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REVISED FINAL TECHNICAL MEMORANDUM FOR SITE REMEDIATION GOAL SELECTION PROCESS AND EVALUATION OF TARGET REMEDIAION AREAS IN SOIL AT SITE 1 ALLEGANY BALLISTICS LABORATORY ROCKET CENTER WV

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Revised Final Technical Memorandum

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory
Rocket Center, West Virginia

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Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1, Allegany Ballistics Laboratory, Rocket Center, West Virginia

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Introduction

This technical memorandum presents the proposed site remediation goals (SRGs) and method for applying a 95 percent upper confidence limit (UCL) of site-wide soil concentrations within the active burning ground (ABG) and outside active burning ground (OABG) to determine areas of concern (AOCs) that will be targeted for remediation in Operable Unit (OU) 4, Site 1 soil, at Allegany Ballistics Laboratory (ABL) located in Rocket Center, West Virginia. The human health and ecological preliminary remediation goals (PRGs) and site-specific soil-to-groundwater leaching considerations discussed herein supersede previous partnering team discussions and decisions regarding Site 1 SRGs.

The Department of the Navy (Navy), in partnership with West Virginia Department of Environmental Protection (WVDEP) and the United States Environmental Protection Agency (EPA), will utilize the AOCs presented in this memo to define the general AOCs in soil for use as part of the remedial alternative development and comparison in the Feasibility Study (FS). This technical memorandum does not address how the post-remedial-action confirmation sampling will be interpreted or how the remedial goals will be used in the field if an excavation alternative is selected as the final remedy. Furthermore, additional data collection efforts may be necessary to refine remedial target areas presented in this memorandum prior to selection of the final remedy, which will be presented in the Record of Decision (ROD) in accordance with the Navy's Environmental Restoration Program, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidance (EPA, 1999), the National Oil and Hazardous Substance Pollution Contingency Plan (Title 40 Code of Federal Regulations Part 300 et seq.), and other relevant EPA guidance.

Site Description

Site 1 is an 11-acre area situated adjacent to the North Branch Potomac River along the northern border of the developed portion of Plant 1 at ABL. Site 1 has been used for various types of waste burning and historical disposal activities. Site 1 groundwater, surface water, and sediment were investigated as part of a separate OU (OU-3) with a final ROD signed in May 1997 (CH2M HILL, 1997). Site 1 soil (OU-4), which is the subject of this memorandum, comprises the ABG and OABG, as shown on Figure 1.

Active Burning Ground

The ABG consists of several historical disposal units within an 8-acre parcel used for burning reactive wastes and is regulated under a Resource Conservation and Recovery Act (RCRA) permit. A 6-foot-tall locked fence surrounds the area, which is mostly covered by mowed grass. An asphalt road spans the east-west length of the fenced area.

Historical disposal of spent acid and solvents occurred in three former disposal pits (FDPs), located inside the boundary of the ABG, and are considered primary sources of contamination to groundwater. An Engineering Evaluation and Cost Analysis and Action Memorandum have been developed to address these potential sources of groundwater contamination in the unsaturated soil (CH2M HILL, 2012).

Eight earthen burn pads, operated from 1959 until the mid-1990s, were used to burn solvents and explosive waste generated at ABL. The burn pads were numbered 1 through 8, going from east to west. During operations, each burn pad reportedly handled specific types of wastes, which included explosives, solid propellants, and reactive solvents. The former earthen burn pads are not currently used and have been overgrown with vegetation. Currently, open burning occurs on six large concrete burn pads, labeled Pad A through Pad F, going from east to west. Although the ABG is operating under a RCRA permit, it was agreed upon by the Partnering Team in April 2009 that this area potentially includes contamination attributed to historical waste burning; therefore, the ABG will be considered for remedial action under CERCLA.

Outside Active Burning Ground

The OABG was historically used for various waste disposal activities that no longer occur. Based on historical activities, the OABG has been divided into the following subareas:

- **West OABG** - Former open burn area and associated disposal area, located in the northwest portion of the site. It consists of the former open burn area, former burn cages, and western drainage ditch. The former open burn area was enclosed behind a chain link fence where the solid wastes were burned. The resulting ash was spread along the lower floodplain area in a portion of the former open burn disposal area. Demolition debris, concrete rubble, drums, and rocket casings were also disposed in the former open burn disposal area. The western drainage ditch is an earthen drainage culvert that cuts through the disposal area and drains surface water and stormwater from Plant 1. Debris materials, including ash buried during successive disposal events, are exposed in the walls of this culvert. Surface debris is also present throughout and to the east of the former open burn disposal area, some of which was removed in 2008.

- **Central OABG** - As reported in the 2008 debris characterization technical memorandum (CH2M HILL, 2008), no evidence of debris or disposal activities in this area was encountered through visual observation or subsurface soil sampling.

- **East OABG** - Former inert burn area and associated disposal area along the river, located in the northeastern portion of the site. The former inert burn area lies east of the perimeter fence surrounding the ABG area. Ash from burning in this area was spread and buried during successive disposal events.

Summary of Site Risks

A quantitative human health risk assessment (HHRA) and ecological risk assessment (ERA) were conducted during the focused Remedial Investigation (RI) for soil within the ABG and OABG (CH2M HILL, 2006). In addition, an evaluation of the potential for constituents to leach from soil to groundwater at levels posing a potentially unacceptable risk was completed for Site 1 soils and is documented herein. Data collected between 1992 and 2004 were included in the risk assessments and soil-to-groundwater leaching evaluation.

Human Health Risk Assessment Summary

The baseline HHRA was conducted to evaluate the potential human health risks associated with surface soil and combined soil (surface and subsurface soil) at the ABG, FDP (addressed separately from the ABG in the RI), and OABG. Potential risks were calculated for current/future industrial worker, adolescent trespasser/visitor, adult recreational person, and adolescent recreational person, as well as for future adult resident, child resident, lifetime resident, and construction worker. Constituents of concern (COCs) were selected as those chemicals contributing individual cancer risks above 10^{-6} to total cancer risks for a potential human receptor that were above 10^{-4} or contributing individual non-carcinogenic hazards above 0.1 to total hazard indices for a potential receptor above 1.0. No unacceptable risks associated with exposure to surface soil were identified, as evaluated for current exposure scenarios. The only unacceptable risk was associated with exposure to combined soil by future residents. A summary of site risks associated with each receptor scenario is provided in Table 1.

Ecological Risk Assessment Summary

The baseline ERA (BERA) was conducted to evaluate the potential ecological risks associated with surface soil at the ABG, FDP, and OABG. Because of their proximity and similarity in habitat, the ABG and FDP areas were

addressed together and referred to as "upland habitat." Because most of the OABG area is within the floodplain of the river, this area was referred to as "floodplain habitat." The terrestrial portion of the ERA was quantitatively conducted using surface soil samples collected from the top foot of the soil column because this depth range represented the most realistic potential exposures for most of the ecological receptors evaluated in terrestrial habitats. Because some ecological receptors may be exposed, at least periodically, to deeper soils, available subsurface soil data from the 12- to 24-inch depth interval (a few samples that extended down to 3 feet were also used) were also qualitatively considered to determine if constituent concentrations in the subsurface layers were higher than in surface layers.

Potential risks were evaluated for lower trophic level receptors (terrestrial plants and soil invertebrates for direct exposures to surface soil) and for upper trophic level receptors (birds and mammals, for food web exposures). Laboratory toxicity tests (bioassays) were conducted using split samples of surface soil collected from floodplain areas of the site. Earthworms were the test organism and a total of 15 tests were conducted, two of which were from reference areas. Earthworm tissue samples from five of these samples (four site samples and one reference sample) were analyzed for dioxins/furans following completion of the toxicity tests.

Surface soil COCs were selected based upon a comparison of site surface soil concentrations to literature-based soil screening values and site-specific background concentrations (CH2M HILL, 2004), the results of soil toxicity testing, and the results of food web modeling. A summary of site risks associated with ecological receptor exposure is provided in Table 2.

For upland areas, potential unacceptable risks were associated with direct exposure to several metals and explosive compounds in surface soil. Baseline risk estimates using area-wide averages indicated low to negligible risks for upper trophic level receptors in upland habitats. The upland portion of Site 1 is covered with periodically mowed grasses and other herbaceous plants, providing habitat of limited diversity and quality. Except for unpaved roads and the areas immediately around some of the active burn pans, no obvious phytotoxic effects (for example, large areas of bare soil or dead or dying plants) were observed. Given the limited habitat quality of the ABG area, particularly in the vicinity of the active burn pads where most of the significant exceedances were found, concentrations of the metal and explosive COCs are not likely to result in adverse impacts to populations of ecological receptors.

For floodplain areas, potential unacceptable risks were associated with direct exposures to several metals, explosives, volatile organic compounds, and polycyclic aromatic hydrocarbons (PAHs) in surface soil. The highest concentrations of these constituents generally occurred in the vicinity of the former open burn area, the western drainage ditch, and in the vicinity of the former inert burn area. Several of these samples consisted mostly of ash rather than soil. PAH concentrations were elevated in several samples clustered on or near the banks of the western drainage ditch. At two of these locations, PAHs were identified as potentially responsible for soil invertebrate toxicity. Trichloroethene and 1,2-dichloroethene exceeded screening values in the vicinity of the former inert burn area. Mercury was the only constituent with an exceedance based on the lowest observed adverse effect level (LOAEL) for terrestrial-based food web exposures in the OABG area. In addition to mercury, hazard quotients (HQs) exceeded 1.0 based upon the maximum acceptable toxicant concentration (MATC) for cadmium (short-tailed shrew), lead (American robin), zinc (American robin), and dioxin/furans (long-tailed weasel).

The results of the soil toxicity test were generally consistent with the results from the surface soil screening. The most-impacted samples, which had a mean survival of less than 25 percent and little if any signs of reproduction, were associated with the locations in the former open burn area, the western drainage ditch, and the former inert burn area.

Site-Specific Soil Screening Levels

Site-specific soil screening levels (SSLs) were developed to evaluate COC concentrations in soil that are protective of the uppermost groundwater-bearing unit. The approach used to develop the SSLs follows EPA's *Soil Screening Guidance* (EPA, 1996) and the *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (EPA, 2002). The basis of the approach is that infiltrating precipitation leaches the contaminants from the soil and transports them into the aquifer, and is then diluted by the lateral flow within the aquifer. The approach assumes

that a hypothetical future groundwater user is present on the immediate downgradient boundary of the site. Potable groundwater use is assumed for the hypothetical future scenario for the Site 1 SSL evaluation.

Procedure for Calculating Soil Screening Levels

The SSLs are based on an equilibrium partitioning equation that assumes chemicals in the subsurface are in equilibrium between the solid, liquid and gaseous phases present in the vadose zone. Therefore, the chemicals in the vadose zone may exist in three states: sorbed to soil particles, dissolved in the soil moisture, and in a gaseous phase in the air-filled soil pores. This approach also assumes that the soil moisture (leachate) will migrate downward to the underlying water table. Typically, lateral groundwater flux within the underlying aquifer is much greater than the vertical recharge and a dilution attenuation factor (DAF) has been used in calculating the SSL. The groundwater protection standard (target leachate concentration [C_w]) is the product of the potable groundwater standard (maximum contaminant level [MCL] or regional screening level [RSL]) and the DAF. The C_w is the diluted standard. The input parameters to the SSL equilibrium equation and DAF equation are listed in Table 3.

SSLs were calculated using: $$SSL = C_w \times \left[K_d + \frac{(\theta_w + \theta_a H')}{\rho_b} \right]$$

DAF was calculated using: $$DAF = 1 + \frac{Kid}{IL}$$

Perchlorate does not readily sorb to soil particles, nor does it partition to soil gas; therefore, a different approach was used to evaluate an SSL. EPA's *Soil Screening Guidance* document provides a conservative estimate for an SSL providing that all of contaminant mass leaches from the soil into the underlying groundwater. The input parameters to the SSL equilibrium equation are listed in Table 4.

The mass limit SSL for perchlorate was calculated using:

$$SSL = \left(\frac{C_w \times I \times ED}{\rho_b \times d_s} \right) \left(\frac{1}{12} \frac{ft}{in} \right)$$

Tables 5 and 6 summarize the SSLs for COCs that exceeded the site-specific background concentrations (as applicable) in the ABG and OABG, respectively. For each constituent, SSLs were calculated using the DAF of 46 (site-specific factor for the ABG) and 236 (site-specific factor for the OABG).

Preliminary Remediation Goals and Soil-To-Groundwater Leaching Considerations

PRGs were calculated for both human health and ecological exposure scenarios, for the COCs identified for ABG and OABG based on their respective risk assessments. As previously noted, human health COCs were identified for only the residential land use scenario. However, PRGs were calculated for all human health COCs to ensure concentrations of COCs remaining onsite would be below levels to allow for industrial land use. Supporting calculations for the human health and ecological risk-based PRGs are presented in Attachments A and B, respectively.

Site-specific soil-to-groundwater leaching considerations presented as SSLs are model-generated values based on a number of assumptions, which include a uniform distribution of COCs across the entire site and no degradation (abiotic or biotic) of the chemicals during either vertical or horizontal transport through the vadose zone and the aquifer. Therefore, leachate concentrations may either be over or underestimated. In an effort to determine how the SSLs will be applied during SRG development, the Navy, in partnership with WVDEP and EPA, agreed that an evaluation of SSLs with respect to groundwater concentrations across the site is warranted.

The PRGs and SSL considerations for the ABG and OABG are presented in Tables 7 and 8, respectively.

Human Health Risk-Based Preliminary Remediation Goals

Human health risk-based PRGs were calculated for industrial site use, and although unlikely, a potential future residential land use for the site. Residential PRGs were calculated for a child resident (based on a target non-carcinogenic hazard) and a lifetime (child/adult) resident (based on a target cancer risk) (Attachment A, Tables 4 through 10). Industrial site use PRGs were calculated for an industrial worker and a construction worker (Attachment A, Tables 11 through 25). PRGs were not calculated for the adolescent trespasser because the potential risks for this receptor are lower than those for the industrial worker; so levels protective of industrial worker are protective of future recreational users (CH2M HILL, 2006).

The equations presented in EPA's *Risk Assessment Guidance for Superfund Volume 1, – Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals* (EPA, 1991) were re-arranged into one equation to incorporate the ingestion, dermal absorption, and inhalation pathways to calculate one PRG per constituent for exposure to soil for each of the scenarios evaluated (Attachment A**,** Tables 4 through 9 and 11 through 24). The method used to calculate the contribution from inhalation to the PRG was updated to be consistent with EPA's *Risk Assessment Guidance for Superfund Volume 1: Human Health Evaluation Manual (Part F, Supplemental Guidance for Inhalation Risk Assessment* (EPA, 2009). As previously stated, PRGs were calculated for both the residential scenario and the industrial scenario for the constituents that were identified as COCs in the Focused RI HHRA. The exposure assumptions used in the PRG calculation equations are the same as those used in the Focused RI HHRA (Table 4 in Appendix D of the Focused RI), with a few exceptions. These exceptions are based on comments received from EPA on the proposed remedial action objectives and remedial goals for Site 1 soil received via email from Sun Yi, EPA, on August 4, 2008 (EPA, 2008), and include the construction worker soil ingestion rate and construction worker inhalation rate, which have been updated to reflect recommended values (Attachment A, Tables 17 through 24). The toxicity values, non-cancer reference doses and cancer slope factors used to calculate the PRGs for the COCs were compared to current toxicity values and have also been updated if more recent values were available.

The HHRA PRGs for residential and industrial land use at the ABG, FDPs, and OABG at Site 1 are summarized in Tables 1, 2, 3, and Attachment A. The target non-carcinogenic hazard for each constituent for each area was determined based on the number of constituents that result in an effect on the same target organ or system (for example, the gastrointestinal system). For example, assuming that an acceptable hazard is 1.0, if two constituents affect the same target organ or system, the target noncarcinogenic hazard for those constituents would be 0.5; therefore the PRG value will be lower than the threshold value of hazard index=1.0. The target carcinogenic risk for each constituent for each area was set equal to 10^{-5} in order to be protective by ensuring that the total cancer risk associated with exposure to the soil would not exceed 10^{-4}. The lower of the PRG based on non-cancer or cancer endpoints was chosen as the human health risk-based PRG for the COC.

Ecological Risk-Based Preliminary Remediation Goals

Soil PRGs based on various ecological effect levels were developed for the Site 1 ecological soil COCs identified in the BERA contained in the soil RI (CH2M HILL, 2006). The development of these PRGs considered the following:

- Soil screening values used in the BERA, updated as appropriate
- Alternate soil screening values from the literature
- Background upper tolerance limit values from the facility-wide background study and maximum concentrations in site-specific reference soil samples
- No observed effect concentration (NOEC) values from surface soil toxicity testing; these values were calculated as follows:
  - Survivorship NOECs were calculated as the maximum concentration in samples that did not have a significant reduction in survivorship as compared to the control
  - Reproduction NOECs were calculated as the maximum concentration in samples that showed signs of reproduction

  - Growth NOECs were not calculated because growth appeared dependent upon the survivorship, with larger worms observed in samples with lower survivorship, and smaller worms observed in samples with higher survivorship

- Back-calculated food web exposure values (from a HQ of 1.0) using facility-specific soil-to-earthworm bioaccumulation factors (geometric mean values), where available, and ingestion-based screening values (based on the LOAEL). The most sensitive receptors were selected for this calculation (based on the HQs from the BERA). Input parameter values and ingestion-based toxicity reference values were the same as those used in the BERA. Although the MATC was used as the threshold to select food web COCs in the BERA (RI), mean surface soil concentrations were also used as the exposure point concentration during the COC selection process. Because the PRGs are used in the FS as risk-management values (that is, based on a 95 percent UCL concentration), using either the NOAEL or MATC to develop the PRGs for food web COCs may result in overly conservative values. For this reason, the PRGs for food web COCs were based on the LOAEL.

The selected ecological PRGs are summarized in Attachment B, Table B.1, and the derivation of these values is provided in Attachment B, Tables B.2 and B.3. The ecological PRGs that were based directly on literature values were checked as part of this evaluation. There were not more recent values available. Ecological PRGs are typically only applicable to the top 2 feet of soil. However, burrowing mammals are known to inhabit the floodplain area, and exposures for these receptors may reach down to 5 feet. As a result, a target ecological exposure depth of 5 feet, or to the top of the water table if it is shallower than 5 feet, was considered when developing and applying the SRGs. Although potential risks are likely to be spatially limited, ecological PRGs were also developed for the ABG/FDP area.

Site-specific Soil Screening Levels

Groundwater data collected since the signing of the ROD in 1997 as part of CERCLA long-term monitoring (LTM) and RCRA compliance monitoring were used to evaluate the applicability of the SSLs at Site 1. Because the groundwater data are collected from monitoring wells within the ABG, the data set was not applied to SSL determinations in the OABG. The lines of evidence considered in determining the applicability of the SSL for each COC consisted of evaluating whether the constituent is a COC in groundwater as defined in the ROD; the frequency of detections and exceedances of risk-based screening levels since the ROD, and if exceedances of risk-based screening levels are localized to elevated constituent concentrations in soil. Table 7 presents a summary of the soil-to-groundwater leaching considerations for each of the COCs in the ABG.

Site Remediation Goals and Areas of Concern

SRGs were derived based on the lower of risk-based PRGs (ecological and human health), SSL (as applicable), or facility-wide background concentration (as applicable). As an initial step, SRGs were eliminated if the maximum detected soil concentration for the individual COCs was less than the PRGs and SSL. Table 7 and Table 8 summarize the SRGs for industrial and residential land use in the ABG and OABG, respectively.

AOCs in the ABG were identified for industrial and residential scenarios. Areas requiring remediation in the OABG were identified for an industrial scenario only because it is unlikely with the presence of debris that the residential scenario will be considered in the FS. Ecological considerations were incorporated into all of the scenarios. The ABG evaluation included the FDPs, and the OABG evaluation considered the entire area as a whole that is, no subareas were used.

The lateral extent of the AOCs was estimated using ABG- and OABG-wide 95 percent UCL calculations. Three scenarios were evaluated: ABG industrial, ABG residential, and OABG industrial. In addition, “baseline” iterations of each scenario were conducted, whereby the SRGs were directly compared on a point-to-point basis. This provided a comparison of utilizing a 95 percent UCL approach with a point-to-point approach to determine lateral extent of the AOCs. The estimation of the vertical extent of AOCs will be evaluated in the forthcoming Revised Site 1 Soils FS and refined during the post-FS phase pre-design data collection.

The UCL evaluations were conducted as follows:

1. The data set used for both the ABG and OABG was generated from all Site 1 soil data used for the risk assessment and SRG development.
2. The location and depth of each soil sample was identified. Sample locations are shown on Figures 2 and 3. The evaluation was conducted separately for the ABG and OABG and each evaluation used a combined surface soil and subsurface soil data set.
3. For each of the three scenarios evaluated, the selected SRG was used for each COC (Tables 7 and 8). However, SRGs based on the ecological PRG were flagged because sample depth had to be factored into the evaluation for these COCs because only soil depths of 0 to 5 feet bgs are applicable to ecological exposures at Site 1.
4. The maximum value between parent and field duplicate samples was used in the evaluation.
5. ProUCL (version 4.1) was used to calculate the UCL statistics, which were at the upper 95 percent level. Detects and non-detects were identified when the data were input into ProUCL (detects are shaded gray in the COC concentration columns of Tables 9 though 14). The recommended UCL value from the ProUCL program was used (using all program defaults and letting the program choose the best distribution) for all decision making in the evaluation.
6. The 95 percent UCL was then calculated for each COC using all relevant data for each scenario and compared with their respective SRGs (see row 149 in Table 10).
7. Once the initial 95 percent UCL was determined prior to the removal of any samples, samples to be removed from the data set (to simulate a soil excavation and removal scenario) were identified as follows:
   - For each COC, the ratio of the maximum concentration to the SRG was calculated. The sample with the COC that yielded the highest ratio (for all COCs) was identified for removal at each step.
   - All samples at depths above the selected sample (if the sample was subsurface) were also removed at that step; samples at depths below the sample were not removed at that step (but could be removed in subsequent steps because they remained in the data set). If the identified sample was subsurface and at a depth exceeding 5 feet bgs, the sample was not removed if the SRG was ecologically based.
   - When the sample or samples were removed from the data set, based on the sample concentration-to-SRG ratio, they were not replaced with another value. The UCL was then recalculated for each COC and compared with the respective SRGs. If any of the UCLs exceeded their SRGs, the process was repeated by recalculating the ratio of the maximum concentration (using the remaining samples) to the SRG for each COC and identifying the next sample to be removed. The process was repeated until all of the UCLs (for all COCs) were less than their respective SRGs.

5. A list of the samples removed was generated for each scenario, in the order they were removed, along with the ratio (to the SRGs) values for each of the COCs at each step. This allowed the incremental improvement to be quantitatively measured for each individual COC, and for all COCs combined.
6. Once the UCL was less than the SRG for all COCs, the maximum SRG ratio in the remaining samples was determined. This was done to provide the risk managers with information on residual COC concentrations following the completion of the UCL process. Ratio values exceeding 5 were flagged. Further, the maximum surface soil sample concentration in the remaining samples was compared with the ecological PRG to determine the residual COC concentrations to which ecological receptors might be exposed to following completion of the UCL process (because a combined surface soil and subsurface soil data set was used). Ratio values that exceeded 5 were flagged.

The results of the evaluation are summarized as follows:

- ABG industrial scenario
  - For the baseline scenario (that is, SRGs used in a point-to-point comparison), 28 sample locations (out of 85) were identified as exceeding SRGs; 10 based on SRG ratios exceeding 5, and 18 based on SRG ratios between 1 and 5 (Figure 4; Table 9).
  - Based on the UCL scenario, the removal of samples from eight locations was sufficient for the UCLs to meet SRGs (red sample locations on Figure 5; Table 10). Two additional locations had residual ratios exceeding 5 for trichloroethene, copper, and/or lead (orange sample locations on Figure 5). Copper also had a maximum ratio to the ecological PRG exceeding 5. With the two additional locations removed, all ratios were less than 5.
- ABG residential scenario
  - For the baseline scenario, 37 sample locations (out of 85) were identified as exceeding SRGs; 16 based on SRG ratios exceeding 5, and 21 based on SRG ratios between 1 and 5 (Figure 6; Table 11).
  - Based upon the UCL scenario, the removal of the 16 sample locations with the SRG ratios exceeding 5 was sufficient for the UCLs to meet the SRGs except for dioxins (red sample locations on Figure 7; Table 12). Twelve additional sample locations were removed for dioxin concentrations to fall below its SRG (orange sample locations on Figure 7).
- OABG industrial scenario
  - For the baseline scenario, 65 sample locations (out of 135) were identified as exceeding SRGs; 40 based on SRG ratios exceeding 5, 14 based on SRG ratios between 1 and 5, and 11 with low-magnitude metal exceedances (SRG ratio less than 1.5) (Figure 8; Table 13).
  - Based on the UCL scenario, the removal of samples from 43 locations was sufficient for UCLs to meet SRGs (Figure 9; Table 14). All residual ratios were less than 5, and no COC had a maximum ratio to the ecological PRG (for surface samples) exceeding 5.

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Tables

Table 1
Summary of Risks Identified in the Human Health Risk Assessment
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

Receptor	Media	Risk	Constituents of Concern
Current Industrial Worker	Surface Soil - Former Disposal Pits	Acceptable	None
	Surface Soil - Outside Active Burning Grounds	Acceptable	None
	Surface Soil - Active Burning Grounds	Acceptable	None
Current Trespasser/Visitor Adolescents	Surface Soil - Former Disposal Pits	Acceptable	None
	Surface Soil - Outside Active Burning Grounds	Acceptable	None
	Surface Soil - Active Burning Grounds	Acceptable	None
Future Industrial Worker	Soil* - Former Disposal Pits	Acceptable	None
	Soil* - Outside Active Burning Grounds	Acceptable	None
	Soil* - Active Burning Grounds	Acceptable	None
Future Trespasser/Visitor Adolescents	Soil* - Former Disposal Pits	Acceptable	None
	Soil* - Outside Active Burning Grounds	Acceptable	None
	Soil* - Active Burning Grounds	Acceptable	None
Future Resident - Adult	Soil* - Former Disposal Pits	Acceptable	None
	Soil* - Outside Active Burning Grounds	Acceptable	None
Future Resident - Child	Soil* - Former Disposal Pits	Unacceptable (noncarcinogenic)	Iron, TCE, aluminum, arsenic, manganese, thallium, and vanadium
	Soil* - Outside Active Burning Grounds	Unacceptable (noncarcinogenic and lead)	Lead, cadmium, iron, manganese, vanadium, TCE, aluminum, antimony, arsenic, chromium, copper, mercury, and thallium
Future Resident - Child/Adult	Soil* - Former Disposal Pits	Unacceptable (carcinogenic)	Dioxin, TCE, arsenic
	Soil* - Outside Active Burning Grounds	Unacceptable (carcinogenic)	PAHs, dioxin, TCE, PCE, and arsenic
Future Construction Worker	Soil* - Former Disposal Pits	Acceptable	None
	Soil* - Outside Active Burning Grounds	Unacceptable (Lead)	Lead
	Soil* - Active Burning Grounds	Acceptable	None
Current/Future Recreational Person - Adult	Surface Water - North Branch Potomac River Adjacent to Site 1	Acceptable	None
	Sediment - North Branch Potomac River Adjacent to Site 1	Acceptable	None
Current/Future Recreational Person - Adolescents	Surface Water - North Branch Potomac River Adjacent to Site 1	Acceptable	None
	Sediment - North Branch Potomac River Adjacent to Site 1	Acceptable	None

Notes:
* Combined surface and subsurface soil
PAH = polyaromatic hydrocarbon
PCE = tetrachloroethene
TCE = trichloroethene

Table 2
Summary of Ecological Chemicals of Concern for Terrestrial Habitats
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

Chemical	Floodplain (OABG)		Upland (ABG/FDP)	
	Surface Soil	Food Web	Surface Soil	Food Web
Metals				
Cadmium	X	X		
Chromium	X			
Copper	X		X	
Lead	X	X	X	
Mercury	X	X	X	
Nickel	X			
Silver	X			
Vanadium	X			
Zinc	X	X		
Semivolatile Organic Compounds				
2-Nitroaniline			X	
PAHs	X			
Explosives				
1,3,5-Trinitrobenzene			X	
HMX	X		X	
Nitroglycerin	X		X	
Perchlorate			X	
RDX	X		X	
Volatile Organic Compounds				
1,2-Dichloroethene	X			
Methyl acetate	X			
Trichloroethene	X			
Dioxin/furans				
Total dioxin/furans (TEQ)		X		

Notes:
ABG = active burning ground
FDP = former disposal site
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
OABG = outside active burning ground
RDX = Hexahydro-1,2,5-trinitro-1,3,5-triazine
TEQ = toxic equivalency quotient

Table 3
Input Parameters to the SSL Equilibrium Equation
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

Input Parameter Description	Value	Source
Target leachate concentration (C_w), Maximum allowable concentration in groundwater multiplied by the dilution attenuation factor (DAF)	Chemical specific (mg/L)	The maximum allowable concentration in groundwater is the EPA MCL or if an MCL has not been developed then EPA's RSL (November 2011) was used. The screening level for water is based on residential tap water usage with a target cancer risk of 10^{-6} or a noncancer hazard index developed using risk assessment protocols (target organ basis) for site specific chemicals. HI was adjusted by dividing 1.0 by the number of target organs.
Dilution Attenuation Factor (DAF)	ABG - 46 (unitless) OABG – 236 (unitless)	Calculated per EPA (1996) $DAF = 1 + \frac{Kid}{IL}$
Source length parallel to groundwater flow (L)	ABG – (122 m) 400 ft OABG – (35 m) 115 ft	Distance measured from the Former Disposal Pits to the river
Hydraulic conductivity (K) of the uppermost aquifer	7046 m/yr 63.33 ft/d	*Phase III Aquifer Testing at Site 1 and Site 10,* CH2M HILL, 2002
Aquifer thickness (d_a)	ABG - (6.1 m) 20 ft OABG – (3.35 m) 11ft	*Phase III Aquifer Testing at Site 1 and Site 10,* CH2M HILL, 2002
Horizontal hydraulic gradient of the uppermost aquifer (i)	ABG - 0.0103 m/m OABG – 0.028 m/m	Measured from the pre-pumping potentiometric surface map.
Mixing zone depth (d)	ABG - 20 ft OABG – 11 ft	Calculated per EPA (1996) $d = \left(0.0112L^2\right)^{0.5} + d_a\left(1 - \exp\left[\frac{-LI}{Kid_a}\right]\right)$
Total porosity (n), - volumetric (L_{pore}/L_{soil})	0.46 (unitless)	Calculated per EPA (1996) $n = 1 - \left(\frac{\rho_b}{\rho_s}\right)$
Water-filled porosity (θ_w) - volumetric (L_{water}/L_{soil})	0.3 (unitless)	Default value from EPA (1996)
Air-filled porosity (θ_a) - volumetric (L_{air}/L_{soil})	0.16 (unitless)	Calculated per EPA (1996) $\theta_a = n - \theta_w$
Bulk density (ρ_b)	1.5 kg/L	Default value from EPA (1996)
Particle density (ρ_p)	2.65 kg/L	Default value from EPA (1996)

Table 3
Input Parameters to the SSL Equilibrium Equation
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

Input Parameter Description	Value	Source
Infiltration rate (I)	0.0804 m/yr 3.16 in/yr	Estimated from Conner et. al. (1997) for a silt soil type (see expanded text below)
Soil fraction organic carbon in vadose zone (foc-soil, g/g)	ABG - 0.0073 (g/g) OABG – 0.0073 (g/g)	Site specific average
Soil pH (SU)	7.0	Site specific average
Organic carbon partition coefficient (K_{oc})	Chemical specific	Source: EPA's RSLs for Chemical Contaminants at Superfund Sites parameter database (November 2011)
Soil/water partition coefficient (K_d)	Chemical specific (L/kg)	Organic compounds: Calculated per EPA, 1996 as: $K_d = K_{oc} \times foc$ Inorganic analytes: Selected from EPA (1996), Table C-4 Metal Kd Values (L/kg) as a Function of pH.
Henry's Law Constant (H')	Chemical specific (dimensionless)	Source: EPA's RSLs for Chemical Contaminants at Superfund Sites parameter database (November 2011)

Notes:
ABG = active burning ground
EPA = United States Environmental Protection Agency
ft = foot
ft/d = foot per day
g/g = gram per gram
HI = hazard index
in/yr = inch per year
kg/L = kilogram per liter
L/kg = liter per kilogram
m = meter
m/m = meter per meter
m/yr = meter per year
MCL = maximum contaminant level
mg/L = milligram per liter
OABG = outside active burning ground
RSL = regional screening level
SU = standard units

Table 4
Input Parameters to the Mass Limit SSL Equilibrium Equation
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

ABG - Perchlorate Soil Screening Level Calculation			
Parameters	Symbol	Units	
Soil Screening Level	SSL	mg/Kg	**0.85**
Affected Soil Layer Thickness	d_s	ft	10
Target Leachate Concentration	Cw	mg/L	0.69
Groundwater Protection Standard	SL	mg/L	0.015
Dilution and Attenuation Factor	DAF	unitless	46
Infiltration Rate	I	in/yr	3.16
Exposure Duration	ED	years	70
Bulk Soil Density	ρ_b	kg/L	1.5
OABG - Perchlorate SSL Calculation			
Parameters	Symbol	Units	
Soil Screening Level	SSL	mg/Kg	**4.35**
Affected Soil Layer Thickness	d_s	ft	10
Target Leachate Concentration	Cw	mg/L	3.5
Groundwater Protection Standard	SL	mg/L	0.015
Dilution and Attenuation Factor	DAF	unitless	236
Infiltration Rate	I	in/yr	3.16
Exposure Duration	ED	years	70
Bulk Soil Density	ρ_b	kg/L	1.5

Notes:
ABG = active burning ground
ft = foot
in/yr = inch per year
kg/L = kilogram per liter
mg/kg = milligram per kilogram
mg/L = milligram per liter

Table 5
Soil to Groundwater Leachability Evaluation for the Active Burning Grounds
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

Chemical Name	SSL (mg/kg)	CAS No.	Former Disposal Pits										Active Burning Grounds									
	DAF = 46		Surface Soil					Subsurface Soil					Surface Soil					Subsurface Soil				
			# of Detects	Total Samples	Min (mg/kg)	Max (mg/kg)	COC?	# of Detects	Total Samples	Min (mg/kg)	Max (mg/kg)	COC?	# of Detects	Total Samples	Min (mg/kg)	Max (mg/kg)	COC?	# of Detects	Total Samples	Min (mg/kg)	Max (mg/kg)	COC?
VOCs																						
Acetone	12	67-64-1	1	5	0.052	0.052	No	0				No	4	29	0.005	0.016	No	0	65			No
Benzene	0.3	71-43-2	0				No	0				No					No					No
Bromodichloromethane	1.6	75-27-4	0				No	0				No					No					No
Bromomethane	0.011	74-83-9	0				No	0				No					No					No
Butanone, 2- (MEK)	5.3	78-93-3	0				No	0				No					No					No
Carbon disulfide	1.4	75-15-0	0				No	0				No	0	29			No	1	65	0.002	0.002	No
Chlorobenzene	8.8	108-90-7	1	5	0.006	0.006	No	2	26	0.002	0.004	No					No					No
Chloroform	1.6	67-66-3	0				No	0				No	1	29	0.001	0.001	No	0	65			No
Chloromethane	1.5	74-87-3	0				No	0				No					No					No
Dichloroethene, 1,1-	0.18	75-35-4	0				No	3	43	0.023	0.19	Yes					No					No
Dichloroethene, cis-1,2-	1.6	156-59-2	0				No	5	32	0.018	0.39	No	0	29			No	2	65	3.0E-03	1.6E-02	No
Dichloroethene, trans-1,2-	2.3	156-60-5	0				No	0				No					No					No
Ethylbenzene	110	100-41-4	1	5	0.005	0.005	No	2	26	0.003	0.32	No					No					No
Methyl acetate	16	79-20-9	2	3	0.018	0.18	No	0				No	3	8	0.0012	0.073	No	1	8	0.082	0.082	No
Methyl-2-pentanone, 4- (MIBK)	1.3	108-10-1	0				No	0				No					No					No
Methylcyclohexane	NA	108-87-2	0				No	0				No					No					No
Methylene chloride	0.086	75-09-2	0				No	3	43	0.021	0.062	No	1	29	0.004	0.004	No	1	65	0.004	0.004	No
Styrene	16	100-42-5	2	5	0.001	0.003	No	0				No					No					No
Tetrachloroethene	0.22	127-18-4	0				No	3	26	0.055	0.74	Yes	1	29	0.42	0.42	Yes	10	65	0.003	5.8	Yes
Toluene	89	108-88-3	1	5	0.004	0.004	No	4	26	0.002	0.66	No					No					No
Trichlorobenzene, 1,2,4-	33	120-82-1	0				No	0				No					No					No
Trichloroethane, 1,1,1-	5.5	71-55-6	0				No	14	43	0.0019	0.67	No	0	29			No	1	65	0.005	0.005	No
Trichloroethene	0.16	79-01-6	4	5	0.057	1.8	Yes	34	43	0.005	160	Yes	8	29	0.0016	1.4	Yes	48	65	0.001	12	Yes
Xylene, total	1400	1330-20-7	1	5	0.015	0.015	No	4	26	0.002	1.7	No	0	29			No	3	65	0.002	0.004	No
SVOCs																						
Acenaphthene	68	83-32-9	0				No	0				No					No					No
Acetophenone	4.0	98-86-2	0				No	0				No	0	35			No	1	8	0.055	0.055	No
Anthracene	720	120-12-7	0				No	0				No					No					No
Benzaldehyde	1.9	100-52-7	0				No	0				No					No					No
Benzo(a)anthracene	1.7	56-55-3	0				No	0				No	7	35	0.024	0.066	No	1	16	0.051	0.051	No
Benzo(a)pyrene	39	50-32-8	0				No	0				No	8	35	0.023	0.054	No	1	16	0.044	0.044	No
Benzo(b)fluoranthene	5.8	205-99-2	2	3	0.045	0.067	No	0				No	1	35	0.068	0.068	No	1	16	0.067	0.067	No
Benzo(k)fluoranthene	57	207-08-9	0				No	0				No					No					No
Biphenyl, 1,1-	0.14	92-52-4	0				No	0				No	1	28	0.02	0.02	No	0	15			No
bis(2-Ethylhexyl)phthalate	240	117-81-7	1	3	0.066	0.066	No	4	16	0.043	0.32	No	14	35	0.041	1.6	Yes	1	16	0.071	2.3	No
Butylbenzylphthalate	34	85-68-7	0				No	0				No					No					No
Caprolactam	13	105-60-2	0				No	0				No	2	8	0.041	0.046	No	0	8			No
Carbazole	NA	86-74-8	0				No	0				No					No					No
Chrysene	180	218-01-9	1	3	0.049	0.049	No	1				No	15	35	0.024	0.11	No	1	16	0.069	0.069	No
Dibenz(a,h)anthracene	1.9	53-70-3	0				No	0				No					No					No
Diethylphthalate	49	84-66-2	0				No	0				No	3	35	0.092	0.27	No	3	16	0.22	0.34	No
Dibutylphthalate	27	84-74-2	0				No	0				No					No					No
Fluoranthene	1200	206-44-0	2	3	0.077	0.093	No	1	16	0.043	0.043	No	2	35	0.042	0.087	No	1	16	0.15	0.15	No
Fluorene	68	86-73-7	0				No	0				No					No					No
Indeno(1,2,3-cd)pyrene	19	193-39-5	0				No	0				No					No					No
Methylnaphthalene, 2-	2.3	91-57-6	0				No	3	16	0.071	0.35	No					No					No
Methylphenol, 3- and 4- (p-cresol)	15	106-44-5	0				No	0				No					No					No
Methylphenol, 4- (m-cresol)	7.9	108-39-4	0				No	0				No					No					No
Naphthalene	0.37	91-20-3	0				No	1	16	0.25	0.25	No	1	35	0.04	0.04	No	0	16			No
Nitrosodiphenylamine, n-	8.9	86-30-6	0				No	0				No	2	35	0.16	3	Yes	0	16			No
Pyrene	160	129-00-0	2	3	0.06	0.067	No	0				No	1	35	0.1	0.1	No	1	16	0.095	0.095	No
Dioxins																						
Hexachlorodibenzo-p-dioxin (total)	0.0026	34465-46-8	3	3	8.30E-06	5.20E-05	No	3	15	2.10E-07	1.40E-03	No					No					No
Octachlorodibenzofuran	NA	39001-02-0	3	3	1.60E-05	5.60E-05	No	5	15	2.10E-06	1.40E-03	No					No					No
Octachlorodibenzo-p-dioxin	NA	3268-87-9	3	3	3.00E-04	9.70E-04	No	15	15	3.40E-05	8.90E-03	No					No					No
Pentachlorodibenzofuran, 1,2,3,7,8-	NA	57117-41-6	2	3	7.50E-06	8.20E-06	No	2	15	2.85E-07	7.10E-04	No					No					No
Pentachlorodibenzofuran, 2,3,4,7,8-	NA	57117-31-4	2	3	7.10E-06	7.90E-06	No	1	15	6.00E-04	6.00E-04	No					No					No
TCDD, 2,3,7,8-	0.0025	1746-01-6	1	3	7.70E-07	7.70E-07	No	1	15	1.60E-05	1.60E-05	No	28	28	2.91E-07	1.62E-04	No	23	23	3.67E-07	4.06E-04	No
TCDF, 2,3,7,8-	NA	51207-31-9	3	3	2.30E-06	7.80E-06	No	4	15	2.07E-07	3.80E-04	No					No					No
Explosives																						
Hexahydro-1,2,5-trinitro-1,3,5-triazine (RDX)	0.024	121-82-4	3	3	0.096	1	Yes	6	15	0.053	5.5	Yes	16	35	0.049	34	Yes	8	16	0.069	5.2	Yes
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	150	2691-41-0	2	3	0.25	3.3	No	4	15	0.35	1.5	No	22	35	0.123	51	No	8	16	0.276	5.2	No
Nitroglycerin	0.072	55-63-0	0				No	0				No	1	28	98	98	Yes	2	16	2	4.5	Yes
Trinitrobenzene, 1,3,5-	26	99-35-4	0				No	0				No	2	21	0.026	30	Yes	0	16			No
Trinitrotoluene, 2,4,6-	2.1	118-96-7	0				No	0				No					No					No

