387	- -	8.134E-07	Res-C	N/A	N/A	YES	ASL
72-43-5	Methoxychlor	1.68	CD	1.68	CD	µg/L	OLF-G07	1/18	0.05 - 11	1.68	- -	0.0475	Res-C	18.25	RBC	YES	ASL
75-09-2	Methylene Chloride	0.260		4.60		µg/L	OLF-G04	5/18	0.5 - 12.5	4.60	- -	0.00783	Res-C	N/A	N/A	YES	ASL
91-20-3	Naphthalene	1.000		1.40		µg/L	OLF-G04	1/18	0.5 - 5	1.40	- -	0.00300	Res-N	N/A	N/A	YES	ASL
55-63-0	Nitroglycerine	1.52	Q	1.89	Q	µg/L	OLF-G15	4/18	1.49 - 26.9	1.89	- -	0.00478	Res-C	N/A	N/A	YES	ASL
12672-29-6	PCB 1248	0.615	ZC	0.615	ZC	µg/L	OLF-G18	1/18	0.385 - 9.1	0.615	- -	N/A		N/A	N/A	YES	ASL
87-86-5	Pentachlorophenol	1.19	9	53	9	µg/L	OLF-G19	6/18	1 - 25	53	- -	0.000267	Res-C	0	MCLG	YES	ASL
127-18-4	Tetrachloroethene	0.360		4.00	D	µg/L	OLF-G03	4/18	0.5 - 12.5	4.00	- -	0.00126	Res-C	0	MCLG	YES	ASL
108-88-3	Toluene	0.180		0.230		µg/L	OLF-G03	2/18	0.5 - 12.5	0.230	- -	0.265	Res-N	74.7037702	RBC	NO	BSL
79-01-6	Trichloroethene	0.160		100		µg/L	OLF-G12	5/18	0.5 - 12.5	100	- -	0.00451	Res-C	0	MCLG	YES	ASL
75-01-4	Vinyl Chloride	1.47		4.08		µg/L	OLF-G10	2/18	1 - 25	4.08	- -	3.206E-05	Res-C	0	MCLG	YES	ASL
1330-20-7	Xylene	0.310		0.310		µg/L	OLF-G04	1/18	1 - 25	0.310	- -	2.78	Res-N	N/A	N/A	NO	BSL
319-84-6	alpha-BHC	0.00360	DC	0.231	C	µg/L	OLF-G04	2/18	0.0025 - 5.3	0.231	- -	N/A		N/A	N/A	YES	ASL
319-85-7	beta-BHC	0.0540		0.0540		µg/L	OLF-G04	1/18	0.0099 - 17	0.0540	- -	N/A		N/A	N/A	YES	ASL
117-81-7	bis(2-Ethylhexyl)phthalate	2.60		53		µg/L	OLF-G08	7/18	5 - 9	53	- -	0.00370	Res-C	N/A	N/A	YES	ASL
319-86-8	delta-BHC	0.00404	C	0.00404	C	µg/L	OLF-G07	1/18	0.0034 - 10	0.00404	- -	N/A		N/A	N/A	YES	ASL
58-89-9	Lindane	0.352	CD	0.352	CD	µg/L	OLF-G07	1/18	0.0025 - 7.2	0.352	- -	0.00289	Res-C	0.05151729	RBC	YES	ASL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)
Below Screening Level (BSL)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-27.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Landfill #3

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	544		1,620		µg/L	OLF-W03	4/5	112 - 112	1,620	5,689	15	Res-N	N/A	N/A	NO	BKG
7440-39-3	Barium	28		43		µg/L	OLF-W05	5/5	- -	43	78	0.992	Res-N	N/A	N/A	NO	BKG
7440-70-2	Calcium	6,970		19,300		µg/L	OLF-W01	5/5	- -	19,300	26,633	N/A		N/A	N/A	NO	BKG,BSL
7439-89-6	Iron	426		7,930		µg/L	OLF-W05	5/5	- -	7,930	21,130	4.50	Res-N	N/A	N/A	NO	BKG
7439-92-1	Lead	71		71		µg/L	OLF-W05	1/5	4.47 - 43.4	71	9.61	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	2,450		8,760		µg/L	OLF-W02	5/5	- -	8,760	11,077	N/A		N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	25		464		µg/L	OLF-W05	5/5	- -	464	604	0.316	Res-N	N/A	N/A	NO	BKG
7440-09-7	Potassium	2,080		3,710		µg/L	OLF-W05	4/5	1240 - 1240	3,710	2,603	N/A		N/A	N/A	NO	BSL
7440-23-5	Sodium	1,100		10,100		µg/L	OLF-W02	5/5	- -	10,100	3,553	N/A		N/A	N/A	NO	BSL
7440-66-6	Zinc	19		22		µg/L	OLF-W04	2/5	18 - 18	22	41	4.56	Res-N	N/A	N/A	NO	BKG
71-55-6	1,1,1-Trichloroethane	1.20		6.20		µg/L	OLF-W04	2/5	1 - 1	6.20	- -	0.480	Res-N	N/A	N/A	YES	ASL
--	Biochemical Oxygen Demand	5.00		5.00		µg/L	OLF-W05	1/4	4000 - 4000	5.00	- -	N/A		N/A	N/A	YES	ASL
79-01-6	Trichloroethene	1.30		1.30		µg/L	OLF-W04	1/5	1 - 1	1.30	- -	0.0511	Res-N	N/A	N/A	YES	ASL
319-84-6	alpha-BHC	0.00348	C	0.00348	C	µg/L	OLF-W04	1/5	0.0025 - 5.3	0.00348	- -	0.000157	Res-C	N/A	N/A	YES	ASL
58-89-9	Lindane	0.00413	C	0.00413	C	µg/L	OLF-W03	1/5	0.0025 - 7.2	0.00413	- -	0.000762	Res-C	N/A	N/A	YES	ASL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-28.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Landfill #3

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	2,630		60,800		mg/kg	OLF-D03	3/3	- -	60,800	8,859	1.054E+06	Res-N	N/A	N/A	NO	BSL
7440-39-3	Barium	13		158		mg/kg	OLF-D03	3/3	- -	158	103	69,849	Res-N	82	MIG	NO	BSL
7440-70-2	Calcium	473		7,860		mg/kg	OLF-D02	3/3	- -	7,860	1,139	N/A		N/A	N/A	NO	BSL
7440-47-3	Chromium	12		42		mg/kg	OLF-D03	3/3	- -	42	32	N/A		N/A	N/A	YES	ASL
7440-48-4	Cobalt	5.12		8.93		mg/kg	OLF-D03	2/3	2.5 - 2.5	8.93	13	71,531	Res-N	N/A	N/A	NO	BKG,BSL
7440-50-8	Copper	7.46		25		mg/kg	OLF-D03	3/3	- -	25	23	46,248	Res-N	N/A	N/A	NO	BSL
7439-89-6	Iron	11,600		37,500		mg/kg	OLF-D03	3/3	- -	37,500	35,480	330,876	Res-N	N/A	N/A	NO	BSL
7439-92-1	Lead	7.54		29		mg/kg	OLF-D03	2/3	7.44 - 7.44	29	47	N/A		N/A	N/A	NO	BKG
7439-95-4	Magnesium	766		4,200		mg/kg	OLF-D03	3/3	- -	4,200	970	N/A		N/A	N/A	NO	BSL
7439-96-5	Manganese	73		361		mg/kg	OLF-D03	3/3	- -	361	1,071	21,119	Res-N	N/A	N/A	NO	BKG,BSL
7440-02-0	Nickel	4.91		21		mg/kg	OLF-D03	3/3	- -	21	14	23,000	Res-N	N/A	N/A	NO	BSL
7440-09-7	Potassium	996		8,180		mg/kg	OLF-D03	2/3	131 - 131	8,180	1,076	N/A		N/A	N/A	NO	BSL
7440-23-5	Sodium	88		123		mg/kg	OLF-D03	2/3	38.7 - 38.7	123	681	N/A		N/A	N/A	NO	BKG,BSL
7440-62-2	Vanadium	9.68		77		mg/kg	OLF-D03	3/3	- -	77	41	4,335	Res-N	54.75	RBC	NO	BSL
7440-66-6	Zinc	26		74		mg/kg	OLF-D03	3/3	- -	74	54	338,678	Res-N	620	MIG	NO	BSL
72-55-9	4,4'-DDE	0.00379	C	0.00379	C	mg/kg	OLF-D03	1/3	0.0027 - 0.0027	0.00379	- -	205	Res-C	1.87860602	RBC	NO	BSL
208-96-8	Acenaphthylene	0.0800		0.0800		mg/kg	OLF-D02	1/3	0.033 - 0.033	0.0800	- -	24,442	Res-N	N/A	N/A	NO	BSL
56-55-3	Benzo(a)anthracene	0.800		0.800		mg/kg	OLF-D02	1/3	0.041 - 0.041	0.800	- -	7.81	Res-C	0.08	MIG	NO	BSL
205-99-2	Benzo(b)fluoranthene	0.920		0.920		mg/kg	OLF-D02	1/3	0.31 - 0.31	0.920	- -	7.81	Res-C	0.2	MIG	NO	BSL
191-24-2	Benzo(g,h,i)perylene	0.390		0.390		mg/kg	OLF-D02	1/3	0.18 - 0.18	0.390	- -	24,442	Res-N	N/A	N/A	NO	BSL
207-08-9	Benzo(k)fluoranthene	0.480		0.480		mg/kg	OLF-D02	1/3	0.13 - 0.13	0.480	- -	7.81	Res-C	2	MIG	NO	BSL
218-01-9	Chrysene	0.630		0.630		mg/kg	OLF-D02	1/3	0.032 - 0.032	0.630	- -	7.81	Res-C	8	MIG	NO	BSL
206-44-0	Fluoranthene	0.890		0.890		mg/kg	OLF-D02	1/3	0.032 - 0.032	0.890	- -	32,589	Res-N	210	MIG	NO	BSL
85-01-8	Phenanthrene	0.230		0.230		mg/kg	OLF-D02	1/3	0.032 - 0.032	0.230	- -	30,157	Res-N	N/A	N/A	NO	BSL
129-00-0	Pyrene	1.20		1.20		mg/kg	OLF-D02	1/3	0.083 - 0.083	1.20	- -	24,442	Res-N	210	MIG	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-29.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Surface Soil
Exposure Medium: Soil
Exposure Point: Old Water Hole

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	4,550		7,890		mg/kg	OWH-S01	2/2	- -	7,890	16,447	3,337	Res-C	N/A	N/A	NO	BKG,BSL
7440-39-3	Barium	17		51		mg/kg	OWH-S01	2/2	- -	51	123	330	Res-C	82	MIG	NO	BKG,BSL
7440-70-2	Calcium	87		852		mg/kg	OWH-S01	2/2	- -	852	1,700	N/A		N/A	N/A	NO	BKG,BSL
7440-47-3	Chromium	12		15		mg/kg	OWH-S01	2/2	- -	15	37	N/A		N/A	N/A	NO	BKG
7440-50-8	Copper	7.43		7.43		mg/kg	OWH-S02	1/2	2.84 - 2.84	7.43	13	312	Res-N	N/A	N/A	NO	BKG,BSL
7439-89-6	Iron	15,900		19,200		mg/kg	OWH-S01	2/2	- -	19,200	34,371	2,337	Res-N	N/A	N/A	NO	BKG,BSL
7439-92-1	Lead	13		22		mg/kg	OWH-S01	2/2	- -	22	39	N/A		N/A	N/A	NO	BKG
7439-95-4	Magnesium	165		338		mg/kg	OWH-S01	2/2	- -	338	1,053	N/A		N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	152		401		mg/kg	OWH-S01	2/2	- -	401	1,456	35	Res-C	N/A	N/A	NO	BKG,BSL
7440-02-0	Nickel	3.81		3.81		mg/kg	OWH-S01	1/2	2.74 - 2.74	3.81	10	156	Res-N	N/A	N/A	NO	BKG,BSL
7440-09-7	Potassium	189		189		mg/kg	OWH-S02	2/2	- -	189	816	N/A		N/A	N/A	NO	BKG,BSL
7440-62-2	Vanadium	27		39		mg/kg	OWH-S01	2/2	- -	39	59	66	Res-N	54.75	RBC	NO	BKG,BSL
7440-66-6	Zinc	23		24		mg/kg	OWH-S01	2/2	- -	24	40	2,339	Res-N	620	MIG	NO	BKG,BSL
100-51-6	Benzyl Alcohol	0.0600		0.0600		mg/kg	OWH-S01	1/2	0.032 - 0.032	0.0600	- -	2,324	Res-N	N/A	N/A	NO	BSL
108-95-2	Phenol	1.000		1.70		mg/kg	OWH-S01	2/2	- -	1.70	- -	4,660	Res-N	5	MIG	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-30.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Subsurface Soil
Exposure Medium: Soil
Exposure Point: Old Water Hole

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	14,400		15,000	D	mg/kg	OWH-S03	1/2	0 - 0	15,000	13,654	6,684	Res-C	N/A	N/A	YES	ASL
7440-39-3	Barium	11	D	12		mg/kg	OWH-S03	1/2	0 - 0	12	271	543	Res-N	82	MIG	NO	BKG,BSL
7440-70-2	Calcium	70		70		mg/kg	OWH-S03	1/2	25.3 - 25.3	70	628	N/A		N/A	N/A	NO	BKG,BSL
7440-47-3	Chromium	5.41	D	37		mg/kg	OWH-S03	1/2	0 - 0	37	38	N/A		N/A	N/A	NO	BKG
7440-50-8	Copper	4.48		6.24	D	mg/kg	OWH-S03	1/2	0 - 0	6.24	20	312	Res-N	N/A	N/A	NO	BKG,BSL
7439-89-6	Iron	37,200		72,000	D	mg/kg	OWH-S03	1/2	0 - 0	72,000	44,936	2,337	Res-N	N/A	N/A	YES	ASL
7439-92-1	Lead	6.87	D	8.49		mg/kg	OWH-S03	1/2	0 - 0	8.49	43	N/A		N/A	N/A	NO	BKG
7439-95-4	Magnesium	353	D	443		mg/kg	OWH-S03	1/2	0 - 0	443	831	N/A		N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	61	D	223		mg/kg	OWH-S03	1/2	0 - 0	223	1,322	71	Res-C	N/A	N/A	NO	BKG,BSL
7440-02-0	Nickel	4.11		4.11		mg/kg	OWH-S03	1/2	2.74 - 2.74	4.11	13	156	Res-N	N/A	N/A	NO	BKG,BSL
7440-09-7	Potassium	220	D	309		mg/kg	OWH-S03	1/2	0 - 0	309	723	N/A		N/A	N/A	NO	BKG,BSL
7440-62-2	Vanadium	60		98	D	mg/kg	OWH-S03	1/2	0 - 0	98	65	66	Res-N	54.75	RBC	YES	ASL
7440-66-6	Zinc	12	D	13		mg/kg	OWH-S03	1/2	0 - 0	13	33	2,339	Res-N	620	MIG	NO	BKG,BSL
100-51-6	Benzyl Alcohol	0.0500		0.0550	D	mg/kg	OWH-S03	1/2	0 - 0	0.0550	- -	2,324	Res-N	N/A	N/A	NO	BSL
108-95-2	Phenol	2.90	D	3.50		mg/kg	OWH-S03	1/2	0 - 0	3.50	- -	4,660	Res-N	5	MIG	NO	BSL

(1) Minimum/maximum detected concentration.
(2) Refer to Table H-1 for supporting information on flags and qualifiers.
(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.
(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient
(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
COPC = Chemical of Potential Concern
ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
MCL = Federal Maximum Contaminant Level
SMCL = Secondary Maximum Contaminant Level
MIG = Region IX Soil Migration to Groundwater
RBC = Region III Risk Based Concentrations
J = Estimated Value
C = Carcinogenic
N = Non-Carcinogenic

TABLE 6-31.
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe:
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Old Water Hole

CAS Number	Chemical	Minimum (1) Concentration	Minimum Qualifier (2)	Maximum (1) Concentration	Maximum Qualifier (2)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background (3) Value	Screening (4) Toxicity Value		Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag	Rationale for (5) Contaminant Deletion or Selection
7429-90-5	Aluminum	148		9,600		µg/L	OWH-G02	5/5	- -	9,600	2,371	9.82	Res-C	N/A	N/A	YES	ASL
7440-38-2	Arsenic	2.60		4.16		µg/L	OWH-G02	1/5	2.35 - 2.35	4.16	17	0.00304	Res-C	N/A	N/A	NO	BKG
7440-39-3	Barium	14		252		µg/L	OWH-G04	5/5	- -	252	185	0.676	Res-C	255.5	RBC	YES	ASL
7440-41-7	Beryllium	1.17		1.17		µg/L	OWH-G02	1/5	0.222 - 1.12	1.17	1.17	0.0145	Res-C	4	MCL	YES	ASL
7440-70-2	Calcium	3,060		43,600		µg/L	OWH-G04	5/5	- -	43,600	77,441	N/A		N/A	N/A	NO	BKG,BSL
16887-00-6	Chloride	1,230		1,230		µg/L	OWH-G02	1/1	- -	1,230	5,588	N/A		N/A	N/A	NO	BKG
7440-48-4	Cobalt	48		48		µg/L	OWH-G04	1/5	20 - 25	48	24	0.610	Res-C	N/A	N/A	YES	ASL
7440-47-3	Hexavalent Chromium	20		20		µg/L	OWH-G02	1/1	- -	20	29	0.0254	Res-C	N/A	N/A	NO	BKG
7439-89-6	Iron	128		7,620		µg/L	OWH-G02	5/5	- -	7,620	7,102	2.98	Res-C	N/A	N/A	YES	ASL
7439-92-1	Lead	6.20		12		µg/L	OWH-G02	3/5	0.556 - 4.47	12	9.46	N/A		N/A	N/A	YES	ASL
7439-95-4	Magnesium	431		22,600		µg/L	OWH-G04	5/5	- -	22,600	27,087	N/A		N/A	N/A	NO	BKG,BSL
7439-96-5	Manganese	41		2,110		µg/L	OWH-G04	5/5	- -	2,110	826	0.222	Res-C	N/A	N/A	YES	ASL
7439-97-6	Mercury	0.107		0.178		µg/L	OWH-G04	3/5	0.1 - 0.2	0.178	- -	0.00217	Res-C	0.365	RBC	YES	ASL
7440-09-7	Potassium	3,780		56,400		µg/L	OWH-G04	5/5	- -	56,400	10,137	N/A		N/A	N/A	NO	BSL
7440-23-5	Sodium	1,760		43,700		µg/L	OWH-G02	5/5	- -	43,700	17,664	N/A		N/A	N/A	NO	BSL
14808-79-8	Sulfate	3,680		3,680		µg/L	OWH-G02	1/1	- -	3,680	120,582	N/A		N/A	N/A	NO	BKG
7440-66-6	Zinc	22	M	84	M	µg/L	OWH-G03	3/5	18 - 70.4	84	283	3.00	Res-C	N/A	N/A	NO	BKG
72-55-9	4,4'-DDE	0.00438	C	0.00438	C	µg/L	OWH-G02	1/5	0.0039 - 14	0.00438	- -	N/A		N/A	N/A	YES	ASL
309-00-2	Aldrin	0.0149	Q	0.0317	C	µg/L	OWH-G02	2/5	0.0074 - 13	0.0317	- -	0.000303	Res-C	N/A	N/A	YES	ASL
56-55-3	Benzo(a)anthracene	0.0212		0.0581		µg/L	OWH-G01	2/5	0.0194 - 0.0196	0.0581	- -	1.705E-06	Res-C	N/A	N/A	YES	ASL
205-99-2	Benzo(b)fluoranthene	0.159	B	0.378	B	µg/L	OWH-G02	5/5	- -	0.378	- -	1.225E-06	Res-C	N/A	N/A	YES	ASL
207-08-9	Benzo(k)fluoranthene	0.0262		0.0262		µg/L	OWH-G02	1/5	0.0193 - 0.0198	0.0262	- -	4.032E-07	Res-C	N/A	N/A	YES	ASL
--	Bicarbonate	82,000		82,000		µg/L	OWH-G02	1/1	- -	82,000	- -	N/A		N/A	N/A	YES	ASL
218-01-9	Chrysene	0.0210		0.0572		µg/L	OWH-G05	4/5	0.0194 - 0.204	0.0572	- -	1.705E-06	Res-C	N/A	N/A	YES	ASL
53-70-3	Dibenzo(a,h)anthracene	0.0504		0.104		µg/L	OWH-G02	3/5	0.0388 - 0.0396	0.104	- -	5.878E-07	Res-C	N/A	N/A	YES	ASL
959-98-8	Endosulfan I	0.0158	C	0.0240	C	µg/L	OWH-G02	2/5	0.0025 - 23	0.0240	- -	0.0607	Res-C	N/A	N/A	NO	BSL
1031-07-8	Endosulfan Sulfate	0.00380	CZ	0.00380	CZ	µg/L	OWH-G04	1/5	0.0025 - 50	0.00380	- -	N/A		N/A	N/A	YES	ASL
76-44-8	Heptachlor	0.00732	C	0.0401	Q	µg/L	OWH-G05	1/5	0.0025 - 38	0.0401	- -	0.00481	Res-C	0	MCLG	YES	ASL
193-39-5	Indeno(1,2,3-cd)pyrene	0.0662		0.133		µg/L	OWH-G01	1/5	0.0194 - 0.0196	0.133	- -	8.134E-07	Res-C	N/A	N/A	YES	ASL
465-73-6	Isodrin	0.0125	BC	0.0125	BC	µg/L	OWH-G02	1/5	0.0025 - 7.8	0.0125	- -	N/A		N/A	N/A	YES	ASL
14797-55-8	Nitrate,Nitrite	17		17		µg/L	OWH-G02	1/1	- -	17	- -	N/A		N/A	N/A	YES	ASL
55-63-0	Nitroglycerine	2.39	Q	2.39	Q	µg/L	OWH-G02	1/5	1.49 - 1.49	2.39	- -	0.00478	Res-C	N/A	N/A	YES	ASL
12672-29-6	PCB 1248	0.447	ZC	0.499	ZC	µg/L	OWH-G02	2/5	0.385 - 9.1	0.499	- -	N/A		N/A	N/A	YES	ASL
121-82-4	RDX	0.578	Q	1.08	Q	µg/L	OWH-G05	2/5	0.416 - 0.416	1.08	- -	0.000608	Res-C	N/A	N/A	YES	ASL
111-48-8	Thiodiglycol	242	J	242	J	µg/L	OWH-G02	1/5	48.8 - 48.8	242	- -	N/A		N/A	N/A	YES	ASL
--	Alkalinity	82,000		82,000		µg/L	OWH-G02	1/1	- -	82,000	- -	N/A		N/A	N/A	YES	ASL
7723-14-0	Phosphorous	13		13		µg/L	OWH-G02	1/1	- -	13	- -	N/A		N/A	N/A	YES	ASL
319-84-6	alpha-BHC	0.0113	C	0.0113	C	µg/L	OWH-G01	1/5	0.0025 - 5.3	0.0113	- -	N/A		N/A	N/A	YES	ASL
117-81-7	bis(2-Ethylhexyl)phthalate	12		21		µg/L	OWH-G04	3/5	7.7 - 7.7	21	- -	0.00370	Res-C	N/A	N/A	YES	ASL

(1) Minimum/maximum detected concentration.

(2) Refer to Table H-1 for supporting information on flags and qualifiers.

(3) "- -" = Refer to supporting information for background discussion.
Background values represent two-times the average background mean. Nondetects were treated at one-half the detection limit.