Table 5

Soil to Groundwater Leachability Evaluation for the Active Burning Grounds

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, WV

Chemical Name	SSL (mg/kg)	CAS No.	Former Disposal Pits										Active Burning Grounds									
	DAF = 46		Surface Soil					Subsurface Soil					Surface Soil					Subsurface Soil				
Metals																						
Aluminum	1000000	7429-90-5	3	3	3940	7020	No	18	18	4430	9090	No	28	28	4680	19000	No	15	15	6100	50500	No
Antimony	12	7440-36-0	0				No	0				No	20	28	0.25	2.5	No	6	15	1.3	17.2	Yes
Arsenic	13	7440-38-2	3	3	3.2	8	No	18	18	4.3	10.6	No	28	28	3.4	9.5	No	15	15	5.3	7.6	No
Barium	3900	7440-39-3	3	3	53.7	151	No	18	18	67.3	206	No	28	28	77.6	255	No	15	15	81.3	207	No
Beryllium	310	7440-41-7	1	3	0.97	0.97	No	3	18	0.63	1.1	No	20	28	0.54	1.2	No	15	15	0.7	1.3	No
Cadmium	25	7440-43-9	1	3	0.45	0.45	No	0				No	21	28	0.56	10.9	No	6	15	0.091	11.9	No
Chromium (III) (Insoluble Salts)	1000000	16065-83-1	3	3	5.1	12.2	No	18	18	8.1	13.6	No	28	3	8.1	23.8	No	15	15	10.7	19.9	No
Cobalt	2.0	7440-48-4	3	3	4	13.3	Yes	17	18	10.4	16.2	Yes	28	3	3.6	16.5	No	15	15	8.4	16.4	Yes
Copper	2100	7440-50-8	3	3	10.5	24.1	No	18	18	11.1	492	No	28	3	17	1820	Yes	15	15	13.5	136	No
Cyanide	93	57-12-5	3	3	0.26	0.91	No	1	18	0.14	0.14	No	24	3	0.13	0.54	No	8	15	0.12	0.3	No
Iron	6400	7439-89-6	3	3	9950	24900	Yes	18	18	14900	31100	Yes	28	28	8980	33200	Yes	15	15	20700	33500	Yes
Lead	160	7439-92-1	3	3	16.3	42.5	No	18	18	9	16.5	No	28	28	14.1	1730	No	15	15	11.9	1760	Yes
Magnesium	NA	7439-95-4	3	3	930	3960	No	18	18	732	24200	No	8	8	831	18400	Yes	8	15	923	2790	No
Manganese	480	7439-96-5	3	3	228	810	Yes	18	18	409	1020	Yes	28	28	208	1120	No	15	15	500	1170	Yes
Mercury	7.6	7439-97-6	3	3	0.067	0.12	No	8	18	0.062	0.12	No	27	28	0.04	7.2	No	12	15	0.03	2	No
Nickel	610	7440-02-0	3	3	0.3	22.5	No	18	18	11.7	23.2	No	28	28	9.5	33.4	Yes	15	15	16.5	27.1	No
Potassium	NA	7440-09-7	3	3	852	1030	No	15	18	552	1060	No	8	8	720	1040	Yes	8	15	743	1180	No
Selenium	10	7782-49-2	2	3	0.65	1.1	No	1	18	0.63	0.63	No	6	28	0.37	0.55	No	8	15	0.98	9	No
Silver	43	7440-22-4	0				No	1	18	1.200000048	1.200000048	No	10	28	0.23	3	No	3	15	0.29	4.1	No
Thallium	6.8	7440-28-0	0				No	4	18	1.3	1.6	No	20	28	0.29	2.3	No	7	15	1.5	2.1	No
Vanadium	360	7440-62-2	3	3	11.9	8.8	No	18	18	10.6	23.60000038	No	28	28	10.3	36.7	Yes	15	15	13.9	24.8	No
Zinc	3300	7440-66-6	3	3	26.4	95.4	No	18	18	37.9	82.69	No	28	28	62.2	271	No	15	15	58.4	222	No

Notes:
CAS = Chemical Abstract Service
DAF = dilution attenuation factor
mg/kg = miiligram per kilogram
NA = not applicable
SSL = soil screening level
SVOC = semivolatile organic compound
VOC = volatile organic compound

Table 6

Soil to Groundwater Leachability Evaluation for the Outside Active Burning Grounds

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical Name	SSL (mg/kg)	CAS No.	Western OABG										Eastern OABG										Central OABG				
	DAF = 236		Surface Soil					Subsurface Soil					Surface Soil					Subsurface Soil					Subsurface Soil				
			# of Detects	Total Samples	Min (mg/kg)	Max (mg/kg)	COC?	# of Detects	Total Samples	Min (mg/kg)	Max (mg/kg)	COC?	# of Detects	Total Samples	Min (mg/kg)	Max (mg/kg)	COC?	# of Detects	Total Samples	Min (mg/kg)	Max (mg/kg)	COC?	# of Detects	Total Samples	Min (mg/kg)	Max (mg/kg)	COC?
VOCs																											
Acetone	62	67-64-1	1	21	0.0096	0.0096	No	3	57	0.003	0.82	No	2	49	0.012	0.43	No	1	19	0.03	0.03	No	0				No
Benzene	1.5	71-43-2	0				No	1	57	0.005	0.005	No	0				No	0				No	0				No
Bromodichloromethane	8.3	75-27-4	0				No	0				No	1	49	0.24	0.24	No	0				No	0				No
Bromomethane	0.054	74-83-9	0				No	1	57	0.003	0.003	No	0				No	0				No	0				No
Butanone, 2- (MEK)	27	78-93-3	1	21	0.0028	0.0028	No	0				No	2	49	0.002	1.4	No	1	19	0.0019	0.0019	No	0				No
Carbon disulfide	7.2	75-15-0	0				No	4	56	0.002	0.006	No	0				No	0				No	0				No
Chlorobenzene	45	108-90-7	0				No	1	57	0.002	0.002	No	0				No	0				No	0				No
Chloroform	8.5	67-66-3	0				No	0				No	0				No	1	19	0.001	0.001	No	0				No
Chloromethane	7.5	74-87-3	1	21	0.37	0.37	No	2	57	0.57	1.3	No	0				No	0				No	0				No
Dichloroethene, 1,1-	0.9	75-35-4	5	21	0.001	0.0026	No	2	62	0.001	0.004	No	0				No	0				No	0				No
Dichloroethene, cis-1,2-	8.4	156-59-2	1	19	0.011	0.011	No	18	33	0.002	0.35	No	13	35	0.002	6.9	No	4	15	0.0017	0.12	No	0				No
Dichloroethene, trans-1,2-	12	156-60-5	0				No	3	33	0.002	0.016	No	1	35	160	160	Yes	0				No	0				No
Ethylbenzene	580	100-41-4	0				No	0				No	0				No	0				No	0				No
Methyl acetate	84	79-20-9	3	19	0.0029	0.85	No	0				No	1	28	2.8	2.8	No	4	15	0.011	1.6	No	0				No
Methyl-2-pentanone, 4- (MIBK)	6.9	108-10-1	0				No	0				No	2	49	0.0037	0.26	No	1	19	0.43	0.43	No	0				No
Methylcyclohexane	NA	108-87-2	2	19	0.0013	0.0015	No	0				No	0				No	0				No	0				No
Methylene chloride	0.44	75-09-2	1	21	0.0013	0.0013	No	8	62	0.003	0.017	No	4	56	0.002	0.012	No	1	19	0.005	0.005	No	0				No
Styrene	82	100-42-5	0				No	0				No	0				No	0				No	0				No
Tetrachloroethene	1.1	127-18-4	0				No	2	57	0.001	0.002	No	19	49	0.002	11	Yes	4	19	0.029	0.73	No	0				No
Toluene	460	108-88-3	1	21	0.0012	0.0012	No	1	57	0.002	0.002	No	1	49	0.21	0.21	No	1	19	0.15	0.15	No	0				No
Trichlorobenzene, 1,2,4-	170	120-82-1	0				No	0				No	0				No	3	21	0.053	81	No	0				No
Trichloroethane, 1,1,1-	28	71-55-6	3	21	0.002	0.0031	No	15	62	0.0019	0.47	No	0				No	2	19	2	0.0022	No	0				No
Trichloroethene	0.81	79-01-6	9	21	0.0044	27	Yes	47	62	0.004	230	Yes	53	56	0.003	730	Yes	14	19	0.0049	82	Yes	5	8	0.006	0.062	No
Xylene, total	7100	1330-20-7	1	21	0.0014	0.0014	No	2	57	0.002	0.006	No	1	49	0.002	0.002	No	0				No	0				No
SVOCs																											
Acenaphthene	350	83-32-9	6	26	0.01	4.1	No	1	29	12	12	No	3	29	0.041	0.066	No	0				No					No
Acetophenone	20	98-86-2	0				No					No	1	28	0.051	0.051	No	1	10	0.055	0.055	No					No
Anthracene	3700	120-12-7	18	26	0.01	8.3	No	4	29	0.049	21	No	3	29	0.11	0.17	No	6	23	0.012	0.099	No	0				No
Benzaldehyde	9.9	100-52-7	3	14	0.26	0.6	No	1	28	0.13	0.13	No	1	28	0.39	0.39	No	1	10	0.3	0.3	No	0				No
Benzo(a)anthracene	8.8	56-55-3	26	26	0.064	8.1	No	11	29	0.06	8	No	5	29	0.097	0.37	No	17	23	0.024	0.22	No	0				No
Benzo(a)pyrene	200	50-32-8	19	26	0.071	12	No	12	29	0.062	55	No	5	29	0.096	0.33	No	15	23	0.024	0.24	No	0				No
Benzo(b)fluoranthene	30	205-99-2	26	26	0.099	21	No	11	29	0.055	65	Yes	6	29	0.051	0.44	No	17	23	0.045	0.29	No	0				No
Benzo(k)fluoranthene	290	207-08-9	19	26	0.042	8.6	No	12	29	0.062	54	No	5	29	0.095	0.39	No	15	23	0.011	0.3	No	0				No
Biphenyl, 1,1-	0.74	92-52-4	3	15	0.043	0.088	No	3	28	0.046	0.89	Yes	3	28	0.049	0.069	No	2	10	0.038	0.053	No	0				No
bis(2-Ethylhexyl)phthalate	1200	117-81-7	4	20	0.066	0.34	No	4	29	0.09	7	No	5	29	0.054	0.21	No	7	16	0.09	26	No	2	8	0.1	0.28	No
Butylbenzylphthalate	170	85-68-7	0				No	0				No	0				No	1	16	0.06	0.06	No	0				No
Caprolactam	69	105-60-2	0				No	0				No	1	28	0.066	0.066	No	1	10	0.068	0.068	No	0				No
Carbazole	NA	86-74-8	5	17	0.043	0.21	No	3	29	0.059	9.5	No	3	29	0.058	0.099	No	1	16	0.043	0.043	No	0				No
Chrysene	900	218-01-9	26	26	0.098	10	No	12	29	0.082	63	No	8	29	0.08	0.52	No	17	23	0.037	0.35	No	1	8	0.11	0.11	No
Dibenz(a,h)anthracene	9.6	53-70-3	4	20	0.051	0.43	No	1	29	2.1	2.1	No	0				No	0				No	0				No
Diethylphthalate	250	84-66-2	2	20	0.04	0.046	No	0				No	3	29	0.051	3.4	No	7	16	0.058	1.3	No	0				No
Dibutylphthalate	140	84-74-2	1	20	0.054	0.054	No	0				No	2	29	0.17	0.46	No	3	16	0.055	0.15	No	0				No
Fluoranthene	6000	206-44-0	26	26	0.12	12	No	16	29	0.048	97	No	8	29	0.071	0.81	No	19	23	0.05	0.36	No	2	8	0.12	0.17	No
Fluorene	350	86-73-7	8	26	0.01	5.5	No	3	29	0.047	11	No	3	29	0.07	0.082	No	0				No	0				No
Indeno(1,2,3-cd)pyrene	97	193-39-5	26	26	0.046	5.4	No	9	29	0.052	18	No	3	29	0.11	0.14	No	13	23	0.019	0.11	No	0				No
Methylnaphthalene, 2-	12	91-57-6	12	20	0.04	0.17	No	6	29	0.05	1.9	No	3	29	0.096	0.17	No	4	16	0.047	0.077	No	0				No
Methylphenol, 3- and 4- (p-cresol)	79	106-44-5	0				No	0				No	1	3	0.064	0.064	No	1	6	0.11	0.11	No	0				No
Methylphenol, 4- (m-cresol)	41	108-39-4	0				No	0				No	0				No	1	10	2.5	2.5	No	0				No
Naphthalene	1.9	91-20-3	6	20	0.05	0.12	No	5	29	0.046	0.65	No	3	29	0.084	0.1	No	2	16	0.051	0.052	No	0				No
Nitrosodiphenylamine, n-	46	86-30-6	0				No	0				No	0				No	1	16	0.44	0.44	No	0				No
Pyrene	810	129-00-0	26	26	0.11	21	No	15	29	0.095	160	No	9	29	0.048	0.79	No	17	23	0.042	0.46	No	2	8	0.11	0.14	No
Dioxins																											
Hexachlorodibenzo-p-dioxin (total)	1.30E-02	34465-46-8	8	8	2.23E-05	1.80E-03	No	14	14	1.74E-07	1.64E-03	No	9	12	1.09E-07	5.60E-04	No	15	15	9.90E-06	1.30E-03	No	3	3	2.22E-07	2.52E-05	No
Octachlorodibenzofuran	NA	39001-02-0	8	8	2.83E-05	4.30E-04	No	7	14	3.54E-06	3.32E-04	No	8	12	4.68E-06	6.20E-04	No	15	15	1.60E-05	1.70E-03	No	2	3	1.37E-04	1.88E-04	No
Octachlorodibenzo-p-dioxin	NA	3268-87-9	8	8	1.07E-03	3.87E-03	No	13	14	6.95E-05	6.52E-03	No	9	12	6.70E-05	1.00E-03	No	15	15	1.50E-04	3.80E-03	No	3	3	1.15E-04	1.25E-03	No
Pentachlorodibenzofuran, 1,2,3,7,8-	NA	57117-41-6	8	8	2.63E-06	7.60E-05	No	9	14	7.36E-08	5.33E-05	No	8	12	1.38E-07	1.50E-04	No	14	15	1.20E-06	2.50E-04	No	2	3	5.71E-06	3.73E-05	No
Pentachlorodibenzofuran, 2,3,4,7,8-	NA	57117-31-4	7	8	2.69E-06	1.00E-05	No	9	14	1.14E-07	1.03E-04	No	8	12	2.23E-07	1.60E-04	No	15	15	1.56E-06	3.00E-04	No	2	3	4.41E-06	4.23E-05	No
TCDD, 2,3,7,8-	1.30E-02	1746-01-6	7	8	2.69E-06	1.00E-05	No	6	14	4.21E-07	4.80E-06	No	2	12	4.80E-07	8.80E-06	No	12	15	7.17E-07	1.60E-05	No	2	3	7.97E-07	1.08E-06	No
TCDF, 2,3,7,8-	NA	51207-31-9	6	8	1.90E-06	6.07E-06	No	7	14	8.26E-07	5.45E-05	No	10	12	2.34E-07	1.60E-04	No	15	15	3.20E-06	1.90E-04	No	2	3	1.51E-05	2.60E-04	No
Explosives																											
Hexahydro-1,2,5-trinitro-1,3,5-triazine (RDX)	0.12	121-82-4	0				No	0				No	2	19	0.14	1.8	Yes	2	8	0.082	7.3	Yes	0				No
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	750	2691-41-0	0				No	0				No	4	19	0.076	75	No	3	8	0.12	530	No	0				No
Nitroglycerin	0.37	55-63-0	0				No	0				No	1	19	30	30	Yes	1	8	0.5	0.5	Yes	0				No
Trinitrobenzene, 1,3,5-	140	99-35-4	0				No	0				No	0				No	0				No	0				No
Trinitrotoluene, 2,4,6-	11	118-96-7	0				No	0				No	0				No	0				No	0				No

Table 6

Soil to Groundwater Leachability Evaluation for the Outside Active Burning Grounds

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical Name	SSL (mg/kg)	CAS No.	Western OABG										Eastern OABG										Central OABG				
	DAF = 236		Surface Soil					Subsurface Soil					Surface Soil					Subsurface Soil					Subsurface Soil				
Metals																											
Aluminum	1,000,000	7429-90-5	32	32	1970	34700	No	30	30	2800	13000	No	30	30	3370	66300	No	23	23	5410	96900	No	8	8	3340	7920	No
Antimony	64	7440-36-0	9	32	3	25.10000038	No	3	18	0.5	4.9	Yes	8	30	0.95	12.89	No	12	23	0.72	16.4	No	0				No
Arsenic	69	7440-38-2	31	32	4.30	18.4	No	30	30	4	21.5	No	30	30	3.9	31	No	23	23	5.9	24.9	No	8	8	3.4	11.2	No
Barium	20,000	7440-39-3	42	43	41.5	837.8	No	30	30	41.8	328	Yes	31	31	46	1510	No	27	27	94.8	758	No	8	8	47.2	143	No
Beryllium	1600	7440-41-7	27	32	0.930000007	2.1	No	29	30	0.49	1.9	No	26	30	0.6	1.8	No	15	23	0.18	1.9	No	8	8	0.47	1.7	No
Cadmium	130	7440-43-9	11	32	0.77	37.5	No	24	30	0.2	12.6	No	27	30	0.12	143	Yes	15	23	0.7	373	No	8	8	0.17	0.79	No
Chromium (III) (Insoluble Salts)	1000000	16065-83-1	45	45	7	110	No	30	30	8.8	37.1	No	31	31	7.7	282	No	27	27	9.5	319	No	8	8	7.4	14.7	No
Cobalt	10	7440-48-4	29	32	15.8	60	No	30	30	3.7	407	Yes	30	30	5.5	53.9	No	23	23	5.5	55.2	No	8	8	7	26.2	No
Copper	11000	7440-50-8	42	43	25.60000038	2150	Yes	30	30	9.2	999	No	31	31	10	13600	No	26	26	17.4	1080	No	8	8	8.8	46.3	No
Cyanide	480	57-12-5	7	23	0.7	1.9	No	0				No	1	7	0.79	0.79	No	5	19	1	1.5	No	0				No
Iron	33000	7439-89-6	32	32	6820	38600	Yes	30	30	16900	40900	Yes	30	30	16400	122000	Yes	23	23	10500	122000	Yes	8	8	16000	32100	No
Lead	830	7439-92-1	35	35	6.5	4500.5	No	30	30	6.7	210	No	31	31	7.5	2540	Yes	27	27	37.1	12100	Yes	8	8	7.1	42.3	No
Magnesium	NA	7439-95-4	31	32	662	14100	Yes	28	30	383	5520	No	30	30	544	30400	No	21	23	700	8810	No	8	8	452	1000	No
Manganese	2500	7439-96-5	32	32	161	2320	No	30	30	158	1450	Yes	30	30	255	1920	Yes	23	23	147	1960	Yes	8	8	326	836	No
Mercury	39	7439-97-6	29	32	0.14	16.80	No	14	30	0.043	5	No	21	30	0.04	22.7	No	22	23	0.091	56.3	No	1	8	0.35	0.35	No
Nickel	3100	7440-02-0	31	32	8.40	185	Yes	30	30	11.6	203	No	30	30	11.6	347	No	23	23	11.39	240	No	8	8	8.8	41.1	No
Potassium	NA	7440-09-7	27	32	558	1710	No	28	30	284	1080	Yes	30	30	284	1750	Yes	20	23	592	1700	Yes	8	8	299	728	No
Selenium	53	7782-49-2	9	32	0.540000021	1.7	No	14	30	0.36	1.3	No	20	30	0.34	1.2	No	6	21	0.71	3.9	No	6	8	0.36	1.3	No
Silver	220	7440-22-4	27	36	1.7	121	Yes	13	30	0.17	104	No	22	31	0.17	104	No	13	23	0.7	70.3	No	2	8	0.25	0.27	No
Thallium	35	7440-28-0	2	32	2.2	3.1	No	0				No	1	30	0.49	0.49	No	0				No	0				No
Vanadium	1800	7440-62-2	31	32	14.60000038	108	No	30	30	10.4	994	Yes	30	30	9.5	97.5	No	23	23	5.59	332	Yes	8	8	10	19.2	No
Zinc	17000	7440-66-6	32	32	23.60000038	4230	Yes	30	30	43.7	1440	Yes	30	30	41.5	3350	Yes	23	23	63.2	3860	Yes	8	8	31.3	161	No

* Exceed 100%

Notes:
CAS = Chemical Abstract Service
DAF = dilution attenuation factor
mg/kg = milligram per kilogram
NA = not applicable
SSL = soil screening level
SVOC = semivolatile organic compound
VOC = volatile organic compound

Table 7
Active Burning Ground Site Remediation Goal Selection Process
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

COCs[1]	Maximum Conc. in Soil (mg/kg)	Background[2] (mg/kg)	PRG[7] (mg/kg)			Soil to Groundwater Leaching Considerations		SRG[6] (mg/kg)				
			Residential	Industrial	Ecological	SSL[3] (mg/kg)	Is constituent a concern for threat to groundwater?	Is SRG warranted?	Residential Scenario	Basis	Industrial Scenario	Basis
VOCs												
1,1-Dichloroethene	ND[9]	NA	Not a COC	Not a COC	Not a COC	0.18	Yes, constituent identified as a COC in the groundwater ROD and is actively being remediated.	Yes	0.18	SSL	0.18	SSL
Tetrachloroethene	5.80	NA	Not a COC	Not a COC	Not a COC	0.22	Yes, constituent identified as a COC in the groundwater ROD and is actively being remediated.	Yes	0.22	SSL	0.22	SSL
Trichloroethene	160	NA	2.5	4	Not a COC	0.16	Yes, constituent identified as a COC in the groundwater ROD and is actively being remediated.	Yes	0.16	SSL	0.16	SSL
SVOCs												
2-Nitroaniline	13	NA	Not a COC	Not a COC	Insufficient Data[5]	0.70	No; constituent was not detected in groundwater at Site 1 prior to or after the ROD.	No	Constituent was only detected in 2 of 70 soil samples.			
Dioxins												
2,3,7,8-TCDD TEQ[4]	6.42×10^{-4}	NA	2.5×10^{-5}	1.8×10^{-4}	Not a COC	2.5E-03	No; constituent was not detected in groundwater at Site 1 prior to or after the ROD.	Yes	2.5×10^{-5}	Residential PRG	1.8×10^{-4}	Industrial PRG
Explosives												
1,3,5-Trinitrobenzene	30	NA	Not a COC	Not a COC	Insufficient Data[5]	26	No; constituent was detected in 2 of 190 samples post-Rod. Maximum detection is 1.6 µg/L and is below the RSL of 780 µg/L and adjusted RSL of 78 µg/L.	No	Constituent was only detected in 2 of 69 soil samples.			
HMX	51	NA	Not a COC	Not a COC	10	150	No; constituent was detected in 73 of 192 samples post-Rod. Maximum detection is 17 µg/L and is below the RSL of 780 µg/L and adjusted RSL of 78 µg/L. Clean up will focus on ecological concerns in surface soil.	Yes	10 (SS)	Ecological PRG	10 (SS)	Ecological PRG
Nitroglycerin	98	NA	Not a COC	Not a COC	65	0.072	No; constituent detected in 2 of 190 post-Rod samples. Maximum detection of 7.7 µg/L slightly exceeds the RSL (1.5 µg/L) and adjusted RSL (0.15 µg/L). Most detection limits (ranging from 0.2 to 2,000 µg/L) also exceed RSL. Maximum detect in GW35 in 4/14/2010, and following samples from that well not detected – with detection limit of 0.28 µg/L. Other detection in GW04 in 4/14/2010 (0.49 µg/L) below RSL, and not detected in following sample with detection limit of 0.25 µg/L. Clean up will focus on ecological concerns in surface soil.	Yes	65 (SS)	Ecological PRG	65 (SS)	Ecological PRG
Perchlorate	31.3	NA	53	671	1.0	0.85	Yes; Constituent detected in 117 of 192 post-Rod samples; many exceedances of the RSL and MCL.	Yes	0.85	SSL	0.85	SSL
RDX	34	NA	Not a COC	Not a COC	10	0.024	Yes; RDX detected in 76 of 192 post-Rod samples. RSL is 0.61 µg/L. More recent data collected as part of RCRA LTM (2009 through Jan 2011) indicates concentrations of RDX below 8 µg/L. Primary risk associated with EW16, otherwise, risk for all other wells below 10-4, some within 10-4 to 10-5, others lower. Max detect is 330 µg/L in EW16 in 2005 which is the only well with concentrations >10-4 risk level (i.e. >61 µg/L). EW12, EW14, GW34, GW35, GW37 (once) greater than 10-5 risk level (>6.1), but not greater than 61. GW5 >6.1, but last sample between 0.61 and 6.1. GW2 >6.1 in 1/2005, but after than all below 6.1 or nd. GW39 >6.1 4/2007, but later samples below 6.1.	Yes[8]	10 (SS)	Ecological PRG	10 (SS)	Ecological PRG
Metals												
Antimony	17.2	1.2 (SS/SB)	Not a COC	Not a COC	Not a COC	12	No; constituent detected in 20 of 243 post-Rod samples. Maximum detect of 11.2 µg/L (GW37 in 8/9/2006) exceeds MCL (6 µg/L) and RSL (6 µg/L) and adjusted RSL (0.6 µg/L), but not detected in sample from same well in later samples from that well. No other detects exceed MCL.	No	Antimony is not a COC based on human and ecological receptor exposure risk and the potential for concentrations in soil leaching to groundwater at levels resulting in unacceptable risk based on the SSL evaluation is not a concern.			
Arsenic	10.6	10.9 (SS/SB)	3.9	16	Not a COC	13	Yes, constituent detected in 81 of 243 post-Rod groundwater samples. Concentrations fluctuate above and below the MCL.	No	Although constituent concentrations in groundwater fluctuate above the MCL, the maximum concentration in soil is below background.			
Cobalt	16.5	20.9 (SS/SB)	Not a COC	Not a COC	Not a COC	2.0	Yes, constituent detected in 72 of 243 post-Rod groundwater samples; maximum concentration is 22 µg/L which is above the RSL and adjusted RSL.	No	Although constituent present in groundwater above the RSL, the maximum concentration in soil is below background.			
Copper	1,820	36.7 (SS/SB)	Not a COC	Not a COC	253	2,100	No; constituent detected in 12 of 23 (instead of 201 of 364 total Site 1 gw samples). Maximum detect of 1,060 µg/L (was 1,210 µg/L in GW3 in 1994) is below MCL of 1,300 µg/L.	Yes	253 (SS)	Ecological PRG	253 (SS)	Ecological PRG

Table 7
Active Burning Ground Site Remediation Goal Selection Process
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

COCs[1]	Maximum Conc. in Soil (mg/kg)	Background[2] (mg/kg)	PRG[7] (mg/kg)			Soil to Groundwater Leaching Considerations		SRG[6] (mg/kg)				
			Residential	Industrial	Ecological	SSL[3] (mg/kg)	Is constituent a concern for threat to groundwater?	Is SRG warranted?	Residential Scenario	Basis	Industrial Scenario	Basis
Iron	33,500	27,900 (SS) 30,900 (SB)	53,259	671,107	Not a COC	6,400	No; constituent is a human nutrient and the maximum site concentration is not signficantly greater than background levels.	No	Maximum soil concentrations are only slightly above background for ABL and iron is considered an essential human nutrient.			
Lead	1,760	44.4 (SS) 22.5 (SB)	Not a COC	Not a COC	785	160	Yes; constituent detected in 48 of 243 post-Rod samples. Maximum of 130 µg/L in EW14 in 2000 exceeds action level of 15 µg/L. EW16, EW18 in 2000, GW4 in 2006, exceed action level.	Yes	160	SSL	160	SSL
Manganese	1,170	1,090 (SS) 852 (SB)	1,087	8,445	Not a COC	480	Yes, groundwater concentrations post-Rod are above RSLs and adjusted RSLs.	Yes	1,090 (SS) 852 (SB)	Background	1,090 (SS) 852 (SB)	Background
Mercury	7.2	0.31 (SS/SB)	Not a COC	Not a COC	1.61	7.6	No; constituent detected in 27 of 242 (instead of 37 of 338 total site 1 gw samples). Maximum detect of 0.31 µg/L below MCL of 2 µg/L.	Yes	1.61 (SS)	Ecological PRG	1.61 (SS)	Ecological PRG
Thallium	2.3 (SS) 1.5 (SB)	2.3 (SS) 2.1 (SB)	0.38	4.8	Not a COC	6.8	No; constituent detected in 23 of 243 post-Rod samples. Maximum detected of 15.5 µg/L in EW 29 exceeds MCL of 2 µg/L. Not detected again in EW29, but the detection limit is above 2 (is about 6). One other detection exceeded MCL. Based on lack of exceedances of MCL;consideration of SSL not warranted.	No	Maximum soil concentration does not exceed background.		Maximum soil concentration is below the industrial PRG.	
Vanadium	36.7	17.8 (SS/SB)	190	2,397	Not a COC	360	No; vanadium detected in 41 of 243 post-Rod groundwater samples; Maximum concentration of 43.1 µg/L is below the RSL but above the adjusted RSL.	No	Maximum soil concentrations are below the PRGs and SSL.			

Notes:
[1] The COC list was generated using the constituents presented in the *Revised Draft Proposed RAOs and Remediation Goals for Site 1 Soil at Allegany Ballistics Laboratory* , dated July 15, 2009, CH2MHILL.
[2] The background values are taken from Table 3-10 in the *Final Background Soil Investigation Technical Memorandum* , dated March 29, 2004 (CH2M HILL).
[3] The SSL values were generated based on site-specific leaching conditions and a DAF of 46
[4] 2,3,7,8-TCDD TEQ - The ecological PRG is based upon 2,3,7,8-TCDD equivalents, mammalian TEFs, and individual dioxin/furan congeners. The human health 2,3,7,8-TCDD TEQ PRG is based on 2,3,7,8-TCDD, the most toxic dioxin/furan congene
[5] There was insufficient data to develop the PRG for this compound
[6] The SRG was determined as the lowest concentration between the PRGs and SSL; and then the higher value between that number and the backgroun
[7] PRGs for residential and industrial human receptors and ecological receptors were calculated following risk assessment methods documented in the *Final Focused Remedial Investigation for Site 1 Soil, Operable Unit 4, at Allegany Ballistics Laboratory, dated July 2006.*
[8] The RDX SSL is lower in many cases than the detection limit in soil. In addition, RDX is a constituent present in groundwater above the RSLs; however was not identified as a COC in the groundwater Record of Decision. Groundwater data will continue to be evaluated as part of long-term monitoring to ensure concentrations are at acceptable levels; becuase of the uncertainty in detections in soil and continued groundwater monitoring eforts, achievement of the SSL in this instance is not warranted.
[9] This constituent was not detected in the soils data set used for the draft FS but was included because it is a groundwater COC
µg/L = microgram per liter
COC = constituent of concern
DAF = dilution attenuation factor
FDP = former disposal pit
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
LTM = long-term monitoring
MCL = maximum contaminant level
mg/kg = milligram per kilogram
NA = not applicable/not available
Not a COC = constituent is not a COC for the respective risk pathway
PRG = preliminary remediation goal
RCRA = Resource Concervation and Recovery Act
RDX = Hexahydro-1,2,5-trinitro-1,3,5-triazine
ROD = Record of Decision
RSL = Regional Screening Level
SB = subsurface soil
SRG = site remediation goal
SS = surface soil
SSL = soil screening level
SS/SB = combined surface and subsurface soil
SVOC = semivolatile organic compound
TCDD = Tetrachlorodibenzo-p-dioxin
TEF = toxic equivalence factor
TEQ = toxic equivalency quotient
VOC = volatile organic compound

Table 8

Outside Active Burning Ground Site Remediation Goal Selection Process

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, WV

COCs[1]	Maximum Conc. in Soil (mg/kg)	Background[2] (mg/kg)	PRG[8] (mg/kg)			SSL[3] (mg/kg)	SRG[7] (mg/kg)				
			Residential	Industrial	Ecological		Is SRG warranted?	Residential Scenario	Basis	Industrial Scenario	Basis
VOCs											
1,2,4-Trichlorobenzene	0.081	NA	Not a COC	Not a COC	Not a COC	170	No	Maximum soil concentration is below PRGs and SSL.			
1,2-Dichloroethene[6]	27	NA	Not a COC	Not a COC	0.45	8.4	Yes	0.45 (SS) 8.4 (SB)	Ecological PRG SSL	0.45 (SS) 8.4 (SB)	Ecological PRG SSL
Bromodichloromethane	0.24	NA	Not a COC	Not a COC	Not a COC	8.3	No	Maximum soil concentration is below SSL.			
Methyl acetate	2.8	NA	Not a COC	Not a COC	0.30	84	Yes	0.30 (SS)	Ecological PRG	0.30 (SS)	Ecological PRG
Tetrachloroethene	11	NA	37	61	Not a COC	1.1	Yes	1.1	SSL	1.1	SSL
Trichloroethene	730	NA	2.5	4	2.5	0.81	Yes	0.81	SSL	0.81	SSL
SVOCs											
Benzo(a)anthracene	58	NA	1.5	21	Not a COC	8.8	Yes	1.5	Residential PRG	8.8	SSL
Benzo(a)pyrene	55	NA	0.15	2.1	Not a COC	200	Yes	0.15	Residential PRG	2.1	Industrial PRG
Benzo(b)fluoranthene	65	NA	1.5	21	Not a COC	30	Yes	1.5	Residential PRG	21	Industrial PRG
Benzo(k)fluoranthene	54	NA	15	211	Not a COC	290	Yes	15	Residential PRG	Maximum soil concentration is below the industrial PRG and SSL.	
Dibenz(a,h)anthracene	2.1	NA	0.15	2.1	Not a COC	9.6	Yes	0.15	Residential PRG	2.1	Industrial PRG
Indeno(1,2,3-cd)pyrene	18	NA	1.5	21	Not a COC	97	Yes	1.5	Residential PRG	Maximum soil concentration is below the industrial PRG and SSL.	
Naphthalene	0.65	NA	Not a COC	Not a COC	Not a COC	1.9	No	Maximum soil concentration is below SSL.			
Total PAHs (low molecular weight)	240	NA	Not a COC	Not a COC	29	NA	Yes	29 (SS)	Ecological PRG	29 (SS)	Ecological PRG
Total PAHs (high molecular weight)	492	NA	Not a COC	Not a COC	18	NA	Yes	18 (SS)	Ecological PRG	18 (SS)	Ecological PRG
Dioxins											
2,3,7,8-TCDD TEQ[4]	3.48×10^{-4}	NA	2.5×10^{-5}	1.8×10^{-4}	9.6×10^{-5}	0.013	Yes	2.5×10^{-5}	Residential PRG	9.6×10^{-5} (SS) 1.8×10^{-4} (SB)	Ecological PRG Industrial PRG
Explosives											
HMX	530	NA	Not a COC	Not a COC	10	750	Yes	10 (SS)	Ecological PRG	10 (SS)	Ecological PRG
Nitroglycerin	30	NA	Not a COC	Not a COC	65	0.37	Yes	0.37	SSL	0.37	SSL
Perchlorate	0.85	NA	Not a COC	Not a COC	Not a COC	4.35	No	Maximum soil concentration is below the SSL			
RDX	7.3	NA	Not a COC	Not a COC	10	0.12	Yes	0.12	SSL	0.12	SSL
Metals											
Antimony	25.1	1.2 (SS/SB)	26	284	Not a COC	64	No	Maximum soil concentration is below PRGs and SSL.			
Arsenic[10]	31	15.1 (SS) 10.9 (SB)	3.9	16	Not a COC	69	Yes	15.1 (SS) 10.9 (SB)	Background Background	16	Industrial PRG
Cadmium	373	0.55 (SS) 0.34 (SB)	70	792	17.4	130	Yes	17.4 (SS) 70 (SB)	Ecological PRG Residential PRG	17.4 (SS) 130 (SB)	Ecological PRG SSL
Chromium[5]	319	13.9 (SS/SB)	37,199	252,266	42.7	1.0×10^{6}	Yes	42.7 (SS)	Ecological PRG	42.7 (SS)	Ecological PRG
Cobalt[10]	60	52.3 (SS) 20.9 (SB)	Not a COC	Not a COC	Not a COC	10	Yes	52.3 (SS) 20.9 (SB)	Background Background	52.3 (SS) 20.9 (SB)	Background Background
Copper	13,600	36.7 (SS/SB)	1,522	19,174	253	11,000	Yes	253 (SS) 1,522 (SB)	Ecological PRG Residential PRG	253 (SS) 11,000 (SB)	Ecological PRG SSL
Iron[10]	122,000	35,600 (SS) 30,900 (SB)	26,629	335,553	Not a COC	33,000	Yes	35,600 (SS) 30,900 (SB)	Background Background	35,600 (SS) 33,000 (SB)	Background SSL
Lead	12,100	44.4 (SS) 22.5 (SB)	418	1,235	785	830	Yes	418	Residential PRG	785 (SS) 830 (SB)	Ecological PRG SSL
Manganese	2,320	1,090 (SS) 852 (SB)	543	4,222	Not a COC	2,500	No	1,090 (SS) 852 (SB)	Background	Maximum soil concentration is below PRGs and SSL.	
Mercury	56.3	0.31 (SS/SB)	8.4	79	1.61	39	Yes	1.61 (SS) 8.4 (SB)	Ecological PRG Residential PRG	1.61 (SS) 39 (SB)	Ecological PRG SSL
Nickel[9]	347	32.4 (SS) 23 (SB)	Not a COC	Not a COC	78.4	3,100	Yes	78.4 (SS)	Ecological PRG	78.4 (SS)	Ecological PRG

Table 8

Outside Active Burning Ground Site Remediation Goal Selection Process

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, WV

COCs[1]	Maximum Conc. in Soil (mg/kg)	Background[2] (mg/kg)	PRG[8] (mg/kg)			SSL[3] (mg/kg)	SRG[7] (mg/kg)				
			Residential	Industrial	Ecological		Is SRG warranted?	Residential Scenario	Basis	Industrial Scenario	Basis
Silver	121	NA	Not a COC	Not a COC	42.6	220	Yes	42.6 SS)	Ecological PRG	42.6 (SS)	Ecological PRG
Thallium	3.1	2.1 (SS/SB)	0.38	4.8	Not a COC	35	Yes	2.1	Background	Maximum soil concentration is below PRGs and SSL.	
Vanadium	994	17.8 (SS/SB)	190	2,397	173	1,800	Yes	173 (SS) 190 (SB)	Ecological PRG Residential PRG	173 (SS)	Ecological PRG
Zinc	4,230	136 (SS) 68.6 (SB)	Not a COC	Not a COC	1,170	17,000	Yes	1,170 (SS)	Ecological PRG	1,170 (SS)	Ecological PRG

Notes:

[1] The COC list was generated using the constituents presented in the *Revised Draft Proposed RAOs and Remediation Goals for Site 1 Soil at Allegany Ballistics Laboratory* , dated July 15, 2009

[2] The background values are taken from Table 3-10 in the *Final Background Soil Investigation Technical Memorandum* , dated March 29, 2004, CH2MHILL.

[3] The SSL values were based on site-specific leaching conditions based on site specific input parameters resulting in a DAF of 236.

[4] 2,3,7,8-TCDD TEQ - The ecological PRG is based upon 2,3,7,8-TCDD equivalents, mammalian TEFs, and individual dioxin/furan congeners. The human health 2,3,7,8-TCDD TEQ PRG is based on 2,3,7,8-TCDD, the most toxic dioxin/furan congener.

[5] The human health PRG for chromium was based on chromium III toxicity numbers. The ecological PRG for chromium was based on total chromium. There has not been analysis of CrVI at Site 1 because there is no historical indication of a source.

[6] Considered total 1,2-dichloroethene (cis-1,2-ichloroethene + trans-1,2-dichloroethene); however, there is no SSL for total 1,2-dichloroethene. The lower SSL between cis-1,2-dichloroethene (8.4 mg/kg) and trans-1,2-dichloroethene (12 mg/kg) was used.

[7] The SRG was determined as the lowest concentration between the PRGs and SSL; and then the higher value between that number and the background

[8] PRGs for residential and industrial human receptors and ecological receptors were calculated following risk assessment methods documented in the *Final Focused Remedial Investigation for Site 1 Soil, Operable Unit 4, at Allegany Ballistics Laboratory, dated July 2006 (CH2M HILL).*

[9] Ecological PRG for nickel is based upon the maximum reference concentration collected from the river floodplain during the remedial investigation.

[10] Because arsenic, cobalt, iron, and thallium had SRGs based on background, the maximum values from the reference (i.e., background) samples collected from the river floodplain during the remedial investigation were used as background values (except for thallium, which was not detected in reference samples) rather than the background concentrations from the area outside the floodplain. This slightly increased the surface soil SRG for arsenic, cobalt, and iron in the OABG.

COC = constituent of concern
DAF = dilution attenuation factor
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
mg/kg = milligram per kilogram
NA = not applicable/not available
Not a COC = constituent is not a COC for the respective risk pathway
PRG = preliminary remediation goal
RAO = remedial action objective
RDX = Hexahydro-1,2,5-trinitro-1,3,5-triazine
SB = subsurface soil
SRG = site remediation goal
SS = surface soil
SS/SB = combined surface and subsurface soil
SSL = soil screening level
SVOC = semi-volatile organic compound
TCDD = tetrachlorodibenzo-p-dioxin
TEF = toxic equivalence factor
TEQ = toxic equivalency quotient
VOC = volatile organic compound

Table 9
Active Burning Grounds - Industrial Removal Scenario (Baseline)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS												COC CONCENTRATION-to-SRG RATIOS														
							VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)				VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)						
						INDUSTRIAL SRGs - Surface Soil (SS):	180	220	160	10,000	65,000	850	10,000	1.80E-04	253	160	1,090	1.61														
						INDUSTRIAL SRGs - Subsurface Soil (SB):	180	220	160	N/A	N/A	850	N/A	1.80E-04	N/A	160	852	N/A														
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Mangenese	Mercury	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury	Maximum Ratio[1]	COC	Other COCs with Ratios > 5
ABG	AS01-SB01	AS01-SS01-R01X	02/21/01	0	1	SS	6	6	6	454	454	66	454	7.69E-05	27.5	39.3	954	0.09								0.43	0.11	0.25	0.88	0.06	0.88	--	--
ABG	AS01-SB02	AS01-SS02-R01X	02/21/01	0	1	SS	6	6	28	1,190	476	56	735	9.38E-05	22.5	1,730	419	0.08			0.18	0.12			0.07	0.52	0.09	10.8	0.38	0.05	10.8	Lead	--
ABG	AS01-SB03	AS01-SS03-R01X	02/21/01	0	1	SS	6	6	6	2,400	476	68	476	7.25E-05	22.4	25.2	912	0.05				0.24		0.08		0.40	0.09	0.16	0.84	0.03	0.84	--	--
ABG	AS01-SB04	AS01-SS04-R01X	02/21/01	0	1	SS	6	6	9	454	476	96	454	7.30E-05	19.2	34.3	797	0.05			0.06			0.11		0.41	0.08	0.21	0.73	0.03	0.73	--	--
ABG	AS01-SB05	AS01-SS05-R01X	02/21/01	0	1	SS	6	6	6	2,250	454	880	784	7.71E-05	19.3	55.2	1,010	0.04				0.23		1.04	0.08	0.43	0.08	0.35	0.93	0.02	1.04	Perchlorate	--
ABG	AS01-SB06	AS01-SS06-R01X	02/21/01	0	1	SS	6	6	6	476	454	95	476	7.09E-05	19.3	26.9	928	0.05						0.11		0.39	0.08	0.17	0.85	0.03	0.85	--	--
ABG	AS01-SB07	AS01-SS07-R01X	02/22/01	0	1	SS	6	6	6	417	435	58	417	5.10E-05	20.5	25.9	783	0.05								0.28	0.08	0.16	0.72	0.03	0.72	--	--
ABG	AS01-SB08	AS01-SS08-R01X	02/21/01	0	1	SS	6	6	6	258	454	63	435	4.86E-05	18.1	30	982	0.05				0.03				0.27	0.07	0.19	0.90	0.03	0.90	--	--
ABG	AS01-SB09	AS01-SS09-R01X	02/22/01	0	1	SS	6	6	6	454	476	63	454	4.97E-05	21.6	38	1,120	0.08								0.28	0.09	0.24	1.03	0.05	1.03	Manganese	--
ABG	AS01-SB10	AS01-SS10-R01X	02/22/01	0	1	SS	6	6	6	124	435	61	417	4.87E-05	17.9	29.5	999	0.05				0.01				0.27	0.07	0.18	0.92	0.03	0.92	--	--
ABG	AS01-SB11	AS01-SS11-R01X	02/22/01	0	1	SS	6	6	3	506	435	58	417	3.85E-05	17.6	96.9	730	0.04			0.02	0.05				0.21	0.07	0.61	0.67	0.02	0.67	--	--
ABG	AS01-SB12	AS01-SS12-R01X	02/22/01	0	1	SS	6	6	6	130	435	62	454	4.60E-05	19.7	53.4	1,120	0.05				0.01				0.26	0.08	0.33	1.03	0.03	1.03	Manganese	--
ABG	AS01-SB13	AS01-SS13-R01X	02/22/01	0	1	SS	6	6	6	417	417	64	417	3.31E-05	20.7	25	1,050	0.06								0.18	0.08	0.16	0.96	0.04	0.96	--	--
ABG	AS01-SB14	AS01-SS14-R01X	02/21/01	0	1	SS	6	6	6	454	454	63	454	6.35E-05	29	101	926	0.06								0.35	0.11	0.63	0.85	0.04	0.85	--	--
ABG	AS01-SB14	AS01-SB14-R01X	02/21/01	1	2	SS	6	6	6	340	454	120	454	1.83E-04	16.2	15.9	911	0.04				0.03		0.14		1.02	0.06	0.10	0.84		1.02	Dioxins	--
ABG	AS01-SB15	AS01-SS15-R01X	02/21/01	0	1	SS	6	6	6	454	435	61	454	4.82E-05	27.2	75.8	777	0.06								0.27	0.11	0.47	0.71	0.04	0.71	--	--
ABG	AS01-SB15	AS01-SB15-R01X	02/21/01	1	2	SS	6	6	6	454	454	61	454	2.12E-04	17.1	20.1	1,030	0.04								1.18	0.07	0.13	0.94		1.18	Dioxins	--
ABG	AS01-SB16	AS01-SS16-R01X	02/22/01	0	1	SS	6	6	6	454	476	59	454	3.69E-04	17.4	26.6	712	0.04								2.05	0.07	0.17	0.65	0.02	2.05	Dioxins	--
ABG	AS01-SB16	AS01-SB16-R01X	02/22/01	1	2	SS	6	6	5	454	476	62	454	2.00E-04	17.5	16	1,010	0.03			0.03			0.07		1.11	0.07	0.10	0.93		1.11	Dioxins	--
ABG	AS01-SB17	AS01-SS17-R01X	02/22/01	0	1	SS	6	6	6	417	454	220	417	5.08E-05	17	30.4	813	0.06						0.26		0.28	0.07	0.19	0.75	0.04	0.75	--	--
ABG	AS01-SB17	AS01-SB17-R01X	02/22/01	1	2	SS	6	6	6	454	476	2,500	454	2.36E-04	16.8	16.7	1,070	0.03						2.94		1.31	0.07	0.10	0.98		2.94	Perchlorate	--
ABG	AS01-SB18	AS01-SS18-R01X	02/22/01	0	1	SS	6	6	6	269	417	62	476	5.01E-05	18.7	134	915	0.38				0.03				0.28	0.07	0.84	0.84	0.24	0.84	--	--
ABG	AS01-SB18	AS01-SB18-R01X	02/22/01	1	2	SS	6	6	6	476	454	61	476	1.87E-04	16.9	22.1	1,170	0.04								1.04	0.07	0.14	1.07		1.07	Manganese	--
ABG	AS01-SB19	AS01-SS19-R01X	02/22/01	0	1	SS	6	6	6	123	417	62	435	3.75E-05	22.8	184	674	0.09				0.01				0.21	0.09	1.15	0.62	0.06	1.15	Lead	--
ABG	AS01-SB19	AS01-SB19-R01X	02/22/01	1	2	SS	6	6	6	435	435	60	435	1.58E-04	18.6	25	1,080	0.04								0.88	0.07	0.16	0.99		0.99	--	--
ABG	AS01-SB20	AS01-SS20-R01X	02/22/01	0	1	SS	6	6	6	435	454	63	435	1.11E-04	20.7	58.1	1,090	0.08								0.62	0.08	0.36	1.00	0.05	1.00	Manganese	--
ABG	AS01-SB20	AS01-SB20-R01X	02/22/01	1	2	SS	6	6	6	417	454	59	417	3.82E-05	17.6	16.6	1,100	0.03								0.21	0.07	0.10	1.01		1.01	Manganese	--
ABG	AS01-SB63	AS01-SS63-0-0_5	09/22/04	0	0.5	SS	14	14	1.6	190	2,500	54.7	49	9.32E-07	20.7	64.9	941	0.13			0.01	0.02			0.00	0.01	0.08	0.41	0.86	0.08	0.86	--	--
ABG	AS01-SB63	AS01-SB63-6_5-7	09/22/04	6.5	7	SB	11	11	13	500	2,500	48.5	500	4.94E-07	15.4	13.7	579	0.061			0.08					0.00		0.09	0.68		0.68	--	--
ABG	AS01-SB64	AS01-SS64-0-0_5	09/22/04	0	0.5	SS	12	12	12	51,000	98,000	31,300	16,000	3.02E-06	18	16.2	1,120	0.067				5.10	1.51	36.8	1.60	0.02	0.07	0.10	1.03	0.04	36.8	Perchlorate	HMX
ABG	AS01-SB64	AS01-SB64-7_5-8	09/22/04	7.5	8	SB	530	530	600	1,300	2,500	18,800	1,100	5.42E-07	13.7	12.9	600	0.066			3.75			22.1		0.00		0.08	0.70		22.1	Perchlorate	--
ABG	AS01-SB65	AS01-SS65-0-0_5	09/22/04	0	0.5	SS	11	11	66	2,200	2,500	47	1,700	2.35E-06	19.9	65.7	879	0.077			0.41	0.22			0.17	0.01	0.08	0.41	0.81	0.05	0.81	--	--
ABG	AS01-SB65	AS01-SB65-1_5-2	09/22/04	1.5	2	SS	11	11	140	1,500	2,500	29.7	940	1.31E-06	17	13.7	932	0.075			0.88	0.15		0.03	0.09	0.01	0.07	0.09	0.86	0.05	0.88	--	--
ABG	AS01-SB66	AS01-SS66-0-0_5	09/23/04	0	0.5	SS	13	13	13	1,300	2,500	52.9	170	2.13E-06	17.6	14.1	1,070	0.066				0.13			0.02	0.01	0.07	0.09	0.98		0.98	--	--
ABG	AS01-SB66	AS01-SB66-1_5-2	09/23/04	1.5	2	SS	14	14	14	810	2,500	48.2	96	1.92E-06	16.3	12.8	922	0.06				0.08			0.01	0.01	0.06	0.08	0.85		0.85	--	--
ABG	AS01-SB67	AS01-SS67-0-0_5	09/23/04	0	0.5	SS	13	13	13	1,300	2,500	45.4	460	3.28E-06	1,820	138	208	0.092				0.13			0.05	0.02	7.19	0.86	0.19	0.06	7.19	Copper	--
ABG	AS01-SB67	AS01-SB67-1_5-2	09/23/04	1.5	2	SS	12	12	11	4,600	2,500	438	69	4.50E-05	24.1	269	546	0.44			0.07	0.46		0.52	0.01	0.25	0.10	1.68	0.50	0.27	1.68	Lead	--
ABG	AS01-SB68	AS01-SS68-0-0_5	09/23/04	0	0.5	SS	12	12	12	500	2,500	47.3	500	1.65E-06	17.2	44.4	520	0.06								0.01	0.07	0.28	0.48	0.04	0.48	--	--
ABG	AS01-SB68	AS01-SB68-1_5-2	09/23/04	1.5	2	SS	610	610	940	5,200	2,000	26.6	74	1.20E-06	36.4	914	692	2			5.88	0.52	0.03	0.03	0.01	0.01	0.14	5.71	0.63	1.24	5.88	TCE	Lead
ABG	AS01-SB69	AS01-SS69-0-0_5	09/23/04	0	0.5	SS	680	420	1,400	20,000	2,500	51.8	2,100	6.01E-06	68.1	106	665	0.16		1.91	8.75	2.00		0.06	0.21	0.03	0.27	0.66	0.61	0.10	8.75	TCE	--
ABG	AS01-SB69	AS01-SB69-1-1_5	09/23/04	1	1.5	SS	800	5,800	12,000	570	2,500	91.2	5,200	2.06E-06	20.1	24.6	783	0.45		26.4	75.0	0.06		0.11	0.52	0.01	0.08	0.15	0.72	0.28	75.0	TCE	Tetrachloroethene
ABG	AS01-SB70	AS01-SS70-0-0_5	09/23/04	0	0.5	SS	12	12	38	420	2,500	49.6	210	5.52E-06	18.9	387	543	7.2			0.24	0.04			0.02	0.03	0.07	2.42	0.50	4.47	4.47	Mercury	--
ABG	AS01-SB70	AS01-SB70-2_5-3	09/23/04	2.5	3	SS	660	660	1,800	2,100	4,500	65	730	3.38E-06	136	1,760	687	0.068			11.3	0.21	0.07	0.08	0.07	0.02	0.54	11.0	0.63		11.3	TCE	Lead
ABG	BG-010/010S/053	HCS-BG-53	07/13/92	13	14	SB	6	6	480	NA	NA	NA	NA	NA	NA	NA	NA	NA			3.00										3.00	TCE	--
ABG	BG-010/010S/053	HCS-BG-10	07/13/92	3	4	SS	6	6	5	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.03										0.03	--	--
ABG	BG-010/010S/053	HCS-BG-10S	06/20/94	0	1	SS	11	11	2	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-017/018	HCS-BG-18	07/13/92	10	11	SB	6	6	48	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.30										0.30	--	--
ABG	BG-025/025S/048	HCS-BG-25S	06/20/94	0	1	SS	13	13	3	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-033/033S	HCS-BG-33S	06/20/94	0	1	SS	14	14	14	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-034/034S	HCS-BG-34	07/13/92	3	4	SS	6	6	1	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01										0.01	--	--
ABG	BG-034/034S	HCS-BG-34S	06/20/94	0	1	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-037	HCS-BG-37	07/13/92	3	4	SS	6	3	37	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.01	0.23										0.23	--	--
ABG	BG-055/055S	HCS-BG-55S	06/20/94	0	1	SS	11	11	7	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.04										0.04	--	--
ABG	BG-059/050	HCS-BG-50	07/13/92	11	12	SB	6	6	2	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01										0.01	--	--
ABG	BG-067/068	HCS-BG-68	07/13/92	11	12	SB	6	12	30	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.05	0.19										0.19	--	--
ABG	BG-132/133	HCS-BG-132	06/22/94	3	5	SS	11	11	89	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.56										0.56	--	--
ABG	BG-132/133	HCS-BG-133	11/15/94	2	3	SS	12	12	37	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.23										0.23	--	--
ABG	BG-180	HCS-BG-180	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-181	HCS-BG-181	10/27/98	2	3	SS	11	11	34	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.21										0.21	--	--
ABG	BG-182/183	HCS-BG-182	10/27/98	2	3	SS	11	11	63	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.39										0.39	--	--
ABG	BG-182/183	HCS-BG-183	10/27/98	4	6	SB	12	12	140	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.88										0.88	--	--
ABG	BG-184/185	HCS-BG-184	10/27/98	2	3	SS	12	12	26	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.16										0.16	--	--
ABG	BG-184/185	HCS-BG-185	10/27/98	4	6	SB	11	11	30	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.19										0.19	--	--
ABG	BG-186/187	HCS-BG-186	10/27/98	2	3	SS	11	11	2	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01										0.01	--	--
ABG	BG-186/187	HCS-BG-187	10/27/98	4	6	SB	11	11	10	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06										0.06	--	--
ABG	BG-188/189	HCS-BG-188	10/27/98	2	3	SS	12	12	10	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06										0.06	--	--
ABG	BG-188/189	HCS-BG-189	10/27/98	4	6	SB	12	12	18	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.11										0.11	--	--
ABG	BG-190	HCS-BG-190	10/27/98	2	3	SS	12	12	53	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.33										0.33	--	--
ABG	BG-191	HCS-BG-191	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-192/193	HCS-BG-192	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-192/193	HCS-BG-193	10/27/98	4	6	SB	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-194	HCS-BG-194	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-195	HCS-BG-195	10/27/98	2	3	SS	12	12	74	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.46										0.46	--	--
ABG	BG-196/197	HCS-BG-196	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-196/197	HCS-BG-197	10/27/98	4	6	SB	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-198	HCS-BG-198	10/27/98	2	3	SS	12	12	2	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01										0.01	--	--

Table 9
Active Burning Grounds - Industrial Removal Scenario (Baseline)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS												COC CONCENTRATION-to-SRG RATIOS														
							VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)				VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)						
						INDUSTRIAL SRGs - Surface Soil (SS):	180	220	160	10,000	65,000	850	10,000	1.80E-04	253	160	1,090	1.61														
						INDUSTRIAL SRGs - Subsurface Soil (SB):	180	220	160	N/A	N/A	850	N/A	1.80E-04	N/A	160	852	N/A														
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Mangenese	Mercury	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury	Maximum Ratio[1]	COC	Other COCs with Ratios > 5
ABG	BG-199/200	HCS-BG-199	10/27/98	2	3	SS	12	12	29	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.18										0.18	--	--
ABG	BG-199/200	HCS-BG-200	10/27/98	4	6	SB	12	12	55	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.34										0.34	--	--
ABG	BG-201/202	HCS-BG-201	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-201/202	HCS-BG-202	10/27/98	4	6	SB	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-203/204	HCS-BG-203	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-203/204	HCS-BG-204	10/27/98	4	6	SB	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-207/208	HCS-BG-207	10/27/98	2	3	SS	11	11	10	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06										0.06	--	--
ABG	BG-207/208	HCS-BG-208	10/27/98	4	6	SB	11	11	9	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06										0.06	--	--
ABG	BG-209/210	HCS-BG-209	10/27/98	2	3	SS	11	32	44	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.15	0.28										0.28	--	--
ABG	BG-209/210	HCS-BG-210	10/27/98	4	6	SB	12	60	120	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.27	0.75										0.75	--	--
ABG	BG-211/212	HCS-BG-211	10/27/98	2	3	SS	11	3	4	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.01	0.03										0.03	--	--
ABG	BG-211/212	HCS-BG-212	10/27/98	4	6	SB	11	6	11	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.03	0.07										0.07	--	--
ABG	BG-213/214	HCS-BG-213	10/27/98	2	3	SS	11	5	46	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.02	0.29										0.29	--	--
ABG	BG-213/214	HCS-BG-214	10/27/98	4	6	SB	12	6	110	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.03	0.69										0.69	--	--
ABG	BG-215/216	HCS-BG-215	10/27/98	2	3	SS	11	11	18	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.11										0.11	--	--
ABG	BG-215/216	HCS-BG-216	10/27/98	4	6	SB	11	11	12	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.08										0.08	--	--
ABG	BG-217/218	HCS-BG-217	10/27/98	2	3	SS	11	11	3	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.02										0.02	--	--
ABG	BG-217/218	HCS-BG-218	10/27/98	4	6	SB	11	7	3	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.03	0.02										0.03	--	--
ABG	BG-219/220	HCS-BG-219	10/27/98	2	3	SS	11	11	23	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.14										0.14	--	--
ABG	BG-219/220	HCS-BG-220	10/27/98	4	6	SB	13	13	37	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.23										0.23	--	--
ABG	BG-221/222	HCS-BG-221	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-221/222	HCS-BG-222	10/27/98	4	6	SB	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BP-01	HCS-BP-1	07/13/92	0.5	1	SS	NA	NA	NA	7,600	NA	NA	6,600	NA	NA	NA	NA	NA				0.76			0.66						0.76	--	--
ABG	BP-02	HCS-BP-2	07/13/92	0.5	1	SS	NA	NA	NA	4,600	NA	NA	7,300	NA	NA	NA	NA	NA				0.46			0.73						0.73	--	--
ABG	BP-03	HCS-BP-3	07/13/92	0.5	1	SS	NA	NA	NA	2,200	NA	NA	2,600	NA	NA	NA	NA	NA							0.26						0.26	--	--
ABG	BP-04	HCS-BP-4	07/13/92	0.5	1	SS	NA	NA	NA	2,300	NA	NA	2,100	NA	NA	NA	NA	NA				0.23			0.21						0.23	--	--
ABG	BP-05	HCS-BP-5	07/13/92	0.5	1	SS	NA	NA	NA	3,900	NA	NA	5,100	NA	NA	NA	NA	NA				0.39			0.51						0.51	--	--
ABG	BP-06	HCS-BP-6	07/13/92	0.5	1	SS	NA	NA	NA	14,000	NA	NA	34,000	NA	NA	NA	NA	NA				**1.40**			**3.40**						3.40	RDX	--
ABG	BP-07	HCS-BP-7	07/13/92	0.5	1	SS	NA	NA	NA	12,000	NA	NA	2,800	NA	NA	NA	NA	NA				**1.20**			0.28						1.20	HMX	--
ABG	BP-08	HCS-BP-8	07/13/92	0.5	1	SS	NA	NA	NA	2,200	NA	NA	2,800	NA	NA	NA	NA	NA							0.28						0.28	--	--
FDP	AS01-SB42	AS01-SB42-(1-2)	10/24/01	1	2	SS	12	12	18	570	57,000	60	570	2.49E-07	16.9	16.2	1,020	0.12			0.11					0.00	0.07	0.10	0.94		0.94	--	--
FDP	AS01-SB43	AS01-SB43-(1-2)	10/24/01	1	2	SS	12	12	12	570	57,000	60	570	4.27E-07	11.1	13	647	0.12								0.00	0.04	0.08	0.59		0.59	--	--
FDP	AS01-SB44	AS01-SB44-(1-2)	10/24/01	1	2	SS	12	12	12	560	56,000	60	560	1.77E-07	15.5	15.1	972	0.11								0.00	0.06	0.09	0.89		0.89	--	--
FDP	AS01-SB60	AS01-SS60-0-0_5	09/21/04	0	0.5	SS	910	910	1,800	250	2,500	54.9	130	1.05E-05	24.1	42.5	810	0.12			**11.3**	0.03			0.01	0.06	0.10	0.27	0.74	0.07	113	TCE	--
FDP	AS01-SB60	AS01-SB60-1-3	09/22/04	1	3	SS	12	12	130	500	2,500	54.6	500	4.93E-07	15.8	14.2	853	0.068			0.81					0.00	0.06	0.09	0.78		0.81	--	--
FDP	AS01-SB60	AS01-SB60-3-5	09/22/04	3	5	SS	11	11	170	500	2,500	48.1	58	9.69E-07	14.6	13.8	790	0.06			**1.06**				0.01	0.01	0.06	0.09	0.72		1.06	TCE	--
FDP	AS01-SB60	AS01-SB60-5-7	09/22/04	5	7	SB	510	510	930	500	2,500	46.4	53	7.74E-07	13.3	13.4	753	0.099			**5.81**					0.00		0.08	0.88		5.81	TCE	--
FDP	AS01-SB60	AS01-SB60-7-8	09/22/04	7	8	SB	12	12	150	500	2,500	48.9	500	5.26E-07	11.8	12.3	624	0.097			0.94					0.00		0.08	0.73		0.94	--	--
FDP	AS01-SB61	AS01-SS61-0-0_5	09/21/04	0	0.5	SS	18	18	18	500	2,500	106	96	2.29E-06	18.5	25	762	0.11							0.01	0.01	0.07	0.16	0.70	0.07	0.70	--	--
FDP	AS01-SB61	AS01-SB61-1-3	09/22/04	1	3	SS	13	13	13	500	2,500	53.9	500	1.35E-06	16.7	15.3	995	0.095								0.01	0.07	0.10	0.91	0.06	0.91	--	--
FDP	AS01-SB61	AS01-SB61-3-5	09/22/04	3	5	SS	11	11	11	500	2,500	49.5	500	1.09E-06	14.7	15.4	783	0.12								0.01	0.06	0.10	0.72	0.07	0.72	--	--
FDP	AS01-SB61	AS01-SB61-5-7	09/22/04	5	7	SB	12	12	12	500	2,500	46.5	500	8.04E-07	15.4	13.2	701	0.063								0.00		0.08	0.82		0.82	--	--
FDP	AS01-SB61	AS01-SB61-7-8	09/22/04	7	8	SB	12	12	12	500	2,500	47.7	500	1.39E-06	15.8	16.5	833	0.06								0.01		0.10	0.98		0.98	--	--
FDP	AS01-SB62	AS01-SS62-0-0_5	09/21/04	0	0.5	SS	710	710	1,100	3,300	2,500	74	1,000	7.67E-06	10.5	16.3	228	0.067			**6.88**	0.33		0.09	0.10	0.04	0.04	0.10	0.21	0.04	6.88	TCE	--
FDP	AS01-SB62	AS01-SB62-1-3	09/22/04	1	3	SS	12,000	12,000	25,000	1,500	2,500	288	2,100	6.42E-04	17.3	14.5	918	0.062			**156**	0.15		0.34	0.21	**3.57**	0.07	0.09	0.84	0.04	156	TCE	--
FDP	AS01-SB62	AS01-SB62-3-5	09/22/04	3	5	SS	11,000	11,000	12,000	1,200	2,500	269	4,500	1.30E-06	16.3	13.8	532	0.06			**75.0**	0.12		0.32	0.45	0.01	0.06	0.09	0.49		75.0	TCE	--
FDP	AS01-SB62	AS01-SB62-5-7	09/22/04	5	7	SB	480	55	6,800	750	2,500	757	5,500	4.70E-07	17.3	14.6	686	0.07		0.25	**42.5**			0.89		0.00		0.09	0.81		42.5	TCE	--
FDP	AS01-SB62	AS01-SB62-7-8	09/22/04	7	8	SB	530	530	6,300	350	2,500	459	3,600	9.09E-07	15.3	15.1	725	0.086			**39.4**			0.54		0.01		0.09	0.85		39.4	TCE	--
FDP	BG-004/004S/005/039	HCS-BG-5(92)	07/13/92	10	11	SB	4,500	4,500	76,000	NA	NA	NA	NA	NA	NA	NA	NA	NA			**475**										475	TCE	--
FDP	BG-004/004S/005/039	HCS-BG-4(92)	07/13/92	3	4	SS	760	740	160,000	NA	NA	NA	NA	NA	NA	NA	NA	NA		**3.36**	**1,000**										1,000	TCE	--
FDP	BG-004/004S/005/039	HCS-BG-4S	06/20/94	0	1	SS	12	12	93	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.58										0.58	--	--
FDP	BG-004/004S/005/039	HCS-BG-4(94)	06/20/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	17	14.8	761	0.08									0.07	0.09	0.70		0.70	--	--
FDP	BG-006/007	HCS-BG-6(92)	07/13/92	3	4	SS	6	6	5	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.03										0.03	--	--
FDP	BG-006/007	HCS-BG-6(94)	06/21/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	492	9	409	0.06									**1.94**	0.06	0.38		1.94	Copper	--
FDP	BG-008/008S/009/038	HCS-BG-38	07/13/92	12.5	13.5	SB	740	330	42,000	NA	NA	NA	NA	NA	NA	NA	NA	NA		**1.50**	**263**										263	TCE	--
FDP	BG-008/008S/009/038	HCS-BG-8S	06/20/94	0	1	SS	11	11	57	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.36										0.36	--	--
FDP	BG-008/008S/009/038	HCS-BG-8	06/21/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	16.7	13.4	886	0.07									0.07	0.08	0.81		0.81	--	--
FDP	BG-079	HCS-BG-79	07/13/92	11	12	SB	6	6	380	NA	NA	NA	NA	NA	NA	NA	NA	NA			**2.38**										2.38	TCE	--
FDP	BG-120/121	HCS-BG-120	06/21/94	3	5	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
FDP	BG-126/127	HCS-BG-127	06/22/94	9	11	SB	12	12	230	NA	NA	NA	NA	NA	NA	NA	NA	NA			**1.44**										1.44	TCE	--
FDP	BG-128/129	HCS-BG-128	06/22/94	9	11	SB	12	12	260	NA	NA	NA	NA	NA	NA	NA	NA	NA			**1.63**										1.63	TCE	--
FDP	BG-130/131	HCS-BG-131	06/22/94	9	11	SB	12	12	270	NA	NA	NA	NA	NA	NA	NA	NA	NA			**1.69**										1.69	TCE	--
FDP	BG-205/206	HCS-BG-205	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
FDP	BG-205/206	HCS-BG-206	10/27/98	4	6	SB	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--

1 - Red shading indicates maximum ratios >5; orange shading indicates maximum ratios between 1 and 5
Gray shaded concentrations indicate detections; NA - Not Analyzed

Notes:
µg/kg = microgram per kilogram
COC = constituent of concern
ft = foot
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification
mg/kg = miligram per kilogram
RDX = Hexahydro-1,2,5-trinitro-1,3,5-triazine
SRG = site remediation goal
VOC = volatile organic compound