(4) Site Specific Screening Levels (IT 1998) were derived for the following: (note: the suffix "-N" = Noncancer, the suffix "-C" = Cancer.)
Res = Resident — IW = Industrial Worker (groundskeeper)
Rec = Recreational Site User — CnW = Construction Worker
Ven = Venison — Nut = Nutrient

(5) Rationale Codes
Selection Reason: Above Screening Levels (ASL)
Deletion Reason: Background Levels (BKG)

Definitions:
N/A = Not Applicable
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ARAR/TBC = Applicable or Relevant and Appropriate Requirement/To Be Considered
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Table 6-32. Exposure Pathways for Human Health Risk Assessment
Fort McClellan RI, Anniston, Alabama

Site	Land Use	Receptor	Soil			Groundwater			Surface Water		Sediment	
			Ingestion	Dermal Contact	Particulate Inhalation	Ingestion	Dermal Contact	Inhalation	Ingestion	Dermal Contact	Ingestion	Dermal Contact
Site 1	Current	Industrial Worker	•	•	•							
Area 4 - Biological	Current/Future	Recreational	•	•								
Simulant Test Area	Current/Future	Hunter	•									
	Future	Industrial Worker	•	•	•							
	Future	Resident - Child	•	•								
	Future	Construction Worker	•	•	•							
Site 2	Current	Industrial Worker	•	•	•							
Area T-5 Toxic Hazards	Current/Future	Recreational	•	•						•	•	•
Detection and Decon-	Current/Future	Hunter	•									
tamination Training Area	Future	Industrial Worker	•	•	•							
	Future	Resident - Child	•	•								
	Future	Construction Worker	•	•	•							
Site 3	Current/Future	Recreational								•	•	•
Area T-24A Chemical	Future	Industrial Worker	•	•	•	•	•					
Munitions Disposal	Future	Resident - Adult				•	•	•				
Training Area	Future	Resident - Child	•	•		•	•					
	Future	Construction Worker	•	•	•							
Site 4	Current	Industrial Worker	•	•	•							
Area T-38 Technical	Current/Future	Recreational	•	•								
Escort Reaction Area	Current/Future	Hunter	•									
	Future	Industrial Worker	•	•	•	•	•					
	Future	Resident - Child	•	•		•	•					
	Future	Resident - Adult				•	•	•				
	Future	Construction Worker	•	•	•							
Site 5	Current/Future	Recreational									•	•
Range K Agent	Future	Industrial Worker	•	•	•							
Training Area	Future	Resident - Child	•	•								
	Future	Construction Worker	•	•	•							
Site 6	Future	Industrial Worker	•	•	•	•	•					
Range J Agent	Future	Resident - Child	•	•		•	•					
Training Area	Future	Resident - Adult				•	•	•				
	Future	Construction Worker	•	•	•							
Site 7	Future	Industrial Worker	•	•	•							
Detection and	Future	Resident - Child	•	•								
Identification Area	Future	Construction Worker	•	•	•							
Site 8	Current	Industrial Worker	•	•	•							
Range L (Lima Pond)	Current/Future	Recreational	•	•						•	•	•
Chemical Munitions	Current/Future	Hunter	•									
Disposal Area	Future	Industrial Worker	•	•	•	•	•					
	Future	Resident - Child	•	•		•	•					
	Future	Resident - Adult				•	•	•				
	Future	Construction Worker	•	•	•							
Site 9	Current/Future	Recreational								•	•	•
Former Landfill #1	Future	Industrial Worker	•	•	•	•	•					
	Future	Resident - Child	•	•		•	•					
	Future	Resident - Adult				•	•	•				
	Future	Construction Worker	•	•	•							
Site 10	Current/Future	Recreational								•	•	•
Former Landfill #2	Future	Industrial Worker				•	•					
	Future	Resident - Child				•	•					
	Future	Resident - Adult				•	•	•				
Site 11	Current	Industrial Worker	•	•	•							
Former Landfill #3	Current/Future	Recreational								•	•	•
	Current/Future	Hunter	•									
	Future	Industrial Worker	•	•	•	•	•					
	Future	Resident - Child	•	•		•	•					
	Future	Resident - Adult				•	•	•				
	Future	Construction Worker	•	•	•							
Site 12	Current	Industrial Worker	•	•	•							
Old Water Hole	Current/Future	Recreational	•	•								
	Current/Future	Hunter	•									
	Future	Industrial Worker	•	•	•	•	•					
	Future	Resident - Child	•	•		•	•					
	Future	Resident - Adult				•	•	•				
	Future	Construction Worker	•	•	•							

Table 6-33 Exposure Factors for Current Land Use
Fort McClellan RI, Anniston, Alabama

PATHWAY ASSUMPTION	UNITS	CURRENT LAND USE	
		Industrial Worker	
		RME	Rationale/ Preference
General			
Body Weight	kg	70	b
Expsoure duration	years	25	b
Averaging time-noncancer	days	9,125	f
Averaging time-cancer	days	25,550	e
Soil Ingestion			
Ingestion Rate of Soil	mg/day	480	b
Conversion Factor	kg/mg	1.00E-06	-
Fraction exposed to contaminated medium	unitless	1.00E+00	c
Exposure Frequency	days/year	10	b
Soil Dermal Contact			
Conversion Factor	kg/mg	1.00E-06	-
Fraction exposed to contaminated medium	unitless	1.00E+00	c
Skin Surface Area	cm^2/day	5800	g
Dermal Absorption Factor	unitless	(1)	(1)
Adherence Factor	mg/cm^2	1.00E+00	g
Exposure Frequency	days/year	10	b
Fugitive Dust Inhalation			
Fraction exposed to contaminated medium	unitless	1	c
Particulate Emission Factor	m^3/kg	1.00E+07	h
Ventilation Rate of Soil/Dust	m^3/day	24	b
Exposure Frequency	days/year	10	b
Sediment Ingestion	not evaluated		
Sediment Dermal Contact	not evaluated		
Surface Water Dermal Contact (while wading)	not evaluated		

(1) EPA Region IV Supplemental Guidance to RAGS (EPA 1995a) provides default dermal absorption factors of 1% for organics and 0.1% for inorganics

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.

c Assumed; see the Facility-Wide Work Plan (IT 1998).

d EPA 1995a, Supplemental Guidance to RAGS: Region IV Bulletins, Human Health Risk Assessment, EPA Region IV, Atlanta, GA, November.

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

g EPA 1998d, "Risk Review Comments, Human Health Aspects, Fort McClellan, Anniston, AL" Memorandum from Ted Simon, OTS, to Bart Reedy, FFB/BRAC, EPA Region 4, Atlanta, GA, 5 August.

h Particulate emission factor from facility-wide work plan (IT 1998)

Table 6-34 Exposure Factors for Current/Future Land Use
Fort McClellan RI, Anniston, Alabama

PATHWAY ASSUMPTION	UNITS	CURRENT/FUTURE LAND USE			
		Recreational User (Adolescent)		Hunter	
		RME	Rationale/ Preference	RME	Rationale/ Preference
General					
Body Weight	kg	45	d	not evaluated	
Exposure Duration	years	10	d		
Averaging Time (Noncancer)	days	3,650	f		
Averaging Time (Cancer)	days	25,550	e		
Soil Ingestion					
Ingestion Rate of Soil	mg/day	100	b	not evaluated	
Conversion Factor	kg/mg	1.00E-06	-		
Fraction exposed to contaminated medium	unitless	2.50E-01	c		
Exposure Frequency	days/year	104	c		
Soil Ingestion (venison)					
Conversion Factor	kg/mg	not evaluated		1.00E-06	-
Fraction exposed to contaminated medium	unitless			1	c
Venison consumption rate	g/day			30	c
Soil to Venison BioTransfer Factor	mg/g			(1)	(1)
Exposure Frequency	days/year			350	b
Soil Dermal Contact					
Conversion Factor	kg/mg	1.00E-06	-	not evaluated	
Skin Surface Area	cm^2/day	5250	g		
Dermal Absorption Factor	unitless	(1)	(1)		
Adherence Factor	mg/cm^2	4.00E-02	g		
Fraction exposed to contaminated medium	unitless	2.50E-01	c		
Exposure Frequency	days/year	104	c		
Fugitive Dust Inhalation					
Fraction exposed to contaminated medium	unitless	not evaluated		not evaluated	
Particulate Emission Factor	m^3/kg				
Ventilation Rate of Soil/Dust	m^3/day				
Exposure Frequency	days/year				
Sediment Ingestion					
Ingestion Rate of Sediment	mg/day	100	b	not evaluated	
Conversion Factor	kg/mg	1.00E-06	-		
Fraction exposed to contaminated medium	unitless	1.30E-01	c		
Exposure Frequency	days/year	104	c		
Sediment Dermal Contact					
Conversion Factor	kg/mg	1.00E-06	-	not evaluated	
Fraction exposed to contaminated medium	unitless	1.30E-01	c		
Skin Surface Area	cm^2/day	5250	g		
Dermal absorption factor	unitless	(1)	(1)		
Adherence Factor	mg/cm^2	2.9E-01	g		
Exposure Frequency	days/year	104	c		
Surface Water Ingestion					
Conversion Factor	mg/µg	1.00E-03	-	not evaluated	
Ingestion Rate of Water	L/day	1	c		
Fraction exposed to contaminated medium	unitless	1	c		
Exposure Frequency	days/year	104	c		

Table 6-34 Exposure Factors for Current/Future Land Use
Fort McClellan RI, Anniston, Alabama

PATHWAY ASSUMPTION	UNITS	CURRENT/FUTURE LAND USE			
		Recreational User (Adolescent)		Hunter	
		RME	Rationale/ Preference	RME	Rationale/ Preference
Surface Water Dermal Contact					
Conversion Factor	L/cm^3	1.00E-03	-	not evaluated	
Conversion Factor	mg/µg	1.00E-03	-		
Fraction exposed to contaminated medium	unitless	1	c		
Skin Surface Area	cm^2	4000	h		
Permeability Coefficient	cm/hour	(1)	(1)		
Exposure Time	hours/day	2	c		
Exposure Frequency	days/year	104	c		

(1) EPA Region IV Supplemental Guidance to RAGS (EPA 1995a) provides default dermal absorption factors of 1% for organics and 0.1% for inorganics

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.

c Assumed; see the Facility-Wide Work Plan (IT 1998).

d EPA 1995a, Supplemental Guidance to RAGS: Region IV Bulletins, Human Health Risk Assessment, EPA Region IV, Atlanta, GA, November.

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

g EPA 1998d, "Risk Review Comments, Human Health Aspects, Fort McClellan, Anniston, AL" Memorandum from Ted Simon, OTS, to Bart Reedy, FFB/BRAC, EPA Region 4, Atlanta, GA, 5 August.

Table 6-35 Exposure Factors for Future Land Use

Fort McClellan RI, Anniston, Alabama

PATHWAY ASSUMPTION	UNITS	FUTURE LAND USE							
		Adult Resident		Child Resident		Industrial Worker		Construction Worker	
		RME	Rationale/ Preference	RME	Rationale/ Preference	RME	Rationale/ Preference	RME	Rationale/ Preference
General									
Body Weight	kg	70	d	15	d	70	b	70	b
Exposure Duration	years	24	d	6	d	25	b	1	c
Averaging Time (Noncancer)	days	8,760	f	2,190	f	9,125	f	365	f
Averaging Time (Cancer)	days	25,550	e	25,550	e	25,550	e	25,550	e
Soil Ingestion									
Age adjusted soil ingestion factor	mg-years/kg-day	-	-	114	a	-	-	-	-
Ingestion Rate of Soil	mg/day	100	b	200	b	100	b	200	c
Conversion Factor	kg/mg	1.00E-06	-	1.00E-06	-	1.00E-06	-	1.00E-06	-
Fraction exposed to contaminated medium	unitless	2.50E-01	c	1.00E+00	c	1.00E+00	c	1.00E+00	c
Exposure Frequency	days/year	104	c	350	b	250	b	250	b
Soil Dermal Contact									
Conversion Factor	kg/mg	1.00E-06	-	1.00E-06	-	1.00E-06	-	1.00E-06	-
Skin Surface Area	cm^2/day	5250	g	1800	g	5250	g	5250	g
Dermal Absorption Factor	unitless	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Adherence Factor	mg/cm^2	4.00E-02	g	7.00E-02	g	1.00E-02	g	1.00E-01	g
Fraction exposed to contaminated medium	unitless	2.50E-01	c	1.00E+00	c	1.00E+00	c	1.00E+00	c
Exposure Frequency	days/year	104	c	350	b	250	b	250	b
Age adjusted body surface area	cm^2-years/kg-day	-	-	2520	g	-	-	-	-
Fugitive Dust Inhalation									
Fraction exposed to contaminated medium	unitless	not evaluated		not evaluated		1	c	1	c
Particulate Emission Factor	m^3/kg					1.00E+07	c	5.00E+06	c
Ventilation Rate of Soil/Dust	m^3/day					20	b	20	b
Exposure Frequency	days/year					250	b	250	b
Groundwater Ingestion									
Fraction exposed to contaminated medium	unitless	1	c	1	c	1	c	not evaluated	
Ingestion Rate of Water	L/day	2	d	1	d	1	b		
Conversion Factor	mg/µg	1.00E-03	-	1.00E-03	-	1.00E-03	-		
Exposure Frequency	days/year	350	b	350	b	250	b		
Age-adjusted ingestion factor	L-years/kg-day	1.09	i	1.09	i				
Groundwater Dermal Contact									
Conversion Factor	L/cm^3	1.00E-03	-	1.00E-03	d	1.00E-03	-	not evaluated	
Conversion Factor	mg/µg	1.00E-03	-	1.00E-03	-	1.00E-03	-		
Fraction exposed to contaminated medium	unitless	1	c	1	b	1	c		
Skin Surface Area	cm^2	18150	h	7300	h	4100	h		
Permeability Coefficient	cm/hour	(1)	(1)	(1)	(1)	(1)	(1)		
Exposure Time	hours/day	0.2	h	0.2	h	1	c		
Exposure Frequency	days/year	350	b	350	b	250	b		
Age-adjusted surface area factor	cm^2-years/kg-day	9140	c	9140	c				

Table 6-35 Exposure Factors for Future Land Use

Fort McClellan RI, Anniston, Alabama

PATHWAY ASSUMPTION	UNITS	FUTURE LAND USE							
		Adult Resident		Child Resident		Industrial Worker		Construction Worker	
		RME	Rationale/ Preference	RME	Rationale/ Preference	RME	Rationale/ Preference	RME	Rationale/ Preference
Groundwater Vapor Inhalation									
Fraction exposed to contaminated medium	unitless	1	c	not evaluated		not evaluated		not evaluated	
Age-adjusted ingestion factor	L-years/kg-day	0.7	i						
Ingestion Rate of Water	L/day	2	d						
Conversion Factor	mg/ug	1.00E-03	-						
Exposure Frequency	days/year	350	b						

(1) EPA Region IV Supplemental Guidance to RAGS (EPA 1995a) provides default dermal absorption factors of 1% for organics and 0.1% for inorganics

b EPA 1991a, Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual Supplemental Guidance, Standard Default Exposure Factors, Interim Final, Office of Solid Waste and Emergency Response, OSWER Directive: 9285.6-03.

c Assumed; see the Facility-Wide Work Plan (IT 1998).

d EPA 1995a, Supplemental Guidance to RAGS: Region IV Bulletins, Human Health Risk Assessment, EPA Region IV, Atlanta, GA, November.

e Calculated as the product of 70 years (assumed human lifetime) x 365 days/year.

f Calculated as the product of ED (years) x 365 days/year.

g EPA 1998d, "Risk Review Comments, Human Health Aspects, Fort McClellan, Anniston, AL" Memorandum from Ted Simon, OTS, to Bart Reedy, FFB/BRAC, EPA Region 4, Atlanta, GA, 5 August.

i EPA 1996c, Exposure Factors Handbook, SAB Review Draft, National Center for Environmental Assessment, Washington, DC, EPA/600/P-95/002Ba, August.

Table 6-36. RME Risk Characterization Summary (Future Land Use)
Area T24A, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI				Cancer Risk			
		Residential		Industrial	Construction	Residential		Industrial	Construction
		Adult	Child	Worker	Worker	Adult	Child	Worker	Worker
Surface Soil (0 to <1 ft BLS)	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA	1E+00 B	1E-01 B	2E-01 B	NA	NA	NA	NA
	Dermal Contact	NA	4E-02 B	3E-03 B	3E-02 B	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	4E-01	8E-01	NA	NA	NA	NA
	Subtotal	**NA**	**1E+00 B**	**5E-01 B**	**1E+00 B**	**NA**	**NA**	**NA**	**NA**
Sediment	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Groundwater	Ingestion	4E+00 E	9E+00 E	1E+00 B	NA	2E-04 E	2E-04 E	4E-05 B	NA
	Dermal Contact	2E-01 B	4E-01 B	2E-01 B	NA	2E-05 B	2E-05 B	1E-05 B	NA
	Inhalation	3E+00 E	NA	NA	NA	5E-05 B	NA	NA	NA
	Subtotal	**7E+00 E**	**1E+01 E**	**2E+00 E**	**NA**	**2E-04 E**	**2E-04 E**	**5E-05 B**	**NA**
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		7E+00 E	1E+01 E	2E+00 E	NA				
Combined Cancer Risk:						2E-04 E	2E-04 E	5E-05 B	NA
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		7E+00 E	1E+01 E	2E+00 E	1E+00 B				
Combined Cancer Risk:						2E-04 E	2E-04 E	5E-05 B	NA

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

TABLE 6-37.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	Area T24A	Aluminum	--	--	--	--	Aluminum	CNS	0.0267	--	0.000140	0.0269
			Antimony	--	--	--	--	Antimony	blood/circulatory system	0.0712	--	0.00187	0.0731
			(Total)	--	--	--	--	(Total)	--	0.0979	--	0.00201	0.0999
	Air	Area T24A	Aluminum	--	--	--	--	Aluminum	--	--	0.382	--	0.382
			Antimony	--	--	--	--	Antimony	--	--	--	--	--
			(Total)	--	--	--	--	(Total)	--	--	0.382	--	0.382
Groundwater	Groundwater	Area T24A	Aluminum	--	--	--	--	Aluminum	CNS	0.0410	--	0.00168	0.0427
			Beryllium	--	--	--	--	Beryllium	GI system	0.00797	--	0.00327	0.0112
			Manganese	--	--	--	--	Manganese	CNS	0.689	--	0.0706	0.760
			Selenium	--	--	--	--	Selenium	whole body	0.00978	--	9.118E-05	0.00988
			Benzene	3.844E-05	--	3.412E-06	4.185E-05	Benzene	--	0.652	--	0.0579	0.710
			Benzo(b)fluoranthene	2.209E-07	--	3.506E-06	3.727E-06	Benzo(b)fluoranthene	--	2.825E-05	--	0.000448	0.000477
			Hexachlorobenzene	7.436E-07	--	1.281E-06	2.024E-06	Hexachlorobenzene	liver	0.00163	--	0.00280	0.00443
			Nitrate,Nitrite	--	--	--	--	Nitrate,Nitrite	blood	0.00352	--	2.888E-05	0.00355
			Pentachlorophenol	8.387E-07	--	2.235E-06	3.074E-06	Pentachlorophenol	liver	0.000652	--	0.00174	0.00239
			Phenol	--	--	--	--	Phenol	reproductive system	0.000930	--	2.329E-05	0.000953
			alpha-BHC	9.335E-08	--	5.537E-09	9.888E-08	alpha-BHC	--	--	--	--	--
			bis(2-Ethylhexyl)phthalate	9.295E-07	--	6.619E-07	1.591E-06	bis(2-Ethylhexyl)phthalate	liver	0.00930	--	0.00662	0.0159
			Lindane	1.963E-08	--	7.735E-10	2.040E-08	Lindane	liver, kidney	0.000141	--	5.553E-06	0.000146
			(Total)	4.129E-05	--	1.110E-05	5.239E-05	(Total)	--	1.42	--	0.145	1.56

Total Risk Across Subsurface Soil	--
Total Risk Across Groundwater	5.239E-05
Total Risk Across All Media and All Exposure Routes	5.239E-05

Total Hazard Index Across Subsurface Soil	0.482
Total Hazard Index Across Groundwater	1.56
Total Hazard Index Across All Media and All Exposure Routes	2.04

Total CNS HI =	0.829
Total blood/circulatory system HI =	0.0731
Total GI system HI =	0.0112
Total whole body HI =	0.00988
Total liver HI =	0.0229
Total blood HI =	0.00355
Total reproductive system HI =	0.000953
Total kidney HI =	0.000146

TABLE 6-38.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Area T24A	Aluminum	--	--	--	--	Aluminum	CNS	0.115	--	0.00208	0.117
			Beryllium	--	--	--	--	Beryllium	GI system	0.0223	--	0.00405	0.0264
			Manganese	--	--	--	--	Manganese	CNS	1.93	--	0.0875	2.02
			Selenium	--	--	--	--	Selenium	whole body	0.0274	--	0.000113	0.0275
			Benzene	0.000164	--	5.963E-06	0.000170	Benzene	--	1.83	--	0.0718	1.90
			Benzo(b)fluoranthene	9.439E-07	--	6.128E-06	7.072E-06	Benzo(b)fluoranthene	--	7.909E-05	--	0.000556	0.000635
			Hexachlorobenzene	3.177E-06	--	2.238E-06	5.415E-06	Hexachlorobenzene	liver	0.00455	--	0.00347	0.00803
			Nitrate,Nitrite	--	--	--	--	Nitrate,Nitrite	blood	0.00986	--	3.580E-05	0.00990
			Pentachlorophenol	3.584E-06	--	3.906E-06	7.490E-06	Pentachlorophenol	liver	0.00183	--	0.00215	0.00398
			Phenol	--	--	--	--	Phenol	reproductive system	0.00260	--	2.887E-05	0.00263
			alpha-BHC	3.989E-07	--	9.677E-09	4.085E-07	alpha-BHC	--	--	--	--	--
			bis(2-Ethylhexyl)phthalate	3.972E-06	--	1.157E-06	5.129E-06	bis(2-Ethylhexyl)phthalate	liver	0.0260	--	0.00820	0.0342
			Lindane	8.386E-08	--	1.352E-09	8.521E-08	Lindane	liver, kidney	0.000395	--	6.884E-06	0.000401
			(Total)	0.000176	--	1.940E-05	0.000196	(Total)	--	3.97	--	0.180	4.15
	Air	Area T24A	Benzene	--	5.236E-05	--	5.236E-05	Benzene	--	--	3.22	--	3.22
			(Total)	--	5.236E-05	--	5.236E-05	(Total)	--	--	3.22	--	3.22
			Total Risk Across Groundwater				0.000248		Total Hazard Index Across Groundwater				7.37
			Total Risk Across All Media and All Exposure Routes				0.000248		Total Hazard Index Across All Media and All Exposure Routes				7.37

Total CNS HI =	2.13
Total GI system HI =	0.0264
Total whole body HI =	0.0275
Total liver HI =	0.0466
Total blood HI =	0.00990
Total reproductive system HI =	0.00263
Total kidney HI =	0.000401

TABLE 6-39.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	Area T24A	Aluminum	--	--	--	--	Aluminum	CNS	0.349	--	0.00220	0.351
			Antimony	--	--	--	--	Antimony	blood/circulatory system	0.930	--	0.0293	0.959
			(Total)	--	--	--	--	(Total)	--	1.28	--	0.0315	1.31
Groundwater	Groundwater	Area T24A	Aluminum	--	--	--	--	Aluminum	CNS	0.268	--	0.00391	0.272
			Beryllium	--	--	--	--	Beryllium	GI system	0.0521	--	0.00761	0.0597
			Manganese	--	--	--	--	Manganese	CNS	4.50	--	0.164	4.67
			Selenium	--	--	--	--	Selenium	whole body	0.0639	--	0.000212	0.0641
			Benzene	0.000164	--	5.963E-06	0.000170	Benzene	--	4.26	--	0.135	4.40
			Benzo(b)fluoranthene	9.439E-07	--	6.128E-06	7.072E-06	Benzo(b)fluoranthene	--	0.000185	--	0.00104	0.00123
			Hexachlorobenzene	3.177E-06	--	2.238E-06	5.415E-06	Hexachlorobenzene	liver	0.0106	--	0.00652	0.0171
			Nitrate,Nitrite	--	--	--	--	Nitrate,Nitrite	blood	0.0230	--	6.720E-05	0.0231
			Pentachlorophenol	3.584E-06	--	3.906E-06	7.490E-06	Pentachlorophenol	liver	0.00426	--	0.00404	0.00831
			Phenol	--	--	--	--	Phenol	reproductive system	0.00607	--	5.419E-05	0.00613
			alpha-BHC	3.989E-07	--	9.677E-09	4.085E-07	alpha-BHC	--	--	--	--	--
			bis(2-Ethylhexyl)phthalate	3.972E-06	--	1.157E-06	5.129E-06	bis(2-Ethylhexyl)phthalate	liver	0.0607	--	0.0154	0.0761
			Lindane	8.386E-08	--	1.352E-09	8.521E-08	Lindane	liver, kidney	0.000921	--	1.292E-05	0.000933
			(Total)	0.000176	--	1.940E-05	0.000196	(Total)	--	9.25	--	0.338	9.59

Total Risk Across Subsurface Soil	--
Total Risk Across Groundwater	0.000196
Total Risk Across All Media and All Exposure Routes	0.000196

Total Hazard Index Across Subsurface Soil	1.31
Total Hazard Index Across Groundwater	9.59
Total Hazard Index Across All Media and All Exposure Routes	11

Total CNS HI =	5.29
Total blood/circulatory system HI =	0.959
Total GI system HI =	0.0597
Total whole body HI =	0.0641
Total liver HI =	0.103
Total blood HI =	0.0231
Total reproductive system HI =	0.00613
Total kidney HI =	0.000933

TABLE 6-40.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	Area T24A	Aluminum	--	--	--	--	Aluminum	CNS	0.0534	--	0.00140	0.0548
			Antimony	--	--	--	--	Antimony	blood/circulatory system	0.142	--	0.0187	0.161
			(Total)	--	--	--	--	(Total)	--	0.196	--	0.0201	0.216
	Air	Area T24A	Aluminum	--	--	--	--	Aluminum	--	--	0.763	--	0.763
			Antimony	--	--	--	--	Antimony	--	--	--	--	--
			(Total)	--	--	--	--	(Total)	--	--	0.763	--	0.763
			Total Risk Across Subsurface Soil				--		Total Hazard Index Across Subsurface Soil				0.979
			Total Risk Across All Media and All Exposure Routes				0.000E+00		Total Hazard Index Across All Media and All Exposure Routes				0.979

Total CNS HI = 0.0548
Total blood/circulatory system HI = 0.161

Table 6-41. RME Risk Characterization Summary (Current Land Use)
Area T38, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI Industrial Worker		Cancer Risk Industrial Worker	
Surface Soil (0 to <1 ft BLS)	Ingestion	2E-02	B	NA	
	Dermal Contact	2E-02	B	NA	
	Venison	NA		NA	
	Inhalation	3E-02	B	2E-06	B
	Subtotal	**7E-02**	B	**2E-06**	B
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA		NA	
	Dermal Contact	NA		NA	
	Venison	NA		NA	
	Inhalation	NA		NA	
	Subtotal	**NA**		**NA**	
Sediment	Ingestion	NA		NA	
	Dermal Contact	NA		NA	
	Subtotal	**NA**		**NA**	
Surface Water	Ingestion	NA		NA	
	Dermal Contact	NA		NA	
	Subtotal	**NA**		**NA**	
Groundwater	Ingestion	NA		NA	
	Dermal Contact	NA		NA	
	Inhalation	NA		NA	
	Subtotal	**NA**		**NA**	
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison					
Combined Hazard Index:		7E-02	B		
Combined Cancer Risk:				2E-06	B
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison					
Combined Hazard Index:		NA			
Combined Cancer Risk:				NA	

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

Table 6-42. RME Risk Characterization Summary (Current/Future Land Use)
Area T38, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI		Cancer Risk	
		Recreational Adolescent	Hunter Adolescent	Recreational Adolescent	Hunter Adolescent
Surface Soil (0 to <1 ft BLS)	Ingestion	2E-02 B	NA	NA	NA
	Dermal Contact	3E-03 B	NA	NA	NA
	Venison	NA	2E-05 B	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**2E-02 B**	**2E-05 B**	**NA**	**NA**
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Venison	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Sediment	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Groundwater	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison					
Combined Hazard Index:		2E-02 B	2E-05 B		
Combined Cancer Risk:				NA	NA
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison					
Combined Hazard Index:		NA	NA		
Combined Cancer Risk:				NA	NA

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

Table 6-43. RME Risk Characterization Summary (Future Land Use)
Area T38, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI				Cancer Risk			
		Residential		Industrial	Construction	Residential		Industrial	Construction
		Adult	Child	Worker	Worker	Adult	Child	Worker	Worker
Surface Soil (0 to <1 ft BLS)	Ingestion	NA	1E+00 B	1E-01 B	2E-01 B	NA	NA	NA	NA
	Dermal Contact	NA	7E-02 B	5E-03 B	5E-02 B	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	6E-01 B	1E+00 B	NA	NA	4E-05 B	3E-06 B
	Subtotal	**NA**	**1E+00** B	**8E-01** B	**2E+00** E	**NA**	**NA**	**4E-05** B	**3E-06** B
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA	1E+00 B	1E-01 B	2E-01 B	NA	NA	NA	NA
	Dermal Contact	NA	3E-02 B	2E-03 B	2E-02 B	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	1E+00	2E+00	NA	NA	2E-05 B	1E-06 B
	Subtotal	**NA**	**1E+00** B	**1E+00** B	**2E+00** E	**NA**	**NA**	**2E-05** B	**1E-06** B
Sediment	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Groundwater	Ingestion	8E+00 E	2E+01 E	3E+00 E	NA	6E-03 E	6E-03 E	1E-03 E	NA
	Dermal Contact	6E-01 B	1E+00 B	5E-01 B	NA	2E-04 E	2E-04 E	1E-04 B	NA
	Inhalation	5E+00 E	NA	NA	NA	4E-03 E	NA	NA	NA
	Subtotal	**1E+01** E	**2E+01** E	**3E+00** E	**NA**	**1E-02** E	**6E-03** E	**2E-03** E	**NA**
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		1E+01 E	2E+01 E	4E+00 E	2E+00 E				
Combined Cancer Risk:						1E-02 E	6E-03 E	2E-03 E	3E-06 B
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		1E+01 E	2E+01 E	5E+00 E	2E+00 E				
Combined Cancer Risk:						1E-02 E	6E-03 E	2E-03 E	1E-06 B

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

TABLE 6-44.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.00727	--	0.000879	0.00815
			Chromium	--	--	--	--	Chromium	none	0.00939	--	0.00568	0.0151
			Vanadium	--	--	--	--	Vanadium	none	0.00388	--	0.00469	0.00857
			(Total)	--	--	--	--	(Total)	--	0.0205	--	0.0112	0.0318
	Air	Area T38	Aluminum	--	--	--	--	Aluminum	--	--	0.0260	--	0.0260
			Chromium	--	2.063E-06	--	2.063E-06	Chromium	respiratory system	--	0.00493	--	0.00493
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	2.063E-06	--	2.063E-06	(Total)	--	--	0.0309	--	0.0309
			Total Risk Across Surface Soil				2.063E-06		Total Hazard Index Across Surface Soil				0.0627
			Total Risk Across All Media and All Exposure Routes				2.063E-06		Total Hazard Index Across All Media and All Exposure Routes				0.0627

Total CNS HI = 0.00815
Total respiratory system HI = 0.00493

TABLE 6-45.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.00613	--	0.000129	0.00625
			Chromium	--	--	--	--	Chromium	none	0.00791	--	0.000831	0.00875
			Vanadium	--	--	--	--	Vanadium	none	0.00327	--	0.000687	0.00396
			(Total)	--	--	--	--	(Total)	--	0.0173	--	0.00165	0.0190
						Total Risk Across Surface Soil	--					Total Hazard Index Across Surface Soil	0.0190
						Total Risk Across All Media and All Exposure Routes	0.000E+00					Total Hazard Index Across All Media and All Exposure Routes	0.0190

Total CNS HI = 0.00625

TABLE 6-46.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Receptor Population: Hunter
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Tissue	Area T38	Chromium	--	--	--	--	Chromium	none	1.877E-05	--	--	1.877E-05
			(Total)	--	--	--	--	(Total)	--	1.877E-05	--	--	1.877E-05
						Total Risk Across Surface Soil	--					Total Hazard Index Across Surface Soil	1.877E-05
						Total Risk Across All Media and All Exposure Routes	0.000E+00					Total Hazard Index Across All Media and All Exposure Routes	1.877E-05

TABLE 6-47.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.0379	--	0.000199	0.0381
			Chromium	--	--	--	--	Chromium	none	0.0489	--	0.00128	0.0502
			Vanadium	--	--	--	--	Vanadium	none	0.0202	--	0.00106	0.0213
			(Total)	--	--	--	--	(Total)	--	0.107	--	0.00254	0.110
	Air	Area T38	Aluminum	--	--	--	--	Aluminum	--	--	0.541	--	0.541
			Chromium	--	4.298E-05	--	4.298E-05	Chromium	respiratory system	--	0.103	--	0.103
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	4.298E-05	--	4.298E-05	(Total)	--	--	0.644	--	0.644
Subsurface Soil	Soil	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.0724	--	0.000380	0.0728
			Chromium	--	--	--	--	Chromium	none	0.0175	--	0.000459	0.0179
			Vanadium	--	--	--	--	Vanadium	none	0.00926	--	0.000486	0.00975
			(Total)	--	--	--	--	(Total)	--	0.0992	--	0.00133	0.100
	Air	Area T38	Aluminum	--	--	--	--	Aluminum	--	--	1.03	--	1.03
			Chromium	--	1.536E-05	--	1.536E-05	Chromium	respiratory system	--	0.0367	--	0.0367
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	1.536E-05	--	1.536E-05	(Total)	--	--	1.07	--	1.07
Groundwater	Groundwater	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.0256	--	0.00105	0.0267
			Barium	--	--	--	--	Barium	kidney	0.0260	--	0.00152	0.0276
			Beryllium	--	--	--	--	Beryllium	GI system	0.0121	--	0.00497	0.0171
			Manganese	--	--	--	--	Manganese	CNS	1.29	--	0.132	1.42
			Mercury	--	--	--	--	Mercury	kidney	0.00868	--	0.00356	0.0122
			Nickel	--	--	--	--	Nickel	whole body	0.0227	--	3.440E-05	0.0227
			Zinc	--	--	--	--	Zinc	blood	0.0105	--	0.000215	0.0107
			1,1,2,2-Tetrachloroethane	0.00140	--	7.369E-05	0.00147	1,1,2,2-Tetrachloroethane	--	0.326	--	0.0172	0.343
			1,1,2-Trichloroethane	4.183E-07	--	1.779E-08	4.361E-07	1,1,2-Trichloroethane	blood	0.00514	--	0.000218	0.00536
			1,2-Dichloroethene (total)	--	--	--	--	1,2-Dichloroethene (total)	liver	0.101	--	0.00415	0.105
			1,3,5-Trinitrobenzene	--	--	--	--	1,3,5-Trinitrobenzene	spleen	5.975E-05	--	2.174E-07	5.997E-05
			Acetone	--	--	--	--	Acetone	liver, kidney	0.00309	--	8.685E-06	0.00310
			Benzo(b)fluoranthene	6.301E-07	--	1.000E-05	1.063E-05	Benzo(b)fluoranthene	--	8.056E-05	--	0.00128	0.00136
			Carbon tetrachloride	2.408E-05	--	3.341E-06	2.742E-05	Carbon tetrachloride	liver	0.741	--	0.103	0.844
			Chloroform	1.961E-07	--	3.578E-08	2.319E-07	Chloroform	liver	0.00900	--	0.00164	0.0106
			Chrysene	1.298E-09	--	1.391E-08	1.521E-08	Chrysene	--	1.660E-05	--	0.000178	0.000194
			Indeno(1,2,3-cd)pyrene	2.066E-07	--	5.192E-06	5.399E-06	Indeno(1,2,3-cd)pyrene	--	2.642E-05	--	0.000664	0.000690
			Nitroglycerine	1.204E-07	--	2.229E-10	1.207E-07	Nitroglycerine	--	--	--	--	--
			Tetrachloroethene	2.362E-06	--	4.649E-07	2.827E-06	Tetrachloroethene	liver	0.0127	--	0.00250	0.0152
			Trichloroethene	9.134E-06	--	3.994E-06	1.313E-05	Trichloroethene	--	0.387	--	0.169	0.557
			bis(2-Ethylhexyl)phthalate	8.523E-07	--	6.069E-07	1.459E-06	bis(2-Ethylhexyl)phthalate	liver	0.00852	--	0.00607	0.0146
			(Total)	0.00144	--	9.735E-05	0.00153	(Total)	--	2.99	--	0.450	3.44

Total Risk Across Surface Soil	4.298E-05
Total Risk Across Subsurface Soil	1.536E-05
Total Risk Across Groundwater	0.00153

Total Hazard Index Across Surface Soil	0.753
Total Hazard Index Across Subsurface Soil	1.17
Total Hazard Index Across Groundwater	3.44

TABLE 6-47.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
						Total Risk Across All Media and All Exposure Routes	0.00159					Total Hazard Index Across All Media and All Exposure Routes	5.36

Total CNS HI =	1.56
Total respiratory system HI =	0.139
Total kidney HI =	0.0429
Total GI system HI =	0.0171
Total whole body HI =	0.0227
Total blood HI =	0.0160
Total liver HI =	0.992
Total spleen HI =	5.997E-05

TABLE 6-48.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.0718	--	0.00130	0.0731
			Barium	--	--	--	--	Barium	kidney	0.0729	--	0.00189	0.0748
			Beryllium	--	--	--	--	Beryllium	GI system	0.0339	--	0.00616	0.0401
			Manganese	--	--	--	--	Manganese	CNS	3.61	--	0.164	3.77
			Mercury	--	--	--	--	Mercury	kidney	0.0243	--	0.00441	0.0287
			Nickel	--	--	--	--	Nickel	whole body	0.0634	--	4.264E-05	0.0635
			Zinc	--	--	--	--	Zinc	blood	0.0293	--	0.000266	0.0296
			1,1,2,2-Tetrachloroethane	0.00597	--	0.000129	0.00610	1,1,2,2-Tetrachloroethane	--	0.913	--	0.0213	0.935
			1,1,2-Trichloroethane	1.787E-06	--	3.108E-08	1.818E-06	1,1,2-Trichloroethane	blood	0.0144	--	0.000271	0.0147
			1,2-Dichloroethene (total)	--	--	--	--	1,2-Dichloroethene (total)	liver	0.283	--	0.00514	0.288
			1,3,5-Trinitrobenzene	--	--	--	--	1,3,5-Trinitrobenzene	spleen	0.000167	--	2.695E-07	0.000168
			Acetone	--	--	--	--	Acetone	liver, kidney	0.00865	--	1.077E-05	0.00866
			Benzo(b)fluoranthene	2.692E-06	--	1.748E-05	2.017E-05	Benzo(b)fluoranthene	--	0.000226	--	0.00158	0.00181
			Carbon tetrachloride	0.000103	--	5.840E-06	0.000109	Carbon tetrachloride	liver	2.07	--	0.127	2.20
			Chloroform	8.380E-07	--	6.254E-08	9.005E-07	Chloroform	liver	0.0252	--	0.00204	0.0272
			Chrysene	5.548E-09	--	2.431E-08	2.986E-08	Chrysene	--	4.648E-05	--	0.000220	0.000267
			Indeno(1,2,3-cd)pyrene	8.829E-07	--	9.075E-06	9.958E-06	Indeno(1,2,3-cd)pyrene	--	7.397E-05	--	0.000823	0.000897
			Nitroglycerine	5.146E-07	--	3.895E-10	5.150E-07	Nitroglycerine	--	--	--	--	--
			Tetrachloroethene	1.009E-05	--	8.125E-07	1.091E-05	Tetrachloroethene	liver	0.0356	--	0.00310	0.0387
			Trichloroethene	3.903E-05	--	6.981E-06	4.601E-05	Trichloroethene	--	1.08	--	0.210	1.30
			bis(2-Ethylhexyl)phthalate	3.642E-06	--	1.061E-06	4.702E-06	bis(2-Ethylhexyl)phthalate	liver	0.0239	--	0.00752	0.0314
			(Total)	0.00613	--	0.000170	0.00631	(Total)	--	8.37	--	0.557	8.92
	Air	Area T38	1,1,2,2-Tetrachloroethane	--	0.00389	--	0.00389	1,1,2,2-Tetrachloroethane	--	--	--	--	--
			1,1,2-Trichloroethane	--	1.148E-06	--	1.148E-06	1,1,2-Trichloroethane	--	--	--	--	--
			1,2-Dichloroethene (total)	--	--	--	--	1,2-Dichloroethene (total)	--	--	--	--	--
			Acetone	--	--	--	--	Acetone	--	--	--	--	--
			Carbon tetrachloride	--	2.668E-05	--	2.668E-05	Carbon tetrachloride	--	--	2.55	--	2.55
			Chloroform	--	7.102E-06	--	7.102E-06	Chloroform	--	--	2.93	--	2.93
			Tetrachloroethene	--	2.493E-07	--	2.493E-07	Tetrachloroethene	--	--	0.00324	--	0.00324
			Trichloroethene	--	1.367E-05	--	1.367E-05	Trichloroethene	--	--	--	--	--
			(Total)	--	0.00394	--	0.00394	(Total)	--	--	5.48	--	5.48

Total Risk Across Groundwater: 0.0102
Total Risk Across All Media and All Exposure Routes: 0.0102

Total Hazard Index Across Groundwater: 14
Total Hazard Index Across All Media and All Exposure Routes: 14

Total CNS HI = 3.84
Total kidney HI = 0.112
Total GI system HI = 0.0401
Total whole body HI = 0.0635
Total blood HI = 0.0442

TABLE 6-48.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
												Total liver HI =	2.60
												Total spleen HI =	0.000168

TABLE 6-49.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.495	--	0.00312	0.498
			Chromium	--	--	--	--	Chromium	none	0.639	--	0.0201	0.659
			Vanadium	--	--	--	--	Vanadium	none	0.264	--	0.0166	0.281
			(Total)	--	--	--	--	(Total)	--	1.40	--	0.0399	1.44
Subsurface Soil		Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.946	--	0.00596	0.952
			Chromium	--	--	--	--	Chromium	none	0.228	--	0.00720	0.236
			Vanadium	--	--	--	--	Vanadium	none	0.121	--	0.00763	0.129
			(Total)	--	--	--	--	(Total)	--	1.30	--	0.0208	1.32
Groundwater	Groundwater	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.167	--	0.00245	0.170
			Barium	--	--	--	--	Barium	kidney	0.170	--	0.00355	0.174
			Beryllium	--	--	--	--	Beryllium	GI system	0.0792	--	0.0116	0.0907
			Manganese	--	--	--	--	Manganese	CNS	8.42	--	0.307	8.72
			Mercury	--	--	--	--	Mercury	kidney	0.0567	--	0.00828	0.0650
			Nickel	--	--	--	--	Nickel	whole body	0.148	--	8.002E-05	0.148
			Zinc	--	--	--	--	Zinc	blood	0.0684	--	0.000499	0.0689
			1,1,2,2-Tetrachloroethane	0.00597	--	0.000129	0.00610	1,1,2,2-Tetrachloroethane	--	2.13	--	0.0400	2.17
			1,1,2-Trichloroethane	1.787E-06	--	3.108E-08	1.818E-06	1,1,2-Trichloroethane	blood	0.0336	--	0.000508	0.0341
			1,2-Dichloroethene (total)	--	--	--	--	1,2-Dichloroethene (total)	liver	0.661	--	0.00964	0.670
			1,3,5-Trinitrobenzene	--	--	--	--	1,3,5-Trinitrobenzene	spleen	0.000390	--	5.058E-07	0.000391
			Acetone	--	--	--	--	Acetone	liver, kidney	0.0202	--	2.021E-05	0.0202
			Benzo(b)fluoranthene	2.692E-06	--	1.748E-05	2.017E-05	Benzo(b)fluoranthene	--	0.000526	--	0.00297	0.00350
			Carbon tetrachloride	0.000103	--	5.840E-06	0.000109	Carbon tetrachloride	liver	4.84	--	0.239	5.08
			Chloroform	8.380E-07	--	6.254E-08	9.005E-07	Chloroform	liver	0.0588	--	0.00382	0.0626
			Chrysene	5.548E-09	--	2.431E-08	2.986E-08	Chrysene	--	0.000108	--	0.000414	0.000522
			Indeno(1,2,3-cd)pyrene	8.829E-07	--	9.075E-06	9.958E-06	Indeno(1,2,3-cd)pyrene	--	0.000173	--	0.00154	0.00172
			Nitroglycerine	5.146E-07	--	3.895E-10	5.150E-07	Nitroglycerine	--	--	--	--	--
			Tetrachloroethene	1.009E-05	--	8.125E-07	1.091E-05	Tetrachloroethene	liver	0.0831	--	0.00582	0.0889
			Trichloroethene	3.903E-05	--	6.981E-06	4.601E-05	Trichloroethene	--	2.53	--	0.394	2.93
			bis(2-Ethylhexyl)phthalate	3.642E-06	--	1.061E-06	4.702E-06	bis(2-Ethylhexyl)phthalate	liver	0.0557	--	0.0141	0.0698
			(Total)	0.00613	--	0.000170	0.00631	(Total)	--	20	--	1.05	21

Total Risk Across Surface Soil	--
Total Risk Across Subsurface Soil	--
Total Risk Across Groundwater	0.00631
Total Risk Across All Media and All Exposure Routes	0.00631

Total Hazard Index Across Surface Soil	1.44
Total Hazard Index Across Subsurface Soil	1.32
Total Hazard Index Across Groundwater	21
Total Hazard Index Across All Media and All Exposure Routes	23

Total CNS HI =	10
Total kidney HI =	0.259
Total GI system HI =	0.0907
Total whole body HI =	0.148

TABLE 6-49.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
												Total blood HI =	0.103
												Total liver HI =	5.99
												Total spleen HI =	0.000391

TABLE 6-50.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.0757	--	0.00199	0.0777
			Chromium	--	--	--	--	Chromium	none	0.0147	--	0.00193	0.0166
			Vanadium	--	--	--	--	Vanadium	none	0.0520	--	0.0136	0.0656
			(Total)	--	--	--	--	(Total)	--	0.142	--	0.0176	0.160
	Air	Area T38	Aluminum	--	--	--	--	Aluminum	--	--	1.08	--	1.08
			Chromium	--	3.439E-06	--	3.439E-06	Chromium	respiratory system	--	0.205	--	0.205
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	3.439E-06	--	3.439E-06	(Total)	--	--	1.29	--	1.29
Subsurface Soil	Soil	Area T38	Aluminum	--	--	--	--	Aluminum	CNS	0.145	--	0.00380	0.149
			Chromium	--	--	--	--	Chromium	none	0.00524	--	0.000688	0.00593
			Vanadium	--	--	--	--	Vanadium	none	0.0238	--	0.00625	0.0301
			(Total)	--	--	--	--	(Total)	--	0.174	--	0.0107	0.185
	Air	Area T38	Aluminum	--	--	--	--	Aluminum	--	--	2.07	--	2.07
			Chromium	--	1.229E-06	--	1.229E-06	Chromium	respiratory system	--	0.0734	--	0.0734
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	1.229E-06	--	1.229E-06	(Total)	--	--	2.14	--	2.14

Total Risk Across Surface Soil	3.439E-06
Total Risk Across Subsurface Soil	1.229E-06
Total Risk Across All Media and All Exposure Routes	4.667E-06

Total Hazard Index Across Surface Soil	1.45
Total Hazard Index Across Subsurface Soil	2.33
Total Hazard Index Across All Media and All Exposure Routes	3.77

Total CNS HI =	0.226
Total respiratory system HI =	0.279

Table 6-51. RME Risk Characterization Summary (Future Land Use)
Range J, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI				Cancer Risk			
		Residential		Industrial	Construction	Residential		Industrial	Construction
		Adult	Child	Worker	Worker	Adult	Child	Worker	Worker
Surface Soil	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
(0 to <1 ft BLS)	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Subsurface Soil	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
(1 to 12 ft BLS)	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Sediment	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Groundwater	Ingestion	8E+01 E	2E+02 E	3E+01 E	NA	4E-03 E	4E-03 E	9E-04 E	NA
	Dermal Contact	5E+00 E	9E+00 E	4E+00 E	NA	2E-04 E	2E-04 E	1E-04 B	NA
	Inhalation	1E+02 E	NA	NA	NA	1E-03 E	NA	NA	NA
	Subtotal	**2E+02 E**	**2E+02 E**	**3E+01 E**	**NA**	**5E-03 E**	**4E-03 E**	**1E-03 E**	**NA**
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		2E+02 E	2E+02 E	3E+01 E	NA				
Combined Cancer Risk:						5E-03 E	4E-03 E	1E-03 E	NA
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		2E+02 E	2E+02 E	3E+01 E	NA				
Combined Cancer Risk:						5E-03 E	4E-03 E	1E-03 E	NA

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

TABLE 6-52.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Range J	1,1,2,2-Tetrachloroethane	3.075E-06	- -	1.621E-07	3.237E-06	1,1,2,2-Tetrachloroethane	- -	0.000718	- -	3.782E-05	0.000755
			Acetone	- -	- -	- -	- -	Acetone	liver, kidney	0.00264	- -	7.429E-06	0.00265
			Carbon tetrachloride	0.000909	- -	0.000126	0.00103	Carbon tetrachloride	liver	28	- -	3.88	32
			Chloroform	6.608E-07	- -	1.206E-07	7.814E-07	Chloroform	liver	0.0303	- -	0.00553	0.0359
			Tetrachloroethene	7.087E-07	- -	1.395E-07	8.482E-07	Tetrachloroethene	liver	0.00382	- -	0.000751	0.00457
			Trichloroethene	1.922E-07	- -	8.406E-08	2.763E-07	Trichloroethene	- -	0.00815	- -	0.00357	0.0117
			(Total)	0.000913	- -	0.000127	0.00104	(Total)	- -	28	- -	3.89	32
			Total Risk Across Groundwater				0.00104		Total Hazard Index Across Groundwater				32
			Total Risk Across All Media and All Exposure Routes				0.00104		Total Hazard Index Across All Media and All Exposure Routes				32