Table 10
Active Burning Grounds - Industrial Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS												COC CONCENTRATION-to-SRG RATIOS											
							VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)				VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)			
						INDUSTRIAL SRGs - Surface Soil (SS):	180	220	160	10,000	65,000	850	10,000	1.80E-04	253	160	1,090	1.61												
						INDUSTRIAL SRGs - Subsurface Soil (SB):	180	220	160	N/A	N/A	850	N/A	1.80E-04	N/A	160	852	N/A												
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury
ABG	AS01-SB01	AS01-SS01-R01X	02/21/01	0	1	SS	6	6	6	454	454	66	454	7.69E-05	27.5	39.3	954	0.09								0.43	0.11	0.25	0.88	0.06
ABG	AS01-SB02	AS01-SS02-R01X	02/21/01	0	1	SS	6	6	28	1,190	476	56	735	9.38E-05	22.5	1,730	419	0.08			0.18	0.12			0.07	0.52	0.09	10.8	0.38	0.05
ABG	AS01-SB03	AS01-SS03-R01X	02/21/01	0	1	SS	6	6	6	2,400	476	68	476	7.25E-05	22.4	25.2	912	0.05				0.24		0.08		0.40	0.09	0.16	0.84	0.03
ABG	AS01-SB04	AS01-SS04-R01X	02/21/01	0	1	SS	6	6	9	454	476	96	454	7.30E-05	19.2	34.3	797	0.05			0.06			0.11		0.41	0.08	0.21	0.73	0.03
ABG	AS01-SB05	AS01-SS05-R01X	02/21/01	0	1	SS	6	6	6	2,250	454	880	784	7.71E-05	19.3	55.2	1,010	0.04				0.23		1.04	0.08	0.43	0.08	0.35	0.93	0.02
ABG	AS01-SB06	AS01-SS06-R01X	02/21/01	0	1	SS	6	6	6	476	454	95	476	7.09E-05	19.3	26.9	928	0.05						0.11		0.39	0.08	0.17	0.85	0.03
ABG	AS01-SB07	AS01-SS07-R01X	02/22/01	0	1	SS	6	6	6	417	435	58	417	5.10E-05	20.5	25.9	783	0.05								0.28	0.08	0.16	0.72	0.03
ABG	AS01-SB08	AS01-SS08-R01X	02/21/01	0	1	SS	6	6	6	258	454	63	435	4.86E-05	18.1	30	982	0.05				0.03				0.27	0.07	0.19	0.90	0.03
ABG	AS01-SB09	AS01-SS09-R01X	02/22/01	0	1	SS	6	6	6	454	476	63	454	4.97E-05	21.6	38	1,120	0.08								0.28	0.09	0.24	1.03	0.05
ABG	AS01-SB10	AS01-SS10-R01X	02/22/01	0	1	SS	6	6	6	124	435	61	417	4.87E-05	17.9	29.5	999	0.05				0.01				0.27	0.07	0.18	0.92	0.03
ABG	AS01-SB11	AS01-SS11-R01X	02/22/01	0	1	SS	6	6	3	506	435	58	417	3.85E-05	17.6	96.9	730	0.04			0.02	0.05				0.21	0.07	0.61	0.67	0.02
ABG	AS01-SB12	AS01-SS12-R01X	02/22/01	0	1	SS	6	6	6	130	435	62	454	4.60E-05	19.7	53.4	1,120	0.05				0.01				0.26	0.08	0.33	1.03	0.03
ABG	AS01-SB13	AS01-SS13-R01X	02/22/01	0	1	SS	6	6	6	417	417	64	417	3.31E-05	20.7	25	1,050	0.06								0.18	0.08	0.16	0.96	0.04
ABG	AS01-SB14	AS01-SS14-R01X	02/21/01	0	1	SS	6	6	6	454	454	63	454	6.35E-05	29	101	926	0.06								0.35	0.11	0.63	0.85	0.04
ABG	AS01-SB14	AS01-SB14-R01X	02/21/01	1	2	SS	6	6	6	340	454	120	454	1.83E-04	16.2	15.9	911	0.04				0.03		0.14		1.02	0.06	0.10	0.84	
ABG	AS01-SB15	AS01-SS15-R01X	02/21/01	0	1	SS	6	6	6	454	435	61	454	4.82E-05	27.2	75.8	777	0.06								0.27	0.11	0.47	0.71	0.04
ABG	AS01-SB15	AS01-SB15-R01X	02/21/01	1	2	SS	6	6	6	454	454	61	454	2.12E-04	17.1	20.1	1,030	0.04								1.18	0.07	0.13	0.94	
ABG	AS01-SB16	AS01-SS16-R01X	02/22/01	0	1	SS	6	6	6	454	476	59	454	3.69E-04	17.4	26.6	712	0.04								2.05	0.07	0.17	0.65	0.02
ABG	AS01-SB16	AS01-SB16-R01X	02/22/01	1	2	SS	6	6	5	454	476	62	454	2.00E-04	17.5	16	1,010	0.03			0.03			0.07		1.11	0.07	0.10	0.93	
ABG	AS01-SB17	AS01-SS17-R01X	02/22/01	0	1	SS	6	6	6	417	454	220	417	5.08E-05	17	30.4	813	0.06						0.26		0.28	0.07	0.19	0.75	0.04
ABG	AS01-SB17	AS01-SB17-R01X	02/22/01	1	2	SS	6	6	6	454	476	2,500	454	2.36E-04	16.8	16.7	1,070	0.03						2.94		1.31	0.07	0.10	0.98	
ABG	AS01-SB18	AS01-SS18-R01X	02/22/01	0	1	SS	6	6	6	269	417	62	476	5.01E-05	18.7	134	915	0.38				0.03				0.28	0.07	0.84	0.84	0.24
ABG	AS01-SB18	AS01-SB18-R01X	02/22/01	1	2	SS	6	6	6	476	454	61	476	1.87E-04	16.9	22.1	1,170	0.04								1.04	0.07	0.14	1.07	
ABG	AS01-SB19	AS01-SS19-R01X	02/22/01	0	1	SS	6	6	6	123	417	62	435	3.75E-05	22.8	184	674	0.09				0.01				0.21	0.09	1.15	0.62	0.06
ABG	AS01-SB19	AS01-SB19-R01X	02/22/01	1	2	SS	6	6	6	435	435	60	435	1.58E-04	18.6	25	1,080	0.04								0.88	0.07	0.16	0.99	
ABG	AS01-SB20	AS01-SS20-R01X	02/22/01	0	1	SS	6	6	6	435	454	63	435	1.11E-04	20.7	58.1	1,090	0.08								0.62	0.08	0.36	1.00	0.05
ABG	AS01-SB20	AS01-SB20-R01X	02/22/01	1	2	SS	6	6	6	417	454	59	417	3.82E-05	17.6	16.6	1,100	0.03								0.21	0.07	0.10	1.01	
ABG	AS01-SB63	AS01-SS63-0-0_5	09/22/04	0	0.5	SS	14	14	1.6	190	2,500	54.7	49	9.32E-07	20.7	64.9	941	0.13			0.01	0.02			0.00	0.01	0.08	0.41	0.86	0.08
ABG	AS01-SB63	AS01-SB63-6_5-7	09/22/04	6.5	7	SB	11	11	13	500	2,500	48.5	500	4.94E-07	15.4	13.7	579	0.061			0.08					0.00		0.09	0.68	
ABG	AS01-SB64	AS01-SS64-0-0_5	09/22/04	0	0.5	SS	12	12	12	51,000	98,000	31,300	16,000	3.02E-06	18	16.2	1,120	0.067				5.10	1.51	36.8	1.60	0.02	0.07	0.10	1.03	0.04
ABG	AS01-SB64	AS01-SB64-7_5-8	09/22/04	7.5	8	SB	530	530	600	1,300	2,500	18,800	1,100	5.42E-07	13.7	12.9	600	0.066			3.75			22.1		0.00		0.08	0.70	
ABG	AS01-SB65	AS01-SS65-0-0_5	09/22/04	0	0.5	SS	11	11	66	2,200	2,500	47	1,700	2.35E-06	19.9	65.7	879	0.077			0.41	0.22			0.17	0.01	0.08	0.41	0.81	0.05
ABG	AS01-SB65	AS01-SB65-1_5-2	09/22/04	1.5	2	SS	11	11	140	1,500	2,500	29.7	940	1.31E-06	17	13.7	932	0.075			0.88	0.15		0.03	0.09	0.01	0.07	0.09	0.86	0.05
ABG	AS01-SB66	AS01-SS66-0-0_5	09/23/04	0	0.5	SS	13	13	13	1,300	2,500	52.9	170	2.13E-06	17.6	14.1	1,070	0.066				0.13			0.02	0.01	0.07	0.09	0.98	
ABG	AS01-SB66	AS01-SB66-1_5-2	09/23/04	1.5	2	SS	14	14	14	810	2,500	48.2	96	1.92E-06	16.3	12.8	922	0.06				0.08			0.01	0.01	0.06	0.08	0.85	
ABG	AS01-SB67	AS01-SS67-0-0_5	09/23/04	0	0.5	SS	13	13	13	1,300	2,500	45.4	460	3.28E-06	1,820	138	208	0.092				0.13			0.05	0.02	7.19	0.86	0.19	0.06
ABG	AS01-SB67	AS01-SB67-1_5-2	09/23/04	1.5	2	SS	12	12	11	4,600	2,500	438	69	4.50E-05	24.1	269	546	0.44			0.07	0.46		0.52	0.01	0.25	0.10	1.68	0.50	0.27
ABG	AS01-SB68	AS01-SS68-0-0_5	09/23/04	0	0.5	SS	12	12	12	500	2,500	47.3	500	1.65E-06	17.2	44.4	520	0.06								0.01	0.07	0.28	0.48	0.04
ABG	AS01-SB68	AS01-SB68-1_5-2	09/23/04	1.5	2	SS	610	610	940	5,200	2,000	26.6	74	1.20E-06	36.4	914	692	2			5.88	0.52	0.03	0.03	0.01	0.01	0.14	5.71	0.63	1.24
ABG	AS01-SB69	AS01-SS69-0-0_5	09/23/04	0	0.5	SS	680	420	1,400	20,000	2,500	51.8	2,100	6.01E-06	68.1	106	665	0.16		1.91	8.75	2.00		0.06	0.21	0.03	0.27	0.66	0.61	0.10
ABG	AS01-SB69	AS01-SB69-1-1_5	09/23/04	1	1.5	SS	800	5,800	12,000	570	2,500	91.2	5,200	2.06E-06	20.1	24.6	783	0.45		26.4	75.0	0.06		0.11	0.52	0.01	0.08	0.15	0.72	0.28
ABG	AS01-SB70	AS01-SS70-0-0_5	09/23/04	0	0.5	SS	12	12	38	420	2,500	49.6	210	5.52E-06	18.9	387	543	7.2			0.24	0.04			0.02	0.03	0.07	2.42	0.50	4.47
ABG	AS01-SB70	AS01-SB70-2_5-3	09/23/04	2.5	3	SS	660	660	1,800	2,100	4,500	65	730	3.38E-06	136	1,760	687	0.068			11.3	0.21	0.07	0.08	0.07	0.02	0.54	11.0	0.63	
ABG	BG-010/010S/053	HCS-BG-53	07/13/92	13	14	SB	6	6	480	NA	NA	NA	NA	NA	NA	NA	NA	NA			3.00									
ABG	BG-010/010S/053	HCS-BG-10	07/13/92	3	4	SS	6	6	5	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.03									
ABG	BG-010/010S/053	HCS-BG-10S	06/20/94	0	1	SS	11	11	2	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-017/018	HCS-BG-18	07/13/92	10	11	SB	6	6	48	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.30									
ABG	BG-025/025S/048	HCS-BG-25S	06/20/94	0	1	SS	13	13	3	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-033/033S	HCS-BG-33S	06/20/94	0	1	SS	14	14	14	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-034/034S	HCS-BG-34	07/13/92	3	4	SS	6	6	1	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01									
ABG	BG-034/034S	HCS-BG-34S	06/20/94	0	1	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-037	HCS-BG-37	07/13/92	3	4	SS	6	3	37	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.01	0.23									
ABG	BG-055/055S	HCS-BG-55S	06/20/94	0	1	SS	11	11	7	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.04									
ABG	BG-059/050	HCS-BG-50	07/13/92	11	12	SB	6	6	2	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01									
ABG	BG-067/068	HCS-BG-68	07/13/92	11	12	SB	6	12	30	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.05	0.19									
ABG	BG-132/133	HCS-BG-132	06/22/94	3	5	SS	11	11	89	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.56									
ABG	BG-132/133	HCS-BG-133	11/15/94	2	3	SS	12	12	37	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.23									
ABG	BG-180	HCS-BG-180	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-181	HCS-BG-181	10/27/98	2	3	SS	11	11	34	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.21									
ABG	BG-182/183	HCS-BG-182	10/27/98	2	3	SS	11	11	63	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.39									
ABG	BG-182/183	HCS-BG-183	10/27/98	4	6	SB	12	12	140	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.88									
ABG	BG-184/185	HCS-BG-184	10/27/98	2	3	SS	12	12	26	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.16									
ABG	BG-184/185	HCS-BG-185	10/27/98	4	6	SB	11	11	30	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.19									
ABG	BG-186/187	HCS-BG-186	10/27/98	2	3	SS	11	11	2	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01									
ABG	BG-186/187	HCS-BG-187	10/27/98	4	6	SB	11	11	10	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06									
ABG	BG-188/189	HCS-BG-188	10/27/98	2	3	SS	12	12	10	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06									
ABG	BG-188/189	HCS-BG-189	10/27/98	4	6	SB	12	12	18	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.11									
ABG	BG-190	HCS-BG-190	10/27/98	2	3	SS	12	12	53	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.33									
ABG	BG-191	HCS-BG-191	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-192/193	HCS-BG-192	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-192/193	HCS-BG-193	10/27/98	4	6	SB	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-194	HCS-BG-194	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-195	HCS-BG-195	10/27/98	2	3	SS	12	12	74	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.46									
ABG	BG-196/197	HCS-BG-196	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												

Table 10
Active Burning Grounds - Industrial Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS												COC CONCENTRATION-to-SRG RATIOS											
							VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)				VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)			
						INDUSTRIAL SRGs - Surface Soil (SS):	180	220	160	10,000	65,000	850	10,000	1.80E-04	253	160	1,090	1.61												
						INDUSTRIAL SRGs - Subsurface Soil (SB):	180	220	160	N/A	N/A	850	N/A	1.80E-04	N/A	160	852	N/A												
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury
ABG	BG-196/197	HCS-BG-197	10/27/98	4	6	SB	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-198	HCS-BG-198	10/27/98	2	3	SS	12	12	2	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01									
ABG	BG-199/200	HCS-BG-199	10/27/98	2	3	SS	12	12	29	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.18									
ABG	BG-199/200	HCS-BG-200	10/27/98	4	6	SB	12	12	55	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.34									
ABG	BG-201/202	HCS-BG-201	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-201/202	HCS-BG-202	10/27/98	4	6	SB	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-203/204	HCS-BG-203	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-203/204	HCS-BG-204	10/27/98	4	6	SB	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-207/208	HCS-BG-207	10/27/98	2	3	SS	11	11	10	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06									
ABG	BG-207/208	HCS-BG-208	10/27/98	4	6	SB	11	11	9	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06									
ABG	BG-209/210	HCS-BG-209	10/27/98	2	3	SS	11	32	44	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.15	0.28									
ABG	BG-209/210	HCS-BG-210	10/27/98	4	6	SB	12	60	120	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.27	0.75									
ABG	BG-211/212	HCS-BG-211	10/27/98	2	3	SS	11	3	4	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.01	0.03									
ABG	BG-211/212	HCS-BG-212	10/27/98	4	6	SB	11	6	11	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.03	0.07									
ABG	BG-213/214	HCS-BG-213	10/27/98	2	3	SS	11	5	46	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.02	0.29									
ABG	BG-213/214	HCS-BG-214	10/27/98	4	6	SB	12	6	110	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.03	0.69									
ABG	BG-215/216	HCS-BG-215	10/27/98	2	3	SS	11	11	18	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.11									
ABG	BG-215/216	HCS-BG-216	10/27/98	4	6	SB	11	11	12	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.08									
ABG	BG-217/218	HCS-BG-217	10/27/98	2	3	SS	11	11	3	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.02									
ABG	BG-217/218	HCS-BG-218	10/27/98	4	6	SB	11	7	3	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.03	0.02									
ABG	BG-219/220	HCS-BG-219	10/27/98	2	3	SS	11	11	23	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.14									
ABG	BG-219/220	HCS-BG-220	10/27/98	4	6	SB	13	13	37	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.23									
ABG	BG-221/222	HCS-BG-221	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-221/222	HCS-BG-222	10/27/98	4	6	SB	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BP-01	HCS-BP-1	07/13/92	0.5	1	SS	NA	NA	NA	7,600	NA	NA	6,600	NA	NA	NA	NA	NA				0.76			0.66					
ABG	BP-02	HCS-BP-2	07/13/92	0.5	1	SS	NA	NA	NA	4,600	NA	NA	7,300	NA	NA	NA	NA	NA				0.46			0.73					
ABG	BP-03	HCS-BP-3	07/13/92	0.5	1	SS	NA	NA	NA	2,200	NA	NA	2,600	NA	NA	NA	NA	NA							0.26					
ABG	BP-04	HCS-BP-4	07/13/92	0.5	1	SS	NA	NA	NA	2,300	NA	NA	2,100	NA	NA	NA	NA	NA				0.23			0.21					
ABG	BP-05	HCS-BP-5	07/13/92	0.5	1	SS	NA	NA	NA	3,900	NA	NA	5,100	NA	NA	NA	NA	NA				0.39			0.51					
ABG	BP-06	HCS-BP-6	07/13/92	0.5	1	SS	NA	NA	NA	14,000	NA	NA	34,000	NA	NA	NA	NA	NA				1.40			3.40					
ABG	BP-07	HCS-BP-7	07/13/92	0.5	1	SS	NA	NA	NA	12,000	NA	NA	2,800	NA	NA	NA	NA	NA				1.20			0.28					
ABG	BP-08	HCS-BP-8	07/13/92	0.5	1	SS	NA	NA	NA	2,200	NA	NA	2,800	NA	NA	NA	NA	NA							0.28					
FDP	AS01-SB42	AS01-SB42-(1-2)	10/24/01	1	2	SS	12	12	18	570	57,000	60	570	2.49E-07	16.9	16.2	1,020	0.12			0.11					0.00	0.07	0.10	0.94	
FDP	AS01-SB43	AS01-SB43-(1-2)	10/24/01	1	2	SS	12	12	12	570	57,000	60	570	4.27E-07	11.1	13	647	0.12								0.00	0.04	0.08	0.59	
FDP	AS01-SB44	AS01-SB44-(1-2)	10/24/01	1	2	SS	12	12	12	560	56,000	60	560	1.77E-07	15.5	15.1	972	0.11								0.00	0.06	0.09	0.89	
FDP	AS01-SB60	AS01-SS60-0-0_5	09/21/04	0	0.5	SS	910	910	1,800	250	2,500	54.9	130	1.05E-05	24.1	42.5	810	0.12			11.3	0.03			0.01	0.06	0.10	0.27	0.74	0.07
FDP	AS01-SB60	AS01-SB60-1-3	09/22/04	1	3	SS	12	12	130	500	2,500	54.6	500	4.93E-07	15.8	14.2	853	0.068			0.81					0.00	0.06	0.09	0.78	
FDP	AS01-SB60	AS01-SB60-3-5	09/22/04	3	5	SS	11	11	170	500	2,500	48.1	58	9.69E-07	14.6	13.8	790	0.06			1.06				0.01	0.01	0.06	0.09	0.72	
FDP	AS01-SB60	AS01-SB60-5-7	09/22/04	5	7	SB	510	510	930	500	2,500	46.4	53	7.74E-07	13.3	13.4	753	0.099			5.81					0.00		0.08	0.88	
FDP	AS01-SB60	AS01-SB60-7-8	09/22/04	7	8	SB	12	12	150	500	2,500	48.9	500	5.26E-07	11.8	12.3	624	0.097			0.94					0.00		0.08	0.73	
FDP	AS01-SB61	AS01-SS61-0-0_5	09/21/04	0	0.5	SS	18	18	18	500	2,500	106	96	2.29E-06	18.5	25	762	0.11							0.01	0.01	0.07	0.16	0.70	0.07
FDP	AS01-SB61	AS01-SB61-1-3	09/22/04	1	3	SS	13	13	13	500	2,500	53.9	500	1.35E-06	16.7	15.3	995	0.095								0.01	0.07	0.10	0.91	0.06
FDP	AS01-SB61	AS01-SB61-3-5	09/22/04	3	5	SS	11	11	11	500	2,500	49.5	500	1.09E-06	14.7	15.4	783	0.12								0.01	0.06	0.10	0.72	0.07
FDP	AS01-SB61	AS01-SB61-5-7	09/22/04	5	7	SB	12	12	12	500	2,500	46.5	500	8.04E-07	15.4	13.2	701	0.063								0.00		0.08	0.82	
FDP	AS01-SB61	AS01-SB61-7-8	09/22/04	7	8	SB	12	12	12	500	2,500	47.7	500	1.39E-06	15.8	16.5	833	0.06								0.01		0.10	0.98	
FDP	AS01-SB62	AS01-SS62-0-0_5	09/21/04	0	0.5	SS	710	710	1,100	3,300	2,500	74	1,000	7.67E-06	10.5	16.3	228	0.067			6.88	0.33		0.09	0.10	0.04	0.04	0.10	0.21	0.04
FDP	AS01-SB62	AS01-SB62-1-3	09/22/04	1	3	SS	12,000	12,000	25,000	1,500	2,500	288	2,100	6.42E-04	17.3	14.5	918	0.062			156	0.15		0.34	0.21	3.57	0.07	0.09	0.84	0.04
FDP	AS01-SB62	AS01-SB62-3-5	09/22/04	3	5	SS	11,000	11,000	12,000	1,200	2,500	269	4,500	1.30E-06	16.3	13.8	532	0.06			75.0	0.12		0.32	0.45	0.01	0.06	0.09	0.49	
FDP	AS01-SB62	AS01-SB62-5-7	09/22/04	5	7	SB	480	55	6,800	750	2,500	757	5,500	4.70E-07	17.3	14.6	686	0.07		0.25	42.5			0.89		0.00		0.09	0.81	
FDP	AS01-SB62	AS01-SB62-7-8	09/22/04	7	8	SB	530	530	6,300	350	2,500	459	3,600	9.09E-07	15.3	15.1	725	0.086			39.4			0.54		0.01		0.09	0.85	
FDP	BG-004/004S/005/039	HCS-BG-5(92)	07/13/92	10	11	SB	4,500	4,500	76,000	NA	NA	NA	NA	NA	NA	NA	NA	NA			475									
FDP	BG-004/004S/005/039	HCS-BG-4(92)	07/13/92	3	4	SS	760	740	160,000	NA	NA	NA	NA	NA	NA	NA	NA	NA		3.36	1,000									
FDP	BG-004/004S/005/039	HCS-BG-4S	06/20/94	0	1	SS	12	12	93	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.58									
FDP	BG-004/004S/005/039	HCS-BG-4(94)	06/20/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	17	14.8	761	0.08									0.07	0.09	0.70	
FDP	BG-006/007	HCS-BG-6(92)	07/13/92	3	4	SS	6	6	5	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.03									
FDP	BG-006/007	HCS-BG-6(94)	06/21/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	492	9	409	0.06									1.94	0.06	0.38	
FDP	BG-008/008S/009/038	HCS-BG-38	07/13/92	12.5	13.5	SB	740	330	42,000	NA	NA	NA	NA	NA	NA	NA	NA	NA		1.50	263									
FDP	BG-008/008S/009/038	HCS-BG-8S	06/20/94	0	1	SS	11	11	57	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.36									
FDP	BG-008/008S/009/038	HCS-BG-8	06/21/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	16.7	13.4	886	0.07									0.07	0.08	0.81	
FDP	BG-079	HCS-BG-79	07/13/92	11	12	SB	6	6	380	NA	NA	NA	NA	NA	NA	NA	NA	NA			2.38									
FDP	BG-120/121	HCS-BG-120	06/21/94	3	5	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
FDP	BG-126/127	HCS-BG-127	06/22/94	9	11	SB	12	12	230	NA	NA	NA	NA	NA	NA	NA	NA	NA			1.44									
FDP	BG-128/129	HCS-BG-128	06/22/94	9	11	SB	12	12	260	NA	NA	NA	NA	NA	NA	NA	NA	NA			1.63									
FDP	BG-130/131	HCS-BG-131	06/22/94	9	11	SB	12	12	270	NA	NA	NA	NA	NA	NA	NA	NA	NA			1.69									
FDP	BG-205/206	HCS-BG-205	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
FDP	BG-205/206	HCS-BG-206	10/27/98	4	6	SB	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												

Table 10
Active Burning Grounds - Industrial Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS												COC CONCENTRATION-to-SRG RATIOS											
							VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)				VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)			
						INDUSTRIAL SRGs - Surface Soil (SS):	180	220	160	10,000	65,000	850	10,000	1.80E-04	253	160	1,090	1.61												
						INDUSTRIAL SRGs - Subsurface Soil (SB):	180	220	160	N/A	N/A	850	N/A	1.80E-04	N/A	160	852	N/A												
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury
					UCL Current Conditions		--	361	11,613	5,948	98,000	3,575	2,604	1.16E-04	183	287	864	0.454												
STEP 1 (SRG Ratio >10)																														
FDP	BG-004/004S/005/039	HCS-BG-4(92)	07/13/92	3	4	SS	760	740	160,000	NA	NA	NA	NA	NA	NA	NA	NA	NA		3.36	1,000									
FDP	BG-004/004S/005/039	HCS-BG-4S	06/20/94	0	1	SS	12	12	93	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.58									
FDP	BG-004/004S/005/039	HCS-BG-5(92)	07/13/92	10	11	SB	4,500	4,500	76,000	NA	NA	NA	NA	NA	NA	NA	NA	NA			475									
FDP	BG-004/004S/005/039	HCS-BG-4(94)	06/20/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	17	14.8	761	0.08									0.07	0.09	0.70	
FDP	BG-008/008S/009/038	HCS-BG-38	07/13/92	12.5	13.5	SB	740	330	42,000	NA	NA	NA	NA	NA	NA	NA	NA	NA		1.50	263									
FDP	BG-008/008S/009/038	HCS-BG-8	06/21/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	16.7	13.4	886	0.07									0.07	0.08	0.81	
FDP	BG-008/008S/009/038	HCS-BG-8S	06/20/94	0	1	SS	11	11	57	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.36									
FDP	AS01-SB62	AS01-SB62-1-3	09/22/04	1	3	SS	12,000	12,000	25,000	1,500	2,500	288	2,100	6.42E-04	17.3	14.5	918	0.062			156	0.15		0.34	0.21	3.57	0.07	0.09	0.84	0.04
FDP	AS01-SB62	AS01-SS62-0-0_5	09/21/04	0	0.5	SS	710	710	1,100	3,300	2,500	74	1,000	7.67E-06	10.5	16.3	228	0.067			6.88	0.33		0.09	0.10	0.04	0.04	0.10	0.21	0.04
ABG	AS01-SB69	AS01-SB69-1-1_5	09/23/04	1	1.5	SS	800	5,800	12,000	570	2,500	91.2	5,200	2.06E-06	20.1	24.6	783	0.45		26.4	75.0	0.06		0.11	0.52	0.01	0.08	0.15	0.72	0.28
ABG	AS01-SB69	AS01-SS69-0-0_5	09/23/04	0	0.5	SS	680	420	1,400	20,000	2,500	51.8	2,100	6.01E-06	68.1	106	665	0.16		1.91	8.75	2.00		0.06	0.21	0.03	0.27	0.66	0.61	0.10
FDP	AS01-SB62	AS01-SB62-3-5	09/22/04	3	5	SS	11,000	11,000	12,000	1,200	2,500	269	4,500	1.30E-06	16.3	13.8	532	0.06			75.0	0.12		0.32	0.45	0.01	0.06	0.09	0.49	
FDP	AS01-SB62	AS01-SB62-5-7	09/22/04	5	7	SB	480	55	6,800	750	2,500	757	5,500	4.70E-07	17.3	14.6	686	0.07		0.25	42.5			0.89		0.00		0.09	0.81	
FDP	AS01-SB62	AS01-SB62-7-8	09/22/04	7	8	SB	530	530	6,300	350	2,500	459	3,600	9.09E-07	15.3	15.1	725	0.086			39.4			0.54		0.01		0.09	0.85	
ABG	AS01-SB64	AS01-SS64-0-0_5	09/22/04	0	0.5	SS	12	12	12	51,000	98,000	31,300	16,000	3.02E-06	18	16.2	1,120	0.067				5.10	1.51	36.8	1.60	0.02	0.07	0.10	1.03	0.04
ABG	AS01-SB64	AS01-SB64-7_5-8	09/22/04	7.5	8	SB	530	530	600	1,300	2,500	18,800	1,100	5.42E-07	13.7	12.9	600	0.066			3.75			22.1		0.00		0.08	0.70	
ABG	AS01-SB70	AS01-SB70-2_5-3	09/23/04	2.5	3	SS	660	660	1,800	2,100	4,500	65	730	3.38E-06	136	1,760	687	0.068			11.3	0.21	0.07	0.08	0.07	0.02	0.54	11.0	0.63	
ABG	AS01-SB70	AS01-SS70-0-0_5	09/23/04	0	0.5	SS	12	12	38	420	2,500	49.6	210	5.52E-06	18.9	387	543	7.2			0.24	0.04			0.02	0.03	0.07	2.42	0.50	4.47
FDP	AS01-SB60	AS01-SS60-0-0_5	09/21/04	0	0.5	SS	910	910	1,800	250	2,500	54.9	130	1.05E-05	24.1	42.5	810	0.12			11.3	0.03			0.01	0.06	0.10	0.27	0.74	0.07
ABG	AS01-SB02	AS01-SS02-R01X	02/21/01	0	1	SS	6	6	28	1,190	476	56	735	9.38E-05	22.5	1,730	419	0.08			0.18	0.12			0.07	0.52	0.09	10.8	0.38	0.05
					UCL Step 1		--	6.83	135	1,991	--	258	2,339	1.27E-04	230	144	907	0.192												
					Maximum - All depths		--	60.0	940	14,000	2,000	2,500	34,000	3.69E-04	1,820	914	1,170	2.00	--	0.27	5.88	1.40	0.03	2.94	3.40	2.05	7.19	5.71	1.07	1.24
					Maximum - SS		--	32.0	940	14,000	2,000	2,500	34,000	3.69E-04	1,820	914	1,170	2.00	--	0.15	5.88	1.40	0.03	2.94	3.40	2.05	7.19	5.71	1.07	1.24
					Ecological PRG		--	--	--	10,000	65,000	1,000	10,000	--	253	785	--	1.61												
					Maximum ratio		--	--	--	1.40	0.03	2.50	3.40	--	7.19	1.16	--	1.24												
STEP 2 (SRG Ratio >5)																														
ABG	AS01-SB67	AS01-SS67-0-0_5	09/23/04	0	0.5	SS	13	13	13	1,300	2,500	45.4	460	3.28E-06	1,820	138	208	0.092				0.13			0.05	0.02	7.19	0.86	0.19	0.06
ABG	AS01-SB68	AS01-SB68-1_5-2	09/23/04	1.5	2	SS	610	610	940	5,200	2,000	26.6	74	1.20E-06	36.4	914	692	2			5.88	0.52	0.03	0.03	0.01	0.01	0.14	5.71	0.63	1.24
ABG	AS01-SB68	AS01-SS68-0-0_5	09/23/04	0	0.5	SS	12	12	12	500	2,500	47.3	500	1.65E-06	17.2	44.4	520	0.06								0.01	0.07	0.28	0.48	0.04
FDP	AS01-SB60	AS01-SB60-5-7	09/22/04	5	7	SB	510	510	930	500	2,500	46.4	53	7.74E-07	13.3	13.4	753	0.099			5.81					0.00		0.08	0.88	
FDP	AS01-SB60	AS01-SB60-3-5	09/22/04	3	5	SS	11	11	170	500	2,500	48.1	58	9.69E-07	14.6	13.8	790	0.06			1.06				0.01	0.01	0.06	0.09	0.72	
FDP	AS01-SB60	AS01-SB60-1-3	09/22/04	1	3	SS	12	12	130	500	2,500	54.6	500	4.93E-07	15.8	14.2	853	0.068			0.81					0.00	0.06	0.09	0.78	
					UCL Step 2		--	6.99	48.1	2,069	--	239	2,615	1.42E-04	77.7	75.8	935	0.103												
					Maximum - All depths		--	60.0	480	14,000	--	2,500	34,000	3.69E-04	492	269	1,170	0.44	--	0.27	3.00	1.40	--	2.94	3.40	2.05	1.94	1.68	1.07	0.27
					Maximum - SS		--	32.0	140	14,000	--	2,500	34,000	3.69E-04	492	269	1,170	0.44	--	0.15	0.88	1.40	--	2.94	3.40	2.05	1.94	1.68	1.07	0.27
					Ecological PRG		--	--	--	10,000	65,000	1,000	10,000	--	253	785	--	1.61												
					Maximum ratio		--	--	--	1.40	--	2.50	3.40	--	1.94	0.34	--	0.27												

Gray shaded concentrations indicate detections; NA - Not Analyzed

Notes:
µg/kg = microgram per kilogram
COC = constituent of concern
ft = foot
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification
mg/kg = milligram per kilogram
RDX = Hexahydro-1,2,5-trinitro-1,3,5-triazine
SRG = site remediation goal
VOC = volatile organic compound

Table 11
Active Burning Grounds - Residential Removal Scenario (Baseline)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS												COC CONCENTRATION-to-SRG RATIOS														
							VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)				VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)						
						RESIDENTIAL SRGs - Surface Soil (SS):	180	220	160	10,000	65,000	850	10,000	2.50E-05	253	160	1,090	1.61														
						RESIDENTIAL SRGs - Subsurface Soil (SB):	180	220	160	N/A	N/A	850	N/A	2.50E-05	N/A	160	852	N/A														
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury	Maximum Ratio[1]	COC	Other COCs with Ratios > 5
ABG	AS01-SB01	AS01-SS01-R01X	02/21/01	0	1	SS	6	6	6	454	454	66	454	7.69E-05	27.5	39.3	954	0.09								3.08	0.11	0.25	0.88	0.06	3.08	Dioxins	--
ABG	AS01-SB02	AS01-SS02-R01X	02/21/01	0	1	SS	6	6	28	1,190	476	56	735	9.38E-05	22.5	1,730	419	0.08			0.18	0.12			0.07	3.75	0.09	10.8	0.38	0.05	10.8	Lead	--
ABG	AS01-SB03	AS01-SS03-R01X	02/21/01	0	1	SS	6	6	6	2,400	476	68	476	7.25E-05	22.4	25.2	912	0.05				0.24		0.08		2.90	0.09	0.16	0.84	0.03	2.90	Dioxins	--
ABG	AS01-SB04	AS01-SS04-R01X	02/21/01	0	1	SS	6	6	9	454	476	96	454	7.30E-05	19.2	34.3	797	0.05			0.06			0.11		2.92	0.08	0.21	0.73	0.03	2.92	Dioxins	--
ABG	AS01-SB05	AS01-SS05-R01X	02/21/01	0	1	SS	6	6	6	2,250	454	880	784	7.71E-05	19.3	55.2	1,010	0.04				0.23		1.04	0.08	3.08	0.08	0.35	0.93	0.02	3.08	Dioxins	--
ABG	AS01-SB06	AS01-SS06-R01X	02/21/01	0	1	SS	6	6	6	476	454	95	476	7.09E-05	19.3	26.9	928	0.05						0.11		2.84	0.08	0.17	0.85	0.03	2.84	Dioxins	--
ABG	AS01-SB07	AS01-SS07-R01X	02/22/01	0	1	SS	6	6	6	417	435	58	417	5.10E-05	20.5	25.9	783	0.05								2.04	0.08	0.16	0.72	0.03	2.04	Dioxins	--
ABG	AS01-SB08	AS01-SS08-R01X	02/21/01	0	1	SS	6	6	6	258	454	63	435	4.86E-05	18.1	30	982	0.05				0.03				1.94	0.07	0.19	0.90	0.03	1.94	Dioxins	--
ABG	AS01-SB09	AS01-SS09-R01X	02/22/01	0	1	SS	6	6	6	454	476	63	454	4.97E-05	21.6	38	1,120	0.08								1.99	0.09	0.24	1.03	0.05	1.99	Dioxins	--
ABG	AS01-SB10	AS01-SS10-R01X	02/22/01	0	1	SS	6	6	6	124	435	61	417	4.87E-05	17.9	29.5	999	0.05				0.01				1.95	0.07	0.18	0.92	0.03	1.95	Dioxins	--
ABG	AS01-SB11	AS01-SS11-R01X	02/22/01	0	1	SS	6	6	3	506	435	58	417	3.85E-05	17.6	96.9	730	0.04			0.02	0.05				1.54	0.07	0.61	0.67	0.02	1.54	Dioxins	--
ABG	AS01-SB12	AS01-SS12-R01X	02/22/01	0	1	SS	6	6	6	130	435	62	454	4.60E-05	19.7	53.4	1,120	0.05				0.01				1.84	0.08	0.33	1.03	0.03	1.84	Dioxins	--
ABG	AS01-SB13	AS01-SS13-R01X	02/22/01	0	1	SS	6	6	6	417	417	64	417	3.31E-05	20.7	25	1,050	0.06								1.32	0.08	0.16	0.96	0.04	1.32	Dioxins	--
ABG	AS01-SB14	AS01-SS14-R01X	02/21/01	0	1	SS	6	6	6	454	454	63	454	6.35E-05	29	101	926	0.06								2.54	0.11	0.63	0.85	0.04	2.54	Dioxins	--
ABG	AS01-SB14	AS01-SB14-R01X	02/21/01	1	2	SS	6	6	6	340	454	120	454	1.83E-04	16.2	15.9	911	0.04				0.03		0.14		7.33	0.06	0.10	0.84		7.33	Dioxins	--
ABG	AS01-SB15	AS01-SS15-R01X	02/21/01	0	1	SS	6	6	6	454	435	61	454	4.82E-05	27.2	75.8	777	0.06								1.93	0.11	0.47	0.71	0.04	1.93	Dioxins	--
ABG	AS01-SB15	AS01-SB15-R01X	02/21/01	1	2	SS	6	6	6	454	454	61	454	2.12E-04	17.1	20.1	1,030	0.04								8.49	0.07	0.13	0.94		8.49	Dioxins	--
ABG	AS01-SB16	AS01-SS16-R01X	02/22/01	0	1	SS	6	6	6	454	476	59	454	3.69E-04	17.4	26.6	712	0.04								14.8	0.07	0.17	0.65	0.02	14.8	Dioxins	--
ABG	AS01-SB16	AS01-SB16-R01X	02/22/01	1	2	SS	6	6	5	454	476	62	454	2.00E-04	17.5	16	1,010	0.03			0.03			0.07		7.98	0.07	0.10	0.93		7.98	Dioxins	--
ABG	AS01-SB17	AS01-SS17-R01X	02/22/01	0	1	SS	6	6	6	417	454	220	417	5.08E-05	17	30.4	813	0.06						0.26		2.03	0.07	0.19	0.75	0.04	2.03	Dioxins	--
ABG	AS01-SB17	AS01-SB17-R01X	02/22/01	1	2	SS	6	6	6	454	476	2,500	454	2.36E-04	16.8	16.7	1,070	0.03						2.94		9.45	0.07	0.10	0.98		9.45	Dioxins	--
ABG	AS01-SB18	AS01-SS18-R01X	02/22/01	0	1	SS	6	6	6	269	417	62	476	5.01E-05	18.7	134	915	0.38				0.03				2.00	0.07	0.84	0.84	0.24	2.00	Dioxins	--
ABG	AS01-SB18	AS01-SB18-R01X	02/22/01	1	2	SS	6	6	6	476	454	61	476	1.87E-04	16.9	22.1	1,170	0.04								7.50	0.07	0.14	1.07		7.50	Dioxins	--
ABG	AS01-SB19	AS01-SS19-R01X	02/22/01	0	1	SS	6	6	6	123	417	62	435	3.75E-05	22.8	184	674	0.09				0.01				1.50	0.09	1.15	0.62	0.06	1.50	Dioxins	--
ABG	AS01-SB19	AS01-SB19-R01X	02/22/01	1	2	SS	6	6	6	435	435	60	435	1.58E-04	18.6	25	1,080	0.04								6.33	0.07	0.16	0.99		6.33	Dioxins	--
ABG	AS01-SB20	AS01-SS20-R01X	02/22/01	0	1	SS	6	6	6	435	454	63	435	1.11E-04	20.7	58.1	1,090	0.08								4.45	0.08	0.36	1.00	0.05	4.45	Dioxins	--
ABG	AS01-SB20	AS01-SB20-R01X	02/22/01	1	2	SS	6	6	6	417	454	59	417	3.82E-05	17.6	16.6	1,100	0.03								1.53	0.07	0.10	1.01		1.53	Dioxins	--
ABG	AS01-SB63	AS01-SS63-0-0_5	09/22/04	0	0.5	SS	14	14	1.6	190	2,500	54.7	49	9.32E-07	20.7	64.9	941	0.13			0.01	0.02			0.00	0.04	0.08	0.41	0.86	0.08	0.86	--	--
ABG	AS01-SB63	AS01-SB63-6_5-7	09/22/04	6.5	7	SB	11	11	13	500	2,500	48.5	500	4.94E-07	15.4	13.7	579	0.061			0.08					0.02		0.09	0.68		0.68	--	--
ABG	AS01-SB64	AS01-SS64-0-0_5	09/22/04	0	0.5	SS	12	12	12	51,000	98,000	31,300	16,000	3.02E-06	18	16.2	1,120	0.067				5.10	1.51	36.8	1.60	0.12	0.07	0.10	1.03	0.04	36.8	Perchlorate	HMX
ABG	AS01-SB64	AS01-SB64-7_5-8	09/22/04	7.5	8	SB	530	530	600	1,300	2,500	18,800	1,100	5.42E-07	13.7	12.9	600	0.066			3.75			22.1		0.02		0.08	0.70		22.1	Perchlorate	--
ABG	AS01-SB65	AS01-SS65-0-0_5	09/22/04	0	0.5	SS	11	11	66	2,200	2,500	47	1,700	2.35E-06	19.9	65.7	879	0.077			0.41	0.22			0.17	0.09	0.08	0.41	0.81	0.05	0.81	--	--
ABG	AS01-SB65	AS01-SB65-1_5-2	09/22/04	1.5	2	SS	11	11	140	1,500	2,500	29.7	940	1.31E-06	17	13.7	932	0.075			0.88	0.15		0.03	0.09	0.05	0.07	0.09	0.86	0.05	0.88	--	--
ABG	AS01-SB66	AS01-SS66-0-0_5	09/23/04	0	0.5	SS	13	13	13	1,300	2,500	52.9	170	2.13E-06	17.6	14.1	1,070	0.066				0.13			0.02	0.09	0.07	0.09	0.98		0.98	--	--
ABG	AS01-SB66	AS01-SB66-1_5-2	09/23/04	1.5	2	SS	14	14	14	810	2,500	48.2	96	1.92E-06	16.3	12.8	922	0.06				0.08			0.01	0.08	0.06	0.08	0.85		0.85	--	--
ABG	AS01-SB67	AS01-SS67-0-0_5	09/23/04	0	0.5	SS	13	13	13	1,300	2,500	45.4	460	3.28E-06	1,820	138	208	0.092				0.13			0.05	0.13	7.19	0.86	0.19	0.06	7.19	Copper	--
ABG	AS01-SB67	AS01-SB67-1_5-2	09/23/04	1.5	2	SS	12	12	11	4,600	2,500	438	69	4.50E-05	24.1	269	546	0.44			0.07	0.46		0.52	0.01	1.80	0.10	1.68	0.50	0.27	1.80	Dioxins	--
ABG	AS01-SB68	AS01-SS68-0-0_5	09/23/04	0	0.5	SS	12	12	12	500	2,500	47.3	500	1.65E-06	17.2	44.4	520	0.06								0.07	0.07	0.28	0.48	0.04	0.48	--	--
ABG	AS01-SB68	AS01-SB68-1_5-2	09/23/04	1.5	2	SS	610	610	940	5,200	2,000	26.6	74	1.20E-06	36.4	914	692	2			5.88	0.52	0.03	0.03	0.01	0.05	0.14	5.71	0.63	1.24	5.88	TCE	Lead
ABG	AS01-SB69	AS01-SS69-0-0_5	09/23/04	0	0.5	SS	680	420	1,400	20,000	2,500	51.8	2,100	6.01E-06	68.1	106	665	0.16		1.91	8.75	2.00		0.06	0.21	0.24	0.27	0.66	0.61	0.10	8.75	TCE	--
ABG	AS01-SB69	AS01-SB69-1-1_5	09/23/04	1	1.5	SS	800	5,800	12,000	570	2,500	91.2	5,200	2.06E-06	20.1	24.6	783	0.45		26.4	75.0	0.06		0.11	0.52	0.08	0.08	0.15	0.72	0.28	75.0	TCE	Tetrachloroethene
ABG	AS01-SB70	AS01-SS70-0-0_5	09/23/04	0	0.5	SS	12	12	38	420	2,500	49.6	210	5.52E-06	18.9	387	543	7.2			0.24	0.04			0.02	0.22	0.07	2.42	0.50	4.47	4.47	Mercury	--
ABG	AS01-SB70	AS01-SB70-2_5-3	09/23/04	2.5	3	SS	660	660	1,800	2,100	4,500	65	730	3.38E-06	136	1,760	687	0.068			11.3	0.21	0.07	0.08	0.07	0.14	0.54	11.0	0.63		11.3	TCE	Lead
ABG	BG-010/010S/053	HCS-BG-53	07/13/92	13	14	SB	6	6	480	NA	NA	NA	NA	NA	NA	NA	NA	NA			3.00										3.00	TCE	--
ABG	BG-010/010S/053	HCS-BG-10	07/13/92	3	4	SS	6	6	5	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.03										0.03	--	--
ABG	BG-010/010S/053	HCS-BG-10S	06/20/94	0	1	SS	11	11	2	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-017/018	HCS-BG-18	07/13/92	10	11	SB	6	6	48	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.30										0.30	--	--
ABG	BG-025/025S/048	HCS-BG-25S	06/20/94	0	1	SS	13	13	3	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-033/033S	HCS-BG-33S	06/20/94	0	1	SS	14	14	14	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-034/034S	HCS-BG-34	07/13/92	3	4	SS	6	6	1	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01										0.01	--	--
ABG	BG-034/034S	HCS-BG-34S	06/20/94	0	1	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-037	HCS-BG-37	07/13/92	3	4	SS	6	3	37	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.01	0.23										0.23	--	--
ABG	BG-055/055S	HCS-BG-55S	06/20/94	0	1	SS	11	11	7	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.04										0.04	--	--
ABG	BG-059/050	HCS-BG-50	07/13/92	11	12	SB	6	6	2	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01										0.01	--	--
ABG	BG-067/068	HCS-BG-68	07/13/92	11	12	SB	6	12	30	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.05	0.19										0.19	--	--
ABG	BG-132/133	HCS-BG-132	06/22/94	3	5	SS	11	11	89	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.56										0.56	--	--
ABG	BG-132/133	HCS-BG-133	11/15/94	2	3	SS	12	12	37	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.23										0.23	--	--
ABG	BG-180	HCS-BG-180	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-181	HCS-BG-181	10/27/98	2	3	SS	11	11	34	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.21										0.21	--	--
ABG	BG-182/183	HCS-BG-182	10/27/98	2	3	SS	11	11	63	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.39										0.39	--	--
ABG	BG-182/183	HCS-BG-183	10/27/98	4	6	SB	12	12	140	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.88										0.88	--	--
ABG	BG-184/185	HCS-BG-184	10/27/98	2	3	SS	12	12	26	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.16										0.16	--	--
ABG	BG-184/185	HCS-BG-185	10/27/98	4	6	SB	11	11	30	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.19										0.19	--	--
ABG	BG-186/187	HCS-BG-186	10/27/98	2	3	SS	11	11	2	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01										0.01	--	--
ABG	BG-186/187	HCS-BG-187	10/27/98	4	6	SB	11	11	10	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06										0.06	--	--
ABG	BG-188/189	HCS-BG-188	10/27/98	2	3	SS	12	12	10	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06										0.06	--	--
ABG	BG-188/189	HCS-BG-189	10/27/98	4	6	SB	12	12	18	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.11										0.11	--	--
ABG	BG-190	HCS-BG-190	10/27/98	2	3	SS	12	12	53	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.33										0.33	--	--
ABG	BG-191	HCS-BG-191	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-192/193	HCS-BG-192	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-192/193	HCS-BG-193	10/27/98	4	6	SB	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-194	HCS-BG-194	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-195	HCS-BG-195	10/27/98	2	3	SS	12	12	74	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.46										0.46	--	--
ABG	BG-196/197	HCS-BG-196	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-196/197	HCS-BG-197	10/27/98	4	6	SB	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-198	HCS-BG-198	10/27/98	2	3	SS	12	12	2	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01										0.01	--	--
ABG	BG-199/200	HCS-BG-199	10/27/98	2	3	SS	12	12	29	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.18										0.18	--	--
ABG	BG-199/200	HCS-BG-200	10/27/98	4	6	SB	12	12	55	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.34										0.34	--	--
ABG	BG-201/202	HCS-BG-201	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-201/202	HCS-BG-202	10/27/98	4	6	SB	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-203/204	HCS-BG-203	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-203/204	HCS-BG-204	10/27/98	4	6	SB	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-207/208	HCS-BG-207	10/27/98	2	3	SS	11	11	10	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06										0.06	--	--