Total liver HI = 32
Total kidney HI = 0.00265

TABLE 6-53.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Range J	1,1,2,2-Tetrachloroethane	1.314E-05	--	2.833E-07	1.342E-05	1,1,2,2-Tetrachloroethane	--	0.00201	--	4.688E-05	0.00206
			Acetone	--	--	--	--	Acetone	liver, kidney	0.00740	--	9.208E-06	0.00741
			Carbon tetrachloride	0.00388	--	0.000220	0.00410	Carbon tetrachloride	liver	78	--	4.81	83
			Chloroform	2.824E-06	--	2.107E-07	3.034E-06	Chloroform	liver	0.0849	--	0.00686	0.0918
			Tetrachloroethene	3.028E-06	--	2.438E-07	3.272E-06	Tetrachloroethene	liver	0.0107	--	0.000931	0.0116
			Trichloroethene	8.212E-07	--	1.469E-07	9.681E-07	Trichloroethene	--	0.0228	--	0.00442	0.0273
			(Total)	0.00390	--	0.000221	0.00412	(Total)	--	78	--	4.82	83
	Air	Range J	1,1,2,2-Tetrachloroethane	--	8.565E-06	--	8.565E-06	1,1,2,2-Tetrachloroethane	--	--	--	--	--
			Acetone	--	--	--	--	Acetone	--	--	--	--	--
			Carbon tetrachloride	--	0.00101	--	0.00101	Carbon tetrachloride	--	--	96	--	96
			Chloroform	--	2.393E-05	--	2.393E-05	Chloroform	--	--	9.88	--	9.88
			Tetrachloroethene	--	7.479E-08	--	7.479E-08	Tetrachloroethene	--	--	0.000971	--	0.000971
			Trichloroethene	--	2.877E-07	--	2.877E-07	Trichloroethene	--	--	--	--	--
			(Total)	--	0.00104	--	0.00104	(Total)	--	--	106	--	106
			Total Risk Across Groundwater				0.00516		Total Hazard Index Across Groundwater				189
			Total Risk Across All Media and All Exposure Routes				0.00516		Total Hazard Index Across All Media and All Exposure Routes				189

Total liver HI = 83
Total kidney HI = 0.00741

TABLE 6-54.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Range J	1,1,2,2-Tetrachloroethane	1.314E-05	--	2.833E-07	1.342E-05
			Acetone	--	--	--	--
			Carbon tetrachloride	0.00388	--	0.000220	0.00410
			Chloroform	2.824E-06	--	2.107E-07	3.034E-06
			Tetrachloroethene	3.028E-06	--	2.438E-07	3.272E-06
			Trichloroethene	8.212E-07	--	1.469E-07	9.681E-07
			(Total)	0.00390	--	0.000221	0.00412
						Total Risk Across Groundwater	0.00412
						Total Risk Across All Media and All Exposure Routes	0.00412

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
1,1,2,2-Tetrachloroethane	--	0.00469	--	8.800E-05	0.00478
Acetone	liver, kidney	0.0173	--	1.728E-05	0.0173
Carbon tetrachloride	liver	183	--	9.03	192
Chloroform	liver	0.198	--	0.0129	0.211
Tetrachloroethene	liver	0.0249	--	0.00175	0.0267
Trichloroethene	--	0.0533	--	0.00830	0.0616
(Total)	--	183	--	9.05	192
				Total Hazard Index Across Groundwater	192
				Total Hazard Index Across All Media and All Exposure Routes	192

Total liver HI = 192
Total kidney HI = 0.0173

Table 6-55. RME Risk Characterization Summary (Future Land Use)
DI Area, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI				Cancer Risk			
		Residential		Industrial	Construction	Residential		Industrial	Construction
		Adult	Child	Worker	Worker	Adult	Child	Worker	Worker
Surface Soil (0 to <1 ft BLS)	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA	7E-01 B	5E-02 B	1E-01 B	NA	NA	NA	NA
	Dermal Contact	NA	3E-02 B	2E-03 B	2E-02 B	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	6E-01	1E+00	NA	NA	1E-05 B	1E-06 B
	Subtotal	**NA**	**7E-01 B**	**6E-01 B**	**1E+00 B**	**NA**	**NA**	**1E-05 B**	**1E-06 B**
Sediment	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Groundwater	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		NA	NA	NA	NA				
Combined Cancer Risk:						NA	NA	NA	NA
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		NA	7E-01 B	6E-01 B	1E+00 B				
Combined Cancer Risk:						NA	NA	1E-05 B	1E-06 B

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

TABLE 6-56.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	DI Area	Aluminum	--	--	--	--	Aluminum	CNS	0.0372	--	0.000195	0.0374
			Chromium	--	--	--	--	Chromium	none	0.0138	--	0.000363	0.0142
			(Total)	--	--	--	--	(Total)	--	0.0510	--	0.000558	0.0516
	Air	DI Area	Aluminum	--	--	--	--	Aluminum	--	--	0.531	--	0.531
			Chromium	--	1.215E-05	--	1.215E-05	Chromium	respiratory system	--	0.0290	--	0.0290
			(Total)	--	1.215E-05	--	1.215E-05	(Total)	--	--	0.560	--	0.560
						Total Risk Across Subsurface Soil	1.215E-05					Total Hazard Index Across Subsurface Soil	0.612
						Total Risk Across All Media and All Exposure Routes	1.215E-05					Total Hazard Index Across All Media and All Exposure Routes	0.612

Total CNS HI = 0.0374
Total respiratory system HI = 0.0290

TABLE 6-57.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	DI Area	Aluminum	--	--	--	--	Aluminum	CNS	0.486	--	0.00306	0.489
			Chromium	--	--	--	--	Chromium	none	0.181	--	0.00569	0.186
			(Total)	--	--	--	--	(Total)	--	0.667	--	0.00875	0.675
							Total Risk Across Subsurface Soil: --						Total Hazard Index Across Subsurface Soil: 0.675
							Total Risk Across All Media and All Exposure Routes: 0.000E+00						Total Hazard Index Across All Media and All Exposure Routes: 0.675

Total CNS HI = 0.489

TABLE 6-58.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	DI Area	Aluminum	--	--	--	--
			Chromium	--	--	--	--
			(Total)	--	--	--	--
	Air	DI Area	Aluminum	--	--	--	--
			Chromium	--	9.720E-07	--	9.720E-07
			(Total)	--	9.720E-07	--	9.720E-07
			Total Risk Across Subsurface Soil				9.720E-07
			Total Risk Across All Media and All Exposure Routes				9.720E-07

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Aluminum	CNS	0.0744	--	0.00195	0.0763
Chromium	none	0.00415	--	0.000545	0.00469
(Total)	--	0.0785	--	0.00250	0.0810
Aluminum	--	--	1.06	--	1.06
Chromium	respiratory system	--	0.0581	--	0.0581
(Total)	--	--	1.12	--	1.12
Total Hazard Index Across Subsurface Soil					1.20
Total Hazard Index Across All Media and All Exposure Routes					1.20

Total CNS HI = 0.0763
Total respiratory system HI = 0.0581

Table 6-59. RME Risk Characterization Summary (Current Land Use)
Range L, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI Industrial Worker		Cancer Risk Industrial Worker	
Surface Soil (0 to <1 ft BLS)	Ingestion	6E-02	B	NA	
	Dermal Contact	2E-02	B	NA	
	Venison	NA		NA	
	Inhalation	4E-01	B	1E-06	B
	Subtotal	**5E-01**	B	**1E-06**	B
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA		NA	
	Dermal Contact	NA		NA	
	Venison	NA		NA	
	Inhalation	NA		NA	
	Subtotal	**NA**		**NA**	
Sediment	Ingestion	NA		NA	
	Dermal Contact	NA		NA	
	Subtotal	**NA**		**NA**	
Surface Water	Ingestion	NA		NA	
	Dermal Contact	NA		NA	
	Subtotal	**NA**		**NA**	
Groundwater	Ingestion	NA		NA	
	Dermal Contact	NA		NA	
	Inhalation	NA		NA	
	Subtotal	**NA**		**NA**	
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison					
Combined Hazard Index:		5E-01	B		
Combined Cancer Risk:				1E-06	B
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison					
Combined Hazard Index:		NA			
Combined Cancer Risk:				NA	

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

Table 6-60. RME Risk Characterization Summary (Current/Future Land Use)
Range L, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI: Recreational Adolescent	Noncancer HI: Hunter Adolescent	Cancer Risk: Recreational Adolescent	Cancer Risk: Hunter Adolescent
Surface Soil (0 to <1 ft BLS)	Ingestion	5E-02 B	NA	NA	NA
	Dermal Contact	3E-03 B	NA	NA	NA
	Venison	NA	1E-02 B	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**5E-02 B**	**1E-02 B**	**NA**	**NA**
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Venison	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Sediment	Ingestion	2E-03 B	NA	NA	NA
	Dermal Contact	2E-03 B	NA	NA	NA
	Subtotal	**4E-03 B**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA
	Dermal Contact	5E-02 B	NA	2E-07 B	NA
	Subtotal	**5E-02 B**	**NA**	**2E-07 B**	**NA**
Groundwater	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison					
Combined Hazard Index:		1E-01 B	1E-02 B		
Combined Cancer Risk:				2E-07 B	NA
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison					
Combined Hazard Index:		6E-02 B	NA		
Combined Cancer Risk:				2E-07 B	NA

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

Table 6-61. RME Risk Characterization Summary (Future Land Use)
Range L, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI				Cancer Risk			
		Residential		Industrial	Construction	Residential		Industrial	Construction
		Adult	Child	Worker	Worker	Adult	Child	Worker	Worker
Surface Soil (0 to <1 ft BLS)	Ingestion	NA	4E+00 E	3E-01 B	6E-01 B	NA	NA	NA	NA
	Dermal Contact	NA	8E-02 B	5E-03 B	5E-02 B	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	8E+00 E	2E+01 E	NA	NA	2E-05 B	2E-06 B
	Subtotal	**NA**	**4E+00** E	**9E+00** E	**2E+01** E	**NA**	**NA**	**2E-05** B	**2E-06** B
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA	1E+00 B	9E-02 B	2E-01 B	NA	NA	NA	NA
	Dermal Contact	NA	4E-02 B	2E-03 B	2E-02 B	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	8E-01	2E+00	NA	NA	3E-05 B	2E-06 B
	Subtotal	**NA**	**1E+00** B	**9E-01** B	**2E+00** E	**NA**	**NA**	**3E-05** B	**2E-06** B
Sediment	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Groundwater	Ingestion	7E+00 E	2E+01 E	2E+00 E	NA	2E-04 E	2E-04 E	4E-05 B	NA
	Dermal Contact	4E-01 B	7E-01 B	3E-01 B	NA	2E-04 E	2E-04 E	1E-04 B	NA
	Inhalation	NA	NA	NA	NA	6E-08 B	NA	NA	NA
	Subtotal	**7E+00** E	**2E+01** E	**3E+00** E	**NA**	**4E-04** E	**4E-04** E	**2E-04** E	**NA**
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		7E+00 E	2E+01 E	1E+01 E	2E+01 E				
Combined Cancer Risk:						4E-04 E	4E-04 E	2E-04 E	2E-06 B
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		7E+00 E	2E+01 E	4E+00 E	2E+00 E				
Combined Cancer Risk:						4E-04 E	4E-04 E	2E-04 E	2E-06 B

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

TABLE 6-62.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Range L	Aluminum	--	--	--	--	Aluminum	CNS	0.00791	--	0.000956	0.00886
			Chromium	--	--	--	--	Chromium	none	0.00460	--	0.00278	0.00737
			Manganese	--	--	--	--	Manganese	CNS	0.0438	--	0.0132	0.0571
			Nickel	--	--	--	--	Nickel	whole body	0.00156	--	6.978E-05	0.00163
			Vanadium	--	--	--	--	Vanadium	none	0.00158	--	0.00191	0.00349
			(Total)	--	--	--	--	(Total)	--	0.0595	--	0.0190	0.0784
	Air	Range L	Aluminum	--	--	--	--	Aluminum	--	--	0.0282	--	0.0282
			Chromium	--	1.010E-06	--	1.010E-06	Chromium	respiratory system	--	0.00241	--	0.00241
			Manganese	--	--	--	--	Manganese	CNS	--	0.368	--	0.368
			Nickel	--	--	--	--	Nickel	--	--	--	--	--
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	1.010E-06	--	1.010E-06	(Total)	--	--	0.399	--	0.399
						Total Risk Across Surface Soil	1.010E-06					Total Hazard Index Across Surface Soil	0.477
						Total Risk Across All Media and All Exposure Routes	1.010E-06					Total Hazard Index Across All Media and All Exposure Routes	0.477

Total CNS HI = 0.434
Total whole body HI = 0.00163
Total respiratory system HI = 0.00241

TABLE 6-63.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Range L	Aluminum	--	--	--	--
			Chromium	--	--	--	--
			Manganese	--	--	--	--
			Nickel	--	--	--	--
			Vanadium	--	--	--	--
			(Total)	--	--	--	--
Sediment	Sediment	Range L	Chromium	--	--	--	--
			(Total)	--	--	--	--
Surface Water	Surface Water	Range L	Arsenic	--	--	8.339E-08	8.339E-08
			Manganese	--	--	--	--
			Selenium	--	--	--	--
			1,1,1-Trichloroethane	--	--	--	--
			2,4,6-Trinitrotoluene	--	--	2.234E-09	2.234E-09
			2,4-Dinitrotoluene	--	--	1.047E-07	1.047E-07
			2,6-Dinitrotoluene	--	--	2.932E-08	2.932E-08
			alpha-BHC	--	--	2.163E-09	2.163E-09
			(Total)	--	--	2.218E-07	2.218E-07

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Aluminum	CNS	0.00666	--	0.000140	0.00680
Chromium	none	0.00387	--	0.000407	0.00428
Manganese	CNS	0.0369	--	0.00194	0.0389
Nickel	whole body	0.00131	--	1.022E-05	0.00132
Vanadium	none	0.00133	--	0.000280	0.00161
(Total)	--	0.0501	--	0.00278	0.0529
Chromium	none	0.00220	--	0.00168	0.00388
(Total)	--	0.00220	--	0.00168	0.00388
Arsenic	skin	--	--	0.00130	0.00130
Manganese	CNS	--	--	0.0514	0.0514
Selenium	whole body	--	--	7.851E-05	7.851E-05
1,1,1-Trichloroethane	--	--	--	7.381E-05	7.381E-05
2,4,6-Trinitrotoluene	liver	--	--	0.00104	0.00104
2,4-Dinitrotoluene	CNS	--	--	0.000539	0.000539
2,6-Dinitrotoluene	CNS, blood, kidney	--	--	0.000302	0.000302
alpha-BHC	--	--	--	--	--
(Total)	--	--	--	0.0548	0.0548

Total Risk Across Surface Soil	--
Total Risk Across Sediment	--
Total Risk Across Surface Water	2.218E-07
Total Risk Across All Media and All Exposure Routes	2.218E-07

Total Hazard Index Across Surface Soil	0.0529
Total Hazard Index Across Sediment	0.00388
Total Hazard Index Across Surface Water	0.0548
Total Hazard Index Across All Media and All Exposure Routes	0.112

Total CNS HI =	0.0980
Total whole body HI =	0.00140
Total skin HI =	0.00130
Total liver HI =	0.00104
Total blood HI =	0.000302
Total kidney HI =	0.000302

TABLE 6-64.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Receptor Population: Hunter
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Tissue	Range L	Chromium	--	--	--	--	Chromium	none	9.185E-06	--	--	9.185E-06
			Manganese	--	--	--	--	Manganese (food)	CNS	0.0256	--	--	0.0256
			Nickel	--	--	--	--	Nickel	whole body	0.00155	--	--	0.00155
			(Total)	--	--	--	--	(Total)	--	0.0271	--	--	0.0271
						Total Risk Across Surface Soil	--					Total Hazard Index Across Surface Soil	0.0271
						Total Risk Across All Media and All Exposure Routes	0.000E+00					Total Hazard Index Across All Media and All Exposure Routes	0.0271

Total CNS HI = 0.0256
Total whole body HI = 0.00155

TABLE 6-65.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Range L	Aluminum	--	--	--	--	Aluminum	CNS	0.0412	--	0.000216	0.0414
			Chromium	--	--	--	--	Chromium	none	0.0239	--	0.000628	0.0246
			Manganese	--	--	--	--	Manganese	CNS	0.228	--	0.00300	0.231
			Nickel	--	--	--	--	Nickel	whole body	0.00812	--	1.579E-05	0.00814
			Vanadium	--	--	--	--	Vanadium	none	0.00824	--	0.000433	0.00867
			(Total)	--	--	--	--	(Total)	--	0.310	--	0.00429	0.314
	Air	Range L	Aluminum	--	--	--	--	Aluminum	--	--	0.588	--	0.588
			Chromium	--	2.103E-05	--	2.103E-05	Chromium	respiratory system	--	0.0503	--	0.0503
			Manganese	--	--	--	--	Manganese	CNS	--	7.67	--	7.67
			Nickel	--	--	--	--	Nickel	--	--	--	--	--
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	2.103E-05	--	2.103E-05	(Total)	--	--	8.31	--	8.31
Subsurface Soil	Soil	Range L	Aluminum	--	--	--	--	Aluminum	CNS	0.0509	--	0.000267	0.0511
			Chromium	--	--	--	--	Chromium	none	0.0288	--	0.000757	0.0296
			Vanadium	--	--	--	--	Vanadium	none	0.0126	--	0.000662	0.0133
			(Total)	--	--	--	--	(Total)	--	0.0923	--	0.00169	0.0940
	Air	Range L	Aluminum	--	--	--	--	Aluminum	--	--	0.727	--	0.727
			Chromium	--	2.533E-05	--	2.533E-05	Chromium	respiratory system	--	0.0605	--	0.0605
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	2.533E-05	--	2.533E-05	(Total)	--	--	0.787	--	0.787
Groundwater	Groundwater	Range L	Aluminum	--	--	--	--	Aluminum	CNS	0.0665	--	0.00273	0.0693
			Beryllium	--	--	--	--	Beryllium	GI system	0.0118	--	0.00483	0.0166
			Cadmium (water)	--	--	--	--	Cadmium (water)	kidney	0.0586	--	0.0240	0.0827
			Cobalt	--	--	--	--	Cobalt	--	0.00618	--	3.168E-05	0.00621
			Manganese	--	--	--	--	Manganese	CNS	2.14	--	0.220	2.36
			Nickel	--	--	--	--	Nickel	whole body	0.0641	--	9.732E-05	0.0642
			4,4'-DDE	2.899E-08	--	4.517E-08	7.416E-08	4,4'-DDE	--	--	--	--	--
			Benzo(a)anthracene	3.036E-07	--	3.252E-06	3.556E-06	Benzo(a)anthracene	--	3.881E-05	--	0.000416	0.000455
			Benzo(b)fluoranthene	4.240E-07	--	6.729E-06	7.153E-06	Benzo(b)fluoranthene	--	5.421E-05	--	0.000860	0.000915
			Chrysene	1.457E-09	--	1.561E-08	1.707E-08	Chrysene	--	1.863E-05	--	0.000200	0.000218
			Heptachlor	2.626E-06	--	4.187E-06	6.813E-06	Heptachlor	liver	0.00327	--	0.00521	0.00848
			Heptachlor Epoxide	4.102E-06	--	1.281E-06	5.383E-06	Heptachlor Epoxide	liver	0.0971	--	0.0303	0.127
			Indeno(1,2,3-cd)pyrene	1.992E-07	--	5.007E-06	5.206E-06	Indeno(1,2,3-cd)pyrene	--	2.547E-05	--	0.000640	0.000666
			Nitrate,Nitrite	--	--	--	--	Nitrate,Nitrite	blood	0.0201	--	0.000164	0.0202
			Nitroglycerine	1.218E-07	--	2.254E-10	1.220E-07	Nitroglycerine	--	--	--	--	--
			PCB 1248	3.313E-05	--	0.000110	0.000143	PCB 1248	--	--	--	--	--
			RDX	2.364E-07	--	3.376E-10	2.367E-07	RDX	reproductive system	0.00201	--	2.864E-06	0.00201
			Trichloroethene	4.228E-08	--	1.849E-08	6.078E-08	Trichloroethene	--	0.00179	--	0.000785	0.00258
			bis(2-Ethylhexyl)phthalate	1.663E-06	--	1.185E-06	2.848E-06	bis(2-Ethylhexyl)phthalate	liver	0.0166	--	0.0118	0.0285
			(Total)	4.288E-05	--	0.000131	0.000174	(Total)	--	2.49	--	0.302	2.79

TABLE 6-65.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
						Total Risk Across Surface Soil	2.103E-05					Total Hazard Index Across Surface Soil	8.62
						Total Risk Across Subsurface Soil	2.533E-05					Total Hazard Index Across Subsurface Soil	0.881
						Total Risk Across Groundwater	0.000174					Total Hazard Index Across Groundwater	2.79
						Total Risk Across All Media and All Exposure Routes	0.000221					Total Hazard Index Across All Media and All Exposure Routes	12

Total CNS HI =	10
Total whole body HI =	0.0723
Total respiratory system HI =	0.111
Total GI system HI =	0.0166
Total kidney HI =	0.0827
Total liver HI =	0.164
Total blood HI =	0.0202
Total reproductive system HI =	0.00201

TABLE 6-66.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Range L	Aluminum	--	--	--	--	Aluminum	CNS	0.186	--	0.00338	0.190
			Beryllium	--	--	--	--	Beryllium	GI system	0.0330	--	0.00599	0.0390
			Cadmium (water)	--	--	--	--	Cadmium (water)	kidney	0.164	--	0.0298	0.194
			Cobalt	--	--	--	--	Cobalt	--	0.0173	--	3.926E-05	0.0173
			Manganese	--	--	--	--	Manganese	CNS	6.00	--	0.272	6.28
			Nickel	--	--	--	--	Nickel	whole body	0.179	--	0.000121	0.180
			4,4'-DDE	1.239E-07	--	7.895E-08	2.028E-07	4,4'-DDE	--	--	--	--	--
			Benzo(a)anthracene	1.297E-06	--	5.684E-06	6.981E-06	Benzo(a)anthracene	--	0.000109	--	0.000515	0.000624
			Benzo(b)fluoranthene	1.812E-06	--	1.176E-05	1.357E-05	Benzo(b)fluoranthene	--	0.000152	--	0.00107	0.00122
			Chrysene	6.227E-09	--	2.729E-08	3.352E-08	Chrysene	--	5.218E-05	--	0.000247	0.000300
			Heptachlor	1.122E-05	--	7.318E-06	1.854E-05	Heptachlor	liver	0.00915	--	0.00646	0.0156
			Heptachlor Epoxide	1.753E-05	--	2.239E-06	1.977E-05	Heptachlor Epoxide	liver	0.272	--	0.0376	0.309
			Indeno(1,2,3-cd)pyrene	8.513E-07	--	8.750E-06	9.602E-06	Indeno(1,2,3-cd)pyrene	--	7.132E-05	--	0.000793	0.000865
			Nitrate,Nitrite	--	--	--	--	Nitrate,Nitrite	blood	0.0562	--	0.000204	0.0564
			Nitroglycerine	5.205E-07	--	3.939E-10	5.209E-07	Nitroglycerine	--	--	--	--	--
			PCB 1248	0.000142	--	0.000192	0.000333	PCB 1248	--	--	--	--	--
			RDX	1.010E-06	--	5.900E-10	1.011E-06	RDX	reproductive system	0.00562	--	3.550E-06	0.00562
			Trichloroethene	1.807E-07	--	3.232E-08	2.130E-07	Trichloroethene	--	0.00502	--	0.000972	0.00600
			bis(2-Ethylhexyl)phthalate	7.107E-06	--	2.070E-06	9.178E-06	bis(2-Ethylhexyl)phthalate	liver	0.0466	--	0.0147	0.0613
			(Total)	0.000183	--	0.000230	0.000413	(Total)	--	6.98	--	0.374	7.35
	Air	Range L	Trichloroethene	--	6.329E-08	--	6.329E-08	Trichloroethene	--	--	--	--	--
			(Total)	--	6.329E-08	--	6.329E-08	(Total)	--	--	--	--	--

Total Risk Across Groundwater	0.000413
Total Risk Across All Media and All Exposure Routes	0.000413

Total Hazard Index Across Groundwater	7.35
Total Hazard Index Across All Media and All Exposure Routes	7.35

Total CNS HI =	6.47
Total GI system HI =	0.0390
Total kidney HI =	0.194
Total whole body HI =	0.180
Total liver HI =	0.386
Total blood HI =	0.0564
Total reproductive system HI =	0.00562

TABLE 6-67.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Range L	Aluminum	--	--	--	--
			Chromium	--	--	--	--
			Manganese	--	--	--	--
			Nickel	--	--	--	--
			Vanadium	--	--	--	--
			(Total)	--	--	--	--
Subsurface Soil		Range L	Aluminum	--	--	--	--
			Chromium	--	--	--	--
			Vanadium	--	--	--	--
			(Total)	--	--	--	--
Groundwater	Groundwater	Range L	Aluminum	--	--	--	--
			Beryllium	--	--	--	--
			Cadmium (water)	--	--	--	--
			Cobalt	--	--	--	--
			Manganese	--	--	--	--
			Nickel	--	--	--	--
			4,4'-DDE	1.239E-07	--	7.895E-08	2.028E-07
			Benzo(a)anthracene	1.297E-06	--	5.684E-06	6.981E-06
			Benzo(b)fluoranthene	1.812E-06	--	1.176E-05	1.357E-05
			Chrysene	6.227E-09	--	2.729E-08	3.352E-08
			Heptachlor	1.122E-05	--	7.318E-06	1.854E-05
			Heptachlor Epoxide	1.753E-05	--	2.239E-06	1.977E-05
			Indeno(1,2,3-cd)pyrene	8.513E-07	--	8.750E-06	9.602E-06
			Nitrate,Nitrite	--	--	--	--
			Nitroglycerine	5.205E-07	--	3.939E-10	5.209E-07
			PCB 1248	0.000142	--	0.000192	0.000333
			RDX	1.010E-06	--	5.900E-10	1.011E-06
			Trichloroethene	1.807E-07	--	3.232E-08	2.130E-07
			bis(2-Ethylhexyl)phthalate	7.107E-06	--	2.070E-06	9.178E-06
			(Total)	0.000183	--	0.000230	0.000413

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Aluminum	CNS	0.538	--	0.00339	0.542
Chromium	none	0.313	--	0.00985	0.323
Manganese	CNS	2.98	--	0.0470	3.03
Nickel	whole body	0.106	--	0.000248	0.106
Vanadium	none	0.108	--	0.00678	0.114
(Total)	--	4.05	--	0.0673	4.12
Aluminum	CNS	0.665	--	0.00419	0.669
Chromium	none	0.377	--	0.0119	0.389
Vanadium	none	0.165	--	0.0104	0.175
(Total)	--	1.21	--	0.0264	1.23
Aluminum	CNS	0.435	--	0.00635	0.441
Beryllium	GI system	0.0770	--	0.0112	0.0883
Cadmium (water)	kidney	0.383	--	0.0559	0.439
Cobalt	--	0.0404	--	7.369E-05	0.0405
Manganese	CNS	14	--	0.511	15
Nickel	whole body	0.419	--	0.000226	0.419
4,4'-DDE	--	--	--	--	--
Benzo(a)anthracene	--	0.000254	--	0.000967	0.00122
Benzo(b)fluoranthene	--	0.000354	--	0.00200	0.00236
Chrysene	--	0.000122	--	0.000464	0.000586
Heptachlor	liver	0.0214	--	0.0121	0.0335
Heptachlor Epoxide	liver	0.634	--	0.0706	0.705
Indeno(1,2,3-cd)pyrene	--	0.000166	--	0.00149	0.00166
Nitrate,Nitrite	blood	0.131	--	0.000383	0.131
Nitroglycerine	--	--	--	--	--
PCB 1248	--	--	--	--	--
RDX	reproductive system	0.0131	--	6.664E-06	0.0131
Trichloroethene	--	0.0117	--	0.00183	0.0135
bis(2-Ethylhexyl)phthalate	liver	0.109	--	0.0276	0.136
(Total)	--	16	--	0.703	17

Total Risk Across Surface Soil	--
Total Risk Across Subsurface Soil	--
Total Risk Across Groundwater	0.000413
Total Risk Across All Media and All Exposure Routes	0.000413

Total Hazard Index Across Surface Soil	4.12
Total Hazard Index Across Subsurface Soil	1.23
Total Hazard Index Across Groundwater	17
Total Hazard Index Across All Media and All Exposure Routes	22

Total CNS HI =	19
Total whole body HI =	0.525
Total GI system HI =	0.0883
Total kidney HI =	0.439
Total liver HI =	0.875

TABLE 6-67.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
												Total blood HI =	0.131
												Total reproductive system HI =	0.0131

TABLE 6-68.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Range L	Aluminum	--	--	--	--	Aluminum	CNS	0.0824	--	0.00216	0.0846
			Chromium	--	--	--	--	Chromium	none	0.00718	--	0.000943	0.00812
			Manganese	--	--	--	--	Manganese	CNS	0.457	--	0.0300	0.487
			Nickel	--	--	--	--	Nickel	whole body	0.0162	--	0.000158	0.0164
			Vanadium	--	--	--	--	Vanadium	none	0.0212	--	0.00556	0.0268
			(Total)	--	--	--	--	(Total)	--	0.584	--	0.0388	0.622
	Air	Range L	Aluminum	--	--	--	--	Aluminum	--	--	1.18	--	1.18
			Chromium	--	1.683E-06	--	1.683E-06	Chromium	respiratory system	--	0.101	--	0.101
			Manganese	--	--	--	--	Manganese	CNS	--	15	--	15
			Nickel	--	--	--	--	Nickel	--	--	--	--	--
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	1.683E-06	--	1.683E-06	(Total)	--	--	17	--	17
Subsurface Soil	Soil	Range L	Aluminum	--	--	--	--	Aluminum	CNS	0.102	--	0.00267	0.104
			Chromium	--	--	--	--	Chromium	none	0.00865	--	0.00114	0.00978
			Vanadium	--	--	--	--	Vanadium	none	0.0324	--	0.00851	0.0409
			(Total)	--	--	--	--	(Total)	--	0.143	--	0.0123	0.155
	Air	Range L	Aluminum	--	--	--	--	Aluminum	--	--	1.45	--	1.45
			Chromium	--	2.027E-06	--	2.027E-06	Chromium	respiratory system	--	0.121	--	0.121
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	2.027E-06	--	2.027E-06	(Total)	--	--	1.57	--	1.57

Total Risk Across Surface Soil	1.683E-06
Total Risk Across Subsurface Soil	2.027E-06
Total Risk Across All Media and All Exposure Routes	3.709E-06

Total Hazard Index Across Surface Soil	17
Total Hazard Index Across Subsurface Soil	1.73
Total Hazard Index Across All Media and All Exposure Routes	19

Total CNS HI =	16
Total whole body HI =	0.0164
Total respiratory system HI =	0.222

Table 6-69. RME Risk Characterization Summary (Current/Future Land Use)
Landfill #1, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI		Cancer Risk	
		Recreational Adolescent	Hunter Adolescent	Recreational Adolescent	Hunter Adolescent
Surface Soil (0 to <1 ft BLS)	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Venison	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Venison	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Sediment	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA
	Dermal Contact	4E-03 B	NA	1E-07 B	NA
	Subtotal	**4E-03 B**	**NA**	**1E-07 B**	**NA**
Groundwater	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**

Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison

Combined Hazard Index:	4E-03 B	NA		
Combined Cancer Risk:			1E-07 B	NA

Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison

Combined Hazard Index:	4E-03 B	NA		
Combined Cancer Risk:			1E-07 B	NA

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

Table 6-70. RME Risk Characterization Summary (Future Land Use)
Landfill #1, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI				Cancer Risk			
		Residential		Industrial	Construction	Residential		Industrial	Construction
		Adult	Child	Worker	Worker	Adult	Child	Worker	Worker
Surface Soil (0 to <1 ft BLS)	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA	7E-01 B	5E-02 B	1E-01 B	NA	2E-07 B	4E-08 B	4E-09 B
	Dermal Contact	NA	2E-02 B	1E-03 B	1E-02 B	NA	1E-08 B	7E-10 B	3E-10 B
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	4E-01	8E-01	NA	NA	4E-10 B	3E-11 B
	Subtotal	**NA**	**7E-01 B**	**5E-01 B**	**1E+00 B**	**NA**	**2E-07 B**	**4E-08 B**	**4E-09 B**
Sediment	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Groundwater	Ingestion	2E+00 E	4E+00 E	6E-01 B	NA	3E-06 B	3E-06 B	8E-07 B	NA
	Dermal Contact	7E-02 B	1E-01 B	6E-02 B	NA	7E-07 B	7E-07 B	4E-07 B	NA
	Inhalation	2E-04 B	NA	NA	NA	8E-09 B	NA	NA	NA
	Subtotal	**2E+00 E**	**4E+00 E**	**6E-01 B**	**NA**	**4E-06 B**	**4E-06 B**	**1E-06 B**	**NA**
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		2E+00 E	4E+00 E	6E-01 B	NA				
Combined Cancer Risk:						4E-06 B	4E-06 B	1E-06 B	NA
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		2E+00 E	4E+00 E	1E+00 B	1E+00 B				
Combined Cancer Risk:						4E-06 B	4E-06 B	1E-06 B	4E-09 B

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

TABLE 6-71.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Landfill #1	Arsenic	--	--	1.451E-07	1.451E-07	Arsenic	skin	--	--	0.00226	0.00226
			Barium	--	--	--	--	Barium	kidney	--	--	0.00108	0.00108
			Zinc	--	--	--	--	Zinc	blood	--	--	3.504E-05	3.504E-05
			1,1,1-Trichloroethane	--	--	--	--	1,1,1-Trichloroethane	--	--	--	4.101E-05	4.101E-05
			Chlorobenzene	--	--	--	--	Chlorobenzene	liver and kidney	--	--	0.000636	0.000636
			(Total)	--	--	1.451E-07	1.451E-07	(Total)	--	--	--	0.00404	0.00404
			Total Risk Across Surface Water				1.451E-07		Total Hazard Index Across Surface Water				0.00404
			Total Risk Across All Media and All Exposure Routes				1.451E-07		Total Hazard Index Across All Media and All Exposure Routes				0.00404

Total skin HI =	0.00226
Total kidney HI =	0.00108
Total blood HI =	3.504E-05
Total liver and kidney HI =	0.000636

TABLE 6-72.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal
Subsurface Soil	Soil	Landfill #1	Aluminum	--	--	--	--	Aluminum	CNS	0.0296	--	0.000155
			Antimony	--	--	--	--	Antimony	blood/circulatory system	0.0204	--	0.000535
			Benzo(a)anthracene	4.337E-08	--	7.344E-10	4.410E-08	Benzo(a)anthracene	--	5.545E-06	--	9.390E-08
			Chrysene	4.337E-10	--	7.344E-12	4.410E-10	Chrysene	--	5.545E-06	--	9.390E-08
			(Total)	4.380E-08	--	7.418E-10	4.454E-08	(Total)	--	0.0500	--	0.000690
	Air	Landfill #1	Aluminum	--	--	--	--	Aluminum	--	--	0.422	--
			Antimony	--	--	--	--	Antimony	--	--	--	--
			Benzo(a)anthracene	--	3.683E-10	--	3.683E-10	Benzo(a)anthracene	--	--	--	--
			Chrysene	--	3.683E-12	--	3.683E-12	Chrysene	--	--	--	--
			(Total)	--	3.720E-10	--	3.720E-10	(Total)	--	--	0.422	--
Groundwater	Groundwater	Landfill #1	Aluminum	--	--	--	--	Aluminum	CNS	0.0336	--	0.00138
			Barium	--	--	--	--	Barium	kidney	0.0879	--	0.00515
			Beryllium	--	--	--	--	Beryllium	GI system	0.00968	--	0.00397
			Manganese	--	--	--	--	Manganese	CNS	0.366	--	0.0375
			1,1,1-Trichloroethane	--	--	--	--	1,1,1-Trichloroethane	--	0.000587	--	4.547E-05
			1,3-Dinitrobenzene	--	--	--	--	1,3-Dinitrobenzene	spleen	0.0306	--	0.000397
			Acetone	--	--	--	--	Acetone	liver, kidney	0.000834	--	2.346E-06
			Di-n-butyl phthalate	--	--	--	--	Di-n-butyl phthalate	--	0.00117	--	0.000159
			Methylene Chloride	1.284E-08	--	2.494E-10	1.309E-08	Methylene Chloride	liver	7.991E-05	--	1.552E-06
			Nitrate,Nitrite	--	--	--	--	Nitrate,Nitrite	blood	0.0241	--	0.000197
			Nitroglycerine	1.600E-07	--	2.960E-10	1.603E-07	Nitroglycerine	--	--	--	--
			beta-BHC	9.954E-08	--	1.146E-08	1.110E-07	beta-BHC	--	--	--	--
			bis(2-Ethylhexyl)phthalate	5.397E-07	--	3.843E-07	9.240E-07	bis(2-Ethylhexyl)phthalate	liver	0.00540	--	0.00384
			(Total)	8.121E-07	--	3.963E-07	1.208E-06	(Total)	--	0.560	--	0.0527

Total Risk Across Subsurface Soil	4.491E-08
Total Risk Across Groundwater	1.208E-06
Total Risk Across All Media and All Exposure Routes	1.253E-06

Total Hazard Index Across Subsurface Soil
Total Hazard Index Across Groundwater
Total Hazard Index Across All Media and All Exposure Routes

Total CNS HI =
Total blood/circulatory system HI =
Total kidney HI =
Total GI system HI =
Total spleen HI =
Total liver HI =
Total blood HI =

TABLE 6-73.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Landfill #1	Aluminum	--	--	--	--	Aluminum	CNS	0.0940	--	0.00171	0.0958
			Barium	--	--	--	--	Barium	kidney	0.246	--	0.00638	0.253
			Beryllium	--	--	--	--	Beryllium	GI system	0.0271	--	0.00492	0.0320
			Manganese	--	--	--	--	Manganese	CNS	1.03	--	0.0465	1.07
			1,1,1-Trichloroethane	--	--	--	--	1,1,1-Trichloroethane	--	0.00164	--	5.636E-05	0.00170
			1,3-Dinitrobenzene	--	--	--	--	1,3-Dinitrobenzene	spleen	0.0858	--	0.000492	0.0863
			Acetone	--	--	--	--	Acetone	liver, kidney	0.00234	--	2.907E-06	0.00234
			Di-n-butyl phthalate	--	--	--	--	Di-n-butyl phthalate	--	0.00329	--	0.000197	0.00348
			Methylene Chloride	5.487E-08	--	4.359E-10	5.531E-08	Methylene Chloride	liver	0.000224	--	1.924E-06	0.000226
			Nitrate,Nitrite	--	--	--	--	Nitrate,Nitrite	blood	0.0674	--	0.000245	0.0676
			Nitroglycerine	6.836E-07	--	5.173E-10	6.841E-07	Nitroglycerine	--	--	--	--	--
			beta-BHC	4.253E-07	--	2.003E-08	4.453E-07	beta-BHC	--	--	--	--	--
			bis(2-Ethylhexyl)phthalate	2.306E-06	--	6.717E-07	2.978E-06	bis(2-Ethylhexyl)phthalate	liver	0.0151	--	0.00476	0.0199
			(Total)	3.470E-06	--	6.927E-07	4.163E-06	(Total)	--	1.57	--	0.0653	1.63
	Air	Landfill #1	1,1,1-Trichloroethane	--	--	--	--	1,1,1-Trichloroethane	--	--	0.000198	--	0.000198
			Acetone	--	--	--	--	Acetone	--	--	--	--	--
			Methylene Chloride	--	7.729E-09	--	7.729E-09	Methylene Chloride	liver	--	1.566E-05	--	1.566E-05
			(Total)	--	7.729E-09	--	7.729E-09	(Total)	--	--	0.000214	--	0.000214
			Total Risk Across Groundwater				4.170E-06	Total Hazard Index Across Groundwater					1.63
			Total Risk Across All Media and All Exposure Routes				4.170E-06	Total Hazard Index Across All Media and All Exposure Routes					1.63

Total CNS HI =	1.17
Total kidney HI =	0.255
Total GI system HI =	0.0320
Total spleen HI =	0.0863
Total liver HI =	0.0225
Total blood HI =	0.0676

TABLE 6-74.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient			
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal
Subsurface Soil	Soil	Landfill #1	Aluminum	- -	- -	- -	- -	Aluminum	CNS	0.386	- -	0.00243
			Antimony	- -	- -	- -	- -	Antimony	blood/circulatory system	0.266	- -	0.00839
			Benzo(a)anthracene	1.938E-07	- -	9.674E-09	2.035E-07	Benzo(a)anthracene	- -	7.245E-05	- -	1.472E-06
			Chrysene	1.938E-09	- -	9.674E-11	2.035E-09	Chrysene	- -	7.245E-05	- -	1.472E-06
			(Total)	1.957E-07	- -	9.770E-09	2.055E-07	(Total)	- -	0.653	- -	0.0108
Groundwater	Groundwater	Landfill #1	Aluminum	- -	- -	- -	- -	Aluminum	CNS	0.219	- -	0.00320
			Barium	- -	- -	- -	- -	Barium	kidney	0.574	- -	0.0120
			Beryllium	- -	- -	- -	- -	Beryllium	GI system	0.0632	- -	0.00923
			Manganese	- -	- -	- -	- -	Manganese	CNS	2.39	- -	0.0874
			1,1,1-Trichloroethane	- -	- -	- -	- -	1,1,1-Trichloroethane	- -	0.00384	- -	0.000106
			1,3-Dinitrobenzene	- -	- -	- -	- -	1,3-Dinitrobenzene	spleen	0.200	- -	0.000923
			Acetone	- -	- -	- -	- -	Acetone	liver, kidney	0.00545	- -	5.457E-06
			Di-n-butyl phthalate	- -	- -	- -	- -	Di-n-butyl phthalate	- -	0.00767	- -	0.000370
			Methylene Chloride	5.487E-08	- -	4.359E-10	5.531E-08	Methylene Chloride	liver	0.000522	- -	3.611E-06
			Nitrate,Nitrite	- -	- -	- -	- -	Nitrate,Nitrite	blood	0.157	- -	0.000459
			Nitroglycerine	6.836E-07	- -	5.173E-10	6.841E-07	Nitroglycerine	- -	- -	- -	- -
			beta-BHC	4.253E-07	- -	2.003E-08	4.453E-07	beta-BHC	- -	- -	- -	- -
			bis(2-Ethylhexyl)phthalate	2.306E-06	- -	6.717E-07	2.978E-06	bis(2-Ethylhexyl)phthalate	liver	0.0353	- -	0.00894
			(Total)	3.470E-06	- -	6.927E-07	4.163E-06	(Total)	- -	3.66	- -	0.123

Total Risk Across Subsurface Soil	2.055E-07
Total Risk Across Groundwater	4.163E-06
Total Risk Across All Media and All Exposure Routes	4.368E-06

Total Hazard Index Across Subsurface Soil
Total Hazard Index Across Groundwater
Total Hazard Index Across All Media and All Exposure Routes

Total CNS HI =
Total blood/circulatory system HI =
Total kidney HI =
Total GI system HI =
Total spleen HI =
Total liver HI =
Total blood HI =

TABLE 6-75.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	Landfill #1	Aluminum	--	--	--	--	Aluminum	CNS	0.0591	--	0.00155	0.0607
			Antimony	--	--	--	--	Antimony	blood/circulatory system	0.0408	--	0.00535	0.0461
			Benzo(a)anthracene	3.469E-09	--	2.938E-10	3.763E-09	Benzo(a)anthracene	--	1.109E-06	--	9.390E-08	1.203E-06
			Chrysene	3.469E-11	--	2.938E-12	3.763E-11	Chrysene	--	1.109E-06	--	9.390E-08	1.203E-06
			(Total)	3.504E-09	--	2.967E-10	3.801E-09	(Total)	--	0.0999	--	0.00690	0.107
	Air	Landfill #1	Aluminum	--	--	--	--	Aluminum	--	--	0.845	--	0.845
			Antimony	--	--	--	--	Antimony	--	--	--	--	--
			Benzo(a)anthracene	--	2.947E-11	--	2.947E-11	Benzo(a)anthracene	--	--	--	--	--
			Chrysene	--	2.947E-13	--	2.947E-13	Chrysene	--	--	--	--	--
			(Total)	--	2.976E-11	--	2.976E-11	(Total)	--	--	0.845	--	0.845

Total Risk Across Subsurface Soil: 3.831E-09
Total Risk Across All Media and All Exposure Routes: 3.831E-09

Total Hazard Index Across Subsurface Soil: 0.952
Total Hazard Index Across All Media and All Exposure Routes: 0.952

Total CNS HI = 0.0607
Total blood/circulatory system HI = 0.0461

Table 6-76. RME Risk Characterization Summary (Current/Future Land Use)
Landfill #2, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI		Cancer Risk	
		Recreational Adolescent	Hunter Adolescent	Recreational Adolescent	Hunter Adolescent
Surface Soil (0 to <1 ft BLS)	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Venison	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Venison	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Sediment	Ingestion	1E-03 B	NA	NA	NA
	Dermal Contact	1E-03 B	NA	NA	NA
	Subtotal	**2E-03 B**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Groundwater	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison					
Combined Hazard Index:		2E-03 B	NA		
Combined Cancer Risk:				NA	NA
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison					
Combined Hazard Index:		2E-03 B	NA		
Combined Cancer Risk:				NA	NA

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

Table 6-77. RME Risk Characterization Summary (Future Land Use)
Landfill #2, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI				Cancer Risk			
		Residential		Industrial	Construction	Residential		Industrial	Construction
		Adult	Child	Worker	Worker	Adult	Child	Worker	Worker
Surface Soil	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
(0 to <1 ft BLS)	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Subsurface Soil	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
(1 to 12 ft BLS)	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Sediment	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Groundwater	Ingestion	3E+00 E	7E+00 E	1E+00 B	NA	3E-06 B	3E-06 B	8E-07 B	NA
	Dermal Contact	2E-01 B	3E-01 B	2E-01 B	NA	4E-06 B	4E-06 B	2E-06 B	NA
	Inhalation	7E-03 B	NA	NA	NA	2E-08 B	NA	NA	NA
	Subtotal	**3E+00 E**	**7E+00 E**	**1E+00 B**	**NA**	**8E-06 B**	**8E-06 B**	**3E-06 B**	**NA**
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		3E+00 E	7E+00 E	1E+00 B	NA				
Combined Cancer Risk:						8E-06 B	8E-06 B	3E-06 B	NA
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		3E+00 E	7E+00 E	1E+00 B	NA				
Combined Cancer Risk:						8E-06 B	8E-06 B	3E-06 B	NA

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

TABLE 6-78.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Landfill #2	Chromium (Total)	--	--	--	--	Chromium (Total)	none	0.00140	--	0.00107	0.00246
				--	--	--	--		--	0.00140	--	0.00107	0.00246
			Total Risk Across Sediment				--		Total Hazard Index Across Sediment				0.00246
			Total Risk Across All Media and All Exposure Routes				0.000E+00		Total Hazard Index Across All Media and All Exposure Routes				0.00246

TABLE 6-79.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Landfill #2	Aluminum	--	--	--	--	Aluminum	CNS	0.0483	--	0.00198	0.0503
			Beryllium	--	--	--	--	Beryllium	GI system	0.0305	--	0.0125	0.0430
			Chromium	--	--	--	--	Chromium	none	0.0744	--	0.0152	0.0896
			Manganese	--	--	--	--	Manganese	CNS	0.848	--	0.0869	0.935
			4-Methyl-2-pentanone	--	--	--	--	4-Methyl-2-pentanone	liver, kidney	0.000660	--	1.117E-05	0.000672
			Acetone	--	--	--	--	Acetone	liver, kidney	0.00978	--	2.751E-05	0.00981
			Aldrin	6.238E-07	--	2.387E-06	3.010E-06	Aldrin	liver	0.00342	--	0.0131	0.0165
			Di-n-butyl phthalate	--	--	--	--	Di-n-butyl phthalate	--	0.000607	--	8.208E-05	0.000689
			Methylene Chloride	3.145E-08	--	6.108E-10	3.206E-08	Methylene Chloride	liver	0.000196	--	3.801E-06	0.000199
			Nitrate,Nitrite	--	--	--	--	Nitrate,Nitrite	blood	0.0120	--	9.869E-05	0.0121
			Nitroglycerine	1.355E-07	--	2.507E-10	1.358E-07	Nitroglycerine	--	--	--	--	--
			(Total)	7.907E-07	--	2.387E-06	3.178E-06	(Total)	--	1.03	--	0.130	1.16
						Total Risk Across Groundwater	3.178E-06					Total Hazard Index Across Groundwater	1.16
						Total Risk Across All Media and All Exposure Routes	3.178E-06					Total Hazard Index Across All Media and All Exposure Routes	1.16

Total CNS HI =	0.985
Total GI system HI =	0.0430
Total liver HI =	0.0272
Total kidney HI =	0.0105
Total blood HI =	0.0121

TABLE 6-80.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Landfill #2	Aluminum	--	--	--	--
			Beryllium	--	--	--	--
			Chromium	--	--	--	--
			Manganese	--	--	--	--
			4-Methyl-2-pentanone	--	--	--	--
			Acetone	--	--	--	--
			Aldrin	2.665E-06	--	4.171E-06	6.836E-06
			Di-n-butyl phthalate	--	--	--	--
			Methylene Chloride	1.344E-07	--	1.068E-09	1.355E-07
			Nitrate,Nitrite	--	--	--	--
			Nitroglycerine	5.790E-07	--	4.382E-10	5.795E-07
			(Total)	3.379E-06	--	4.173E-06	7.551E-06
	Air	Landfill #2	4-Methyl-2-pentanone	--	--	--	--
			Acetone	--	--	--	--
			Methylene Chloride	--	1.893E-08	--	1.893E-08
			(Total)	--	1.893E-08	--	1.893E-08