Table 11
Active Burning Grounds - Residential Removal Scenario (Baseline)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS												COC CONCENTRATION-to-SRG RATIOS														
							VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)				VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)						
						RESIDENTIAL SRGs - Surface Soil (SS):	180	220	160	10,000	65,000	850	10,000	2.50E-05	253	160	1,090	1.61															
						RESIDENTIAL SRGs - Subsurface Soil (SB):	180	220	160	N/A	N/A	850	N/A	2.50E-05	N/A	160	852	N/A															
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury	Maximum Ratio[1]	COC	Other COCs with Ratios > 5
ABG	BG-207/208	HCS-BG-208	10/27/98	4	6	SB	11	11	9	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06										0.06	--	--
ABG	BG-209/210	HCS-BG-209	10/27/98	2	3	SS	11	32	44	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.15	0.28										0.28	--	--
ABG	BG-209/210	HCS-BG-210	10/27/98	4	6	SB	12	60	120	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.27	0.75										0.75	--	--
ABG	BG-211/212	HCS-BG-211	10/27/98	2	3	SS	11	3	4	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.01	0.03										0.03	--	--
ABG	BG-211/212	HCS-BG-212	10/27/98	4	6	SB	11	6	11	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.03	0.07										0.07	--	--
ABG	BG-213/214	HCS-BG-213	10/27/98	2	3	SS	11	5	46	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.02	0.29										0.29	--	--
ABG	BG-213/214	HCS-BG-214	10/27/98	4	6	SB	12	6	110	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.03	0.69										0.69	--	--
ABG	BG-215/216	HCS-BG-215	10/27/98	2	3	SS	11	11	18	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.11										0.11	--	--
ABG	BG-215/216	HCS-BG-216	10/27/98	4	6	SB	11	11	12	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.08										0.08	--	--
ABG	BG-217/218	HCS-BG-217	10/27/98	2	3	SS	11	11	3	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.02										0.02	--	--
ABG	BG-217/218	HCS-BG-218	10/27/98	4	6	SB	11	7	3	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.03	0.02										0.03	--	--
ABG	BG-219/220	HCS-BG-219	10/27/98	2	3	SS	11	11	23	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.14										0.14	--	--
ABG	BG-219/220	HCS-BG-220	10/27/98	4	6	SB	13	13	37	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.23										0.23	--	--
ABG	BG-221/222	HCS-BG-221	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BG-221/222	HCS-BG-222	10/27/98	4	6	SB	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
ABG	BP-01	HCS-BP-1	07/13/92	0.5	1	SS	NA	NA	NA	7,600	NA	NA	6,600	NA	NA	NA	NA	NA				0.76			0.66						0.76	--	--
ABG	BP-02	HCS-BP-2	07/13/92	0.5	1	SS	NA	NA	NA	4,600	NA	NA	7,300	NA	NA	NA	NA	NA				0.46			0.73						0.73	--	--
ABG	BP-03	HCS-BP-3	07/13/92	0.5	1	SS	NA	NA	NA	2,200	NA	NA	2,600	NA	NA	NA	NA	NA							0.26						0.26	--	--
ABG	BP-04	HCS-BP-4	07/13/92	0.5	1	SS	NA	NA	NA	2,300	NA	NA	2,100	NA	NA	NA	NA	NA				0.23			0.21						0.23	--	--
ABG	BP-05	HCS-BP-5	07/13/92	0.5	1	SS	NA	NA	NA	3,900	NA	NA	5,100	NA	NA	NA	NA	NA				0.39			0.51						0.51	--	--
ABG	BP-06	HCS-BP-6	07/13/92	0.5	1	SS	NA	NA	NA	14,000	NA	NA	34,000	NA	NA	NA	NA	NA				**1.40**			**3.40**						3.40	RDX	--
ABG	BP-07	HCS-BP-7	07/13/92	0.5	1	SS	NA	NA	NA	12,000	NA	NA	2,800	NA	NA	NA	NA	NA				**1.20**			0.28						1.20	HMX	--
ABG	BP-08	HCS-BP-8	07/13/92	0.5	1	SS	NA	NA	NA	2,200	NA	NA	2,800	NA	NA	NA	NA	NA							0.28						0.28	--	--
FDP	AS01-SB42	AS01-SB42-(1-2)	10/24/01	1	2	SS	12	12	18	570	57,000	60	570	2.49E-07	16.9	16.2	1,020	0.12			0.11					0.01	0.07	0.10	0.94		0.94	--	--
FDP	AS01-SB43	AS01-SB43-(1-2)	10/24/01	1	2	SS	12	12	12	570	57,000	60	570	4.27E-07	11.1	13	647	0.12								0.02	0.04	0.08	0.59		0.59	--	--
FDP	AS01-SB44	AS01-SB44-(1-2)	10/24/01	1	2	SS	12	12	12	560	56,000	60	560	1.77E-07	15.5	15.1	972	0.11								0.01	0.06	0.09	0.89		0.89	--	--
FDP	AS01-SB60	AS01-SS60-0-0_5	09/21/04	0	0.5	SS	910	910	1,800	250	2,500	54.9	130	1.05E-05	24.1	42.5	810	0.12			**11.3**	0.03			0.01	0.42	0.10	0.27	0.74	0.07	11.3	TCE	--
FDP	AS01-SB60	AS01-SB60-1-3	09/22/04	1	3	SS	12	12	130	500	2,500	54.6	500	4.93E-07	15.8	14.2	853	0.068			0.81					0.02	0.06	0.09	0.78		0.81	--	--
FDP	AS01-SB60	AS01-SB60-3-5	09/22/04	3	5	SS	11	11	170	500	2,500	48.1	58	9.69E-07	14.6	13.8	790	0.06			**1.06**				0.01	0.04	0.06	0.09	0.72		1.06	TCE	--
FDP	AS01-SB60	AS01-SB60-5-7	09/22/04	5	7	SB	510	510	930	500	2,500	46.4	53	7.74E-07	13.3	13.4	753	0.099			**5.81**					0.03		0.08	0.88		5.81	TCE	--
FDP	AS01-SB60	AS01-SB60-7-8	09/22/04	7	8	SB	12	12	150	500	2,500	48.9	500	5.26E-07	11.8	12.3	624	0.097			0.94					0.02		0.08	0.73		0.94	--	--
FDP	AS01-SB61	AS01-SS61-0-0_5	09/21/04	0	0.5	SS	18	18	18	500	2,500	106	96	2.29E-06	18.5	25	762	0.11							0.01	0.09	0.07	0.16	0.70	0.07	0.70	--	--
FDP	AS01-SB61	AS01-SB61-1-3	09/22/04	1	3	SS	13	13	13	500	2,500	53.9	500	1.35E-06	16.7	15.3	995	0.095								0.05	0.07	0.10	0.91	0.06	0.91	--	--
FDP	AS01-SB61	AS01-SB61-3-5	09/22/04	3	5	SS	11	11	11	500	2,500	49.5	500	1.09E-06	14.7	15.4	783	0.12								0.04	0.06	0.10	0.72	0.07	0.72	--	--
FDP	AS01-SB61	AS01-SB61-5-7	09/22/04	5	7	SB	12	12	12	500	2,500	46.5	500	8.04E-07	15.4	13.2	701	0.063								0.03		0.08	0.82		0.82	--	--
FDP	AS01-SB61	AS01-SB61-7-8	09/22/04	7	8	SB	12	12	12	500	2,500	47.7	500	1.39E-06	15.8	16.5	833	0.06								0.06		0.10	0.98		0.98	--	--
FDP	AS01-SB62	AS01-SS62-0-0_5	09/21/04	0	0.5	SS	710	710	1,100	3,300	2,500	74	1,000	7.67E-06	10.5	16.3	228	0.067			**6.88**	0.33		0.09	0.10	0.31	0.04	0.10	0.21	0.04	6.88	TCE	--
FDP	AS01-SB62	AS01-SB62-1-3	09/22/04	1	3	SS	12,000	12,000	25,000	1,500	2,500	288	2,100	6.42E-04	17.3	14.5	918	0.062			**156**	0.15		0.34	0.21	**25.7**	0.07	0.09	0.84	0.04	156	TCE	Dioxins
FDP	AS01-SB62	AS01-SB62-3-5	09/22/04	3	5	SS	11,000	11,000	12,000	1,200	2,500	269	4,500	1.30E-06	16.3	13.8	532	0.06			**75.0**	0.12		0.32	0.45	0.05	0.06	0.09	0.49		75.0	TCE	--
FDP	AS01-SB62	AS01-SB62-5-7	09/22/04	5	7	SB	480	55	6,800	750	2,500	757	5,500	4.70E-07	17.3	14.6	686	0.07		0.25	**42.5**			0.89		0.02		0.09	0.81		42.5	TCE	--
FDP	AS01-SB62	AS01-SB62-7-8	09/22/04	7	8	SB	530	530	6,300	350	2,500	459	3,600	9.09E-07	15.3	15.1	725	0.086			**39.4**			0.54		0.04		0.09	0.85		39.4	TCE	--
FDP	BG-004/004S/005/039	HCS-BG-5(92)	07/13/92	10	11	SB	4,500	4,500	76,000	NA	NA	NA	NA	NA	NA	NA	NA	NA			**475**										475	TCE	--
FDP	BG-004/004S/005/039	HCS-BG-4(92)	07/13/92	3	4	SS	760	740	160,000	NA	NA	NA	NA	NA	NA	NA	NA	NA		**3.36**	**1,000**										1,000	TCE	--
FDP	BG-004/004S/005/039	HCS-BG-4S	06/20/94	0	1	SS	12	12	93	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.58										0.58	--	--
FDP	BG-004/004S/005/039	HCS-BG-4(94)	06/20/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	17	14.8	761	0.08									0.07	0.09	0.70		0.70	--	--
FDP	BG-006/007	HCS-BG-6(92)	07/13/92	3	4	SS	6	6	5	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.03										0.03	--	--
FDP	BG-006/007	HCS-BG-6(94)	06/21/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	492	9	409	0.06									**1.94**	0.06	0.38		1.94	Copper	--
FDP	BG-008/008S/009/038	HCS-BG-38	07/13/92	12.5	13.5	SB	740	330	42,000	NA	NA	NA	NA	NA	NA	NA	NA	NA		**1.50**	**263**										263	TCE	--
FDP	BG-008/008S/009/038	HCS-BG-8S	06/20/94	0	1	SS	11	11	57	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.36										0.36	--	--
FDP	BG-008/008S/009/038	HCS-BG-8	06/21/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	16.7	13.4	886	0.07									0.07	0.08	0.81		0.81	--	--
FDP	BG-079	HCS-BG-79	07/13/92	11	12	SB	6	6	380	NA	NA	NA	NA	NA	NA	NA	NA	NA			**2.38**										2.38	TCE	--
FDP	BG-120/121	HCS-BG-120	06/21/94	3	5	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
FDP	BG-126/127	HCS-BG-127	06/22/94	9	11	SB	12	12	230	NA	NA	NA	NA	NA	NA	NA	NA	NA			**1.44**										1.44	TCE	--
FDP	BG-128/129	HCS-BG-128	06/22/94	9	11	SB	12	12	260	NA	NA	NA	NA	NA	NA	NA	NA	NA			**1.63**										1.63	TCE	--
FDP	BG-130/131	HCS-BG-131	06/22/94	9	11	SB	12	12	270	NA	NA	NA	NA	NA	NA	NA	NA	NA			**1.69**										1.69	TCE	--
FDP	BG-205/206	HCS-BG-205	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--
FDP	BG-205/206	HCS-BG-206	10/27/98	4	6	SB	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA													0.00	--	--

1 - Red shading indicates maximum ratios >5; orange shading indicates maximum ratios between 1 and 5
Gray shaded concentrations indicate detections; NA - Not Analyzed

Notes:
µg/kg = microgram per kilogram
COC = constituent of concern
ft = foot
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification
mg/kg = miiligram per kilogram
RDX = Hexahydro-1,2,5-trinitro-1,3,5-triazine
SRG = site remediation goal
VOC = volatile organic compound

Table 12
Active Burning Grounds - Residential Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS												COC CONCENTRATION-to-SRG RATIOS										
							VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)				VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)			
						RESIDENTIAL SRGs - Surface Soil (SS):	180	220	160	10,000	65,000	850	10,000	2.50E-05	253	160	1,090	1.61												
						RESIDENTIAL SRGs - Subsurface Soil (SB):	180	220	160	N/A	N/A	850	N/A	2.50E-05	N/A	160	852	N/A												
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury
ABG	AS01-SB01	AS01-SS01-R01X	02/21/01	0	1	SS	6	6	6	454	454	66	454	7.69E-05	27.5	39.3	954	0.09								3.08	0.11	0.25	0.88	0.06
ABG	AS01-SB02	AS01-SS02-R01X	02/21/01	0	1	SS	6	6	28	1,190	476	56	735	9.38E-05	22.5	1,730	419	0.08			0.18	0.12			0.07	3.75	0.09	10.8	0.38	0.05
ABG	AS01-SB03	AS01-SS03-R01X	02/21/01	0	1	SS	6	6	6	2,400	476	68	476	7.25E-05	22.4	25.2	912	0.05				0.24		0.08		2.90	0.09	0.16	0.84	0.03
ABG	AS01-SB04	AS01-SS04-R01X	02/21/01	0	1	SS	6	6	9	454	476	96	454	7.30E-05	19.2	34.3	797	0.05			0.06			0.11		2.92	0.08	0.21	0.73	0.03
ABG	AS01-SB05	AS01-SS05-R01X	02/21/01	0	1	SS	6	6	6	2,250	454	880	784	7.71E-05	19.3	55.2	1,010	0.04				0.23		1.04	0.08	3.08	0.08	0.35	0.93	0.02
ABG	AS01-SB06	AS01-SS06-R01X	02/21/01	0	1	SS	6	6	6	476	454	95	476	7.09E-05	19.3	26.9	928	0.05						0.11		2.84	0.08	0.17	0.85	0.03
ABG	AS01-SB07	AS01-SS07-R01X	02/22/01	0	1	SS	6	6	6	417	435	58	417	5.10E-05	20.5	25.9	783	0.05								2.04	0.08	0.16	0.72	0.03
ABG	AS01-SB08	AS01-SS08-R01X	02/21/01	0	1	SS	6	6	6	258	454	63	435	4.86E-05	18.1	30	982	0.05				0.03				1.94	0.07	0.19	0.90	0.03
ABG	AS01-SB09	AS01-SS09-R01X	02/22/01	0	1	SS	6	6	6	454	476	63	454	4.97E-05	21.6	38	1,120	0.08								1.99	0.09	0.24	1.03	0.05
ABG	AS01-SB10	AS01-SS10-R01X	02/22/01	0	1	SS	6	6	6	124	435	61	417	4.87E-05	17.9	29.5	999	0.05				0.01				1.95	0.07	0.18	0.92	0.03
ABG	AS01-SB11	AS01-SS11-R01X	02/22/01	0	1	SS	6	6	3	506	435	58	417	3.85E-05	17.6	96.9	730	0.04			0.02	0.05				1.54	0.07	0.61	0.67	0.02
ABG	AS01-SB12	AS01-SS12-R01X	02/22/01	0	1	SS	6	6	6	130	435	62	454	4.60E-05	19.7	53.4	1,120	0.05				0.01				1.84	0.08	0.33	1.03	0.03
ABG	AS01-SB13	AS01-SS13-R01X	02/22/01	0	1	SS	6	6	6	417	417	64	417	3.31E-05	20.7	25	1,050	0.06								1.32	0.08	0.16	0.96	0.04
ABG	AS01-SB14	AS01-SS14-R01X	02/21/01	0	1	SS	6	6	6	454	454	63	454	6.35E-05	29	101	926	0.06								2.54	0.11	0.63	0.85	0.04
ABG	AS01-SB14	AS01-SB14-R01X	02/21/01	1	2	SS	6	6	6	340	454	120	454	1.83E-04	16.2	15.9	911	0.04				0.03		0.14		7.33	0.06	0.10	0.84	
ABG	AS01-SB15	AS01-SS15-R01X	02/21/01	0	1	SS	6	6	6	454	435	61	454	4.82E-05	27.2	75.8	777	0.06								1.93	0.11	0.47	0.71	0.04
ABG	AS01-SB15	AS01-SB15-R01X	02/21/01	1	2	SS	6	6	6	454	454	61	454	2.12E-04	17.1	20.1	1,030	0.04								8.49	0.07	0.13	0.94	
ABG	AS01-SB16	AS01-SS16-R01X	02/22/01	0	1	SS	6	6	6	454	476	59	454	3.69E-04	17.4	26.6	712	0.04								14.8	0.07	0.17	0.65	0.02
ABG	AS01-SB16	AS01-SB16-R01X	02/22/01	1	2	SS	6	6	5	454	476	62	454	2.00E-04	17.5	16	1,010	0.03			0.03			0.07		7.98	0.07	0.10	0.93	
ABG	AS01-SB17	AS01-SS17-R01X	02/22/01	0	1	SS	6	6	6	417	454	220	417	5.08E-05	17	30.4	813	0.06						0.26		2.03	0.07	0.19	0.75	0.04
ABG	AS01-SB17	AS01-SB17-R01X	02/22/01	1	2	SS	6	6	6	454	476	2,500	454	2.36E-04	16.8	16.7	1,070	0.03						2.94		9.45	0.07	0.10	0.98	
ABG	AS01-SB18	AS01-SS18-R01X	02/22/01	0	1	SS	6	6	6	269	417	62	476	5.01E-05	18.7	134	915	0.38				0.03				2.00	0.07	0.84	0.84	0.24
ABG	AS01-SB18	AS01-SB18-R01X	02/22/01	1	2	SS	6	6	6	476	454	61	476	1.87E-04	16.9	22.1	1,170	0.04								7.50	0.07	0.14	1.07	
ABG	AS01-SB19	AS01-SS19-R01X	02/22/01	0	1	SS	6	6	6	123	417	62	435	3.75E-05	22.8	184	674	0.09				0.01				1.50	0.09	1.15	0.62	0.06
ABG	AS01-SB19	AS01-SB19-R01X	02/22/01	1	2	SS	6	6	6	435	435	60	435	1.58E-04	18.6	25	1,080	0.04								6.33	0.07	0.16	0.99	
ABG	AS01-SB20	AS01-SS20-R01X	02/22/01	0	1	SS	6	6	6	435	454	63	435	1.11E-04	20.7	58.1	1,090	0.08								4.45	0.08	0.36	1.00	0.05
ABG	AS01-SB20	AS01-SB20-R01X	02/22/01	1	2	SS	6	6	6	417	454	59	417	3.82E-05	17.6	16.6	1,100	0.03								1.53	0.07	0.10	1.01	
ABG	AS01-SB63	AS01-SS63-0-0_5	09/22/04	0	0.5	SS	14	14	1.6	190	2,500	54.7	49	9.32E-07	20.7	64.9	941	0.13			0.01	0.02			0.00	0.04	0.08	0.41	0.86	0.08
ABG	AS01-SB63	AS01-SB63-6_5-7	09/22/04	6.5	7	SB	11	11	13	500	2,500	48.5	500	4.94E-07	15.4	13.7	579	0.061			0.08					0.02		0.09	0.68	
ABG	AS01-SB64	AS01-SS64-0-0_5	09/22/04	0	0.5	SS	12	12	12	51,000	98,000	31,300	16,000	3.02E-06	18	16.2	1,120	0.067				5.10	1.51	36.8	1.60	0.12	0.07	0.10	1.03	0.04
ABG	AS01-SB64	AS01-SB64-7_5-8	09/22/04	7.5	8	SB	530	530	600	1,300	2,500	18,800	1,100	5.42E-07	13.7	12.9	600	0.066			3.75			22.1		0.02		0.08	0.70	
ABG	AS01-SB65	AS01-SS65-0-0_5	09/22/04	0	0.5	SS	11	11	66	2,200	2,500	47	1,700	2.35E-06	19.9	65.7	879	0.077			0.41	0.22			0.17	0.09	0.08	0.41	0.81	0.05
ABG	AS01-SB65	AS01-SB65-1_5-2	09/22/04	1.5	2	SS	11	11	140	1,500	2,500	29.7	940	1.31E-06	17	13.7	932	0.075			0.88	0.15		0.03	0.09	0.05	0.07	0.09	0.86	0.05
ABG	AS01-SB66	AS01-SS66-0-0_5	09/23/04	0	0.5	SS	13	13	13	1,300	2,500	52.9	170	2.13E-06	17.6	14.1	1,070	0.066				0.13			0.02	0.09	0.07	0.09	0.98	
ABG	AS01-SB66	AS01-SB66-1_5-2	09/23/04	1.5	2	SS	14	14	14	810	2,500	48.2	96	1.92E-06	16.3	12.8	922	0.06				0.08			0.01	0.08	0.06	0.08	0.85	
ABG	AS01-SB67	AS01-SS67-0-0_5	09/23/04	0	0.5	SS	13	13	13	1,300	2,500	45.4	460	3.28E-06	1,820	138	208	0.092				0.13			0.05	0.13	7.19	0.86	0.19	0.06
ABG	AS01-SB67	AS01-SB67-1_5-2	09/23/04	1.5	2	SS	12	12	11	4,600	2,500	438	69	4.50E-05	24.1	269	546	0.44			0.07	0.46		0.52	0.01	1.80	0.10	1.68	0.50	0.27
ABG	AS01-SB68	AS01-SS68-0-0_5	09/23/04	0	0.5	SS	12	12	12	500	2,500	47.3	500	1.65E-06	17.2	44.4	520	0.06								0.07	0.07	0.28	0.48	0.04
ABG	AS01-SB68	AS01-SB68-1_5-2	09/23/04	1.5	2	SS	610	610	940	5,200	2,000	26.6	74	1.20E-06	36.4	914	692	2			5.88	0.52	0.03	0.03	0.01	0.05	0.14	5.71	0.63	1.24
ABG	AS01-SB69	AS01-SS69-0-0_5	09/23/04	0	0.5	SS	680	420	1,400	20,000	2,500	51.8	2,100	6.01E-06	68.1	106	665	0.16		1.91	8.75	2.00		0.06	0.21	0.24	0.27	0.66	0.61	0.10
ABG	AS01-SB69	AS01-SB69-1-1_5	09/23/04	1	1.5	SS	800	5,800	12,000	570	2,500	91.2	5,200	2.06E-06	20.1	24.6	783	0.45		26.4	75.0	0.06		0.11	0.52	0.08	0.08	0.15	0.72	0.28
ABG	AS01-SB70	AS01-SS70-0-0_5	09/23/04	0	0.5	SS	12	12	38	420	2,500	49.6	210	5.52E-06	18.9	387	543	7.2			0.24	0.04			0.02	0.22	0.07	2.42	0.50	4.47
ABG	AS01-SB70	AS01-SB70-2_5-3	09/23/04	2.5	3	SS	660	660	1,800	2,100	4,500	65	730	3.38E-06	136	1,760	687	0.068			11.3	0.21	0.07	0.08	0.07	0.14	0.54	11.0	0.63	
ABG	BG-010/010S/053	HCS-BG-53	07/13/92	13	14	SB	6	6	480	NA	NA	NA	NA	NA	NA	NA	NA	NA			3.00									
ABG	BG-010/010S/053	HCS-BG-10	07/13/92	3	4	SS	6	6	5	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.03									
ABG	BG-010/010S/053	HCS-BG-10S	06/20/94	0	1	SS	11	11	2	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-017/018	HCS-BG-18	07/13/92	10	11	SB	6	6	48	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.30									
ABG	BG-025/025S/048	HCS-BG-25S	06/20/94	0	1	SS	13	13	3	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-033/033S	HCS-BG-33S	06/20/94	0	1	SS	14	14	14	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-034/034S	HCS-BG-34	07/13/92	3	4	SS	6	6	1	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01									
ABG	BG-034/034S	HCS-BG-34S	06/20/94	0	1	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-037	HCS-BG-37	07/13/92	3	4	SS	6	3	37	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.01	0.23									
ABG	BG-055/055S	HCS-BG-55S	06/20/94	0	1	SS	11	11	7	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.04									
ABG	BG-059/050	HCS-BG-50	07/13/92	11	12	SB	6	6	2	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01									
ABG	BG-067/068	HCS-BG-68	07/13/92	11	12	SB	6	12	30	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.05	0.19									
ABG	BG-132/133	HCS-BG-132	06/22/94	3	5	SS	11	11	89	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.56									
ABG	BG-132/133	HCS-BG-133	11/15/94	2	3	SS	12	12	37	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.23									
ABG	BG-180	HCS-BG-180	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-181	HCS-BG-181	10/27/98	2	3	SS	11	11	34	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.21									
ABG	BG-182/183	HCS-BG-182	10/27/98	2	3	SS	11	11	63	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.39									
ABG	BG-182/183	HCS-BG-183	10/27/98	4	6	SB	12	12	140	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.88									
ABG	BG-184/185	HCS-BG-184	10/27/98	2	3	SS	12	12	26	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.16									
ABG	BG-184/185	HCS-BG-185	10/27/98	4	6	SB	11	11	30	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.19									
ABG	BG-186/187	HCS-BG-186	10/27/98	2	3	SS	11	11	2	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01									
ABG	BG-186/187	HCS-BG-187	10/27/98	4	6	SB	11	11	10	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06									
ABG	BG-188/189	HCS-BG-188	10/27/98	2	3	SS	12	12	10	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06									
ABG	BG-188/189	HCS-BG-189	10/27/98	4	6	SB	12	12	18	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.11									
ABG	BG-190	HCS-BG-190	10/27/98	2	3	SS	12	12	53	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.33									
ABG	BG-191	HCS-BG-191	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-192/193	HCS-BG-192	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-192/193	HCS-BG-193	10/27/98	4	6	SB	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-194	HCS-BG-194	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-195	HCS-BG-195	10/27/98	2	3	SS	12	12	74	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.46									
ABG	BG-196/197	HCS-BG-196	10/27/98	2	3	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-196/197	HCS-BG-197	10/27/98	4	6	SB	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-198	HCS-BG-198	10/27/98	2	3	SS	12	12	2	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.01									
ABG	BG-199/200	HCS-BG-199	10/27/98	2	3	SS	12	12	29	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.18									
ABG	BG-199/200	HCS-BG-200	10/27/98	4	6	SB	12	12	55	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.34									
ABG	BG-201/202	HCS-BG-201	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-201/202	HCS-BG-202	10/27/98	4	6	SB	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-203/204	HCS-BG-203	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-203/204	HCS-BG-204	10/27/98	4	6	SB	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-207/208	HCS-BG-207	10/27/98	2	3	SS	11	11	10	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06									
ABG	BG-207/208	HCS-BG-208	10/27/98	4	6	SB	11	11	9	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.06									
ABG	BG-209/210	HCS-BG-209	10/27/98	2	3	SS	11	32	44	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.15	0.28									
ABG	BG-209/210	HCS-BG-210	10/27/98	4	6	SB	12	60	120	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.27	0.75									
ABG	BG-211/212	HCS-BG-211	10/27/98	2	3	SS	11	3	4	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.01	0.03									
ABG	BG-211/212	HCS-BG-212	10/27/98	4	6	SB	11	6	11	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.03	0.07									
ABG	BG-213/214	HCS-BG-213	10/27/98	2	3	SS	11	5	46	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.02	0.29									
ABG	BG-213/214	HCS-BG-214	10/27/98	4	6	SB	12	6	110	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.03	0.69									