Total Risk Across Groundwater: 7.570E-06
Total Risk Across All Media and All Exposure Routes: 7.570E-06

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Aluminum	CNS	0.135	--	0.00246	0.138
Beryllium	GI system	0.0855	--	0.0155	0.101
Chromium	none	0.208	--	0.0189	0.227
Manganese	CNS	2.37	--	0.108	2.48
4-Methyl-2-pentanone	liver, kidney	0.00185	--	1.385E-05	0.00186
Acetone	liver, kidney	0.0274	--	3.410E-05	0.0274
Aldrin	liver	0.00959	--	0.0162	0.0258
Di-n-butyl phthalate	--	0.00170	--	0.000102	0.00180
Methylene Chloride	liver	0.000548	--	4.711E-06	0.000553
Nitrate,Nitrite	blood	0.0337	--	0.000122	0.0338
Nitroglycerine	--	--	--	--	--
(Total)	--	2.88	--	0.161	3.04
4-Methyl-2-pentanone	liver, kidney	--	0.00647	--	0.00647
Acetone	--	--	--	--	--
Methylene Chloride	liver	--	3.836E-05	--	3.836E-05
(Total)	--	--	0.00651	--	0.00651

Total Hazard Index Across Groundwater: 3.05
Total Hazard Index Across All Media and All Exposure Routes: 3.05

Total CNS HI = 2.62
Total GI system HI = 0.101
Total liver HI = 0.0622
Total kidney HI = 0.0358
Total blood HI = 0.0338

TABLE 6-81.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Landfill #2	Aluminum	--	--	--	--
			Beryllium	--	--	--	--
			Chromium	--	--	--	--
			Manganese	--	--	--	--
			4-Methyl-2-pentanone	--	--	--	--
			Acetone	--	--	--	--
			Aldrin	2.665E-06	--	4.171E-06	6.836E-06
			Di-n-butyl phthalate	--	--	--	--
			Methylene Chloride	1.344E-07	--	1.068E-09	1.355E-07
			Nitrate,Nitrite	--	--	--	--
			Nitroglycerine	5.790E-07	--	4.382E-10	5.795E-07
			(Total)	3.379E-06	--	4.173E-06	7.551E-06
						Total Risk Across Groundwater	7.551E-06
						Total Risk Across All Media and All Exposure Routes	7.551E-06

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Aluminum	CNS	0.316	--	0.00461	0.320
Beryllium	GI system	0.199	--	0.0291	0.229
Chromium	none	0.486	--	0.0355	0.521
Manganese	CNS	5.54	--	0.202	5.74
4-Methyl-2-pentanone	liver, kidney	0.00432	--	2.599E-05	0.00434
Acetone	liver, kidney	0.0639	--	6.401E-05	0.0640
Aldrin	liver	0.0224	--	0.0305	0.0529
Di-n-butyl phthalate	--	0.00396	--	0.000191	0.00415
Methylene Chloride	liver	0.00128	--	8.842E-06	0.00129
Nitrate,Nitrite	blood	0.0786	--	0.000230	0.0789
Nitroglycerine	--	--	--	--	--
(Total)	--	6.72	--	0.302	7.02
				Total Hazard Index Across Groundwater	7.02
				Total Hazard Index Across All Media and All Exposure Routes	7.02

Total CNS HI =	6.06
Total GI system HI =	0.229
Total liver HI =	0.122
Total kidney HI =	0.0683
Total blood HI =	0.0789

Table 6-82. RME Risk Characterization Summary (Current Land Use)
Landfill #3, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI Industrial Worker		Cancer Risk Industrial Worker	
Surface Soil (0 to <1 ft BLS)	Ingestion	5E-02	B	8E-09	B
	Dermal Contact	2E-02	B	3E-09	B
	Venison	NA		NA	
	Inhalation	3E-01	B	7E-07	B
	Subtotal	**4E-01**	B	**7E-07**	B
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA		NA	
	Dermal Contact	NA		NA	
	Venison	NA		NA	
	Inhalation	NA		NA	
	Subtotal	**NA**		**NA**	
Sediment	Ingestion	NA		NA	
	Dermal Contact	NA		NA	
	Subtotal	**NA**		**NA**	
Surface Water	Ingestion	NA		NA	
	Dermal Contact	NA		NA	
	Subtotal	**NA**		**NA**	
Groundwater	Ingestion	NA		NA	
	Dermal Contact	NA		NA	
	Inhalation	NA		NA	
	Subtotal	**NA**		**NA**	

Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison

Combined Hazard Index:	4E-01	B		
Combined Cancer Risk:			7E-07	B

Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison

Combined Hazard Index:	NA			
Combined Cancer Risk:			NA	

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

Table 6-83. RME Risk Characterization Summary (Current/Future Land Use)
Landfill #3, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI		Cancer Risk	
		Recreational Adolescent	Hunter Adolescent	Recreational Adolescent	Hunter Adolescent
Surface Soil (0 to <1 ft BLS)	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Venison	NA	9E-03 B	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**NA**	**9E-03 B**	**NA**	**NA**
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Venison	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**
Sediment	Ingestion	1E-03 B	NA	NA	NA
	Dermal Contact	9E-04 B	NA	NA	NA
	Subtotal	**2E-03 B**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA
	Dermal Contact	1E-03 B	NA	1E-08 B	NA
	Subtotal	**1E-03 B**	**NA**	**1E-08 B**	**NA**
Groundwater	Ingestion	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**

Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison

Combined Hazard Index:	3E-03 B	9E-03 B		
Combined Cancer Risk:			1E-08 B	NA

Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison

Combined Hazard Index:	3E-03 B	NA		
Combined Cancer Risk:			1E-08 B	NA

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

Table 6-84. RME Risk Characterization Summary (Future Land Use)
Landfill #3, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI				Cancer Risk			
		Residential Adult	Residential Child	Industrial Worker	Construction Worker	Residential Adult	Residential Child	Industrial Worker	Construction Worker
Surface Soil (0 to <1 ft BLS)	Ingestion	NA	3E+00 E	2E-01 B	5E-01 B	NA	2E-07 B	4E-08 B	3E-09 B
	Dermal Contact	NA	6E-02 B	4E-03 B	4E-02 B	NA	9E-09 B	7E-10 B	3E-10 B
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	6E+00 E	1E+01 E	NA	NA	2E-05 B	1E-06 B
	Subtotal	**NA**	**3E+00 E**	**7E+00 E**	**1E+01 E**	**NA**	**2E-07 B**	**2E-05 B**	**1E-06 B**
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA	7E-01 B	5E-02 B	1E-01 B	NA	NA	NA	NA
	Dermal Contact	NA	4E-03 B	3E-04 B	3E-03 B	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	7E-01	1E+00	NA	NA	NA	NA
	Subtotal	**NA**	**7E-01 B**	**8E-01 B**	**2E+00 E**	**NA**	**NA**	**NA**	**NA**
Sediment	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Groundwater	Ingestion	1E+01 E	3E+01 E	4E+00 E	NA	2E-03 E	2E-03 E	4E-04 E	NA
	Dermal Contact	1E+00 B	2E+00 E	1E+00 B	NA	5E-04 E	5E-04 E	3E-04 E	NA
	Inhalation	1E-01 B	NA	NA	NA	8E-04 E	NA	NA	NA
	Subtotal	**1E+01 E**	**3E+01 E**	**5E+00 E**	**NA**	**3E-03 E**	**2E-03 E**	**7E-04 E**	**NA**
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		1E+01 E	3E+01 E	1E+01 E	1E+01 E				
Combined Cancer Risk:						3E-03 E	2E-03 E	7E-04 E	1E-06 B
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		1E+01 E	3E+01 E	6E+00 E	2E+00 E				
Combined Cancer Risk:						3E-03 E	2E-03 E	7E-04 E	NA

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

TABLE 6-85.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Landfill #3	Aluminum	--	--	--	--	Aluminum	CNS	0.0119	--	0.00144	0.0134
			Chromium	--	--	--	--	Chromium	none	0.00333	--	0.00201	0.00535
			Manganese	--	--	--	--	Manganese	CNS	0.0305	--	0.00922	0.0398
			Vanadium	--	--	--	--	Vanadium	none	0.00167	--	0.00201	0.00368
			Benzo(a)anthracene	7.837E-09	--	3.055E-09	1.089E-08	Benzo(a)anthracene	--	1.002E-06	--	3.905E-07	1.393E-06
			Chrysene	4.457E-11	--	1.737E-11	6.194E-11	Chrysene	--	5.699E-07	--	2.221E-07	7.920E-07
			(Total)	7.881E-09	--	3.072E-09	1.095E-08	(Total)	--	0.0475	--	0.0147	0.0622
	Air	Landfill #3	Aluminum	--	--	--	--	Aluminum	--	--	0.0426	--	0.0426
			Chromium	--	7.322E-07	--	7.322E-07	Chromium	respiratory system	--	0.00175	--	0.00175
			Manganese	--	--	--	--	Manganese	CNS	--	0.256	--	0.256
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			Benzo(a)anthracene	--	1.664E-11	--	1.664E-11	Benzo(a)anthracene	--	--	--	--	--
			Chrysene	--	9.464E-14	--	9.464E-14	Chrysene	--	--	--	--	--
			(Total)	--	7.322E-07	--	7.322E-07	(Total)	--	--	0.301	--	0.301
						Total Risk Across Surface Soil	7.432E-07					Total Hazard Index Across Surface Soil	0.363
						Total Risk Across All Media and All Exposure Routes	7.432E-07					Total Hazard Index Across All Media and All Exposure Routes	0.363

Total CNS HI = 0.310
Total respiratory system HI = 0.00175

TABLE 6-86.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Landfill #3	Chromium	--	--	--	--	Chromium	none	0.00116	--	0.000881	0.00204
			(Total)	--	--	--	--	(Total)	--	0.00116	--	0.000881	0.00204
Surface Water	Surface Water	Landfill #3	1,1,1-Trichloroethane	--	--	--	--	1,1,1-Trichloroethane	--	--	--	0.000169	0.000169
			Trichloroethene	--	--	1.104E-08	1.104E-08	Trichloroethene	--	--	--	0.00117	0.00117
			alpha-BHC	--	--	2.295E-09	2.295E-09	alpha-BHC	--	--	--	--	--
			Lindane	--	--	3.735E-10	3.735E-10	Lindane	liver, kidney	--	--	6.704E-06	6.704E-06
			(Total)	--	--	1.371E-08	1.371E-08	(Total)	--	--	--	0.00135	0.00135

Total Risk Across Sediment	--
Total Risk Across Surface Water	1.371E-08
Total Risk Across All Media and All Exposure Routes	1.371E-08

Total Hazard Index Across Sediment	0.00204
Total Hazard Index Across Surface Water	0.00135
Total Hazard Index Across All Media and All Exposure Routes	0.00339

Total liver HI =	6.704E-06
Total kidney HI =	6.704E-06

TABLE 6-87.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Current/Future
Receptor Population: Hunter
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Tissue	Landfill #3	Chromium	--	--	--	--	Chromium	none	6.662E-06	--	--	6.662E-06
			Manganese	--	--	--	--	Manganese (food)	CNS	0.0178	--	--	0.0178
			(Total)	--	--	--	--	(Total)	--	0.0178	--	--	0.0178
						Total Risk Across Surface Soil	--					Total Hazard Index Across Surface Soil	0.0178
						Total Risk Across All Media and All Exposure Routes	0.000E+00					Total Hazard Index Across All Media and All Exposure Routes	0.0178

Total CNS HI = 0.0178

TABLE 6-88.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Landfill #3	Aluminum	--	--	--	--	Aluminum	CNS	0.0622	--	0.000327	0.0625
			Chromium	--	--	--	--	Chromium	none	0.0174	--	0.000456	0.0178
			Manganese	--	--	--	--	Manganese	CNS	0.159	--	0.00209	0.161
			Vanadium	--	--	--	--	Vanadium	none	0.00868	--	0.000456	0.00913
			Benzo(a)anthracene	4.082E-08	--	6.912E-10	4.151E-08	Benzo(a)anthracene	--	5.219E-06	--	8.838E-08	5.307E-06
			Chrysene	2.321E-10	--	3.931E-12	2.361E-10	Chrysene	--	2.968E-06	--	5.027E-08	3.018E-06
			(Total)	4.105E-08	--	6.952E-10	4.174E-08	(Total)	--	0.247	--	0.00332	0.251
	Air	Landfill #3	Aluminum	--	--	--	--	Aluminum	--	--	0.888	--	0.888
			Chromium	--	1.525E-05	--	1.525E-05	Chromium	respiratory system	--	0.0365	--	0.0365
			Manganese	--	--	--	--	Manganese	CNS	--	5.34	--	5.34
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			Benzo(a)anthracene	--	3.467E-10	--	3.467E-10	Benzo(a)anthracene	--	--	--	--	--
			Chrysene	--	1.972E-12	--	1.972E-12	Chrysene	--	--	--	--	--
			(Total)	--	1.525E-05	--	1.525E-05	(Total)	--	--	6.27	--	6.27
Subsurface Soil	Soil	Landfill #3	Aluminum	--	--	--	--	Aluminum	CNS	0.0502	--	0.000264	0.0505
			(Total)	--	--	--	--	(Total)	--	0.0502	--	0.000264	0.0505
	Air	Landfill #3	Aluminum	--	--	--	--	Aluminum	--	--	0.717	--	0.717
			(Total)	--	--	--	--	(Total)	--	--	0.717	--	0.717
Groundwater	Groundwater	Landfill #3	Aluminum	--	--	--	--	Aluminum	CNS	0.415	--	0.0170	0.432
			Barium	--	--	--	--	Barium	kidney	0.0168	--	0.000982	0.0178
			Beryllium	--	--	--	--	Beryllium	GI system	0.0978	--	0.0401	0.138
			Cadmium (water)	--	--	--	--	Cadmium (water)	kidney	0.0425	--	0.0174	0.0599
			Chromium	--	--	--	--	Chromium	none	0.884	--	0.181	1.07
			Cobalt	--	--	--	--	Cobalt	--	0.0246	--	0.000126	0.0248
			Copper	--	--	--	--	Copper	gastrointestinal system	0.0761	--	0.00104	0.0771
			Manganese	--	--	--	--	Manganese	CNS	1.29	--	0.132	1.42
			Mercury	--	--	--	--	Mercury	kidney	0.0685	--	0.0281	0.0966
			Nickel	--	--	--	--	Nickel	whole body	0.117	--	0.000178	0.117
			Selenium	--	--	--	--	Selenium	whole body	0.00898	--	8.370E-05	0.00907
			Vanadium	--	--	--	--	Vanadium	none	0.424	--	0.174	0.598
			Zinc	--	--	--	--	Zinc	blood	0.00357	--	7.322E-05	0.00364
			1,1,1-Trichloroethane	--	--	--	--	1,1,1-Trichloroethane	--	0.000671	--	5.196E-05	0.000723
			1,1,2,2-Tetrachloroethane	0.000280	--	1.474E-05	0.000294	1,1,2,2-Tetrachloroethane	--	0.0652	--	0.00344	0.0687
			1,1,2-Trichloroethane	6.175E-07	--	2.625E-08	6.437E-07	1,1,2-Trichloroethane	blood	0.00758	--	0.000322	0.00791
			1,1-Dichloroethane	--	--	--	--	1,1-Dichloroethane	none	0.00108	--	3.927E-05	0.00112
			1,2-Dichloroethene (total)	--	--	--	--	1,2-Dichloroethene (total)	liver	0.0217	--	0.000891	0.0226
			1,4-Dichlorobenzene	3.858E-07	--	1.090E-07	4.948E-07	1,4-Dichlorobenzene	liver, kidney	0.00150	--	0.000424	0.00192
			4,4'-DDD	2.474E-08	--	3.380E-08	5.854E-08	4,4'-DDD	--	--	--	--	--
			4,4'-DDT	1.354E-07	--	1.622E-07	2.976E-07	4,4'-DDT	liver	0.00223	--	0.00267	0.00490
			4-Chloroaniline	--	--	--	--	4-Chloroaniline	spleen	0.00440	--	0.000228	0.00463
			4-Methyl-2-pentanone	--	--	--	--	4-Methyl-2-pentanone	liver, kidney	0.000477	--	8.067E-06	0.000485
			Acetone	--	--	--	--	Acetone	liver, kidney	0.0558	--	0.000157	0.0559
			Aldrin	3.856E-06	--	1.475E-05	1.861E-05	Aldrin	liver	0.0212	--	0.0810	0.102

TABLE 6-88.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
			Benzene	4.036E-07	--	3.583E-08	4.394E-07
			Benzo(a)anthracene	2.883E-07	--	3.088E-06	3.376E-06
			Benzo(a)pyrene	1.033E-06	--	1.640E-05	1.743E-05
			Benzo(b)fluoranthene	1.018E-06	--	1.615E-05	1.717E-05
			Benzo(k)fluoranthene	1.821E-07	--	9.687E-06	9.869E-06
			Carbon disulfide	--	--	--	--
			Chlorobenzene	--	--	--	--
			Chrysene	1.094E-09	--	1.172E-08	1.282E-08
			Di-n-butyl phthalate	--	--	--	--
			Dibenzo(a,h)anthracene	3.673E-06	--	0.000131	0.000135
			Dichlorobenzene-nonspecific	--	--	--	--
			Dieldrin	1.392E-05	--	6.707E-06	2.063E-05
			Diethylphthalate	--	--	--	--
			Endosulfan I	--	--	--	--
			Endrin	--	--	--	--
			Heptachlor	1.524E-06	--	2.430E-06	3.953E-06
			Heptachlor Epoxide	5.406E-07	--	1.688E-07	7.094E-07
			Hexachlorocyclopentadiene	--	--	--	--
			Indeno(1,2,3-cd)pyrene	9.872E-08	--	2.481E-06	2.580E-06
			Methoxychlor	--	--	--	--
			Methylene Chloride	1.206E-07	--	2.341E-09	1.229E-07
			Naphthalene	--	--	--	--
			Nitroglycerine	9.247E-08	--	1.711E-10	9.264E-08
			PCB 1248	4.298E-06	--	1.423E-05	1.853E-05
			Pentachlorophenol	2.214E-05	--	5.901E-05	8.115E-05
			Tetrachloroethene	7.269E-07	--	1.430E-07	8.699E-07
			Trichloroethene	3.844E-06	--	1.681E-06	5.525E-06
			Vinyl Chloride	2.709E-05	--	8.108E-07	2.790E-05
			alpha-BHC	5.086E-06	--	3.016E-07	5.387E-06
			beta-BHC	3.397E-07	--	3.911E-08	3.788E-07
			bis(2-Ethylhexyl)phthalate	2.593E-06	--	1.846E-06	4.439E-06
			Lindane	1.599E-06	--	6.303E-08	1.662E-06
			(Total)	0.000375	--	0.000296	0.000671

Total Risk Across Surface Soil	1.530E-05
Total Risk Across Subsurface Soil	--
Total Risk Across Groundwater	0.000671
Total Risk Across All Media and All Exposure Routes	0.000687

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Benzene	--	0.00685	--	0.000608	0.00746
Benzo(a)anthracene	--	3.686E-05	--	0.000395	0.000432
Benzo(a)pyrene	--	1.321E-05	--	0.000210	0.000223
Benzo(b)fluoranthene	--	0.000130	--	0.00207	0.00220
Benzo(k)fluoranthene	--	0.000233	--	0.0124	0.0126
Carbon disulfide	fetus, reproductive system	0.000294	--	4.585E-05	0.000339
Chlorobenzene	liver and kidney	0.000783	--	0.000424	0.00121
Chrysene	--	1.399E-05	--	0.000150	0.000164
Di-n-butyl phthalate	--	0.000675	--	9.135E-05	0.000766
Dibenzo(a,h)anthracene	--	4.697E-05	--	0.00168	0.00172
Dichlorobenzene-nonspecific	liver	0.000250	--	8.626E-05	0.000336
Dieldrin	liver	0.0487	--	0.0235	0.0722
Diethylphthalate	whole body	1.957E-05	--	4.279E-07	2.000E-05
Endosulfan I	kidney	0.000444	--	4.205E-06	0.000448
Endrin	CNS, liver	0.00783	--	0.0568	0.0646
Heptachlor	liver	0.00190	--	0.00302	0.00492
Heptachlor Epoxide	liver	0.0128	--	0.00400	0.0168
Hexachlorocyclopentadiene	GI tract	0.000672	--	0.000158	0.000830
Indeno(1,2,3-cd)pyrene	--	1.262E-05	--	0.000317	0.000330
Methoxychlor	reproductive system	0.00329	--	0.000251	0.00354
Methylene Chloride	liver	0.000750	--	1.457E-05	0.000765
Naphthalene	whole body	0.000685	--	0.000242	0.000927
Nitroglycerine	--	--	--	--	--
PCB 1248	--	--	--	--	--
Pentachlorophenol	liver	0.0172	--	0.0459	0.0631
Tetrachloroethene	liver	0.00391	--	0.000770	0.00468
Trichloroethene	--	0.163	--	0.0713	0.234
Vinyl Chloride	--	0.0307	--	0.000919	0.0316
alpha-BHC	--	--	--	--	--
beta-BHC	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	liver	0.0259	--	0.0185	0.0444
Lindane	liver, kidney	0.0115	--	0.000453	0.0119
(Total)	--	3.99	--	0.925	4.91

Total Hazard Index Across Surface Soil	6.52
Total Hazard Index Across Subsurface Soil	0.768
Total Hazard Index Across Groundwater	4.91
Total Hazard Index Across All Media and All Exposure Routes	12

Total CNS HI =	7.53
Total respiratory system HI =	0.0365
Total kidney HI =	0.245
Total GI system HI =	0.138
Total gastrointestinal system HI =	0.0771
Total whole body HI =	0.127

TABLE 6-88.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
												Total blood HI =	0.0116
												Total liver HI =	0.472
												Total spleen HI =	0.00463
												Total fetus HI =	0.000339
												Total reproductive system HI =	0.00388
												Total liver and kidney HI =	0.00121
												Total GI tract HI =	0.000830

TABLE 6-89.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Landfill #3	Aluminum	--	--	--	--	Aluminum	CNS	1.16	--	0.0211	1.18
			Barium	--	--	--	--	Barium	kidney	0.0470	--	0.00122	0.0482
			Beryllium	--	--	--	--	Beryllium	GI system	0.274	--	0.0497	0.324
			Cadmium (water)	--	--	--	--	Cadmium (water)	kidney	0.119	--	0.0216	0.141
			Chromium	--	--	--	--	Chromium	none	2.47	--	0.225	2.70
			Cobalt	--	--	--	--	Cobalt	--	0.0689	--	0.000156	0.0691
			Copper	--	--	--	--	Copper	gastrointestinal system	0.213	--	0.00129	0.214
			Manganese	--	--	--	--	Manganese	CNS	3.60	--	0.163	3.77
			Mercury	--	--	--	--	Mercury	kidney	0.192	--	0.0348	0.227
			Nickel	--	--	--	--	Nickel	whole body	0.327	--	0.000220	0.328
			Selenium	--	--	--	--	Selenium	whole body	0.0252	--	0.000104	0.0253
			Vanadium	--	--	--	--	Vanadium	none	1.19	--	0.215	1.40
			Zinc	--	--	--	--	Zinc	blood	0.0100	--	9.075E-05	0.0101
			1,1,1-Trichloroethane	--	--	--	--	1,1,1-Trichloroethane	--	0.00188	--	6.441E-05	0.00194
			1,1,2,2-Tetrachloroethane	0.00119	--	2.576E-05	0.00122	1,1,2,2-Tetrachloroethane	--	0.183	--	0.00426	0.187
			1,1,2-Trichloroethane	2.638E-06	--	4.589E-08	2.684E-06	1,1,2-Trichloroethane	blood	0.0212	--	0.000400	0.0216
			1,1-Dichloroethane	--	--	--	--	1,1-Dichloroethane	none	0.00301	--	4.868E-05	0.00306
			1,2-Dichloroethene (total)	--	--	--	--	1,2-Dichloroethene (total)	liver	0.0609	--	0.00111	0.0620
			1,4-Dichlorobenzene	1.648E-06	--	1.904E-07	1.839E-06	1,4-Dichlorobenzene	liver, kidney	0.00420	--	0.000525	0.00473
			4,4'-DDD	1.057E-07	--	5.908E-08	1.648E-07	4,4'-DDD	--	--	--	--	--
			4,4'-DDT	5.787E-07	--	2.834E-07	8.622E-07	4,4'-DDT	liver	0.00625	--	0.00331	0.00956
			4-Chloroaniline	--	--	--	--	4-Chloroaniline	spleen	0.0123	--	0.000283	0.0126
			4-Methyl-2-pentanone	--	--	--	--	4-Methyl-2-pentanone	liver, kidney	0.00134	--	1.000E-05	0.00135
			Acetone	--	--	--	--	Acetone	liver, kidney	0.156	--	0.000194	0.156
			Aldrin	1.647E-05	--	2.578E-05	4.226E-05	Aldrin	liver	0.0593	--	0.100	0.160
			Benzene	1.725E-06	--	6.262E-08	1.787E-06	Benzene	--	0.0192	--	0.000754	0.0199
			Benzo(a)anthracene	1.232E-06	--	5.397E-06	6.629E-06	Benzo(a)anthracene	--	0.000103	--	0.000489	0.000593
			Benzo(a)pyrene	4.415E-06	--	2.866E-05	3.307E-05	Benzo(a)pyrene	--	3.699E-05	--	0.000260	0.000297
			Benzo(b)fluoranthene	4.349E-06	--	2.823E-05	3.258E-05	Benzo(b)fluoranthene	--	0.000364	--	0.00256	0.00292
			Benzo(k)fluoranthene	7.783E-07	--	1.693E-05	1.771E-05	Benzo(k)fluoranthene	--	0.000652	--	0.0154	0.0160
			Carbon disulfide	--	--	--	--	Carbon disulfide	fetus, reproductive system	0.000822	--	5.683E-05	0.000879
			Chlorobenzene	--	--	--	--	Chlorobenzene	liver and kidney	0.00219	--	0.000526	0.00272
			Chrysene	4.676E-09	--	2.049E-08	2.517E-08	Chrysene	--	3.918E-05	--	0.000186	0.000225
			Di-n-butyl phthalate	--	--	--	--	Di-n-butyl phthalate	--	0.00189	--	0.000113	0.00200
			Dibenzo(a,h)anthracene	1.570E-05	--	0.000229	0.000245	Dibenzo(a,h)anthracene	--	0.000132	--	0.00208	0.00221
			Dichlorobenzene-nonspecific	--	--	--	--	Dichlorobenzene-nonspecific	liver	0.000700	--	0.000107	0.000807
			Dieldrin	5.949E-05	--	1.172E-05	7.121E-05	Dieldrin	liver	0.136	--	0.0291	0.166
			Diethylphthalate	--	--	--	--	Diethylphthalate	whole body	5.479E-05	--	5.304E-07	5.532E-05
			Endosulfan I	--	--	--	--	Endosulfan I	kidney	0.00124	--	5.213E-06	0.00125
			Endrin	--	--	--	--	Endrin	CNS, liver	0.0219	--	0.0704	0.0923
			Heptachlor	6.511E-06	--	4.246E-06	1.076E-05	Heptachlor	liver	0.00531	--	0.00375	0.00906
			Heptachlor Epoxide	2.310E-06	--	2.951E-07	2.605E-06	Heptachlor Epoxide	liver	0.0358	--	0.00495	0.0408
			Hexachlorocyclopentadiene	--	--	--	--	Hexachlorocyclopentadiene	GI tract	0.00188	--	0.000195	0.00208