Table 12
Active Burning Grounds - Residential Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS												COC CONCENTRATION-to-SRG RATIOS										
							VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)				VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)			
						RESIDENTIAL SRGs - Surface Soil (SS):	180	220	160	10,000	65,000	850	10,000	2.50E-05	253	160	1,090	1.61												
						RESIDENTIAL SRGs - Subsurface Soil (SB):	180	220	160	N/A	N/A	850	N/A	2.50E-05	N/A	160	852	N/A												
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury
ABG	BG-215/216	HCS-BG-215	10/27/98	2	3	SS	11	11	18	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.11									
ABG	BG-215/216	HCS-BG-216	10/27/98	4	6	SB	11	11	12	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.08									
ABG	BG-217/218	HCS-BG-217	10/27/98	2	3	SS	11	11	3	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.02									
ABG	BG-217/218	HCS-BG-218	10/27/98	4	6	SB	11	7	3	NA	NA	NA	NA	NA	NA	NA	NA	NA		0.03	0.02									
ABG	BG-219/220	HCS-BG-219	10/27/98	2	3	SS	11	11	23	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.14									
ABG	BG-219/220	HCS-BG-220	10/27/98	4	6	SB	13	13	37	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.23									
ABG	BG-221/222	HCS-BG-221	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BG-221/222	HCS-BG-222	10/27/98	4	6	SB	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
ABG	BP-01	HCS-BP-1	07/13/92	0.5	1	SS	NA	NA	NA	7,600	NA	NA	6,600	NA	NA	NA	NA	NA				0.76			0.66					
ABG	BP-02	HCS-BP-2	07/13/92	0.5	1	SS	NA	NA	NA	4,600	NA	NA	7,300	NA	NA	NA	NA	NA				0.46			0.73					
ABG	BP-03	HCS-BP-3	07/13/92	0.5	1	SS	NA	NA	NA	2,200	NA	NA	2,600	NA	NA	NA	NA	NA							0.26					
ABG	BP-04	HCS-BP-4	07/13/92	0.5	1	SS	NA	NA	NA	2,300	NA	NA	2,100	NA	NA	NA	NA	NA				0.23			0.21					
ABG	BP-05	HCS-BP-5	07/13/92	0.5	1	SS	NA	NA	NA	3,900	NA	NA	5,100	NA	NA	NA	NA	NA				0.39			0.51					
ABG	BP-06	HCS-BP-6	07/13/92	0.5	1	SS	NA	NA	NA	14,000	NA	NA	34,000	NA	NA	NA	NA	NA				1.40			3.40					
ABG	BP-07	HCS-BP-7	07/13/92	0.5	1	SS	NA	NA	NA	12,000	NA	NA	2,800	NA	NA	NA	NA	NA				1.20			0.28					
ABG	BP-08	HCS-BP-8	07/13/92	0.5	1	SS	NA	NA	NA	2,200	NA	NA	2,800	NA	NA	NA	NA	NA							0.28					
FDP	AS01-SB42	AS01-SB42-(1-2)	10/24/01	1	2	SS	12	12	18	570	57,000	60	570	2.49E-07	16.9	16.2	1,020	0.12			0.11					0.01	0.07	0.10	0.94	
FDP	AS01-SB43	AS01-SB43-(1-2)	10/24/01	1	2	SS	12	12	12	570	57,000	60	570	4.27E-07	11.1	13	647	0.12								0.02	0.04	0.08	0.59	
FDP	AS01-SB44	AS01-SB44-(1-2)	10/24/01	1	2	SS	12	12	12	560	56,000	60	560	1.77E-07	15.5	15.1	972	0.11								0.01	0.06	0.09	0.89	
FDP	AS01-SB60	AS01-SS60-0-0_5	09/21/04	0	0.5	SS	910	910	1,800	250	2,500	54.9	130	1.05E-05	24.1	42.5	810	0.12			11.3	0.03			0.01	0.42	0.10	0.27	0.74	0.07
FDP	AS01-SB60	AS01-SB60-1-3	09/22/04	1	3	SS	12	12	130	500	2,500	54.6	500	4.93E-07	15.8	14.2	853	0.068			0.81					0.02	0.06	0.09	0.78	
FDP	AS01-SB60	AS01-SB60-3-5	09/22/04	3	5	SS	11	11	170	500	2,500	48.1	58	9.69E-07	14.6	13.8	790	0.06			1.06				0.01	0.04	0.06	0.09	0.72	
FDP	AS01-SB60	AS01-SB60-5-7	09/22/04	5	7	SB	510	510	930	500	2,500	46.4	53	7.74E-07	13.3	13.4	753	0.099			5.81					0.03		0.08	0.88	
FDP	AS01-SB60	AS01-SB60-7-8	09/22/04	7	8	SB	12	12	150	500	2,500	48.9	500	5.26E-07	11.8	12.3	624	0.097			0.94					0.02		0.08	0.73	
FDP	AS01-SB61	AS01-SS61-0-0_5	09/21/04	0	0.5	SS	18	18	18	500	2,500	106	96	2.29E-06	18.5	25	762	0.11							0.01	0.09	0.07	0.16	0.70	0.07
FDP	AS01-SB61	AS01-SB61-1-3	09/22/04	1	3	SS	13	13	13	500	2,500	53.9	500	1.35E-06	16.7	15.3	995	0.095								0.05	0.07	0.10	0.91	0.06
FDP	AS01-SB61	AS01-SB61-3-5	09/22/04	3	5	SS	11	11	11	500	2,500	49.5	500	1.09E-06	14.7	15.4	783	0.12								0.04	0.06	0.10	0.72	0.07
FDP	AS01-SB61	AS01-SB61-5-7	09/22/04	5	7	SB	12	12	12	500	2,500	46.5	500	8.04E-07	15.4	13.2	701	0.063								0.03		0.08	0.82	
FDP	AS01-SB61	AS01-SB61-7-8	09/22/04	7	8	SB	12	12	12	500	2,500	47.7	500	1.39E-06	15.8	16.5	833	0.06								0.06		0.10	0.98	
FDP	AS01-SB62	AS01-SS62-0-0_5	09/21/04	0	0.5	SS	710	710	1,100	3,300	2,500	74	1,000	7.67E-06	10.5	16.3	228	0.067			6.88	0.33		0.09	0.10	0.31	0.04	0.10	0.21	0.04
FDP	AS01-SB62	AS01-SB62-1-3	09/22/04	1	3	SS	12,000	12,000	25,000	1,500	2,500	288	2,100	6.42E-04	17.3	14.5	918	0.062			156	0.15		0.34	0.21	25.7	0.07	0.09	0.84	0.04
FDP	AS01-SB62	AS01-SB62-3-5	09/22/04	3	5	SS	11,000	11,000	12,000	1,200	2,500	269	4,500	1.30E-06	16.3	13.8	532	0.06			75.0	0.12		0.32	0.45	0.05	0.06	0.09	0.49	
FDP	AS01-SB62	AS01-SB62-5-7	09/22/04	5	7	SB	480	55	6,800	750	2,500	757	5,500	4.70E-07	17.3	14.6	686	0.07		0.25	42.5			0.89		0.02		0.09	0.81	
FDP	AS01-SB62	AS01-SB62-7-8	09/22/04	7	8	SB	530	530	6,300	350	2,500	459	3,600	9.09E-07	15.3	15.1	725	0.086			39.4			0.54		0.04		0.09	0.85	
FDP	BG-004/004S/005/039	HCS-BG-5(92)	07/13/92	10	11	SB	4,500	4,500	76,000	NA	NA	NA	NA	NA	NA	NA	NA	NA			475									
FDP	BG-004/004S/005/039	HCS-BG-4(92)	07/13/92	3	4	SS	760	740	160,000	NA	NA	NA	NA	NA	NA	NA	NA	NA		3.36	1,000									
FDP	BG-004/004S/005/039	HCS-BG-4S	06/20/94	0	1	SS	12	12	93	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.58									
FDP	BG-004/004S/005/039	HCS-BG-4(94)	06/20/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	17	14.8	761	0.08									0.07	0.09	0.70	
FDP	BG-006/007	HCS-BG-6(92)	07/13/92	3	4	SS	6	6	5	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.03									
FDP	BG-006/007	HCS-BG-6(94)	06/21/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	492	9	409	0.06									1.94	0.06	0.38	
FDP	BG-008/008S/009/038	HCS-BG-38	07/13/92	12.5	13.5	SB	740	330	42,000	NA	NA	NA	NA	NA	NA	NA	NA	NA		1.50	263									
FDP	BG-008/008S/009/038	HCS-BG-8S	06/20/94	0	1	SS	11	11	57	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.36									
FDP	BG-008/008S/009/038	HCS-BG-8	06/21/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	16.7	13.4	886	0.07									0.07	0.08	0.81	
FDP	BG-079	HCS-BG-79	07/13/92	11	12	SB	6	6	380	NA	NA	NA	NA	NA	NA	NA	NA	NA			2.38									
FDP	BG-120/121	HCS-BG-120	06/21/94	3	5	SS	12	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA												
FDP	BG-126/127	HCS-BG-127	06/22/94	9	11	SB	12	12	230	NA	NA	NA	NA	NA	NA	NA	NA	NA			1.44									
FDP	BG-128/129	HCS-BG-128	06/22/94	9	11	SB	12	12	260	NA	NA	NA	NA	NA	NA	NA	NA	NA			1.63									
FDP	BG-130/131	HCS-BG-131	06/22/94	9	11	SB	12	12	270	NA	NA	NA	NA	NA	NA	NA	NA	NA			1.69									
FDP	BG-205/206	HCS-BG-205	10/27/98	2	3	SS	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												
FDP	BG-205/206	HCS-BG-206	10/27/98	4	6	SB	11	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA												

Table 12
Active Burning Grounds - Residential Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS											COC CONCENTRATION-to-SRG RATIOS										
							VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)			VOCs (ug/kg)			Explosives (ug/kg)				Dioxins/ Furans (mg/kg)	Metals (mg/kg)			
					RESIDENTIAL SRGs - Surface Soil (SS):		180	220	160	10,000	65,000	850	10,000	2.50E-05	253	160	1,090	1.61											
					RESIDENTIAL SRGs - Subsurface Soil (SB):		180	220	160	N/A	N/A	850	N/A	2.50E-05	N/A	160	852	N/A											
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury	1,1-Dichloroethene	Tetrachloroethene	Trichloroethene	HMX	Nitroglycerin	Perchlorate	RDX	TEQs	Copper	Lead	Manganese	Mercury
					UCL Current Conditions		--	361	11,613	5,948	98,000	3,575	2,604	1.16E-04	183	287	864	0.454												
STEP 1 (SRG Ratio >10)																														
FDP	BG-004/004S/005/039	HCS-BG-4(92)	07/13/92	3	4	SS	760	740	160,000	NA	NA	NA	NA	NA	NA	NA	NA	NA		3.36	1,000									
FDP	BG-004/004S/005/039	HCS-BG-4S	06/20/94	0	1	SS	12	12	93	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.58									
FDP	BG-004/004S/005/039	HCS-BG-5(92)	07/13/92	10	11	SB	4,500	4,500	76,000	NA	NA	NA	NA	NA	NA	NA	NA	NA			475									
FDP	BG-004/004S/005/039	HCS-BG-4(94)	06/20/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	17	14.8	761	0.08									0.07	0.09	0.70	
FDP	BG-008/008S/009/038	HCS-BG-38	07/13/92	12.5	13.5	SB	740	330	42,000	NA	NA	NA	NA	NA	NA	NA	NA	NA		1.50	263									
FDP	BG-008/008S/009/038	HCS-BG-8	06/21/94	3	5	SS	NA	NA	NA	NA	NA	NA	NA	NA	16.7	13.4	886	0.07									0.07	0.08	0.81	
FDP	BG-008/008S/009/038	HCS-BG-8S	06/20/94	0	1	SS	11	11	57	NA	NA	NA	NA	NA	NA	NA	NA	NA			0.36									
FDP	AS01-SB62	AS01-SB62-1-3	09/22/04	1	3	SS	12,000	12,000	25,000	1,500	2,500	288	2,100	6.42E-04	17.3	14.5	918	0.062			156	0.15		0.34	0.21	25.7	0.07	0.09	0.84	0.04
FDP	AS01-SB62	AS01-SS62-0-0_5	09/21/04	0	0.5	SS	710	710	1,100	3,300	2,500	74	1,000	7.67E-06	10.5	16.3	228	0.067			6.88	0.33		0.09	0.10	0.31	0.04	0.10	0.21	0.04
ABG	AS01-SB69	AS01-SB69-1-1_5	09/23/04	1	1.5	SS	800	5,800	12,000	570	2,500	91.2	5,200	2.06E-06	20.1	24.6	783	0.45		26.4	75.0	0.06		0.11	0.52	0.08	0.08	0.15	0.72	0.28
ABG	AS01-SB69	AS01-SS69-0-0_5	09/23/04	0	0.5	SS	680	420	1,400	20,000	2,500	51.8	2,100	6.01E-06	68.1	106	665	0.16		1.91	8.75	2.00		0.06	0.21	0.24	0.27	0.66	0.61	0.10
FDP	AS01-SB62	AS01-SB62-3-5	09/22/04	3	5	SS	11,000	11,000	12,000	1,200	2,500	269	4,500	1.30E-06	16.3	13.8	532	0.06			75.0	0.12		0.32	0.45	0.05	0.06	0.09	0.49	
FDP	AS01-SB62	AS01-SB62-5-7	09/22/04	5	7	SB	480	55	6,800	750	2,500	757	5,500	4.70E-07	17.3	14.6	686	0.07		0.25	42.5			0.89		0.02		0.09	0.81	
FDP	AS01-SB62	AS01-SB62-7-8	09/22/04	7	8	SB	530	530	6,300	350	2,500	459	3,600	9.09E-07	15.3	15.1	725	0.086			39.4			0.54		0.04		0.09	0.85	
ABG	AS01-SB64	AS01-SS64-0-0_5	09/22/04	0	0.5	SS	12	12	12	51,000	98,000	31,300	16,000	3.02E-06	18	16.2	1,120	0.067				5.10	1.51	36.8	1.60	0.12	0.07	0.10	1.03	0.04
ABG	AS01-SB64	AS01-SB64-7_5-8	09/22/04	7.5	8	SB	530	530	600	1,300	2,500	18,800	1,100	5.42E-07	13.7	12.9	600	0.066			3.75			22.1		0.02		0.08	0.70	
ABG	AS01-SB16	AS01-SS16-R01X	02/22/01	0	1	SS	6	6	6	454	476	59	454	3.69E-04	17.4	26.6	712	0.04								14.8	0.07	0.17	0.65	0.02
ABG	AS01-SB70	AS01-SB70-2_5-3	09/23/04	2.5	3	SS	660	660	1,800	2,100	4,500	65	730	3.38E-06	136	1,760	687	0.068			11.3	0.21	0.07	0.08	0.07	0.14	0.54	11.0	0.63	
ABG	AS01-SB70	AS01-SS70-0-0_5	09/23/04	0	0.5	SS	12	12	38	420	2,500	49.6	210	5.52E-06	18.9	387	543	7.2			0.24	0.04			0.02	0.22	0.07	2.42	0.50	4.47
FDP	AS01-SB60	AS01-SS60-0-0_5	09/21/04	0	0.5	SS	910	910	1,800	250	2,500	54.9	130	1.05E-05	24.1	42.5	810	0.12			11.3	0.03			0.01	0.42	0.10	0.27	0.74	0.07
ABG	AS01-SB02	AS01-SS02-R01X	02/21/01	0	1	SS	6	6	28	1,190	476	56	735	9.38E-05	22.5	1,730	419	0.08			0.18	0.12			0.07	3.75	0.09	10.8	0.38	0.05
					UCL Step 1		--	6.77	136	2,023	--	244	2,380	1.08E-04	234	146	911	0.200												
					Maximum - All depths		--	60.0	940	14,000	2,000	2,500	34,000	2.36E-04	1,820	914	1,170	2.00	--	0.27	5.88	1.40	0.03	2.94	3.40	9.45	7.19	5.71	1.07	1.24
					Maximum - SS		--	32.0	940	14,000	2,000	2,500	34,000	2.36E-04	1,820	914	1,170	2.00	--	0.15	5.88	1.40	0.03	2.94	3.40	9.45	7.19	5.71	1.07	1.24
					Ecological PRG		--	--	--	10,000	65,000	1,000	10,000	--	253	785	--	1.61												
					Maximum ratio		--	--	--	1.40	0.03	2.50	3.40	--	7.19	1.16	--	1.24												
STEP 2 (SRG Ratio >5)																														
ABG	AS01-SB17	AS01-SB17-R01X	02/22/01	1	2	SS	6	6	6	454	476	2,500	454	2.36E-04	16.8	16.7	1,070	0.03						2.94		9.45	0.07	0.10	0.98	
ABG	AS01-SB17	AS01-SS17-R01X	02/22/01	0	1	SS	6	6	6	417	454	220	417	5.08E-05	17	30.4	813	0.06						0.26		2.03	0.07	0.19	0.75	0.04
ABG	AS01-SB15	AS01-SB15-R01X	02/21/01	1	2	SS	6	6	6	454	454	61	454	2.12E-04	17.1	20.1	1,030	0.04								8.49	0.07	0.13	0.94	
ABG	AS01-SB15	AS01-SS15-R01X	02/21/01	0	1	SS	6	6	6	454	435	61	454	4.82E-05	27.2	75.8	777	0.06								1.93	0.11	0.47	0.71	0.04
ABG	AS01-SB16	AS01-SB16-R01X	02/22/01	1	2	SS	6	6	5	454	476	62	454	2.00E-04	17.5	16	1,010	0.03			0.03			0.07		7.98	0.07	0.10	0.93	
ABG	AS01-SB18	AS01-SB18-R01X	02/22/01	1	2	SS	6	6	6	476	454	61	476	1.87E-04	16.9	22.1	1,170	0.04								7.50	0.07	0.14	1.07	
ABG	AS01-SB18	AS01-SS18-R01X	02/22/01	0	1	SS	6	6	6	269	417	62	476	5.01E-05	18.7	134	915	0.38				0.03				2.00	0.07	0.84	0.84	0.24
ABG	AS01-SB14	AS01-SB14-R01X	02/21/01	1	2	SS	6	6	6	340	454	120	454	1.83E-04	16.2	15.9	911	0.04				0.03		0.14		7.33	0.06	0.10	0.84	
ABG	AS01-SB14	AS01-SS14-R01X	02/21/01	0	1	SS	6	6	6	454	454	63	454	6.35E-05	29	101	926	0.06								2.54	0.11	0.63	0.85	0.04
ABG	AS01-SB67	AS01-SS67-0-0_5	09/23/04	0	0.5	SS	13	13	13	1,300	2,500	45.4	460	3.28E-06	1,820	138	208	0.092				0.13			0.05	0.13	7.19	0.86	0.19	0.06
ABG	AS01-SB19	AS01-SB19-R01X	02/22/01	1	2	SS	6	6	6	435	435	60	435	1.58E-04	18.6	25	1,080	0.04								6.33	0.07	0.16	0.99	
ABG	AS01-SB19	AS01-SS19-R01X	02/22/01	0	1	SS	6	6	6	123	417	62	435	3.75E-05	22.8	184	674	0.09				0.01				1.50	0.09	1.15	0.62	0.06
ABG	AS01-SB68	AS01-SB68-1_5-2	09/23/04	1.5	2	SS	610	610	940	5,200	2,000	26.6	74	1.20E-06	36.4	914	692	2			5.88	0.52	0.03	0.03	0.01	0.05	0.14	5.71	0.63	1.24
ABG	AS01-SB68	AS01-SS68-0-0_5	09/23/04	0	0.5	SS	12	12	12	500	2,500	47.3	500	1.65E-06	17.2	44.4	520	0.06								0.07	0.07	0.28	0.48	0.04
FDP	AS01-SB60	AS01-SB60-5-7	09/22/04	5	7	SB	510	510	930	500	2,500	46.4	53	7.74E-07	13.3	13.4	753	0.099			5.81					0.03		0.08	0.88	
FDP	AS01-SB60	AS01-SB60-3-5	09/22/04	3	5	SS	11	11	170	500	2,500	48.1	58	9.69E-07	14.6	13.8	790	0.06			1.06				0.01	0.04	0.06	0.09	0.72	
FDP	AS01-SB60	AS01-SB60-1-3	09/22/04	1	3	SS	12	12	130	500	2,500	54.6	500	4.93E-07	15.8	14.2	853	0.068			0.81					0.02	0.06	0.09	0.78	
					UCL Step 2		--	6.93	51.0	2,626	--	134	3,402	6.72E-05	100	74.7	933	0.101												
					Maximum - All depths		--	60.0	480	14,000	--	880	34,000	1.11E-04	492	269	1,120	0.44	--	0.27	3.00	1.40	--	1.04	3.40	4.45	1.94	1.68	1.03	0.27
					Maximum - SS		--	32.0	140	14,000	--	880	34,000	1.11E-04	492	269	1,120	0.44	--	0.15	0.88	1.40	--	1.04	3.40	4.45	1.94	1.68	1.03	0.27
					Ecological PRG		--	--	--	10,000	65,000	1,000	10,000	--	253	785	--	1.61												
					Maximum ratio		--	--	--	1.40	--	0.88	3.40	--	1.94	0.34	--	0.27												
STEP 3 (Dioxins)																														
ABG	AS01-SB20	AS01-SS20-R01X	02/22/01	0	1	SS	6	6	6	435	454	63	435	1.11E-04	20.7	58.1	1,090	0.08								4.45	0.08	0.36	1.00	0.05
ABG	AS01-SB05	AS01-SS05-R01X	02/21/01	0	1	SS	6	6	6	2,250	454	880	784	7.71E-05	19.3	55.2	1,010	0.04				0.23		1.04	0.08	3.08	0.08	0.35	0.93	0.02
ABG	AS01-SB01	AS01-SS01-R01X	02/21/01	0	1	SS	6	6	6	454	454	66	454	7.69E-05	27.5	39.3	954	0.09								3.08	0.11	0.25	0.88	0.06
ABG	AS01-SB04	AS01-SS04-R01X	02/21/01	0	1	SS	6	6	9	454	476	96	454	7.30E-05	19.2	34.3	797	0.05			0.06			0.11		2.92	0.08	0.21	0.73	0.03
ABG	AS01-SB03	AS01-SS03-R01X	02/21/01	0	1	SS	6	6	6	2,400	476	68	476	7.25E-05	22.4	25.2	912	0.05				0.24		0.08		2.90	0.09	0.16	0.84	0.03
ABG	AS01-SB06	AS01-SS06-R01X	02/21/01	0	1	SS	6	6	6	476	454	95	476	7.09E-05	19.3	26.9	928	0.05						0.11		2.84	0.08	0.17	0.85	0.03
ABG	AS01-SB07	AS01-SS07-R01X	02/22/01	0	1	SS	6	6	6	417	435	58	417	5.10E-05	20.5	25.9	783	0.05								2.04	0.08	0.16	0.72	0.03
ABG	AS01-SB09	AS01-SS09-R01X	02/22/01	0	1	SS	6	6	6	454	476	63	454	4.97E-05	21.6	38	1,120	0.08								1.99	0.09	0.24	1.03	0.05
ABG	AS01-SB10	AS01-SS10-R01X	02/22/01	0	1	SS	6	6	6	124	435	61	417	4.87E-05	17.9	29.5	999	0.05				0.01				1.95	0.07	0.18	0.92	0.03
ABG	AS01-SB08	AS01-SS08-R01X	02/21/01	0	1	SS	6	6	6	258	454	63	435	4.86E-05	18.1	30	982	0.05				0.03				1.94	0.07	0.19	0.90	0.03
ABG	AS01-SB12	AS01-SS12-R01X	02/22/01	0	1	SS	6	6	6	130	435	62	454	4.60E-05	19.7	53.4	1,120	0.05				0.01				1.84	0.08	0.33	1.03	0.03
ABG	AS01-SB67	AS01-SB67-1_5-2	09/23/04	1.5	2	SS	12	12	11	4,600	2,500	438	69	4.50E-05	24.1	269	546	0.44			0.07	0.46		0.52	0.01	1.80	0.10	1.68	0.50	0.27
ABG	AS01-SB11	AS01-SS11-R01X	02/22/01	0	1	SS	6	6	3	506	435	58	417	3.85E-05	17.6	96.9	730	0.04			0.02	0.05				1.54	0.07	0.61	0.67	0.02
					UCL Step 3									1.74E-05																
					Maximum - All depths		--	60.0	480	14,000	--	29.7	34,000	3.82E-05	492	65.7	1,100	0.130	--	0.27	3.00	1.40	--	0.03	3.40	1.53	1.94	0.41	1.01	0.08
					Maximum - SS		--	32.0	140	14,000	--	29.7	34,000	3.82E-05	492	65.7	1,100	0.130	--	0.15	0.88	1.40	--	0.03	3.40	1.53	1.94	0.41	1.01	0.08
					Ecological PRG		--	--	--	10,000	65,000	1,000	10,000	--	253	785	--	1.61												
					Maximum ratio		--	--	--	1.40	--	0.03	3.40	--	1.94	0.08	--	0.08												

Gray shaded concentrations indicate detections; NA - Not Analyzed

Notes:
µg/kg = microgram per kilogram
COC = constituent of concern
ft = foot
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification
mg/kg = miligram per kilogram
RDX = Hexahydro-1,2,5-trinitro-1,3,5-triazine
SRG = site remediation goal
VOC = volatile organic compound

Table 13
Outside Active Burning Grounds - Industrial Removal Scenario (Baseline)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS																								
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)										
						INDUSTRIAL SRGs - Surface Soil (SS):	450	300	1,100	810	8,800	2,100	21,000	2,100	29,000	18,000	10,000	370	120	9.60E-05	16.0	17.4	42.7	52.3	253	35,600	785	1.61	78.4	42.6	173	1,170
						INDUSTRIAL SRGs - Subsurface Soil (SB):	8,400	N/A	1,100	810	8,800	2,100	21,000	2,100	N/A	N/A	N/A	370	120	1.80E-04	16.0	130	N/A	20.9	11,000	33,000	830	39.0	N/A	N/A	N/A	N/A
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (tota	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc
W-OABG	22C-1	22C-1-T	10/26/95	0	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	52	52	NA	6.6	2.7	19.3	10.6	25.6	28,300	74.9	0.42	21.4	7.7	18.9	123
W-OABG	22C-2	22C-2-T	10/26/95	0	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38	38	NA	1.5	0.58	7	1.6	5.2	6,820	6.5	0.06	2.3	1.6	10.3	23.6
W-OABG	22D-1	22D-1-D	10/26/95	2	4	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.5	1.1	13.6	13	22.1	26,900	22.1	0.55	17	0.82	21.6	88.6
W-OABG	22D-1	22D-1-T	10/26/95	0	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.3	2	22	5	33.9	12,400	80.1	5.3	8.4	11.6	15.9	261
W-OABG	AOCM-1	AOCM-1-T	10/26/01	0	1	SS	NA	14	14	14	140	130	160	460	1,714	1,291	NA	NA	NA	NA	16.6	0.84	15.6	42.8	46	31,200	53.3	0.34	60.9	2.6	37.1	220
W-OABG	AOCM-2	AOCM-2-T	10/26/01	0	1	SS	NA	13	13	13	100	83	100	420	1,708	867	NA	NA	NA	NA	9.6	0.76	13	24	33.3	20,600	43.5	0.31	38.2	2	41.2	144
E-OABG	AS01-SB21	AS01-SS21-(0-1)	10/25/01	0	1	SS	NA	12	12	82,000	61	55	97	390	1,605	1,082	NA	NA	NA	NA	13.1	12.4	43.3	23.7	526	33,800	1,120	4.7	47.4	70.3	44.6	1,030
E-OABG	AS01-SB22	AS01-SS22-(0-1)	10/25/01	0	1	SS	NA	11	11	65,000	78	79	110	380	1,580	1,049	NA	NA	NA	NA	19.3	6.5	224	34.5	1,080	57,900	337	2.5	240	61	332	1,360
W-OABG	AS01-SB23	AS01-SS23-(0-1)	10/26/01	0	1	SS	NA	12	12	12	110	120	190	390	1,685	1,146	NA	NA	NA	NA	10.2	0.69	22.5	18.9	57.4	24,700	46	0.24	29.3	12.1	24.3	235
W-OABG	AS01-SB24	AS01-SB24-(1-2)	10/24/01	1	2	SS	NA	11	11	11	350	350	350	350	1,195	1,575	NA	NA	NA	NA	11.9	0.67	12.3	24.3	50.7	20,900	59.1	0.26	34.1	1.1	12.6	148
W-OABG	AS01-SB24	AS01-SS24-(0-1)	10/24/01	0	1	SS	NA	11	11	11	760	680	840	51	3,682	6,291	NA	NA	NA	NA	14.4	0.77	11.6	58.2	41	25,800	42.4	0.29	79.5	1.8	16.5	231
W-OABG	AS01-SB25	AS01-SB25-(1-2)	10/24/01	1	2	SS	NA	11	11	11	58,000	55,000	65,000	2,100	240,060	492,100	NA	NA	NA	NA	7.3	0.64	10	16.2	27.8	16,900	21.8	0.45	25	1.9	10.4	131
W-OABG	AS01-SB25	AS01-SS25-(0-1)	10/24/01	0	1	SS	NA	12	12	12	680	750	970	390	3,453	6,205	NA	NA	NA	NA	18.2	0.93	15.4	55.6	48.2	32,300	47.6	0.28	77.3	4	22.2	246
W-OABG	AS01-SB26	AS01-SB26-(1-2)	10/23/01	1	2	SS	NA	12	12	25,000	130	130	170	400	1,760	1,338	NA	NA	NA	NA	20.6	0.72	20.8	28	64.9	36,500	73.4	0.7	42.1	1.2	21.4	212
W-OABG	AS01-SB26	AS01-SS26-(0-1)	10/23/01	0	1	SS	NA	13	13	120	180	160	240	430	1,867	2,109	NA	NA	NA	NA	18.4	0.77	17.9	43.9	55.2	34,500	55.1	0.18	83.7	1.3	25.7	207
W-OABG	AS01-SB27	AS01-SB27-(1-2)	10/23/01	1	2	SS	NA	12	12	12	180	190	330	360	1,314	1,916	NA	NA	NA	NA	14.7	0.72	16.8	20.4	37.3	31,500	38.7	0.35	28.7	1.2	19.7	127
W-OABG	AS01-SB27	AS01-SS27-(0-1)	10/23/01	0	1	SS	NA	14	14	18	180	170	260	420	1,781	1,832	NA	NA	NA	NA	11	0.8	11.4	38.7	40.2	21,900	46.7	0.14	56	1.3	16.3	168
W-OABG	AS01-SB28	AS01-SS28-(0-1)	10/26/01	0	1	SS	NA	12	12	9.1	100	100	120	410	1,765	970	NA	NA	NA	NA	13	0.74	12.6	41.8	37.4	26,800	42.2	0.69	59.5	1.2	18.8	176
E-OABG	AS01-SB29	AS01-SS29-(0-1)	10/26/01	0	1	SS	NA	13	13	13	83	84	98	420	1,740	1,228	620	62,000	620	NA	14.4	0.75	13.4	39.7	35.6	26,800	45.3	0.16	54	1.3	23.2	161
E-OABG	AS01-SB30	AS01-SB30-(1-2)	10/24/01	1	2	SS	NA	12	6.1	13,000	370	330	320	390	2,314	3,165	590	59,000	590	1.22E-05	31	12.4	112	40.3	332	122,000	2,540	4.5	63.6	43.1	26.6	999
E-OABG	AS01-SB30	AS01-SS30-(0-1)	10/24/01	0	1	SS	NA	14	14	26	220	240	290	440	1,844	2,286	670	67,000	670	3.72E-06	10.5	0.82	9.5	51.1	36.2	18,900	38.1	0.14	75.4	1.4	13.4	206
W-OABG	AS01-SB33	AS01-SS33-(0-1)	10/26/01	0	1	SS	NA	12	12	12	250	220	270	410	2,120	1,931	610	61,000	610	1.36E-05	17.9	0.75	15.3	41.7	45	33,600	40.8	0.18	58.3	1.7	20.7	189
W-OABG	AS01-SB34	AS01-SB34-(1-2)	10/25/01	1	2	SS	NA	12	12	23	210	190	280	390	1,570	2,116	600	60,000	600	7.28E-05	15.0	12.6	37.1	40.7	999	40,900	210	0.57	73.7	95.3	80.3	1,080
W-OABG	AS01-SB34	AS01-SS34-(0-1)	10/25/01	0	1	SS	NA	13	13	4.4	340	340	380	420	1,811	3,020	630	63,000	630	NA	16.5	0.93	15.0	60	59.8	32,300	49.7	0.41	78.9	9.8	21.4	283
W-OABG	AS01-SB35	AS01-SS35-(0-1)	10/26/01	0	1	SS	NA	12	12	12	160	180	120	400	1,485	1,440	580	58,000	580	5.54E-06	13.8	0.72	13	39.3	37.5	27,800	47.2	0.18	54.5	1.7	18.9	186
W-OABG	AS01-SB36	AS01-SB36-(1-2)	10/25/01	1	2	SS	NA	11	11	11	60	62	55	360	1466	817	540	54,000	540	1.43E-05	10	1.3	12.5	15.6	46.5	24,400	44.3	0.14	22.9	6	13.5	220
W-OABG	AS01-SB36	AS01-SS36-(0-1)	10/25/01	0	1	SS	NA	13	13	13	100	100	150	430	1,560	1,281	650	65,000	650	1.78E-05	17.9	0.78	16.5	41	44.9	34,800	48.3	0.18	56.7	1.3	22.6	204
W-OABG	AS01-SB37	AS01-SS37-(0-1)	10/26/01	0	1	SS	NA	13	13	13	160	150	260	420	1,692	1,460	620	62,000	620	2.34E-05	12.9	0.75	20.7	29.5	161	25,000	103	0.28	47	3	32.2	362
W-OABG	AS01-SB38	AS01-SB38-(1-2)	10/26/01	1	2	SS	NA	11	11	11	170	170	190	370	1,529	1,506	560	56,000	560	7.43E-07	10.7	0.67	14	15.2	23.1	28,300	28.2	0.11	18.8	1.1	19.5	78.1
W-OABG	AS01-SB38	AS01-SS38-(0-1)	10/26/01	0	1	SS	NA	12	12	12	150	150	200	390	1,695	1,488	590	59,000	590	1.84E-05	9.1	0.7	13.5	21.5	27.8	20,700	37.1	0.12	31.8	1.2	21.8	108
W-OABG	AS01-SB39	AS01-SB39-(1-2)	10/23/01	1	2	SS	NA	12	12	16,000	310	310	360	380	2,118	2,980	NA	NA	NA	NA	21.5	0.8	23.9	28.4	72	34,200	88.6	0.79	43.1	1.2	20.7	226
W-OABG	AS01-SB39	AS01-SS39-(0-1)	10/23/01	0	1	SS	NA	13	13	180	120	110	170	380	1,530	1,286	NA	NA	NA	NA	13.1	0.78	12.3	38.3	37.5	23,100	43.3	0.12	54.5	1.3	16.1	165
E-OABG	AS01-SB40	AS01-SB40-(1-2)	10/24/01	1	2	SS	NA	12	8.9	15	300	310	440	370	2,248	3,195	580	58,000	580	5.86E-06	10	0.69	13.1	19.6	32	21,000	56.2	0.36	25.1	1.2	13.5	110
E-OABG	AS01-SB40	AS01-SS40-(0-1)	10/24/01	0	1	SS	NA	13	13	23	140	140	170	370	1,525	1,432	630	63,000	630	5.35E-05	24.9	84.7	29.8	43	972	70,900	416	0.17	79.4	1.2	29.7	1,400
E-OABG	AS01-SB41	AS01-SB41-(1-2)	10/24/01	1	2	SS	NA	11	11	29	220	220	250	350	1,745	1,975	570	57,000	570	1.01E-06	14.2	0.68	11.9	21	38.7	26,800	44.8	0.26	30.9	1.1	15.2	160
E-OABG	AS01-SB41	AS01-SS41-(0-1)	10/24/01	0	1	SS	NA	12	12	12	180	180	240	400	1,438	1,875	620	62,000	620	1.01E-05	16.3	0.81	14.3	44	43.7	29,500	51.8	0.17	63.3	1.2	22.2	192
W-OABG	AS01-SB46	AS01-SS46-0-1	07/20/04	0	1	SS	NA	2.9	12	12	78	88	150	NA	887	718	NA	NA	NA	NA	11.1	0.54	14.2	46.8	37.8	29,500	39.7	0.17	64.4	0.97	18.3	191
W-OABG	AS01-SB47	AS01-SS47-0-1	07/20/04	0	1	SS	NA	12	12	12	130	140	230	NA	659	1,094	NA	NA	NA	NA	11.9	0.25	15.7	41.8	46.6	31,300	43.6	0.96	60.2	2.9	21.3	217
W-OABG	AS01-SB48	AS01-SS48-0-1	07/20/04	0	1	SS	NA	850	610	3,600	64	81	150	NA	834	653	NA	NA	NA	NA	8.5	0.3	14.1	23.4	43.1	28,000	44.3	1	36.6	3.3	21.8	161
W-OABG	AS01-SB49	AS01-SS49-0-1	07/20/04	0	1	SS	NA	450	620	990	7,500	9,000	21,000	NA	14,760	72,300	NA	NA	NA	NA	12.4	0.069	19.7	34.6	43.5	32,300	44.9	0.36	54.5	0.54	21.8	181
E-OABG	AS01-SB50	AS01-SS50-0-1	07/21/04	0	1	SS	NA	11	14	14	24	24	45	NA	839	220	NA	NA	NA	2.63E-06	5.9	0.067	10.4	10.7	17.4	21,000	73	0.091	15.3	0.22	16.1	63.2
E-OABG	AS01-SB51	AS01-SS51-0-1	07/21/04	0	1	SS	NA	320	730	2,700	31	36	63	NA	886	280	NA	NA	NA	4.26E-05	8.5	13	23.5	23.9	123	31,100	223	0.26	37	1	26.5	845
E-OABG	AS01-SB52	AS01-SS52-0-1	07/21/04	0	1	SS	NA	300	560	6,400	46	55	91	NA	1026	426	NA	NA	NA	1.20E-04	8.6	4.5	42.7	20.3	253	57,100	591	2.1	50	2.4	22.4	1,170
E-OABG	AS01-SB53	AS01-SS53-0-1	07/21/04	0	1	SS	NA	1,800	1,800	36,000	34	40	75	NA	959	317	NA	NA	NA	1.34E-04	12.5	11	63.8	20	284	28,700	1,310	1	70.5	42.6	173	1,400
E-OABG	AS01-SB54	AS01-SS54-0-1	07/21/04	0	1	SS	NA	13	13	13	99	120	240	NA	954	972	NA	NA	NA	1.83E-05	12.8	0.3	17.1	37.1	44.1	32,400	47.4	0.3	56.6	0.45	25.4	176
W-OABG	AS01-SB56	AS01-SS56-0-1	07/21/04	0	1	SS	NA	NA	NA	NA	87	100	160	NA	960	826	NA	NA	NA	1.64E-05	11.8	0.4	15.6	42.8	41	31,600	38	0.25	59.7	1.2	21.9	200
W-OABG	AS01-SB57	AS01-SS57-0-1	07/21/04	0	1	SS	NA	NA	NA	NA	8,100	12,000	16,000	NA	63,100	82,500	NA	NA	NA	2.65E-05	11.2	5.2	59.5	15.8	517	30,400	939	0.44	45.5	5.5	58.3	841
E-OABG	AS01-SB58	AS01-SS58-0-1	07/21/04	0	1	SS	NA	NA	NA	NA	70	88	170	NA	843	709	NA	NA	NA	4.37E-05	11.2	0.46	14	39.7	39.8	28,700	43.7	0.23	57.4	0.24	22.1	180
E-OABG	AS01-SB59	AS01-SS59-0-1	07/21/04	0	1	SS	NA	NA	NA	NA	99	110	200	NA	976	865	NA	NA	NA	1.19E-05	12.7	0.37	16.4	42	44.1	32,400	45.3	0.24	62.9	0.25	24.9	181
E-OABG	AS01-SB71	AS01-SB71-1_5-2	09/23/04	1.5	2	SS	NA	14	26	13	440	440	51	440	1665	1639	1,500	2,500	140	2.16E-06	7	0.44	14.2	13.4	22.5	23,600	39.2	0.27	20.8	0.69	14.2	78.9
E-OABG	AS01-SB71	AS01-SS71-0-0_5	09/23/04	0	1	SS	NA	15	15	15	500	500	500	500	2,050	2,250	500	2,500	82	5.27E-06	9.5	1.8	15.1	27	35.6	28,700	61.5	0.23	42.8	0.7	23.4	179
E-OABG	AS01-SB72	AS01-SB72-4_5-5	09/23/04	4.5	5	SB	NA	2,800	11,000	77,000	470	470	470	470	2,115	2,115	75,000	30,000	1,800	1.85E-04	3.9	143	38.1	20.2	436	29,800	810	22.7	38.7	13.3	14.3	2,060
E-OABG	AS01-SB72	AS01-SS72-0-0_5	09/23/04	0	1	SS	NA	1,600	420	4,400	450	450	450	450	2,025	2,025	530,000	500	7,300	3.48E-04	7.2	373	319	27.7	248	54,200	814	56.3	56.0	12.3	17.8	2,060
E-OABG	AS01-SB73	AS01-SB73-1_5-2	09/23/04	1.5	2	SS	NA	12,000	12,000	170,000	400	400	400	400	1,800	1,800	76	2,500	500	2.09E-06	7.1	0.35	12.6	15	21.8	27,700	20.5	0.17	22.5	0.38	16.5	79.2
E-OABG	AS01-SB73	AS01-SS73-0-0_5	09/23/04	0	1	SS	NA	1,300	1,300	22,000	390	390	390	390	1,755	1,755	120	2,500	500	2.40E-05	8.7	2.1	37.6	16.3	172	40,700	111	0.42	37	41.2	30.2	311
E-OABG	AS01-SB74	AS01-SB74-4-4_5	09/23/04	4	5	SS	NA	15	3.3	57	460	460	460	460	2,070	2,070	100	2,500	500	6.82E-06	7	11.6	282	53.9	13,600	33,500	865	0.17	347	19.5	53.4	1,010
E-OABG	AS01-SB74	AS01-SS74-0-0_5	09/23/04	0	1	SS	NA	12	12	4.9	430	430	430	430	1,599	1,935	500	2,500	500	6.64E-06	7.5	0.7	31.1	18.5	94.9	31,600	66.8	0.34	29.3	0.97	19.5	182
W-OABG	AS01-TP02	AS01-TP02-0910	03/18/08	9	10	SB	NA	10	10	10	380	380	380	380	1,710	1,710	620	4,000	620	7.83E-08	6.6	0.43	13.4	6.7	16.4	32,900	9.7	0.11	19.2	1.1	16.3	64.9