TABLE 6-89.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
			Indeno(1,2,3-cd)pyrene	4.218E-07	--	4.336E-06	4.758E-06
			Methoxychlor	--	--	--	--
			Methylene Chloride	5.151E-07	--	4.092E-09	5.192E-07
			Naphthalene	--	--	--	--
			Nitroglycerine	3.951E-07	--	2.990E-10	3.954E-07
			PCB 1248	1.837E-05	--	2.487E-05	4.323E-05
			Pentachlorophenol	9.461E-05	--	0.000103	0.000198
			Tetrachloroethene	3.106E-06	--	2.500E-07	3.356E-06
			Trichloroethene	1.642E-05	--	2.938E-06	1.936E-05
			Vinyl Chloride	0.000116	--	1.417E-06	0.000117
			alpha-BHC	2.173E-05	--	5.272E-07	2.226E-05
			beta-BHC	1.451E-06	--	6.835E-08	1.520E-06
			bis(2-Ethylhexyl)phthalate	1.108E-05	--	3.227E-06	1.431E-05
			Lindane	6.833E-06	--	1.102E-07	6.943E-06
			(Total)	0.00160	--	0.000518	0.00212
	Air	Landfill #3	1,1,1-Trichloroethane	--	--	--	--
			1,1,2,2-Tetrachloroethane	--	0.000779	--	0.000779
			1,1,2-Trichloroethane	--	1.694E-06	--	1.694E-06
			1,1-Dichloroethane	--	--	--	--
			1,2-Dichloroethene (total)	--	--	--	--
			1,4-Dichlorobenzene	--	9.704E-07	--	9.704E-07
			4-Chloroaniline	--	--	--	--
			4-Methyl-2-pentanone	--	--	--	--
			Acetone	--	--	--	--
			Benzene	--	5.497E-07	--	5.497E-07
			Carbon disulfide	--	--	--	--
			Chlorobenzene	--	--	--	--
			Dichlorobenzene-nonspecific	--	--	--	--
			Methylene Chloride	--	7.256E-08	--	7.256E-08
			Naphthalene	--	--	--	--
			Tetrachloroethene	--	7.671E-08	--	7.671E-08
			Trichloroethene	--	5.753E-06	--	5.753E-06
			Vinyl Chloride	--	1.150E-05	--	1.150E-05
			(Total)	--	0.000799	--	0.000799
			Total Risk Across Groundwater				0.00292
			Total Risk Across All Media and All Exposure Routes				0.00292

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Indeno(1,2,3-cd)pyrene	--	3.534E-05	--	0.000393	0.000428
Methoxychlor	reproductive system	0.00921	--	0.000311	0.00952
Methylene Chloride	liver	0.00210	--	1.806E-05	0.00212
Naphthalene	whole body	0.00192	--	0.000300	0.00222
Nitroglycerine	--	--	--	--	--
PCB 1248	--	--	--	--	--
Pentachlorophenol	liver	0.0482	--	0.0569	0.105
Tetrachloroethene	liver	0.0110	--	0.000955	0.0119
Trichloroethene	--	0.457	--	0.0884	0.545
Vinyl Chloride	--	0.0860	--	0.00114	0.0871
alpha-BHC	--	--	--	--	--
beta-BHC	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	liver	0.0726	--	0.0229	0.0955
Lindane	liver, kidney	0.0321	--	0.000561	0.0327
(Total)	--	11	--	1.15	12
1,1,1-Trichloroethane	--	--	0.000227	--	0.000227
1,1,2,2-Tetrachloroethane	--	--	--	--	--
1,1,2-Trichloroethane	--	--	--	--	--
1,1-Dichloroethane	kidney	--	0.00211	--	0.00211
1,2-Dichloroethene (total)	--	--	--	--	--
1,4-Dichlorobenzene	--	--	0.000551	--	0.000551
4-Chloroaniline	--	--	--	--	--
4-Methyl-2-pentanone	liver, kidney	--	0.00467	--	0.00467
Acetone	--	--	--	--	--
Benzene	--	--	0.0338	--	0.0338
Carbon disulfide	CNS	--	0.000411	--	0.000411
Chlorobenzene	liver and kidney	--	0.00767	--	0.00767
Dichlorobenzene-nonspecific	whole body	--	0.00110	--	0.00110
Methylene Chloride	liver	--	0.000147	--	0.000147
Naphthalene	--	--	0.0447	--	0.0447
Tetrachloroethene	--	--	0.000996	--	0.000996
Trichloroethene	--	--	--	--	--
Vinyl Chloride	--	--	--	--	--
(Total)	--	--	0.0965	--	0.0965
Total Hazard Index Across Groundwater					12
Total Hazard Index Across All Media and All Exposure Routes					12

Total CNS HI =	5.04
Total kidney HI =	0.619
Total GI system HI =	0.324
Total gastrointestinal system HI =	0.214
Total whole body HI =	0.356
Total blood HI =	0.0317
Total liver HI =	0.954

TABLE 6-89.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
												Total spleen HI =	0.0126
												Total fetus HI =	0.000879
												Total reproductive system HI =	0.0104
												Total liver and kidney HI =	0.0104
												Total GI tract HI =	0.00208

TABLE 6-90.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Landfill #3	Aluminum	--	--	--	--	Aluminum	CNS	0.813	--	0.00512	0.818
			Chromium	--	--	--	--	Chromium	none	0.227	--	0.00715	0.234
			Manganese	--	--	--	--	Manganese	CNS	2.08	--	0.0327	2.11
			Vanadium	--	--	--	--	Vanadium	none	0.113	--	0.00714	0.121
			Benzo(a)anthracene	1.824E-07	--	9.105E-09	1.915E-07	Benzo(a)anthracene	--	6.819E-05	--	1.386E-06	6.957E-05
			Chrysene	1.037E-09	--	5.178E-11	1.089E-09	Chrysene	--	3.878E-05	--	7.882E-07	3.957E-05
			(Total)	1.834E-07	--	9.156E-09	1.926E-07	(Total)	--	3.23	--	0.0521	3.28
Subsurface Soil		Landfill #3	Aluminum	--	--	--	--	Aluminum	CNS	0.656	--	0.00413	0.660
			(Total)	--	--	--	--	(Total)	--	0.656	--	0.00413	0.660
Groundwater	Groundwater	Landfill #3	Aluminum	--	--	--	--	Aluminum	CNS	2.71	--	0.0396	2.75
			Barium	--	--	--	--	Barium	kidney	0.110	--	0.00228	0.112
			Beryllium	--	--	--	--	Beryllium	GI system	0.639	--	0.0933	0.733
			Cadmium (water)	--	--	--	--	Cadmium (water)	kidney	0.278	--	0.0405	0.318
			Chromium	--	--	--	--	Chromium	none	5.77	--	0.422	6.20
			Cobalt	--	--	--	--	Cobalt	--	0.161	--	0.000294	0.161
			Copper	--	--	--	--	Copper	gastrointestinal system	0.497	--	0.00242	0.499
			Manganese	--	--	--	--	Manganese	CNS	8.40	--	0.307	8.71
			Mercury	--	--	--	--	Mercury	kidney	0.447	--	0.0653	0.513
			Nickel	--	--	--	--	Nickel	whole body	0.764	--	0.000413	0.764
			Selenium	--	--	--	--	Selenium	whole body	0.0587	--	0.000195	0.0589
			Vanadium	--	--	--	--	Vanadium	none	2.77	--	0.404	3.17
			Zinc	--	--	--	--	Zinc	blood	0.0233	--	0.000170	0.0235
			1,1,1-Trichloroethane	--	--	--	--	1,1,1-Trichloroethane	--	0.00438	--	0.000121	0.00450
			1,1,2,2-Tetrachloroethane	0.00119	--	2.576E-05	0.00122	1,1,2,2-Tetrachloroethane	--	0.426	--	0.00800	0.434
			1,1,2-Trichloroethane	2.638E-06	--	4.589E-08	2.684E-06	1,1,2-Trichloroethane	blood	0.0495	--	0.000750	0.0503
			1,1-Dichloroethane	--	--	--	--	1,1-Dichloroethane	none	0.00703	--	9.137E-05	0.00712
			1,2-Dichloroethene (total)	--	--	--	--	1,2-Dichloroethene (total)	liver	0.142	--	0.00207	0.144
			1,4-Dichlorobenzene	1.648E-06	--	1.904E-07	1.839E-06	1,4-Dichlorobenzene	liver, kidney	0.00980	--	0.000986	0.0108
			4,4'-DDD	1.057E-07	--	5.908E-08	1.648E-07	4,4'-DDD	--	--	--	--	--
			4,4'-DDT	5.787E-07	--	2.834E-07	8.622E-07	4,4'-DDT	liver	0.0146	--	0.00621	0.0208
			4-Chloroaniline	--	--	--	--	4-Chloroaniline	spleen	0.0288	--	0.000531	0.0293
			4-Methyl-2-pentanone	--	--	--	--	4-Methyl-2-pentanone	liver, kidney	0.00312	--	1.877E-05	0.00314
			Acetone	--	--	--	--	Acetone	liver, kidney	0.364	--	0.000365	0.365
			Aldrin	1.647E-05	--	2.578E-05	4.226E-05	Aldrin	liver	0.138	--	0.188	0.327
			Benzene	1.725E-06	--	6.262E-08	1.787E-06	Benzene	--	0.0447	--	0.00141	0.0462
			Benzo(a)anthracene	1.232E-06	--	5.397E-06	6.629E-06	Benzo(a)anthracene	--	0.000241	--	0.000919	0.00116
			Benzo(a)pyrene	4.415E-06	--	2.866E-05	3.307E-05	Benzo(a)pyrene	--	8.630E-05	--	0.000488	0.000574
			Benzo(b)fluoranthene	4.349E-06	--	2.823E-05	3.258E-05	Benzo(b)fluoranthene	--	0.000850	--	0.00481	0.00566
			Benzo(k)fluoranthene	7.783E-07	--	1.693E-05	1.771E-05	Benzo(k)fluoranthene	--	0.00152	--	0.0288	0.0303
			Carbon disulfide	--	--	--	--	Carbon disulfide	fetus, reproductive system	0.00192	--	0.000107	0.00202
			Chlorobenzene	--	--	--	--	Chlorobenzene	liver and kidney	0.00511	--	0.000988	0.00610
			Chrysene	4.676E-09	--	2.049E-08	2.517E-08	Chrysene	--	9.142E-05	--	0.000349	0.000440
			Di-n-butyl phthalate	--	--	--	--	Di-n-butyl phthalate	--	0.00441	--	0.000213	0.00462

TABLE 6-90.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
			Dibenzo(a,h)anthracene	1.570E-05	--	0.000229	0.000245
			Dichlorobenzene-nonspecific	--	--	--	--
			Dieldrin	5.949E-05	--	1.172E-05	7.121E-05
			Diethylphthalate	--	--	--	--
			Endosulfan I	--	--	--	--
			Endrin	--	--	--	--
			Heptachlor	6.511E-06	--	4.246E-06	1.076E-05
			Heptachlor Epoxide	2.310E-06	--	2.951E-07	2.605E-06
			Hexachlorocyclopentadiene	--	--	--	--
			Indeno(1,2,3-cd)pyrene	4.218E-07	--	4.336E-06	4.758E-06
			Methoxychlor	--	--	--	--
			Methylene Chloride	5.151E-07	--	4.092E-09	5.192E-07
			Naphthalene	--	--	--	--
			Nitroglycerine	3.951E-07	--	2.990E-10	3.954E-07
			PCB 1248	1.837E-05	--	2.487E-05	4.323E-05
			Pentachlorophenol	9.461E-05	--	0.000103	0.000198
			Tetrachloroethene	3.106E-06	--	2.500E-07	3.356E-06
			Trichloroethene	1.642E-05	--	2.938E-06	1.936E-05
			Vinyl Chloride	0.000116	--	1.417E-06	0.000117
			alpha-BHC	2.173E-05	--	5.272E-07	2.226E-05
			beta-BHC	1.451E-06	--	6.835E-08	1.520E-06
			bis(2-Ethylhexyl)phthalate	1.108E-05	--	3.227E-06	1.431E-05
			Lindane	6.833E-06	--	1.102E-07	6.943E-06
			(Total)	0.00160	--	0.000518	0.00212

Total Risk Across Surface Soil	1.926E-07
Total Risk Across Subsurface Soil	--
Total Risk Across Groundwater	0.00212
Total Risk Across All Media and All Exposure Routes	0.00212

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Dibenzo(a,h)anthracene	--	0.000307	--	0.00390	0.00421
Dichlorobenzene-nonspecific	liver	0.00163	--	0.000201	0.00183
Dieldrin	liver	0.318	--	0.0546	0.373
Diethylphthalate	whole body	0.000128	--	9.956E-07	0.000129
Endosulfan I	kidney	0.00290	--	9.784E-06	0.00291
Endrin	CNS, liver	0.0511	--	0.132	0.183
Heptachlor	liver	0.0124	--	0.00703	0.0194
Heptachlor Epoxide	liver	0.0836	--	0.00930	0.0929
Hexachlorocyclopentadiene	GI tract	0.00439	--	0.000367	0.00476
Indeno(1,2,3-cd)pyrene	--	8.247E-05	--	0.000738	0.000820
Methoxychlor	reproductive system	0.0215	--	0.000584	0.0221
Methylene Chloride	liver	0.00490	--	3.389E-05	0.00493
Naphthalene	whole body	0.00447	--	0.000564	0.00504
Nitroglycerine	--	--	--	--	--
PCB 1248	--	--	--	--	--
Pentachlorophenol	liver	0.113	--	0.107	0.219
Tetrachloroethene	liver	0.0256	--	0.00179	0.0274
Trichloroethene	--	1.07	--	0.166	1.23
Vinyl Chloride	--	0.201	--	0.00214	0.203
alpha-BHC	--	--	--	--	--
beta-BHC	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	liver	0.169	--	0.0430	0.212
Lindane	liver, kidney	0.0750	--	0.00105	0.0761
(Total)	--	26	--	2.15	28

Total Hazard Index Across Surface Soil	3.28
Total Hazard Index Across Subsurface Soil	0.660
Total Hazard Index Across Groundwater	28
Total Hazard Index Across All Media and All Exposure Routes	32

Total CNS HI =	15
Total kidney HI =	1.40
Total GI system HI =	0.733
Total gastrointestinal system HI =	0.499
Total whole body HI =	0.828
Total blood HI =	0.0738
Total liver HI =	2.08
Total spleen HI =	0.0293
Total fetus HI =	0.00202
Total reproductive system HI =	0.0241
Total liver and kidney HI =	0.00610
Total GI tract HI =	0.00476

TABLE 6-91.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil	Soil	Landfill #3	Aluminum	--	--	--	--
			Chromium	--	--	--	--
			Manganese	--	--	--	--
			Vanadium	--	--	--	--
			Benzo(a)anthracene	3.265E-09	--	2.765E-10	3.542E-09
			Chrysene	1.857E-11	--	1.573E-12	2.014E-11
			(Total)	3.284E-09	--	2.781E-10	3.562E-09
	Air	Landfill #3	Aluminum	--	--	--	--
			Chromium	--	1.220E-06	--	1.220E-06
			Manganese	--	--	--	--
			Vanadium	--	--	--	--
			Benzo(a)anthracene	--	2.773E-11	--	2.773E-11
			Chrysene	--	1.577E-13	--	1.577E-13
			(Total)	--	1.220E-06	--	1.220E-06
Subsurface Soil	Soil	Landfill #3	Aluminum	--	--	--	--
			(Total)	--	--	--	--
	Air	Landfill #3	Aluminum	--	--	--	--
			(Total)	--	--	--	--

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Aluminum	CNS	0.124	--	0.00327	0.128
Chromium	none	0.00521	--	0.000684	0.00589
Manganese	CNS	0.318	--	0.0209	0.339
Vanadium	none	0.0223	--	0.00586	0.0282
Benzo(a)anthracene	--	1.044E-06	--	8.838E-08	1.132E-06
Chrysene	--	5.936E-07	--	5.027E-08	6.439E-07
(Total)	--	0.470	--	0.0307	0.501
Aluminum	--	--	1.78	--	1.78
Chromium	respiratory system	--	0.0729	--	0.0729
Manganese	CNS	--	11	--	11
Vanadium	--	--	--	--	--
Benzo(a)anthracene	--	--	--	--	--
Chrysene	--	--	--	--	--
(Total)	--	--	13	--	13
Aluminum	CNS	0.100	--	0.00264	0.103
(Total)	--	0.100	--	0.00264	0.103
Aluminum	--	--	1.43	--	1.43
(Total)	--	--	1.43	--	1.43

Total Risk Across Surface Soil	1.224E-06
Total Risk Across Subsurface Soil	--
Total Risk Across All Media and All Exposure Routes	1.224E-06

Total Hazard Index Across Surface Soil	13
Total Hazard Index Across Subsurface Soil	1.54
Total Hazard Index Across All Media and All Exposure Routes	15

Total CNS HI =	11
Total respiratory system HI =	0.0729

Table 6-92. RME Risk Characterization Summary (Future Land Use)
Landfill #3, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI				Cancer Risk			
		Residential		Industrial	Construction	Residential		Industrial	Construction
		Adult	Child	Worker	Worker	Adult	Child	Worker	Worker
Surface Soil (0 to <1 ft BLS)	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Sediment	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Groundwater	Ingestion	4E+00 E	8E+00 E	1E+00 B	NA	NA	NA	NA	NA
	Dermal Contact	2E-01 B	3E-01 B	1E-01 B	NA	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**4E+00 E**	**9E+00 E**	**1E+00 B**	**NA**	**NA**	**NA**	**NA**	**NA**
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		4E+00 E	9E+00 E	1E+00 B	NA				
Combined Cancer Risk:						NA	NA	NA	NA
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		4E+00 E	9E+00 E	1E+00 B	NA				
Combined Cancer Risk:						NA	NA	NA	NA

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI ≤ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR $> 10^{-4}$

TABLE 6-93.

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Landfill #3	Cobalt	--	--	--	--	Cobalt	--	0.00755	--	3.870E-05	0.00759
			Manganese	--	--	--	--	Manganese	CNS	1.29	--	0.132	1.42
			(Total)	--	--	--	--	(Total)	--	1.30	--	0.133	1.43
			Total Risk Across Groundwater				--		Total Hazard Index Across Groundwater				1.43
			Total Risk Across All Media and All Exposure Routes				0.000E+00		Total Hazard Index Across All Media and All Exposure Routes				1.43

Total CNS HI = 1.42

TABLE 6-94.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Landfill #3	Cobalt	--	--	--	--	Cobalt	--	0.0211	--	4.796E-05	0.0212
			Manganese	--	--	--	--	Manganese	CNS	3.62	--	0.164	3.78
			(Total)	--	--	--	--	(Total)	--	3.64	--	0.164	3.80
						Total Risk Across Groundwater	--					Total Hazard Index Across Groundwater	3.80
						Total Risk Across All Media and All Exposure Routes	0.000E+00					Total Hazard Index Across All Media and All Exposure Routes	3.80

Total CNS HI = 3.78

TABLE 6-95.