Table 13
Outside Active Burning Grounds - Industrial Removal Scenario (Baseline)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS																									
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)											
						INDUSTRIAL SRGs - Surface Soil (SS):	450	300	1,100	810	8,800	2,100	21,000	2,100	29,000	18,000	10,000	370	120	9.60E-05	16.0	17.4	42.7	52.3	253	35,600	785	1.61	78.4	42.6	173	1,170
						INDUSTRIAL SRGs - Subsurface Soil (SB):	8,400	N/A	1,100	810	8,800	2,100	21,000	2,100	N/A	N/A	N/A	370	120	1.80E-04	16.0	130	N/A	20.9	11,000	33,000	830	39.0	N/A	N/A	N/A	N/A
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (total)	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc
W-OABG	AS01-TP03	AS01-TP03-0910	03/18/08	9	10	SB	NA	10	10	10	390	390	390	390	1,755	1,755	620	4,000	620	3.19E-07	5	0.23	10.7	11.6	14.3	24,200	11	0.11	14.5	1.2	16.2	49.2
W-OABG	AS01-TP04	AS01-TP04-0910	03/18/08	9	10	SB	NA	12	12	12	410	410	410	410	1,845	1,845	620	4,000	620	1.82E-07	4	0.2	8.8	7	9.2	19,700	8	0.12	13.2	1.2	11.8	43.7
W-OABG	AS01-TP05	AS01-DC01-0506	03/19/08	5	6	SB	NA	12	12	7,600	150	190	240	400	1,760	1,780	620	4,000	620	1.44E-04	6.2	8.2	27.2	20.3	704	27,500	178	5	46.1	104	57.2	1,440
W-OABG	AS01-TP05	AS01-TP05-0910	03/19/08	9	10	SB	NA	12	12	32	180	150	220	430	2,115	1,785	620	4,000	620	7.60E-05	6.7	6.6	19.3	17	278	28,800	153	2.7	40.6	69.6	70.8	420
W-OABG	AS01-TP06	AS01-TP06-0910	03/19/08	9	10	SB	NA	12	12	44	400	400	400	400	1,800	1,800	620	4,000	620	3.51E-07	4.6	0.27	13.2	3.7	9.4	26,900	6.7	0.12	11.6	0.19	13.2	51.1
W-OABG	AS01-TP07	AS01-DC03-0304	03/20/08	3	4	SS	NA	10	10	10	420	420	420	420	1,687	1,790	620	4,000	620	1.50E-05	7.9	1	27.7	13.4	563	33,400	99.4	0.043	27.9	1.3	19.3	926
W-OABG	AS01-TP07	AS01-TP07-0910	03/20/08	9	10	SB	NA	11	11	11	400	400	400	400	1,800	1,800	620	4,000	620	7.68E-08	5.6	0.23	12.5	6.8	17.2	25,900	9.9	0.063	14.1	1.2	15.6	67.9
W-OABG	AS01-TP08	AS01-TP08-0910	03/20/08	9	10	SB	NA	10	10	10	390	390	390	390	1,755	1,755	620	4,000	620	1.31E-07	4.3	0.23	9.8	8.5	11.4	20,700	9.1	0.12	12.7	0.17	13	44.5
W-OABG	AS01-TP09	AS01-DC02-0405	03/20/08	4	5	SS	NA	10	10	15	410	100	110	410	1,685	1,128	620	4,000	620	3.09E-05	7.2	8.3	36.8	13.2	69.3	23,600	179	0.12	203	1.6	994	721
W-OABG	AS01-TP09	AS01-TP09-0910	03/20/08	9	10	SB	NA	11	11	22	380	380	380	380	1,710	1,710	620	4,000	620	3.09E-07	4.9	0.2	11.5	13.1	16.9	24,700	12.2	0.11	17	1.2	18.8	62.2
W-OABG	AS01-TP10	AS01-TP10-0910	03/24/08	9	10	SB	NA	12	12	85	430	430	430	430	1,935	1,935	NA	NA	NA	NA	5	0.27	11.6	12.3	15.8	26,400	11.7	0.13	16.4	1.3	17.4	59.7
W-OABG	AS01-TP11	AS01-TP11-0910	03/24/08	9	10	SB	NA	16	16	24	490	490	490	490	2,080	2,080	620	4,000	620	NA	7.1	0.33	10.1	14.3	28.5	22,100	31.3	0.081	24.3	1.5	12.5	106
W-OABG	AS01-TP12	AS01-TP12-0809	03/25/08	8	9	SB	NA	12	12	150	480	480	480	480	2,160	2,160	NA	NA	NA	NA	5.9	0.29	10.9	10.1	15.8	26,700	11.9	0.049	15.7	1.4	17.5	61.4
W-OABG	AS01-TP13	AS01-TP13-0910	03/25/08	9	10	SB	NA	12	12	6,900	470	470	470	470	2,115	2,115	620	4,000	620	NA	4.7	0.29	10	10.4	11.5	20,600	10.1	0.14	17.3	1.4	13.3	51.5
W-OABG	AS01-TP14	AS01-DC04-0304	03/25/08	3	4	SS	NA	13	13	26,000	490	490	490	490	2,205	2,205	620	4,000	620	NA	5.1	0.31	9.4	11.6	20.6	19,600	14.5	0.062	18.9	0.18	13	61.6
W-OABG	AS01-TP14	AS01-TP14-0910	03/25/08	9	10	SB	NA	15	15	92,000	520	520	520	520	2,090	2,190	620	4,000	620	NA	9.2	0.6	14.4	19.1	42.3	25,700	36.5	0.71	29.7	0.31	16.1	125
W-OABG	AS01-TP15	AS01-TP15-0910	03/25/08	9	10	SB	NA	13	13	11,000	470	470	470	470	2,115	2,115	NA	NA	NA	NA	4.6	0.26	10.2	10.1	11.2	21,800	10	0.14	16.8	1.4	13.6	53.9
C-OABG	AS01-TP16	AS01-TP16-0809	03/25/08	8	9	SB	NA	16	16	62	500	500	500	500	2,050	2,000	620	4,000	620	8.28E-06	11.2	0.74	14.7	26.2	46.3	32,100	42.3	0.35	41.1	0.27	19.2	161
C-OABG	AS01-TP17	AS01-TP17-0809	03/25/08	8	9	SB	NA	14	14	14	470	470	470	470	1,885	1,990	620	4,000	620	4.70E-05	10.1	0.79	13.8	22.9	38.7	29,800	34.9	0.14	37	0.25	17.8	136
C-OABG	AS01-TP18	AS01-TP18-0910	03/26/08	9	10	SB	NA	10	10	10	380	380	380	380	1,710	1,710	620	4,000	620	NA	4.6	0.24	9.5	9.1	10.9	20,700	9.3	0.12	12.2	1.1	12.9	41.3
C-OABG	AS01-TP19	AS01-TP19-0910	03/26/08	9	10	SB	NA	10	10	6	390	390	390	390	1,755	1,755	NA	NA	NA	NA	3.8	0.21	7.7	8.5	10	17,600	8.3	0.12	10.4	1.2	11.1	35.3
C-OABG	AS01-TP20	AS01-TP20-0910	03/26/08	9	10	SB	NA	10	10	10	390	390	390	390	1,755	1,755	620	4,000	620	NA	3.8	0.21	8	8	10.1	19,300	8.3	0.12	11.6	1.2	12	41
C-OABG	AS01-TP21	AS01-TP21-0910	03/26/08	9	10	SB	NA	10	10	7	380	380	380	380	1,710	1,710	620	4,000	620	NA	3.7	0.19	8.2	7.8	10.3	17,200	10.1	0.12	11.3	1.2	11.2	37.1
C-OABG	AS01-TP22	AS01-TP22-0910	03/26/08	9	10	SB	NA	10	10	30	380	380	380	380	1,710	1,710	620	4,000	620	8.60E-08	4.7	0.26	9.1	8.9	9.7	21,400	8.6	0.12	13.3	1.2	12.3	47
E-OABG	AS01-TP23	AS01-DC12-0102	03/31/08	1	2	SS	NA	11	11	11	400	150	400	400	1,800	1,680	620	4,000	620	NA	5.9	0.45	10.4	9.6	22.4	19,300	93.7	0.17	16.2	0.67	15.9	81.5
E-OABG	AS01-TP23	AS01-TP23-0910	03/31/08	9	10	SB	NA	10	10	3	390	390	390	390	1,755	1,755	620	4,000	620	NA	4.4	0.12	9.2	8.4	11.8	21,300	11	0.054	12.5	1.2	13.1	41.5
E-OABG	AS01-TP24	AS01-TP24-0910	03/27/08	9	10	SB	NA	10	10	11	380	380	380	380	1,710	1,710	620	4,000	620	4.04E-08	4.4	0.21	9.3	9.2	12.8	21,400	9.3	0.12	12.4	1.2	13.5	42.4
E-OABG	AS01-TP25	AS01-DC13-0304	04/01/08	3	4	SS	NA	13	13	5	400	400	400	400	1,800	1,800	620	4,000	620	4.06E-07	8.2	2	31.7	11.3	29.9	25,800	45.8	0.31	94.1	0.91	20.1	253
E-OABG	AS01-TP25	AS01-TP25-0910	04/01/08	9	10	SB	NA	10	3	17	390	390	390	390	1,755	1,755	620	4,000	620	3.88E-08	5.3	0.26	11.2	9.3	13.8	24,500	29.1	0.12	13.7	1.2	15	48.4
E-OABG	AS01-TP26	AS01-TP26-0910	03/31/08	9	10	SB	NA	11	31	29	400	400	400	400	1,800	1,800	620	4,000	620	NA	3.9	0.22	8.6	8.8	10	18,600	7.5	0.06	14.3	1.2	10.8	43.5
E-OABG	AS01-TP27	AS01-DC10-0405	03/28/08	4	5	SS	NA	10	22	90	400	400	400	400	1,800	1,800	NA	NA	NA	NA	6.3	1.4	15.1	12.8	44.8	23,500	166	0.45	31.8	2.3	15.2	247
E-OABG	AS01-TP27	AS01-TP27-0910	03/28/08	9	10	SB	NA	10	26	62	360	360	360	360	1,620	1,620	NA	NA	NA	NA	5	1.9	11.3	10.2	15.1	23,100	10.9	0.046	17.5	0.72	13.7	51.4
E-OABG	AS01-TP28	AS01-DC09-0304	03/28/08	3	4	SS	NA	1,300	1,100	26,000	400	400	400	400	1,800	1,800	NA	NA	NA	NA	6.3	7.4	39.3	17.8	598	24,900	671	1.5	55.2	54.9	26	1,550
E-OABG	AS01-TP28	AS01-TP28-0910	03/28/08	9	10	SB	NA	10	20	12,000	400	400	400	400	1,800	1,800	620	4,000	620	NA	4.6	0.35	10.5	7.7	12.5	25,000	9.5	0.12	13.4	1.2	15.3	51.8
E-OABG	AS01-TP29	AS01-DC08-0304	03/28/08	3	4	SS	NA	10,000	10,000	70,000	380	380	380	380	1,710	1,710	NA	NA	NA	1.16E-06	6	1	12.1	10.3	23.9	25,700	25.2	4.9	19.3	4.4	16.6	285
E-OABG	AS01-TP29	AS01-TP29-0910	03/28/08	9	10	SB	NA	38,000	38,000	460,000	390	390	390	390	1655	1530	NA	NA	NA	NA	4.7	0.18	9.8	5.5	12.2	23,000	10.4	0.11	11.6	1.2	13	50.2
E-OABG	AS01-TP30	AS01-DC05-0203	03/27/08	2	3	SS	NA	13	13	11	420	420	420	420	1,740	1,674	NA	NA	NA	NA	9.4	8.4	77.7	25.5	779	30,900	197	2	75.9	4.6	19.3	840
E-OABG	AS01-TP30	AS01-TP30-0910	03/27/08	9	10	SB	NA	13	13	3	110	96	130	430	2,005	1,461	620	4,000	620	NA	6.1	0.71	9.3	22.7	489	19,800	30.4	0.072	25.9	0.38	10.8	142
W-OABG	AS01-TP32	AS01-TP32-0910	03/24/08	9	10	SB	NA	15	15	31	150	120	130	500	2,300	1,710	NA	NA	NA	NA	10.4	0.49	14.3	20.9	54.7	28,700	53.7	0.18	36.7	0.39	17.3	155
W-OABG	AS01-TP33	AS01-TP33-0607	03/25/08	6	7	SB	NA	13	13	170	490	490	490	490	2,205	2,205	NA	NA	NA	NA	4.9	0.27	9.1	9.9	16.1	20,600	12.1	0.099	17	1.5	12.3	55
C-OABG	AS01-TP34	AS01-TP34-0910	03/26/08	9	10	SB	NA	10	10	9	380	380	380	380	1,710	1,710	NA	NA	NA	NA	3.4	0.17	7.4	7	8.8	16,000	7.1	0.12	8.8	1.2	10	31.3
E-OABG	AS01-TP35	AS01-DC11-0203	03/31/08	2	3	SS	NA	11	11	11	390	390	390	390	1,755	1,755	620	4,000	620	NA	4.6	0.43	10.7	9.9	18.1	22,100	47.3	0.12	15.1	1.2	16.2	65.5
E-OABG	AS01-TP35	AS01-TP35-0910	03/31/08	9	10	SB	NA	10	10	12	390	390	390	390	1,755	1,755	NA	NA	NA	NA	4.7	1.9	10.1	11	12	22,600	10.1	0.04	14	0.57	14.2	48.3
E-OABG	AS01-TP36	AS01-DC07-0304	03/27/08	3	4	SS	NA	10	2	230,000	340	340	340	340	1,530	1,530	620	4,000	620	NA	4.4	0.35	7.7	11	15.3	16,400	14.3	0.052	15.5	0.17	10.8	49.2
E-OABG	AS01-TP36	AS01-TP36-0910	03/27/08	9	10	SB	NA	14	4	730,000	480	480	480	480	2,160	2,160	620	4,000	620	6.44E-06	4.1	0.28	8.2	8.2	13	17,800	12.1	0.15	13.7	0.25	10.5	49.3
E-OABG	AS01-TP37	AS01-DC06-0203	03/27/08	2	3	SS	NA	14	14	16	97	430	110	430	1,905	1,482	NA	NA	NA	NA	10	0.91	15.7	19.9	52.6	25,100	58.7	0.68	31.8	4	16.4	197
E-OABG	AS01-TP37	AS01-TP37-0910	03/27/08	9	10	SB	NA	12	12	19	420	420	420	420	1,890	1,890	NA	NA	NA	NA	7.6	0.73	10	12.7	32.3	19,800	62.4	0.25	21.4	0.7	12.6	196
E-OABG	AS01-TP38	AS01-TP38-0910	03/27/08	9	10	SB	NA	13	13	9	450	450	450	450	2,025	2,025	620	4,000	620	NA	5.2	0.59	7.7	37.8	43.5	21,100	20.5	0.055	30.4	1.4	9.5	114
E-OABG	B1-003	HCS-B1-3-1	07/17/92	1	2	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.5	3.4	46.9	14.5	79.9	28,400	173	0.28	25.7	1.1	17.9	383
E-OABG	B1-003	HCS-B1-3-S	07/17/92	0.5	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.4	22.9	51.4	28.4	309	27,200	793	0.56	44.2	5.8	34.7	1,290
E-OABG	B1-004	HCS-B1-4-S	07/17/92	0.5	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.4	57.1	100	39.8	780	122,000	12,100	1	107	12.6	18.1	3,860
E-OABG	B1-011	HCS-B1-11-2	07/17/92	0.5	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.8	46.8	99.8	26.8	1,390	81,100	993	4.6	102	104	97.5	3,350
E-OABG	B1-011	HCS-B1-11-S	07/17/92	1	2	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.2	154	103	31.6	855	45,700	6,680	2.5	74.1	24.8	30.3	2,160
E-OABG	B1-12S/12	HCS-B1-12-1	11/16/94	0	1	SS	NA	NA	NA	NA	380	380	380	380	1,710	1,710	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	B1-12S/12	HCS-B1-12-S	11/16/94	0	1	SS	NA	NA	NA	NA	68	500	92	500	2,020	1,617	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	B1-13S/13	HCS-B1-13-1	11/16/94	0	1	SS	NA	NA	NA	NA	88	70	82	370	1544	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	B1-13S/13	HCS-B1-13-S	11/16/94	0	1	SS	NA	NA	NA	NA	520	520	520	520	2,340	2,340	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	B1-C	HCS-B1-C	07/17/92	0	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.21E-04	7.3	3.3	10	5.5	81.9	10,500	4,990	2.1	11.4	8.9	5.6	291
E-OABG	B1-CS	HCS-B1-CS	06/20/94	1	2	SS	NA	NA	NA	NA	380	380	380	380	1,710	1,710	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	B2-003	HCS-B2-3-4	07/17/92	3	4	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.7	0.74	31.5	21.1	136	28,500	68.6	0.32	55.1	6.5	108	408
W-OABG	B2-003	HCS-B2-3-S	07/17/92	2	3	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.5	5.3	55.1	24.6	579	31,900	1,630	1.2	49.7	78.8	33.4	679
W-OABG	B2-004	HCS-B2-4-4	07/17/92	3	4	SS	NA	NA	NA	NA	1,700	1,400	1,500	230	7,136	11,530	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	B2-005	HCS-B2-5-3	07/17/92	2	3	SS	NA	NA	NA	NA	700	690	730	390	2,883	5,565	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	B2-006	HCS-B2-6-3	07/17/92	2	3	SS	NA	NA	NA	NA	95	83	100	490	1,918	1,127	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	B2-007	HCS-B2-7-3	07/17/92	2	3	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.9	0.71	15.3	18.9	54.5	30,400	74.6	0.4	38	2.1	14.6	163
W-OABG	B2-007	HCS-B2-7-S	07/17/92	1	2	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.3	1.9	29.8	25.6	2,150	25,100	272	2.7	40.3	121	82.7	636
W-OABG	B2-010	HCS-B2-10	07/17/92	5	6	SB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11	37.5	110	30.6	1,970	31,300	472	16.8	185	106	100	4,230
W-OABG	B2-C	HCS-B2-C	07/17/92	0.5	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.88E-04	12.9	6.8	34	25.5	348	31,900	200	3.2	66.4	64.5	75.8	849
E-OABG	BG-003	HCS-BG-3	07/13/92	3	4	SS	6	NA	6	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-015	HCS-BG-15	07/13/92	3	4	SS	6	NA	6	26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-023/023S/083	HCS-BG-23S	06/21/94	0	1	SS	11	NA	11	14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-084/084S/106	HCS-BG-106	07/13/92	11	12	SB	750	NA	750	2,500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 13
Outside Active Burning Grounds - Industrial Removal Scenario (Baseline)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS																									
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)											
						INDUSTRIAL SRGs - Surface Soil (SS):	450	300	1,100	810	8,800	2,100	21,000	2,100	29,000	18,000	10,000	370	120	9.60E-05	16.0	17.4	42.7	52.3	253	35,600	785	1.61	78.4	42.6	173	1,170
						INDUSTRIAL SRGs - Subsurface Soil (SB):	8,400	N/A	1,100	810	8,800	2,100	21,000	2,100	N/A	N/A	N/A	370	120	1.80E-04	16.0	130	N/A	20.9	11,000	33,000	830	39.0	N/A	N/A	N/A	N/A
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (tota	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc
E-OABG	BG-084/084S/106	HCS-BG-84	07/13/92	3	4	SS	6	NA	6	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-084/084S/106	HCS-BG-84S	06/20/94	0	1	SS	11	NA	11	110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-098/098S	HCS-BG-98S	11/16/94	0	1	SS	1,800	NA	1,800	27,000	110	71	99	460	1,940	923	NA	NA	NA	NA	15.8	3.5	23.6	31.2	75.5	38,600	53.3	0.46	50.8	3.3	26.2	206
W-OABG	BG-099	HCS-BG-99	07/13/92	2	3	SS	6	NA	6	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-099	HCS-BG-99R	07/13/92	2	3	SS	6	NA	6	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-102/102S	HCS-BG-102	07/13/92	1	2	SS	260	NA	1,400	25,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-102/102S	HCS-BG-102S	11/16/94	0	1	SS	71	NA	29	890	100	80	120	450	1,847	980	NA	NA	NA	NA	11.4	2.9	13.1	38.6	37.3	32,600	37.1	0.14	58.8	1.5	20.1	210
E-OABG	BG-110/110S	HCS-BG-110	07/13/92	2	3	SS	27,000	NA	820	34,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-110/110S	HCS-BG-110S	11/16/94	0	1	SS	16,000	NA	1,600	26,000	85	61	84	440	1800	805	NA	NA	NA	NA	10.2	2.3	11.9	55.2	33.7	28,700	38.5	0.1	76.1	1.1	18.8	233
W-OABG	BG-112	HCS-BG-112	07/13/92	2	3	SS	33	NA	7	56	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-112	HCS-BG-112R	07/13/92	2	3	SS	7	NA	7	14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-113	HCS-BG-113	07/13/92	2	3	SS	880	NA	880	94,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-113	HCS-BG-113S	11/15/94	0	1	SS	1,800	NA	1,800	8,000	100	85	170	57	1,900	1,331	NA	NA	NA	NA	14.8	3.1	19.9	37.2	49.8	35,200	57.6	0.48	53.3	2.7	24.5	192
W-OABG	BG-134	HCS-BG-134	11/16/94	2	3	SS	2,300	NA	1,500	230,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-135	HCS-BG-135	11/16/94	2	3	SS	11	NA	2	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-136	HCS-BG-136	11/16/94	2	3	SS	11	NA	56	730	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-137	HCS-BG-137	11/16/94	2	3	SS	12	NA	12	7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-138	HCS-BG-138	11/16/94	2	3	SS	1,300	NA	1,700	140,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-139	HCS-BG-139	11/15/94	2	3	SS	1,800	NA	1,800	4,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-140	HCS-BG-140	11/15/94	2	3	SS	2	NA	12	41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-141	HCS-BG-141	11/16/94	2	3	SS	12	NA	12	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-142	HCS-BG-142	11/16/94	2	3	SS	12	NA	12	160	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-143	HCS-BG-143	11/16/94	2	3	SS	12	NA	12	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-144	HCS-BG-144	11/16/94	2	3	SS	12	NA	12	28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-145	HCS-BG-145	11/16/94	2	3	SS	1	NA	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-146	HCS-BG-146	11/16/94	2	3	SS	1,600	NA	2,200	20,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-147	HCS-BG-147	11/16/94	2	3	SS	840	NA	480	53,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-148	HCS-BG-148	11/16/94	2	3	SS	24,000	NA	160	64,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-149	HCS-BG-149	11/16/94	2	3	SS	1,500	NA	1,500	6,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-150	HCS-BG-150	11/15/94	2	3	SS	1,500	NA	1,500	17,000	77	74	360	360	1,580	1,301	NA	NA	NA	NA	8.3	2.1	8.8	20.2	31.3	25,200	30.4	0.22	31.3	2.1	17.3	124
W-OABG	BG-151	HCS-BG-151	03/04/95	2	3	SS	12	NA	1	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-154	HCS-BG-154	10/27/98	2	3	SS	11	NA	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-155	HCS-BG-155	10/27/98	2	3	SS	11	NA	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-156	HCS-BG-156	10/27/98	2	3	SS	52	NA	11	900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-157	HCS-BG-157	10/27/98	2	3	SS	11	NA	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-158	HCS-BG-158	10/27/98	2	3	SS	7,100	NA	11	46,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-159/160	HCS-BG-159	10/27/98	2	3	SS	11	NA	11	21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-159/160	HCS-BG-160	10/27/98	4	6	SB	11	NA	11	57	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-163/164	HCS-BG-163	10/27/98	2	3	SS	11	NA	11	21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-163/164	HCS-BG-164	10/27/98	4	6	SB	11	NA	11	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-166	HCS-BG-166	10/27/98	2	3	SS	3	NA	11	92,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-167/168	HCS-BG-167	10/27/98	2	3	SS	11	NA	11	51,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-167/168	HCS-BG-168	10/27/98	4	6	SB	3	NA	13	720	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-169	HCS-BG-169	10/27/98	2	3	SS	11	NA	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-170	HCS-BG-170	10/27/98	2	3	SS	11	NA	11	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-172	HCS-BG-172	10/27/98	2	3	SS	11	NA	41	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-173	HCS-BG-173	10/27/98	2	3	SS	11	NA	4	390	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-174	HCS-BG-174	10/27/98	2	3	SS	6	NA	11	360,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-175/176	HCS-BG-175	10/27/98	2	3	SS	11	NA	11	99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-175/176	HCS-BG-176	10/27/98	4	6	SB	11	NA	11	530	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-177/178	HCS-BG-177	10/27/98	2	3	SS	11	NA	11	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-177/178	HCS-BG-178	10/27/98	4	6	SB	11	NA	11	160	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

1 - Red shading indicates maximum ratios >5; orange shading indicates maximum ratios between 1 and 5;

green shading indicates low magnitude (ratio ≤1.5) metal SRG exceedances

Gray shaded concentrations indicate detections; NA - Not Analyzed

Notes:
µg/kg = microgram per kilogram
COC = constituent of concern
ft = foot
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification
mg/kg = miligram per kilogram
RDX = Hexahydro-1,2,5-trinitro-1,3,5-triazine
SRG = site remediation goal
VOC = volatile organic compound

Table 13
Outside Active Burning Grounds - Industrial Removal Scenario (Baseline)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATION-to-SRG RATIOS																												
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)														
				INDUSTRIAL SRGs - Surface Soil (SS):																															
				INDUSTRIAL SRGs - Subsurface Soil (SB):																															
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (tota	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc	Maximum Ratio[1]	COC	Other COCs with Ratios > 5
W-OABG	22C-1	22C-1-T	10/26/95	0	1	SS															0.41	0.16	0.45		0.10	0.79	0.10	0.26	0.27	0.18	0.11	0.11	0.79		
W-OABG	22C-2	22C-2-T	10/26/95	0	1	SS																	0.16			0.19	0.01					0.02	0.19		
W-OABG	22D-1	22D-1-D	10/26/95	2	4	SS															0.41	0.06	0.32	0.25	0.09	0.76	0.03	0.34	0.22		0.12	0.08	0.76		
W-OABG	22D-1	22D-1-T	10/26/95	0	1	SS															0.27	0.11	0.52		0.13	0.35	0.10	3.29	0.11	0.27	0.09	0.22	3.29	Mercury	
W-OABG	AOCM-1	AOCM-1-T	10/26/01	0	1	SS					0.02		0.01		0.06	0.07					1.04		0.37	0.82	0.18	0.88	0.07	0.21	0.78	0.06	0.21	0.19	1.04	Arsenic	
W-OABG	AOCM-2	AOCM-2-T	10/26/01	0	1	SS					0.01		0.00		0.06	0.05					0.60		0.30	0.46	0.13	0.58	0.06	0.19	0.49	0.05	0.24	0.12	0.60		
E-OABG	AS01-SB21	AS01-SS21-(0-1)	10/25/01	0	1	SS				101	0.01	0.03	0.00		0.06	0.06					0.82	0.71	1.01	0.45	2.08	0.95	1.43	2.92	0.60	1.65	0.26	0.88	101	TCE	
E-OABG	AS01-SB22	AS01-SS22-(0-1)	10/25/01	0	1	SS				80.2	0.01	0.04	0.01		0.05	0.06					1.21	0.37	5.25	0.66	4.27	1.63	0.43	1.55	3.06	1.43	1.92	1.16	80.2	TCE	Chromium
W-OABG	AS01-SB23	AS01-SS23-(0-1)	10/26/01	0	1	SS					0.01		0.01		0.06	0.06					0.64		0.53	0.36	0.23	0.69	0.06	0.15	0.37	0.28	0.14	0.20	0.69		
W-OABG	AS01-SB24	AS01-SB24-(1-2)	10/24/01	1	2	SS									0.04						0.74		0.29	0.46	0.20	0.59	0.08	0.16	0.43		0.07	0.13	0.74		
W-OABG	AS01-SB24	AS01-SS24-(0-1)	10/24/01	0	1	SS					0.09	0.32	0.04	0.02	0.13	0.35					0.90	0.04	0.27	1.11	0.16	0.72	0.05	0.18	1.01	0.04	0.10	0.20	1.11	Cobalt	
W-OABG	AS01-SB25	AS01-SB25-(1-2)	10/24/01	1	2	SS					6.59	26.2	3.10	1.00	8.28	27.3					0.46		0.23	0.31	0.11	0.47	0.03	0.28	0.32	0.04	0.06	0.11	27.3	HMW PAH	Benzo(a)anthracene, Benzo(a)pyrene, LMW PAH
W-OABG	AS01-SB25	AS01-SS25-(0-1)	10/24/01	0	1	SS					0.08	0.36	0.05		0.12	0.34					1.14	0.05	0.36	1.06	0.19	0.91	0.06	0.17	0.99	0.09	0.13	0.21	1.14	Arsenic	
W-OABG	AS01-SB26	AS01-SB26-(1-2)	10/23/01	1	2	SS				30.9	0.01	0.06	0.01		0.06	0.07					1.29		0.49	0.54	0.26	1.03	0.09	0.43	0.54		0.12	0.18	30.9	TCE	
W-OABG	AS01-SB26	AS01-SS26-(0-1)	10/23/01	0	1	SS				0.15	0.02	0.08	0.01	0.20	0.06	0.12					1.15		0.42	0.84	0.22	0.97	0.07	0.11	1.07		0.15	0.18	1.15	Arsenic	
W-OABG	AS01-SB27	AS01-SB27-(1-2)	10/23/01	1	2	SS					0.02	0.09	0.02		0.05	0.11					0.92		0.39	0.39	0.15	0.88	0.05	0.22	0.37		0.11	0.11	0.92		
W-OABG	AS01-SB27	AS01-SS27-(0-1)	10/23/01	0	1	SS				0.02	0.02	0.08	0.01		0.06	0.10					0.69		0.27	0.74	0.16	0.62	0.06	0.09	0.71		0.09	0.14	0.74		
W-OABG	AS01-SB28	AS01-SS28-(0-1)	10/26/01	0	1	SS				0.01	0.01		0.01		0.06	0.05					0.81		0.30	0.80	0.15	0.75	0.05	0.43	0.76		0.11	0.15	0.81		
E-OABG	AS01-SB29	AS01-SS29-(0-1)	10/26/01	0	1	SS				0.02	0.01		0.00		0.06	0.07					0.90		0.31	0.76	0.14	0.75	0.06	0.10	0.69		0.13	0.14	0.90		
E-OABG	AS01-SB30	AS01-SB30-(1-2)	10/24/01	1	2	SS			0.01	16.0	0.04	0.16	0.02		0.08	0.18				0.13	1.94	0.71	2.62	0.77	1.31	3.43	3.24	2.80	0.81	1.01	0.15	0.85	16.0	TCE	
E-OABG	AS01-SB30	AS01-SS30-(0-1)	10/24/01	0	1	SS				0.03	0.03	0.11	0.01		0.06	0.13				0.04	0.66		0.22	0.98	0.14	0.53	0.05		0.96		0.08	0.18	0.98		
W-OABG	AS01-SB33	AS01-SS33-(0-1)	10/26/01	0	1	SS					0.03		0.01		0.07	0.11				0.14	1.12		0.36	0.80	0.18	0.94	0.05	0.11	0.74	0.04	0.12	0.16	1.12	Arsenic	
W-OABG	AS01-SB34	AS01-SB34-(1-2)	10/25/01	1	2	SS				0.03	0.02	0.09	0.01		0.05	0.12				0.76	0.94	0.72	0.87	0.78	3.95	1.15	0.27	0.35	0.94	2.24	0.46	0.92	3.95	Copper	
W-OABG	AS01-SB34	AS01-SS34-(0-1)	10/25/01	0	1	SS				0.01	0.04	0.16	0.02		0.06	0.17					1.03	0.05	0.35	1.15	0.24	0.91	0.06	0.25	1.01	0.23	0.12	0.24	1.15	Cobalt	
W-OABG	AS01-SB35	AS01-SS35-(0-1)	10/26/01	0	1	SS					0.02		0.01		0.05	0.08				0.06	0.86		0.30	0.75	0.15	0.78	0.06	0.11	0.70	0.04	0.11	0.16	0.86		
W-OABG	AS01-SB36	AS01-SB36-(1-2)	10/25/01	1	2	SS					0.01	0.03	0.00		0.05	0.05				0.15	0.63	0.07	0.29	0.30	0.18	0.69	0.06	0.09	0.29	0.14	0.08	0.19	0.69		
W-OABG	AS01-SB36	AS01-SS36-(0-1)	10/25/01	0	1	SS					0.01	0.05	0.01		0.05	0.07				0.18	1.12		0.39	0.78	0.18	0.98	0.06	0.11	0.72		0.13	0.17	1.12	Arsenic	
W-OABG	AS01-SB37	AS01-SS37-(0-1)	10/26/01	0	1	SS					0.02		0.01		0.06	0.08				0.24	0.81	0.04	0.48	0.56	0.64	0.70	0.13	0.17	0.60	0.07	0.19	0.31	0.81		
W-OABG	AS01-SB38	AS01-SB38-(1-2)	10/26/01	1	2	SS					0.02	0.08	0.01		0.05	0.08				0.01	0.67		0.33	0.29	0.09	0.79	0.04		0.24		0.11	0.07	0.79		
W-OABG	AS01-SB38	AS01-SS38-(0-1)	10/26/01	0	1	SS					0.02	0.07	0.01		0.06	0.08				0.19	0.57		0.32	0.41	0.11	0.58	0.05		0.41		0.13	0.09	0.58		
W-OABG	AS01-SB39	AS01-SB39-(1-2)	10/23/01	1	2	SS				19.8	0.04	0.15	0.02		0.07	0.17					1.34	0.05	0.56	0.54	0.28	0.96	0.11	0.49	0.55		0.12	0.19	19.8	TCE	
W-OABG	AS01-SB39	AS01-SS39-(0-1)	10/23/01	0	1	SS				0.22	0.01	0.05	0.01		0.05	0.07					0.82		0.29	0.73	0.15	0.65	0.06		0.70		0.09	0.14	0.82		
E-OABG	AS01-SB40	AS01-SB40-(1-2)	10/24/01	1	2	SS			0.01	0.02	0.03	0.15	0.02		0.08	0.18				0.06	0.63		0.31	0.37	0.13	0.59	0.07	0.22	0.32		0.08	0.09	0.63		
E-OABG	AS01-SB40	AS01-SS40-(0-1)	10/24/01	0	1	SS				0.03	0.02	0.07	0.01		0.05	0.08				0.56	1.56	4.87	0.70	0.82	3.84	1.99	0.53	0.11	1.01		0.17	1.20	4.87	Cadmium	
E-OABG	AS01-SB41	AS01-SB41-(1-2)	10/24/01	1	2	SS				0.04	0.03	0.10	0.01		0.06	0.11				0.01	0.89		0.28	0.40	0.15	0.75	0.06	0.16	0.39		0.09	0.14	0.89		
E-OABG	AS01-SB41	AS01-SS41-(0-1)	10/24/01	0	1	SS					0.02	0.09	0.01		0.05	0.10				0.11	1.02	0.05	0.33	0.84	0.17	0.83	0.07	0.11	0.81		0.13	0.16	1.02	Arsenic	
W-OABG	AS01-SB46	AS01-SS46-0-1	07/20/04	0	1	SS		0.01			0.01	0.04	0.01		0.03	0.04					0.69		0.33	0.89	0.15	0.83	0.05	0.11	0.82		0.11	0.16	0.89		
W-OABG	AS01-SB47	AS01-SS47-0-1	07/20/04	0	1	SS					0.01	0.07	0.01		0.02	0.06					0.74		0.37	0.80	0.18	0.88	0.06	0.60	0.77	0.07	0.12	0.19	0.88		
W-OABG	AS01-SB48	AS01-SS48-0-1	07/20/04	0	1	SS		2.83		4.44	0.01	0.04	0.01		0.03	0.04					0.53		0.33	0.45	0.17	0.79	0.06	0.62	0.47	0.08	0.13	0.14	4.44	TCE	
W-OABG	AS01-SB49	AS01-SS49-0-1	07/20/04	0	1	SS		1.50		1.22	0.85	4.29	1.00		0.51	4.02					0.78		0.46	0.66	0.17	0.91	0.06	0.22	0.70		0.13	0.15	4.29	Benzo(a)pyrene	
E-OABG	AS01-SB50	AS01-SS50-0-1	07/21/04	0	1	SS		0.04			0.00	0.01	0.00		0.03	0.01				0.03	0.37		0.24	0.20	0.07	0.59	0.09	0.06	0.20		0.09	0.05	0.59		
E-OABG	AS01-SB51	AS01-SS51-0-1	07/21/04	0	1	SS		1.07	0.66	3.33	0.00	0.02	0.00		0.03	0.02				0.44	0.53	0.75	0.55	0.46	0.49	0.87	0.28	0.16	0.47		0.15	0.72	3.33	TCE	
E-OABG	AS01-SB52	AS01-SS52-0-1	07/21/04	0	1	SS		1.00	0.51	7.90	0.01	0.03	0.00		0.04	0.02				1.25	0.54	0.26	1.00	0.39	1.00	1.60	0.75	1.30	0.64	0.06	0.13	1.00	7.90	TCE	
E-OABG	AS01-SB53	AS01-SS53-0-1	07/21/04	0	1	SS				44.4	0.00	0.02	0.00		0.03	0.02				1.40	0.78	0.63	1.49	0.38	1.12	0.81	1.67	0.62	0.90	1.00	1.00	1.20	44.4	TCE	
E-OABG	AS01-SB54	AS01-SS54-0-1	07/21/04	0	1	SS					0.01	0.06	0.01		0.03	0.05				0.19	0.80		0.40	0.71	0.17	0.91	0.06	0.19	0.72		0.15	0.15	0.91		
W-OABG	AS01-SB56	AS01-SS56-0-1	07/21/04	0	1	SS					0.01	0.05	0.01		0.03	0.05				0.17	0.74		0.37	0.82	0.16	0.89	0.05	0.16	0.76		0.13	0.17	0.89		
W-OABG	AS01-SB57	AS01-SS57-0-1	07/21/04	0	1	SS					0.92	5.71	0.76		2.18	4.58				0.28	0.70	0.30	1.39	0.30	2.04	0.85	1.20	0.27	0.58	0.13	0.34	0.72	5.71	Benzo(a)pyrene	
E-OABG	AS01-SB58	AS01-SS58-0-1	07/21/04	0	1	SS					0.01	0.04	0.01		0.03	0.04				0.46	0.70		0.33	0.76	0.16	0.81	0.06	0.14	0.73		0.13	0.15	0.81		
E-OABG	AS01-SB59	AS01-SS59-0-1	07/21/04	0	1	SS					0.01	0.05	0.01		0.03	0.05				0.12	0.79		0.38	0.80	0.17	0.91	0.06	0.15	0.80		0.14	0.15	0.91		
E-OABG	AS01-SB71	AS01-SB71-1_5-2	09/23/04	1.5	2	SS			0.02	0.02			0.00		0.06	0.09	0.15		1.17	0.02	0.44	0.03	0.33	0.26	0.09	0.66	0.05	0.17	0.27	0.02	0.08	0.07	1.17	RDX	
E-OABG	AS01-SB71	AS01-SS71-0-0_5	09/23/04	0	1	SS									0.07		0.05		0.68	0.05	0.59	0.10	0.35	0.52	0.14	0.81	0.08	0.14	0.55	0.02	0.14	0.15	0.81		
E-OABG	AS01-SB72	AS01-SB72-4_5-5	09/23/04	4.5	5	SB			10.0	95.1								81.1	15.0	1.03	0.24	1.10		0.97	0.04	0.90	0.98	0.58					95.1	TCE	Tetrachloroethene, RDX, Nitroglycerin
E-OABG	AS01-SB72	AS01-SS72-0-0_5	09/23/04	0	1	SS		5.33	0.38	5.43							53.0	1.35	60.8	3.63	0.45	21.4	7.47	0.53	0.98	1.52	1.04	35.0	0.71	0.29	0.10	1.76	60.8	RDX	Methyl acetate, TCE, HMX, Cadmium, Chromium, Mercury
E-OABG	AS01-SB73	AS01-SB73-1_5-2	09/23/04	1.5	2	SS				210							0.01			0.02	0.44		0.30	0.29	0.09	0.78	0.03	0.11	0.29	0.01	0.10	0.07	210	TCE	
E-OABG	AS01-SB73	AS01-SS73-0-0_5	09/23/04	0	1	SS				27.2							0.01			0.25	0.54	0.12	0.88	0.31	0.68	1.14	0.14	0.26	0.47	0.97	0.17	0.27	27.2	TCE	
E-OABG	AS01-SB74	AS01-SB74-4-4_5	09/23/04	4	5	SS			0.00	0.07							0.01			0.07	0.44	0.67	6.60	1.03	53.8	0.94	1.10	0.11	4.43	0.46	0.31	0.86	53.8	Copper	Chromium
E-OABG	AS01-SB74	AS01-SS74-0-0_5	09/23/04	0	1	SS				0.01					0.06					0.07	0.47	0.04	0.73	0.35	0.38	0.89	0.09	0.21	0.37	0.02	0.11	0.16	0.89		
W-OABG	AS01-TP02	AS01-TP02-0910	03/18/08	9	10	SB														0.00	0.41	0.00		0.32	0.00	1.00	0.01						0.997		