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Landfill #3	Cobalt	--	--	--	--	Cobalt	--	0.0493	--	9.003E-05	0.0494
			Manganese	--	--	--	--	Manganese	CNS	8.44	--	0.308	8.75
			(Total)	--	--	--	--	(Total)	--	8.49	--	0.308	8.80
						Total Risk Across Groundwater	--					Total Hazard Index Across Groundwater	8.80
						Total Risk Across All Media and All Exposure Routes	0.000E+00					Total Hazard Index Across All Media and All Exposure Routes	8.80

Total CNS HI = 8.75

Table 6-96. RME Risk Characterization Summary (Future Land Use)
Old Water Hole, Fort McClellan RI, Anniston, Alabama

Medium	Exposure Route	Noncancer HI				Cancer Risk			
		Residential		Industrial	Construction	Residential		Industrial	Construction
		Adult	Child	Worker	Worker	Adult	Child	Worker	Worker
Surface Soil (0 to <1 ft BLS)	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Subsurface Soil (1 to 12 ft BLS)	Ingestion	NA	3E-01 B	3E-02 B	5E-02 B	NA	NA	NA	NA
	Dermal Contact	NA	2E-02 B	1E-03 B	1E-02 B	NA	NA	NA	NA
	Venison	NA	NA	NA	NA	NA	NA	NA	NA
	Inhalation	NA	NA	2E-01	4E-01	NA	NA	NA	NA
	Subtotal	**NA**	**4E-01 B**	**2E-01 B**	**5E-01 B**	**NA**	**NA**	**NA**	**NA**
Sediment	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Surface Water	Ingestion	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
Groundwater	Ingestion	1E+00 B	3E+00 E	4E-01 B	NA	5E-05 B	5E-05 B	1E-05 B	NA
	Dermal Contact	1E-01 B	2E-01 B	1E-01 B	NA	2E-04 E	2E-04 E	1E-04 B	NA
	Inhalation	NA	NA	NA	NA	NA	NA	NA	NA
	Subtotal	**1E+00 B**	**3E+00 E**	**5E-01 B**	**NA**	**3E-04 E**	**3E-04 E**	**1E-04 B**	**NA**
Surface Soil (0 to <1 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		1E+00 B	3E+00 E	5E-01 B	NA				
Combined Cancer Risk:						3E-04 E	3E-04 E	1E-04 B	NA
Subsurface Soil (1 to 12 ft BLS), Sediment, Surface Water, Groundwater, and Venison									
Combined Hazard Index:		1E+00 B	3E+00 E	8E-01 B	5E-01 B				
Combined Cancer Risk:						3E-04 E	3E-04 E	1E-04 B	NA

NA - pathway not evaluated or all detected chemicals eliminated as COPCs
0E+00 - pathway evaluated but no risks could be calculated due to lack of EPA-approved toxicity values
B - HI $\leq$ 1 or ELCR $\leq 10^{-4}$
E - HI > 1 or ELCR > 10^{-4}

TABLE 6-97.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	Old Water Hole	Aluminum	--	--	--	--
			Vanadium	--	--	--	--
			(Total)	--	--	--	--
	Air	Old Water Hole	Aluminum	--	--	--	--
			Vanadium	--	--	--	--
			(Total)	--	--	--	--
Groundwater	Groundwater	Old Water Hole	Aluminum	--	--	--	--
			Barium	--	--	--	--
			Beryllium	--	--	--	--
			Cobalt	--	--	--	--
			Manganese	--	--	--	--
			Mercury	--	--	--	--
			4,4'-DDE	5.204E-09	--	8.109E-09	1.331E-08
			Aldrin	1.883E-06	--	7.205E-06	9.088E-06
			Benzo(a)anthracene	1.482E-07	--	1.588E-06	1.736E-06
			Benzo(b)fluoranthene	4.379E-07	--	6.950E-06	7.388E-06
			Benzo(k)fluoranthene	6.684E-09	--	3.555E-07	3.621E-07
			Chrysene	1.459E-09	--	1.563E-08	1.709E-08
			Dibenzo(a,h)anthracene	2.480E-06	--	8.854E-05	9.102E-05
			Heptachlor	6.306E-07	--	1.005E-06	1.636E-06
			Indeno(1,2,3-cd)pyrene	3.393E-07	--	8.526E-06	8.865E-06
			Nitrate,Nitrite	--	--	--	--
			Nitroglycerine	1.169E-07	--	2.163E-10	1.171E-07
			PCB 1248	3.488E-06	--	1.154E-05	1.503E-05
			RDX	2.807E-07	--	4.008E-10	2.811E-07
			alpha-BHC	2.488E-07	--	1.476E-08	2.635E-07
			bis(2-Ethylhexyl)phthalate	7.042E-07	--	5.014E-07	1.206E-06
			(Total)	1.077E-05	--	0.000126	0.000137

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Aluminum	CNS	0.0147	--	7.705E-05	0.0148
Vanadium	none	0.0107	--	0.000562	0.0113
(Total)	--	0.0254	--	0.000639	0.0260
Aluminum	--	--	0.210	--	0.210
Vanadium	--	--	--	--	--
(Total)	--	--	0.210	--	0.210
Aluminum	CNS	0.0252	--	0.00103	0.0262
Barium	kidney	0.0168	--	0.000984	0.0178
Beryllium	GI system	0.00572	--	0.00235	0.00807
Cobalt	--	0.00789	--	4.045E-05	0.00793
Manganese	CNS	0.334	--	0.0342	0.368
Mercury	kidney	0.00494	--	0.00202	0.00696
4,4'-DDE	--	--	--	--	--
Aldrin	liver	0.0103	--	0.0396	0.0499
Benzo(a)anthracene	--	1.895E-05	--	0.000203	0.000222
Benzo(b)fluoranthene	--	5.599E-05	--	0.000889	0.000945
Benzo(k)fluoranthene	--	8.545E-06	--	0.000454	0.000463
Chrysene	--	1.866E-05	--	0.000200	0.000219
Dibenzo(a,h)anthracene	--	3.170E-05	--	0.00113	0.00116
Heptachlor	liver	0.000785	--	0.00125	0.00204
Indeno(1,2,3-cd)pyrene	--	4.338E-05	--	0.00109	0.00113
Nitrate,Nitrite	blood	0.00166	--	1.364E-05	0.00168
Nitroglycerine	--	--	--	--	--
PCB 1248	--	--	--	--	--
RDX	reproductive system	0.00238	--	3.401E-06	0.00239
alpha-BHC	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	liver	0.00704	--	0.00501	0.0121
(Total)	--	0.417	--	0.0905	0.507

Total Risk Across Subsurface Soil	--
Total Risk Across Groundwater	0.000137
Total Risk Across All Media and All Exposure Routes	0.000137

Total Hazard Index Across Subsurface Soil	0.236
Total Hazard Index Across Groundwater	0.507
Total Hazard Index Across All Media and All Exposure Routes	0.743

Total CNS HI =	0.409
Total kidney HI =	0.0247
Total GI system HI =	0.00807
Total liver HI =	0.0640
Total blood HI =	0.00168
Total reproductive system HI =	0.00239

TABLE 6-98.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Old Water Hole	Aluminum	--	--	--	--	Aluminum	CNS	0.0705	--	0.00128	0.0718
			Barium	--	--	--	--	Barium	kidney	0.0470	--	0.00122	0.0483
			Beryllium	--	--	--	--	Beryllium	GI system	0.0160	--	0.00291	0.0189
			Cobalt	--	--	--	--	Cobalt	--	0.0221	--	5.014E-05	0.0222
			Manganese	--	--	--	--	Manganese	CNS	0.935	--	0.0424	0.977
			Mercury	--	--	--	--	Mercury	kidney	0.0138	--	0.00251	0.0163
			4,4'-DDE	2.224E-08	--	1.417E-08	3.641E-08	4,4'-DDE	--	--	--	--	--
			Aldrin	8.047E-06	--	1.259E-05	2.064E-05	Aldrin	liver	0.0289	--	0.0490	0.0780
			Benzo(a)anthracene	6.333E-07	--	2.775E-06	3.408E-06	Benzo(a)anthracene	--	5.306E-05	--	0.000252	0.000305
			Benzo(b)fluoranthene	1.871E-06	--	1.215E-05	1.402E-05	Benzo(b)fluoranthene	--	0.000157	--	0.00110	0.00126
			Benzo(k)fluoranthene	2.856E-08	--	6.212E-07	6.498E-07	Benzo(k)fluoranthene	--	2.393E-05	--	0.000563	0.000587
			Chrysene	6.235E-09	--	2.732E-08	3.356E-08	Chrysene	--	5.224E-05	--	0.000248	0.000300
			Dibenzo(a,h)anthracene	1.059E-05	--	0.000155	0.000165	Dibenzo(a,h)anthracene	--	8.877E-05	--	0.00140	0.00149
			Heptachlor	2.694E-06	--	1.757E-06	4.452E-06	Heptachlor	liver	0.00220	--	0.00155	0.00375
			Indeno(1,2,3-cd)pyrene	1.450E-06	--	1.490E-05	1.635E-05	Indeno(1,2,3-cd)pyrene	--	0.000121	--	0.00135	0.00147
			Nitrate,Nitrite	--	--	--	--	Nitrate,Nitrite	blood	0.00466	--	1.691E-05	0.00467
			Nitroglycerine	4.996E-07	--	3.781E-10	5.000E-07	Nitroglycerine	--	--	--	--	--
			PCB 1248	1.490E-05	--	2.018E-05	3.508E-05	PCB 1248	--	--	--	--	--
			RDX	1.199E-06	--	7.006E-10	1.200E-06	RDX	reproductive system	0.00667	--	4.216E-06	0.00667
			alpha-BHC	1.063E-06	--	2.579E-08	1.089E-06	alpha-BHC	--	--	--	--	--
			bis(2-Ethylhexyl)phthalate	3.009E-06	--	8.764E-07	3.885E-06	bis(2-Ethylhexyl)phthalate	liver	0.0197	--	0.00622	0.0259
			(Total)	4.602E-05	--	0.000221	0.000267	(Total)	--	1.17	--	0.112	1.28

Total Risk Across Groundwater	0.000267
Total Risk Across All Media and All Exposure Routes	0.000267

Total Hazard Index Across Groundwater	1.28
Total Hazard Index Across All Media and All Exposure Routes	1.28

Total CNS HI =	1.05
Total kidney HI =	0.0646
Total GI system HI =	0.0189
Total liver HI =	0.108
Total blood HI =	0.00467
Total reproductive system HI =	0.00667

TABLE 6-99.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	Old Water Hole	Aluminum	--	--	--	--
			Vanadium	--	--	--	--
			(Total)	--	--	--	--
Groundwater	Groundwater	Old Water Hole	Aluminum	--	--	--	--
			Barium	--	--	--	--
			Beryllium	--	--	--	--
			Cobalt	--	--	--	--
			Manganese	--	--	--	--
			Mercury	--	--	--	--
			4,4'-DDE	2.224E-08	--	1.417E-08	3.641E-08
			Aldrin	8.047E-06	--	1.259E-05	2.064E-05
			Benzo(a)anthracene	6.333E-07	--	2.775E-06	3.408E-06
			Benzo(b)fluoranthene	1.871E-06	--	1.215E-05	1.402E-05
			Benzo(k)fluoranthene	2.856E-08	--	6.212E-07	6.498E-07
			Chrysene	6.235E-09	--	2.732E-08	3.356E-08
			Dibenzo(a,h)anthracene	1.059E-05	--	0.000155	0.000165
			Heptachlor	2.694E-06	--	1.757E-06	4.452E-06
			Indeno(1,2,3-cd)pyrene	1.450E-06	--	1.490E-05	1.635E-05
			Nitrate,Nitrite	--	--	--	--
			Nitroglycerine	4.996E-07	--	3.781E-10	5.000E-07
			PCB 1248	1.490E-05	--	2.018E-05	3.508E-05
			RDX	1.199E-06	--	7.006E-10	1.200E-06
			alpha-BHC	1.063E-06	--	2.579E-08	1.089E-06
			bis(2-Ethylhexyl)phthalate	3.009E-06	--	8.764E-07	3.885E-06
			(Total)	4.602E-05	--	0.000221	0.000267

Chemical	Non-Carcinogenic Hazard Quotient				
	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Aluminum	CNS	0.192	--	0.00121	0.193
Vanadium	none	0.140	--	0.00881	0.149
(Total)	--	0.332	--	0.0100	0.342
Aluminum	CNS	0.165	--	0.00240	0.167
Barium	kidney	0.110	--	0.00229	0.112
Beryllium	GI system	0.0374	--	0.00546	0.0429
Cobalt	--	0.0516	--	9.411E-05	0.0517
Manganese	CNS	2.18	--	0.0796	2.26
Mercury	kidney	0.0322	--	0.00471	0.0370
4,4'-DDE	--	--	--	--	--
Aldrin	liver	0.0675	--	0.0920	0.160
Benzo(a)anthracene	--	0.000124	--	0.000472	0.000596
Benzo(b)fluoranthene	--	0.000366	--	0.00207	0.00243
Benzo(k)fluoranthene	--	5.583E-05	--	0.00106	0.00111
Chrysene	--	0.000122	--	0.000465	0.000587
Dibenzo(a,h)anthracene	--	0.000207	--	0.00263	0.00284
Heptachlor	liver	0.00513	--	0.00291	0.00804
Indeno(1,2,3-cd)pyrene	--	0.000283	--	0.00254	0.00282
Nitrate,Nitrite	blood	0.0109	--	3.173E-05	0.0109
Nitroglycerine	--	--	--	--	--
PCB 1248	--	--	--	--	--
RDX	reproductive system	0.0156	--	7.913E-06	0.0156
alpha-BHC	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	liver	0.0460	--	0.0117	0.0577
(Total)	--	2.72	--	0.210	2.93

Total Risk Across Subsurface Soil	--
Total Risk Across Groundwater	0.000267
Total Risk Across All Media and All Exposure Routes	0.000267

Total Hazard Index Across Subsurface Soil	0.342
Total Hazard Index Across Groundwater	2.93
Total Hazard Index Across All Media and All Exposure Routes	3.27

Total CNS HI =	2.62
Total kidney HI =	0.149
Total GI system HI =	0.0429
Total liver HI =	0.225
Total blood HI =	0.0109
Total reproductive system HI =	0.0156

TABLE 6-100.
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
FORT McCLELLAN RI, ANNISTON, ALABAMA

Scenario Timeframe: Future
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical	Carcinogenic Risk				Chemical	Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Subsurface Soil	Soil	Old Water Hole	Aluminum	--	--	--	--	Aluminum	CNS	0.0294	--	0.000771	0.0301
			Vanadium	--	--	--	--	Vanadium	none	0.0275	--	0.00722	0.0347
			(Total)	--	--	--	--	(Total)	--	0.0569	--	0.00799	0.0649
	Air	Old Water Hole	Aluminum	--	--	--	--	Aluminum	--	--	0.419	--	0.419
			Vanadium	--	--	--	--	Vanadium	--	--	--	--	--
			(Total)	--	--	--	--	(Total)	--	--	0.419	--	0.419

Total Risk Across Subsurface Soil: --
Total Risk Across All Media and All Exposure Routes: 0.000E+00

Total Hazard Index Across Subsurface Soil: 0.484
Total Hazard Index Across All Media and All Exposure Routes: 0.484

Total CNS HI = 0.0301

Table 6-101. RME Human Health Risk Assessment Summary (Current Land Use)
Fort McClellan RI, Anniston, Alabama

Medium	Noncancer HI		Cancer Risk	
	Industrial Worker		Industrial Worker	
Area T-4 Biological Simulant Test Area				
Surface Soil (0 to <1 ft BLS)	NA		NA	
Subsurface Soil (1 to 12 ft BLS)	NA		NA	
Sediment	NA		NA	
Surface Water	NA		NA	
Groundwater	NA		NA	
Area T-5 Toxic Hazards Detection and Decontamination Training Area				
Surface Soil (0 to <1 ft BLS)	NA		NA	
Subsurface Soil (1 to 12 ft BLS)	NA		NA	
Sediment	NA		NA	
Surface Water	NA		NA	
Groundwater	NA		NA	
Area T-24A Chemical Munitions Disposal Training Area				
Surface Soil (0 to <1 ft BLS)	NA		NA	
Subsurface Soil (1 to 12 ft BLS)	NA		NA	
Sediment	NA		NA	
Surface Water	NA		NA	
Groundwater	NA		NA	
Area T-38 Technical Escort Reaction Area				
Surface Soil (0 to <1 ft BLS)	7E-02	B	2E-06	B
Subsurface Soil (1 to 12 ft BLS)	NA		NA	
Sediment	NA		NA	
Surface Water	NA		NA	
Groundwater	NA		NA	
Range K Agent Training Area				
Surface Soil (0 to <1 ft BLS)	NA		NA	
Subsurface Soil (1 to 12 ft BLS)	NA		NA	
Sediment	NA		NA	
Surface Water	NA		NA	
Groundwater	NA		NA	
Range J Agent Training Area				
Surface Soil (0 to <1 ft BLS)	NA		NA	
Subsurface Soil (1 to 12 ft BLS)	NA		NA	
Sediment	NA		NA	
Surface Water	NA		NA	
Groundwater	NA		NA	
Range L (Lima Pond) Chemical Munitions Disposal Area				
Surface Soil (0 to <1 ft BLS)	5E-01	B	1E-06	B
Subsurface Soil (1 to 12 ft BLS)	NA		NA	
Sediment	NA		NA	
Surface Water	NA		NA	
Groundwater	NA		NA	

Table 6-101. RME Human Health Risk Assessment Summary (Current Land Use)
Fort McClellan RI, Anniston, Alabama (Continued)

Medium	Noncancer HI		Cancer Risk	
	Industrial Worker		Industrial Worker	
Detection and Identification Area				
Surface Soil (0 to <1 ft BLS)	NA		NA	
Subsurface Soil (1 to 12 ft BLS)	NA		NA	
Sediment	NA		NA	
Surface Water	NA		NA	
Groundwater	NA		NA	
Former Landfill #1				
Surface Soil (0 to <1 ft BLS)	NA		NA	
Subsurface Soil (1 to 12 ft BLS)	NA		NA	
Sediment	NA		NA	
Surface Water	NA		NA	
Groundwater	NA		NA	
Former Landfill #2				
Surface Soil (0 to <1 ft BLS)	NA		NA	
Subsurface Soil (1 to 12 ft BLS)	NA		NA	
Sediment	NA		NA	
Surface Water	NA		NA	
Groundwater	NA		NA	
Former Landfill #3				
Surface Soil (0 to <1 ft BLS)	4E-01	B	7E-07	B
Subsurface Soil (1 to 12 ft BLS)	NA		NA	
Sediment	NA		NA	
Surface Water	NA		NA	
Groundwater	NA		NA	
Old Water Hole				
Surface Soil (0 to <1 ft BLS)	NA		NA	
Subsurface Soil (1 to 12 ft BLS)	NA		NA	
Sediment	NA		NA	
Surface Water	NA		NA	
Groundwater	NA		NA	

Table 6-102. RME Human Health Risk Assessment Summary (Current/Future Land Use)
Fort McClellan RI, Anniston, Alabama

Medium	Noncancer HI		Cancer Risk	
	Recreational	Hunter	Recreational	Hunter
Area T-4 Biological Simulant Test Area				
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA
Sediment	NA	NA	NA	NA
Surface Water	NA	NA	NA	NA
Groundwater	NA	NA	NA	NA
Area T-5 Toxic Hazards Detection and Decontamination Training Area				
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA
Sediment	NA	NA	NA	NA
Surface Water	NA	NA	NA	NA
Groundwater	NA	NA	NA	NA
Area T-24A Chemical Munitions Disposal Training Area				
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA
Sediment	NA	NA	NA	NA
Surface Water	NA	NA	NA	NA
Groundwater	NA	NA	NA	NA
Area T-38 Technical Escort Reaction Area				
Surface Soil (0 to <1 ft BLS)	2E-02 B	2E-05 B	NA	NA
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA
Sediment	NA	NA	NA	NA
Surface Water	NA	NA	NA	NA
Groundwater	NA	NA	NA	NA
Range K Agent Training Area				
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA
Sediment	NA	NA	NA	NA
Surface Water	NA	NA	NA	NA
Groundwater	NA	NA	NA	NA
Range J Agent Training Area				
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA
Sediment	NA	NA	NA	NA
Surface Water	NA	NA	NA	NA
Groundwater	NA	NA	NA	NA
Range L (Lima Pond) Chemical Munitions Disposal Area				
Surface Soil (0 to <1 ft BLS)	5E-02 B	1E-02 B	NA	NA
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA
Sediment	4E-03 B	NA	NA	NA
Surface Water	5E-02 B	NA	2E-07 B	NA
Groundwater	NA	NA	NA	NA

Table 6-102. RME Human Health Risk Assessment Summary (Current/Future Land Use)
Fort McClellan RI, Anniston, Alabama (Continued)

Medium	Noncancer HI		Cancer Risk	
	Recreational	Hunter	Recreational	Hunter
Detection and Identification Area				
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA
Sediment	NA	NA	NA	NA
Surface Water	NA	NA	NA	NA
Groundwater	NA	NA	NA	NA
Former Landfill #1				
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA
Sediment	NA	NA	NA	NA
Surface Water	4E-03 B	NA	1E-07 B	NA
Groundwater	NA	NA	NA	NA
Former Landfill #2				
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA
Sediment	2E-03 B	NA	NA	NA
Surface Water	NA	NA	NA	NA
Groundwater	NA	NA	NA	NA
Former Landfill #3				
Surface Soil (0 to <1 ft BLS)	NA	9E-03 B	NA	NA
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA
Sediment	2E-03 B	NA	NA	NA
Surface Water	1E-03 B	NA	1E-08 B	NA
Groundwater	NA	NA	NA	NA
Old Water Hole				
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA
Sediment	NA	NA	NA	NA
Surface Water	NA	NA	NA	NA
Groundwater	NA	NA	NA	NA

Table 6-103. RME Human Health Risk Assessment Summary (Future Land Use)
Fort McClellan RI, Anniston, Alabama

Medium	Noncancer HI				Cancer Risk				Lead		
	Residential		Industrial	Construction	Residential		Industrial	Construction	Residential	Industrial	Construction
	Adult	Child	Worker	Worker	Adult	Child	Worker	Worker	Child	Worker	Worker
Area T-4 Biological Simulant Test Area											
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Sediment	NA	NA	NA	NA	NA	NA	NA	NA			
Surface Water	NA	NA	NA	NA	NA	NA	NA	NA			
Groundwater	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Area T-5 Toxic Hazards Detection and Decontamination Training Area											
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Sediment	NA	NA	NA	NA	NA	NA	NA	NA			
Surface Water	NA	NA	NA	NA	NA	NA	NA	NA			
Groundwater	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Area T-24A Chemical Munitions Disposal Training Area											
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Subsurface Soil (1 to 12 ft BLS)	NA	1E+00 B	5E-01 B	1E+00 B	NA	NA	NA	NA	-	-	-
Sediment	NA	NA	NA	NA	NA	NA	NA	NA			
Surface Water	NA	NA	NA	NA	NA	NA	NA	NA			
Groundwater	7E+00 E	1E+01 E	2E+00 E	NA	2E-04 E	2E-04 E	5E-05 B	NA	-	-	-
Area T-38 Technical Escort Reaction Area											
Surface Soil (0 to <1 ft BLS)	NA	1E+00 B	8E-01 B	2E+00 E	NA	NA	4E-05 B	3E-06 B	-	-	-
Subsurface Soil (1 to 12 ft BLS)	NA	1E+00 B	1E+00 B	2E+00 E	NA	NA	2E-05 B	1E-06 B	-	-	-
Sediment	NA	NA	NA	NA	NA	NA	NA	NA			
Surface Water	NA	NA	NA	NA	NA	NA	NA	NA			
Groundwater	1E+01 E	2E+01 E	3E+00 E	NA	1E-02 E	6E-03 E	2E-03 E	NA	-	-	-
Range K Agent Training Area											
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Sediment	NA	NA	NA	NA	NA	NA	NA	NA			
Surface Water	NA	NA	NA	NA	NA	NA	NA	NA			
Groundwater	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Range J Agent Training Area											
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Sediment	NA	NA	NA	NA	NA	NA	NA	NA			
Surface Water	NA	NA	NA	NA	NA	NA	NA	NA			
Groundwater	2E+02 E	2E+02 E	3E+01 E	NA	5E-03 E	4E-03 E	1E-03 E	NA	-	-	-

Table 6-103. RME Human Health Risk Assessment Summary (Future Land Use)
Fort McClellan RI, Anniston, Alabama (Continued)

Medium	Noncancer HI				Cancer Risk				Lead		
	Residential		Industrial	Construction	Residential		Industrial	Construction	Residential	Industrial	Construction
	Adult	Child	Worker	Worker	Adult	Child	Worker	Worker	Child	Worker	Worker
Range L (Lima Pond) Chemical Munitions Disposal Area											
Surface Soil (0 to <1 ft BLS)	NA	4E+00 E	9E+00 E	2E+01 E	NA	NA	2E-05 B	2E-06 B	-	-	-
Subsurface Soil (1 to 12 ft BLS)	NA	1E+00 B	9E-01 B	2E+00 E	NA	NA	3E-05 B	2E-06 B	-	-	-
Sediment	NA	NA	NA	NA	NA	NA	NA	NA			
Surface Water	NA	NA	NA	NA	NA	NA	NA	NA			
Groundwater	7E+00 E	2E+01 E	3E+00 E	NA	4E-04 E	4E-04 E	2E-04 E	NA	-	-	-
Detection and Identification Area											
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Subsurface Soil (1 to 12 ft BLS)	NA	7E-01 B	6E-01 B	1E+00 B	NA	NA	1E-05 B	1E-06 B	-	-	-
Sediment	NA	NA	NA	NA	NA	NA	NA	NA			
Surface Water	NA	NA	NA	NA	NA	NA	NA	NA			
Groundwater	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Former Landfill #1											
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Subsurface Soil (1 to 12 ft BLS)	NA	7E-01 B	5E-01 B	1E+00 B	NA	2E-07 B	4E-08 B	4E-09 B	-	-	-
Sediment	NA	NA	NA	NA	NA	NA	NA	NA			
Surface Water	NA	NA	NA	NA	NA	NA	NA	NA			
Groundwater	2E+00 E	4E+00 E	6E-01 B	NA	4E-06 B	4E-06 B	1E-06 B	NA	-	-	-
Former Landfill #2											
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Subsurface Soil (1 to 12 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Sediment	NA	NA	NA	NA	NA	NA	NA	NA			
Surface Water	NA	NA	NA	NA	NA	NA	NA	NA			
Groundwater	3E+00 E	7E+00 E	1E+00 B	NA	8E-06 B	8E-06 B	3E-06 B	NA	2E+01 E	-	-
Former Landfill #3											
Surface Soil (0 to <1 ft BLS)	NA	3E+00 E	7E+00 E	1E+01 E	NA	2E-07 B	2E-05 B	1E-06 B	-	-	-
Subsurface Soil (1 to 12 ft BLS)	NA	7E-01 B	8E-01 B	2E+00 E	NA	NA	NA	NA	-	-	-
Sediment	NA	NA	NA	NA	NA	NA	NA	NA			
Surface Water	NA	NA	NA	NA	NA	NA	NA	NA			
Groundwater	1E+01 E	3E+01 E	5E+00 E	NA	3E-03 E	2E-03 E	7E-04 E	NA	1E+01 E	-	-
Old Water Hole											
Surface Soil (0 to <1 ft BLS)	NA	NA	NA	NA	NA	NA	NA	NA	-	-	-
Subsurface Soil (1 to 12 ft BLS)	NA	4E-01 B	2E-01 B	5E-01 B	NA	NA	NA	NA	-	-	-
Sediment	NA	NA	NA	NA	NA	NA	NA	NA			
Surface Water	NA	NA	NA	NA	NA	NA	NA	NA			
Groundwater	1E+00 B	3E+00 E	5E-01 B	NA	3E-04 E	3E-04 E	1E-04 B	NA	-	-	-