Table 13
Outside Active Burning Grounds - Industrial Removal Scenario (Baseline)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATION-to-SRG RATIOS																												
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)														
						INDUSTRIAL SRGs - Surface Soil (SS): INDUSTRIAL SRGs - Subsurface Soil (SB):																														
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (total)	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc	Maximum Ratio[1]	COC	Other COCs with Ratios > 5
W-OABG	AS01-TP03	AS01-TP03-0910	03/18/08	9	10	SB														0.00	0.31	0.00		0.56	0.00	0.73	0.01						0.73		
W-OABG	AS01-TP04	AS01-TP04-0910	03/18/08	9	10	SB														0.00	0.25	0.00		0.33	0.00	0.60	0.01						0.60		
W-OABG	AS01-TP05	AS01-DC01-0506	03/19/08	5	6	SB				9.38	0.02	0.09	0.01							0.80	0.39	0.06		0.97	0.06	0.83	0.21	0.13					9.38	TCE	
W-OABG	AS01-TP05	AS01-TP05-0910	03/19/08	9	10	SB				0.04	0.02	0.07	0.01							0.42	0.42	0.05		0.81	0.03	0.87	0.18	0.07					0.87		
W-OABG	AS01-TP06	AS01-TP06-0910	03/19/08	9	10	SB				0.05										0.00	0.29	0.00		0.18	0.00	0.82	0.01						0.82		
W-OABG	AS01-TP07	AS01-DC03-0304	03/20/08	3	4	SS									0.06	0.10				0.16	0.49	0.06	0.65	0.26	2.23	0.94	0.13	0.03	0.36	0.03	0.11	0.79	2.23	Copper	
W-OABG	AS01-TP07	AS01-TP07-0910	03/20/08	9	10	SB														0.00	0.35	0.00		0.33	0.00	0.78	0.01	0.00					0.78		
W-OABG	AS01-TP08	AS01-TP08-0910	03/20/08	9	10	SB														0.00	0.27	0.00		0.41	0.00	0.63	0.01						0.63		
W-OABG	AS01-TP09	AS01-DC02-0405	03/20/08	4	5	SS				0.02		0.05	0.01		0.06	0.06				0.32	0.45	0.48	0.86	0.25	0.27	0.66	0.23		2.59	0.04	5.75	0.62	5.75	Vanadium	
W-OABG	AS01-TP09	AS01-TP09-0910	03/20/08	9	10	SB				0.03										0.00	0.31	0.00		0.63	0.00	0.75	0.01						0.75		
W-OABG	AS01-TP10	AS01-TP10-0910	03/24/08	9	10	SB				0.10											0.31	0.00		0.59	0.00	0.80	0.01						0.80		
W-OABG	AS01-TP11	AS01-TP11-0910	03/24/08	9	10	SB				0.03											0.44	0.00		0.68	0.00	0.67	0.04						0.68		
W-OABG	AS01-TP12	AS01-TP12-0809	03/25/08	8	9	SB				0.19											0.37	0.00		0.48	0.00	0.81	0.01						0.81		
W-OABG	AS01-TP13	AS01-TP13-0910	03/25/08	9	10	SB				8.52											0.29	0.00		0.50	0.00	0.62	0.01						8.52	TCE	
W-OABG	AS01-TP14	AS01-DC04-0304	03/25/08	3	4	SS				32.1											0.32	0.02	0.22	0.22	0.08	0.55	0.02		0.24	0.00	0.08	0.05	32.1	TCE	
W-OABG	AS01-TP14	AS01-TP14-0910	03/25/08	9	10	SB				114											0.58	0.00		0.91	0.00	0.78	0.04	0.02					114	TCE	
W-OABG	AS01-TP15	AS01-TP15-0910	03/25/08	9	10	SB				13.6											0.29	0.00		0.48	0.00	0.66	0.01						13.6	TCE	
C-OABG	AS01-TP16	AS01-TP16-0809	03/25/08	8	9	SB				0.08										0.05	0.70	0.01		1.25	0.00	0.97	0.05	0.01					1.25	Cobalt	
C-OABG	AS01-TP17	AS01-TP17-0809	03/25/08	8	9	SB														0.26	0.63	0.01		1.10	0.00	0.90	0.04						1.10	Cobalt	
C-OABG	AS01-TP18	AS01-TP18-0910	03/26/08	9	10	SB															0.29	0.00		0.44	0.00	0.63	0.01						0.63		
C-OABG	AS01-TP19	AS01-TP19-0910	03/26/08	9	10	SB				0.01											0.24	0.00		0.41	0.00	0.53	0.01						0.53		
C-OABG	AS01-TP20	AS01-TP20-0910	03/26/08	9	10	SB															0.24	0.00		0.38	0.00	0.58	0.01						0.58		
C-OABG	AS01-TP21	AS01-TP21-0910	03/26/08	9	10	SB				0.01											0.23	0.00		0.37	0.00	0.52	0.01						0.52		
C-OABG	AS01-TP22	AS01-TP22-0910	03/26/08	9	10	SB				0.04										0.00	0.29	0.00		0.43	0.00	0.65	0.01						0.65		
E-OABG	AS01-TP23	AS01-DC12-0102	03/31/08	1	2	SS						0.07				0.09					0.37	0.03	0.24	0.18	0.09	0.54	0.12	0.11	0.21	0.02	0.09	0.07	0.54		
E-OABG	AS01-TP23	AS01-TP23-0910	03/31/08	9	10	SB				0.00											0.28	0.00		0.40	0.00	0.65	0.01	0.00					0.65		
E-OABG	AS01-TP24	AS01-TP24-0910	03/27/08	9	10	SB				0.01										0.00	0.28	0.00		0.44	0.00	0.65	0.01						0.65		
E-OABG	AS01-TP25	AS01-DC13-0304	04/01/08	3	4	SS				0.01										0.00	0.51	0.11	0.74	0.22	0.12	0.72	0.06	0.19	1.20	0.02	0.12	0.22	1.20	Nickel	
E-OABG	AS01-TP25	AS01-TP25-0910	04/01/08	9	10	SB			0.00	0.02										0.00	0.33	0.00		0.44	0.00	0.74	0.04						0.74		
E-OABG	AS01-TP26	AS01-TP26-0910	03/31/08	9	10	SB			0.03	0.04											0.24	0.00		0.42	0.00	0.56	0.01	0.00					0.56		
E-OABG	AS01-TP27	AS01-DC10-0405	03/28/08	4	5	SS			0.02	0.11											0.39	0.08	0.35	0.24	0.18	0.66	0.21	0.28	0.41	0.05	0.09	0.21	0.66		
E-OABG	AS01-TP27	AS01-TP27-0910	03/28/08	9	10	SB			0.02	0.08											0.31	0.01		0.49	0.00	0.70	0.01						0.70		
E-OABG	AS01-TP28	AS01-DC09-0304	03/28/08	3	4	SS			1.00	32.1											0.39	0.43	0.92	0.34	2.36	0.70	0.85	0.93	0.70	1.29	0.15	1.32	32.1	TCE	
E-OABG	AS01-TP28	AS01-TP28-0910	03/28/08	9	10	SB			0.02	14.8											0.29	0.00		0.37	0.00	0.76	0.01						14.8	TCE	
E-OABG	AS01-TP29	AS01-DC08-0304	03/28/08	3	4	SS				86.4										0.01	0.38	0.06	0.28	0.20	0.09	0.72	0.03	3.04	0.25	0.10	0.10	0.24	86.4	TCE	
E-OABG	AS01-TP29	AS01-TP29-0910	03/28/08	9	10	SB				568											0.29	0.00		0.26	0.00	0.70	0.01						568	TCE	
E-OABG	AS01-TP30	AS01-DC05-0203	03/27/08	2	3	SS				0.01					0.06	0.09					0.59	0.48	1.82	0.49	3.08	0.87	0.25	1.24	0.97	0.11	0.11	0.72	3.08	Copper	
E-OABG	AS01-TP30	AS01-TP30-0910	03/27/08	9	10	SB				0.00	0.01	0.05	0.01								0.38	0.01		1.09	0.04	0.60	0.04						1.09	Cobalt	
W-OABG	AS01-TP32	AS01-TP32-0910	03/24/08	9	10	SB				0.04	0.02	0.06	0.01								0.65	0.00		1.00	0.00	0.87	0.06						1.00	Cobalt	
W-OABG	AS01-TP33	AS01-TP33-0607	03/25/08	6	7	SB				0.21											0.31	0.00		0.47	0.00	0.62	0.01						0.62		
C-OABG	AS01-TP34	AS01-TP34-0910	03/26/08	9	10	SB				0.01											0.21	0.00		0.33	0.00	0.48	0.01						0.48		
E-OABG	AS01-TP35	AS01-DC11-0203	03/31/08	2	3	SS															0.29	0.02	0.25	0.19	0.07	0.62	0.06	0.07	0.19	0.03	0.09	0.06	0.62		
E-OABG	AS01-TP35	AS01-TP35-0910	03/31/08	9	10	SB				0.01											0.29	0.01		0.53	0.00	0.68	0.01	0.00					0.68		
E-OABG	AS01-TP36	AS01-DC07-0304	03/27/08	3	4	SS			0.00	284											0.28	0.02	0.18	0.21	0.06	0.46	0.02		0.20	0.00	0.06	0.04	284	TCE	
E-OABG	AS01-TP36	AS01-TP36-0910	03/27/08	9	10	SB			0.00	901										0.04	0.26	0.00		0.39	0.00	0.54	0.01						901	TCE	
E-OABG	AS01-TP37	AS01-DC06-0203	03/27/08	2	3	SS				0.02	0.01		0.01		0.07	0.08					0.63	0.05	0.37	0.38	0.21	0.71	0.07	0.42	0.41	0.09	0.09	0.17	0.71		
E-OABG	AS01-TP37	AS01-TP37-0910	03/27/08	9	10	SB				0.02											0.48	0.01		0.61	0.00	0.60	0.08	0.01					0.61		
E-OABG	AS01-TP38	AS01-TP38-0910	03/27/08	9	10	SB				0.01											0.33	0.00		1.81	0.00	0.64	0.02						1.81	Cobalt	
E-OABG	B1-003	HCS-B1-3-1	07/17/92	1	2	SS															0.28	0.20	1.10	0.28	0.32	0.80	0.22	0.17	0.33	0.03	0.10	0.33	1.10	Chromium	
E-OABG	B1-003	HCS-B1-3-S	07/17/92	0.5	1	SS															0.90	1.32	1.20	0.54	1.22	0.76	1.01	0.35	0.56	0.14	0.20	1.10	1.32	Cadmium	
E-OABG	B1-004	HCS-B1-4-S	07/17/92	0.5	1	SS															0.53	3.28	2.34	0.76	3.08	3.43	15.4	0.62	1.36	0.30	0.10	3.30	15.4	Lead	
E-OABG	B1-011	HCS-B1-11-2	07/17/92	0.5	1	SS															0.80	2.69	2.34	0.51	5.49	2.28	1.26	2.86	1.30	2.44	0.56	2.86	5.49	Copper	
E-OABG	B1-011	HCS-B1-11-S	07/17/92	1	2	SS															0.89	8.85	2.41	0.60	3.38	1.28	8.51	1.55	0.95	0.58	0.18	1.85	8.85	Cadmium	Lead
E-OABG	B1-12S/12	HCS-B1-12-1	11/16/94	0	1	SS																											0.00		
E-OABG	B1-12S/12	HCS-B1-12-S	11/16/94	0	1	SS					0.01		0.00		0.07	0.09																	0.09		
E-OABG	B1-13S/13	HCS-B1-13-1	11/16/94	0	1	SS					0.01	0.03	0.00		0.05	0.04																	0.05		
E-OABG	B1-13S/13	HCS-B1-13-S	11/16/94	0	1	SS																											0.00		
E-OABG	B1-C	HCS-B1-C	07/17/92	0	1	SS														2.31	0.46	0.19	0.23	0.11	0.32	0.29	6.36	1.30	0.15	0.21	0.03	0.25	6.36	Lead	
E-OABG	B1-CS	HCS-B1-CS	06/20/94	1	2	SS																											0.00		
W-OABG	B2-003	HCS-B2-3-4	07/17/92	3	4	SS															0.48		0.74	0.40	0.54	0.80	0.09	0.20	0.70	0.15	0.62	0.35	0.80		
W-OABG	B2-003	HCS-B2-3-S	07/17/92	2	3	SS															0.59	0.30	1.29	0.47	2.29	0.90	2.08	0.75	0.63	1.85	0.19	0.58	2.29	Copper	
W-OABG	B2-004	HCS-B2-4-4	07/17/92	3	4	SS					0.19	0.67	0.07	0.11	0.25	0.64																	0.67		
W-OABG	B2-005	HCS-B2-5-3	07/17/92	2	3	SS					0.08	0.33	0.03		0.10	0.31																	0.33		
W-OABG	B2-006	HCS-B2-6-3	07/17/92	2	3	SS					0.01	0.04	0.00		0.07	0.06																	0.07		
W-OABG	B2-007	HCS-B2-7-3	07/17/92	2	3	SS															0.43		0.36	0.36	0.22	0.85	0.10	0.25	0.48	0.05	0.08	0.14	0.85		
W-OABG	B2-007	HCS-B2-7-S	07/17/92	1	2	SS															0.89	0.11	0.70	0.49	8.50	0.71	0.35	1.68	0.51	2.84	0.48	0.54	8.50	Copper	
W-OABG	B2-010	HCS-B2-10	07/17/92	5	6	SB															0.69	0.29		1.46	0.18	0.95	0.57	0.43					1.46	Cobalt	
W-OABG	B2-C	HCS-B2-C	07/17/92	0.5	1	SS														1.96	0.81	0.39	0.80	0.49	1.38	0.90	0.25	1.99	0.85	1.51	0.44	0.73	1.99	Mercury	
E-OABG	BG-003	HCS-BG-3	07/13/92	3	4	SS				0.01																							0.01		
W-OABG	BG-015	HCS-BG-15	07/13/92	3	4	SS				0.03																							0.03		
E-OABG	BG-023/023S/083	HCS-BG-23S	06/21/94	0	1	SS																											0.00		
E-OABG	BG-084/084S/106	HCS-BG-106	07/13/92	11	12	SB				3.09																							3.09	TCE	

Table 13
Outside Active Burning Grounds - Industrial Removal Scenario (Baseline)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATION-to-SRG RATIOS																												
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)														
						INDUSTRIAL SRGs - Surface Soil (SS): INDUSTRIAL SRGs - Subsurface Soil (SB):																														
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (tota	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc	Maximum Ratio[1]	COC	Other COCs with Ratios > 5
E-OABG	BG-084/084S/106	HCS-BG-84	07/13/92	3	4	SS				0.12																							0.12		
E-OABG	BG-084/084S/106	HCS-BG-84S	06/20/94	0	1	SS				0.14																							0.14		
W-OABG	BG-098/098S	HCS-BG-98S	11/16/94	0	1	SS				33.3	0.01	0.03	0.00		0.07	0.05					0.99		0.55	0.60	0.30	1.08	0.07	0.29	0.65	0.08	0.15	0.18	33.3	TCE	
W-OABG	BG-099	HCS-BG-99	07/13/92	2	3	SS				0.01																							0.01		
W-OABG	BG-099	HCS-BG-99R	07/13/92	2	3	SS				0.01																							0.01		
E-OABG	BG-102/102S	HCS-BG-102	07/13/92	1	2	SS	0.58		1.27	30.9																							30.9	TCE	
E-OABG	BG-102/102S	HCS-BG-102S	11/16/94	0	1	SS			0.03	1.10	0.01	0.04	0.01		0.06	0.05					0.71		0.31	0.74	0.15	0.92	0.05	0.09	0.75		0.12	0.18	1.10	TCE	
E-OABG	BG-110/110S	HCS-BG-110	07/13/92	2	3	SS	60.0			42.0																							60.0	1,2-DCE	TCE
E-OABG	BG-110/110S	HCS-BG-110S	11/16/94	0	1	SS	35.6			32.1	0.01	0.03	0.00		0.06	0.04					0.64		0.28	1.06	0.13	0.81	0.05	0.06	0.97		0.11	0.20	35.6	1,2-DCE	TCE
W-OABG	BG-112	HCS-BG-112	07/13/92	2	3	SS	0.07			0.07																							0.07		
W-OABG	BG-112	HCS-BG-112R	07/13/92	2	3	SS				0.02																							0.02		
W-OABG	BG-113	HCS-BG-113	07/13/92	2	3	SS				116																							116	TCE	
W-OABG	BG-113	HCS-BG-113S	11/15/94	0	1	SS				9.88	0.01	0.04	0.01	0.03	0.07	0.07					0.93	0.18	0.47	0.71	0.20	0.99	0.07	0.30	0.68	0.06	0.14	0.16	9.88	TCE	
W-OABG	BG-134	HCS-BG-134	11/16/94	2	3	SS	5.11			284																							284	TCE	1,2-DCE
W-OABG	BG-135	HCS-BG-135	11/16/94	2	3	SS			0.00	0.09																							0.09		
W-OABG	BG-136	HCS-BG-136	11/16/94	2	3	SS	0.02			0.90																							0.90		
W-OABG	BG-137	HCS-BG-137	11/16/94	2	3	SS				0.01																							0.01		
W-OABG	BG-138	HCS-BG-138	11/16/94	2	3	SS	2.89			173																							173	TCE	
W-OABG	BG-139	HCS-BG-139	11/15/94	2	3	SS				5.43																							5.43	TCE	
W-OABG	BG-140	HCS-BG-140	11/15/94	2	3	SS	0.00			0.05																							0.05		
W-OABG	BG-141	HCS-BG-141	11/16/94	2	3	SS				0.01																							0.01		
W-OABG	BG-142	HCS-BG-142	11/16/94	2	3	SS	0.03			0.20																							0.20		
E-OABG	BG-143	HCS-BG-143	11/16/94	2	3	SS				0.02																							0.02		
E-OABG	BG-144	HCS-BG-144	11/16/94	2	3	SS				0.03																							0.03		
E-OABG	BG-145	HCS-BG-145	11/16/94	2	3	SS	0.00			0.01																							0.01		
E-OABG	BG-146	HCS-BG-146	11/16/94	2	3	SS			2.00	24.7																							24.7	TCE	
E-OABG	BG-147	HCS-BG-147	11/16/94	2	3	SS	1.87		0.44	65.4																							65.4	TCE	
E-OABG	BG-148	HCS-BG-148	11/16/94	2	3	SS	53.3		0.15	79.0																							79.0	TCE	1,2-DCE
E-OABG	BG-149	HCS-BG-149	11/16/94	2	3	SS				7.90																							7.90	TCE	
W-OABG	BG-150	HCS-BG-150	11/15/94	2	3	SS				21.0	0.01	0.04			0.05	0.07					0.52		0.21	0.39	0.12	0.71	0.04	0.14	0.40	0.05	0.10	0.11	21.0	TCE	
W-OABG	BG-151	HCS-BG-151	03/04/95	2	3	SS			0.00																								0.00		
W-OABG	BG-154	HCS-BG-154	10/27/98	2	3	SS																											0.00		
W-OABG	BG-155	HCS-BG-155	10/27/98	2	3	SS																											0.00		
W-OABG	BG-156	HCS-BG-156	10/27/98	2	3	SS	0.12			1.11																							1.11	TCE	
W-OABG	BG-157	HCS-BG-157	10/27/98	2	3	SS																											0.00		
W-OABG	BG-158	HCS-BG-158	10/27/98	2	3	SS	15.8			56.8																							56.8	TCE	1,2-DCE
W-OABG	BG-159/160	HCS-BG-159	10/27/98	2	3	SS				0.03																							0.03		
W-OABG	BG-159/160	HCS-BG-160	10/27/98	4	6	SB				0.07																							0.07		
W-OABG	BG-163/164	HCS-BG-163	10/27/98	2	3	SS				0.03																							0.03		
W-OABG	BG-163/164	HCS-BG-164	10/27/98	4	6	SB				0.00																							0.00		
W-OABG	BG-166	HCS-BG-166	10/27/98	2	3	SS	0.01			114																							114	TCE	
W-OABG	BG-167/168	HCS-BG-167	10/27/98	2	3	SS				63.0																							63.0	TCE	
W-OABG	BG-167/168	HCS-BG-168	10/27/98	4	6	SB	0.00			0.89																							0.89		
E-OABG	BG-169	HCS-BG-169	10/27/98	2	3	SS																											0.00		
E-OABG	BG-170	HCS-BG-170	10/27/98	2	3	SS				0.01																							0.01		
E-OABG	BG-172	HCS-BG-172	10/27/98	2	3	SS			0.04	0.86																							0.86		
E-OABG	BG-173	HCS-BG-173	10/27/98	2	3	SS			0.00	0.48																							0.48		
E-OABG	BG-174	HCS-BG-174	10/27/98	2	3	SS	0.01			444																							444	TCE	
E-OABG	BG-175/176	HCS-BG-175	10/27/98	2	3	SS				0.12																							0.12		
E-OABG	BG-175/176	HCS-BG-176	10/27/98	4	6	SB				0.65																							0.65		
E-OABG	BG-177/178	HCS-BG-177	10/27/98	2	3	SS				0.05																							0.05		
E-OABG	BG-177/178	HCS-BG-178	10/27/98	4	6	SB				0.20																							0.20		

1 - Red shading indicates maximum ratios >5; orange shading indicates maximum ratios between 1 and 5;

green shading indicates low magnitude (ratio ≤1.5) metal SRG exceedances

Gray shaded concentrations indicate detections; NA - Not Analyzed

Notes:
µg/kg = microgram per kilogram
COC = constituent of concern
ft = foot
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification
mg/kg = miiligram per kilogram
RDX = Hexahydro-1,2,5-trinitro-1,3,5-triazine
SRG = site remediation goal
VOC = volatile organic compound

Table 14
Outside Active Burning Grounds - Industrial Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS																									
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)											
						INDUSTRIAL SRGs - Surface Soil (SS):	450	300	1,100	810	8,800	2,100	21,000	2,100	29,000	18,000	10,000	370	120	9.60E-05	16.0	17.4	42.7	52.3	253	35,600	785	1.61	78.4	42.6	173	1,170
						INDUSTRIAL SRGs - Subsurface Soil (SB):	8,400	N/A	1,100	810	8,800	2,100	21,000	2,100	N/A	N/A	N/A	370	120	1.80E-04	16.0	130	N/A	20.9	11,000	33,000	830	39.0	N/A	N/A	N/A	N/A
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (total)	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc
W-OABG	22C-1	22C-1-T	10/26/95	0	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	52	52	NA	6.6	2.7	19.3	10.6	25.6	28,300	74.9	0.42	21.4	7.7	18.9	123
W-OABG	22C-2	22C-2-T	10/26/95	0	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	38	38	NA	1.5	0.58	7	1.6	5.2	6,820	6.5	0.06	2.3	1.6	10.3	23.6
W-OABG	22D-1	22D-1-D	10/26/95	2	4	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.5	1.1	13.6	13	22.1	26,900	22.1	0.55	17	0.82	21.6	88.6
W-OABG	22D-1	22D-1-T	10/26/95	0	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.3	2	22	5	33.9	12,400	80.1	5.3	8.4	11.6	15.9	261
W-OABG	AOCM-1	AOCM-1-T	10/26/01	0	1	SS	NA	14	14	14	140	130	160	460	1,714	1,291	NA	NA	NA	NA	16.6	0.84	15.6	42.8	46	31,200	53.3	0.34	60.9	2.6	37.1	220
W-OABG	AOCM-2	AOCM-2-T	10/26/01	0	1	SS	NA	13	13	13	100	83	100	420	1,708	867	NA	NA	NA	NA	9.6	0.76	13	24	33.3	20,600	43.5	0.31	38.2	2	41.2	144
E-OABG	AS01-SB21	AS01-SS21-(0-1)	10/25/01	0	1	SS	NA	12	12	82,000	61	55	97	390	1,605	1,082	NA	NA	NA	NA	13.1	12.4	43.3	23.7	526	33,800	1,120	4.7	47.4	70.3	44.6	1,030
E-OABG	AS01-SB22	AS01-SS22-(0-1)	10/25/01	0	1	SS	NA	11	11	65,000	78	79	110	380	1,580	1,049	NA	NA	NA	NA	19.3	6.5	224	34.5	1,080	57,900	337	2.5	240	61	332	1,360
W-OABG	AS01-SB23	AS01-SS23-(0-1)	10/26/01	0	1	SS	NA	12	12	12	110	120	190	390	1,685	1,146	NA	NA	NA	NA	10.2	0.69	22.5	18.9	57.4	24,700	46	0.24	29.3	12.1	24.3	235
W-OABG	AS01-SB24	AS01-SB24-(1-2)	10/24/01	1	2	SS	NA	11	11	11	350	350	350	350	1,195	1,575	NA	NA	NA	NA	11.9	0.67	12.3	24.3	50.7	20,900	59.1	0.26	34.1	1.1	12.6	148
W-OABG	AS01-SB24	AS01-SS24-(0-1)	10/24/01	0	1	SS	NA	11	11	11	760	680	840	51	3,682	6,291	NA	NA	NA	NA	14.4	0.77	11.6	58.2	41	25,800	42.4	0.29	79.5	1.8	16.5	231
W-OABG	AS01-SB25	AS01-SB25-(1-2)	10/24/01	1	2	SS	NA	11	11	11	58,000	55,000	65,000	2,100	240,060	492,100	NA	NA	NA	NA	7.3	0.64	10	16.2	27.8	16,900	21.8	0.45	25	1.9	10.4	131
W-OABG	AS01-SB25	AS01-SS25-(0-1)	10/24/01	0	1	SS	NA	12	12	12	680	750	970	390	3,453	6,205	NA	NA	NA	NA	18.2	0.93	15.4	55.6	48.2	32,300	47.6	0.28	77.3	4	22.2	246
W-OABG	AS01-SB26	AS01-SB26-(1-2)	10/23/01	1	2	SS	NA	12	12	25,000	130	130	170	400	1,760	1,338	NA	NA	NA	NA	20.6	0.72	20.8	28	64.9	36,500	73.4	0.7	42.1	1.2	21.4	212
W-OABG	AS01-SB26	AS01-SS26-(0-1)	10/23/01	0	1	SS	NA	13	13	120	180	160	240	430	1,867	2,109	NA	NA	NA	NA	18.4	0.77	17.9	43.9	55.2	34,500	55.1	0.18	83.7	1.3	25.7	207
W-OABG	AS01-SB27	AS01-SB27-(1-2)	10/23/01	1	2	SS	NA	12	12	12	180	190	330	360	1,314	1,916	NA	NA	NA	NA	14.7	0.72	16.8	20.4	37.3	31,500	38.7	0.35	28.7	1.2	19.7	127
W-OABG	AS01-SB27	AS01-SS27-(0-1)	10/23/01	0	1	SS	NA	14	14	18	180	170	260	420	1,781	1,832	NA	NA	NA	NA	11	0.8	11.4	38.7	40.2	21,900	46.7	0.14	56	1.3	16.3	168
W-OABG	AS01-SB28	AS01-SS28-(0-1)	10/26/01	0	1	SS	NA	12	12	9.1	100	100	120	410	1,765	970	NA	NA	NA	NA	13	0.74	12.6	41.8	37.4	26,800	42.2	0.69	59.5	1.2	18.8	176
E-OABG	AS01-SB29	AS01-SS29-(0-1)	10/26/01	0	1	SS	NA	13	13	13	83	84	98	420	1,740	1,228	620	62,000	620	NA	14.4	0.75	13.4	39.7	35.6	26,800	45.3	0.16	54	1.3	23.2	161
E-OABG	AS01-SB30	AS01-SB30-(1-2)	10/24/01	1	2	SS	NA	12	6.1	13,000	370	330	320	390	2,314	3,165	590	59,000	590	1.22E-05	31	12.4	112	40.3	332	122,000	2,540	4.5	63.6	43.1	26.6	999
E-OABG	AS01-SB30	AS01-SS30-(0-1)	10/24/01	0	1	SS	NA	14	14	26	220	240	290	440	1,844	2,286	670	67,000	670	3.72E-06	10.5	0.82	9.5	51.1	36.2	18,900	38.1	0.14	75.4	1.4	13.4	206
W-OABG	AS01-SB33	AS01-SS33-(0-1)	10/26/01	0	1	SS	NA	12	12	12	250	220	270	410	2,120	1,931	610	61,000	610	1.36E-05	17.9	0.75	15.3	41.7	45	33,600	40.8	0.18	58.3	1.7	20.7	189
W-OABG	AS01-SB34	AS01-SB34-(1-2)	10/25/01	1	2	SS	NA	12	12	23	210	190	280	390	1,570	2,116	600	60,000	600	7.28E-05	15.0	12.6	37.1	40.7	999	40,900	210	0.57	73.7	95.3	80.3	1,080
W-OABG	AS01-SB34	AS01-SS34-(0-1)	10/25/01	0	1	SS	NA	13	13	4.4	340	340	380	420	1,811	3,020	630	63,000	630	NA	16.5	0.93	15.0	60	59.8	32,300	49.7	0.41	78.9	9.8	21.4	283
W-OABG	AS01-SB35	AS01-SS35-(0-1)	10/26/01	0	1	SS	NA	12	12	12	160	180	120	400	1,485	1,440	580	58,000	580	5.54E-06	13.8	0.72	13	39.3	37.5	27,800	47.2	0.18	54.5	1.7	18.9	186
W-OABG	AS01-SB36	AS01-SB36-(1-2)	10/25/01	1	2	SS	NA	11	11	11	60	62	55	360	1466	817	540	54,000	540	1.43E-05	10	1.3	12.5	15.6	46.5	24,400	44.3	0.14	22.9	6	13.5	220
W-OABG	AS01-SB36	AS01-SS36-(0-1)	10/25/01	0	1	SS	NA	13	13	13	100	100	150	430	1,560	1,281	650	65,000	650	1.78E-05	17.9	0.78	16.5	41	44.9	34,800	48.3	0.18	56.7	1.3	22.6	204
W-OABG	AS01-SB37	AS01-SS37-(0-1)	10/26/01	0	1	SS	NA	13	13	13	160	150	260	420	1,692	1,460	620	62,000	620	2.34E-05	12.9	0.75	20.7	29.5	161	25,000	103	0.28	47	3	32.2	362
W-OABG	AS01-SB38	AS01-SB38-(1-2)	10/26/01	1	2	SS	NA	11	11	11	170	170	190	370	1,529	1,506	560	56,000	560	7.43E-07	10.7	0.67	14	15.2	23.1	28,300	28.2	0.11	18.8	1.1	19.5	78.1
W-OABG	AS01-SB38	AS01-SS38-(0-1)	10/26/01	0	1	SS	NA	12	12	12	150	150	200	390	1,695	1,488	590	59,000	590	1.84E-05	9.1	0.7	13.5	21.5	27.8	20,700	37.1	0.12	31.8	1.2	21.8	108
W-OABG	AS01-SB39	AS01-SB39-(1-2)	10/23/01	1	2	SS	NA	12	12	16,000	310	310	360	380	2,118	2,980	NA	NA	NA	NA	21.5	0.8	23.9	28.4	72	34,200	88.6	0.79	43.1	1.2	20.7	226
W-OABG	AS01-SB39	AS01-SS39-(0-1)	10/23/01	0	1	SS	NA	13	13	180	120	110	170	380	1,530	1,286	NA	NA	NA	NA	13.1	0.78	12.3	38.3	37.5	23,100	43.3	0.12	54.5	1.3	16.1	165
E-OABG	AS01-SB40	AS01-SB40-(1-2)	10/24/01	1	2	SS	NA	12	8.9	15	300	310	440	370	2,248	3,195	580	58,000	580	5.86E-06	10	0.69	13.1	19.6	32	21,000	56.2	0.36	25.1	1.2	13.5	110
E-OABG	AS01-SB40	AS01-SS40-(0-1)	10/24/01	0	1	SS	NA	13	13	23	140	140	170	370	1,525	1,432	630	63,000	630	5.35E-05	24.9	84.7	29.8	43	972	70,900	416	0.17	79.4	1.2	29.7	1,400
E-OABG	AS01-SB41	AS01-SB41-(1-2)	10/24/01	1	2	SS	NA	11	11	29	220	220	250	350	1,745	1,975	570	57,000	570	1.01E-06	14.2	0.68	11.9	21	38.7	26,800	44.8	0.26	30.9	1.1	15.2	160
E-OABG	AS01-SB41	AS01-SS41-(0-1)	10/24/01	0	1	SS	NA	12	12	12	180	180	240	400	1,438	1,875	620	62,000	620	1.01E-05	16.3	0.81	14.3	44	43.7	29,500	51.8	0.17	63.3	1.2	22.2	192
W-OABG	AS01-SB46	AS01-SS46-0-1	07/20/04	0	1	SS	NA	2.9	12	12	78	88	150	NA	887	718	NA	NA	NA	NA	11.1	0.54	14.2	46.8	37.8	29,500	39.7	0.17	64.4	0.97	18.3	191
W-OABG	AS01-SB47	AS01-SS47-0-1	07/20/04	0	1	SS	NA	12	12	12	130	140	230	NA	659	1,094	NA	NA	NA	NA	11.9	0.25	15.7	41.8	46.6	31,300	43.6	0.96	60.2	2.9	21.3	217
W-OABG	AS01-SB48	AS01-SS48-0-1	07/20/04	0	1	SS	NA	850	610	3,600	64	81	150	NA	834	653	NA	NA	NA	NA	8.5	0.3	14.1	23.4	43.1	28,000	44.3	1	36.6	3.3	21.8	161
W-OABG	AS01-SB49	AS01-SS49-0-1	07/20/04	0	1	SS	NA	450	620	990	7,500	9,000	21,000	NA	14,760	72,300	NA	NA	NA	NA	12.4	0.069	19.7	34.6	43.5	32,300	44.9	0.36	54.5	0.54	21.8	181
E-OABG	AS01-SB50	AS01-SS50-0-1	07/21/04	0	1	SS	NA	11	14	14	24	24	45	NA	839	220	NA	NA	NA	2.63E-06	5.9	0.067	10.4	10.7	17.4	21,000	73	0.091	15.3	0.22	16.1	63.2
E-OABG	AS01-SB51	AS01-SS51-0-1	07/21/04	0	1	SS	NA	320	730	2,700	31	36	63	NA	886	280	NA	NA	NA	4.26E-05	8.5	13	23.5	23.9	123	31,100	223	0.26	37	1	26.5	845
E-OABG	AS01-SB52	AS01-SS52-0-1	07/21/04	0	1	SS	NA	300	560	6,400	46	55	91	NA	1026	426	NA	NA	NA	1.20E-04	8.6	4.5	42.7	20.3	253	57,100	591	2.1	50	2.4	22.4	1,170
E-OABG	AS01-SB53	AS01-SS53-0-1	07/21/04	0	1	SS	NA	1,800	1,800	36,000	34	40	75	NA	959	317	NA	NA	NA	1.34E-04	12.5	11	63.8	20	284	28,700	1,310	1	70.5	42.6	173	1,400
E-OABG	AS01-SB54	AS01-SS54-0-1	07/21/04	0	1	SS	NA	13	13	13	99	120	240	NA	954	972	NA	NA	NA	1.83E-05	12.8	0.3	17.1	37.1	44.1	32,400	47.4	0.3	56.6	0.45	25.4	176
W-OABG	AS01-SB56	AS01-SS56-0-1	07/21/04	0	1	SS	NA	NA	NA	NA	87	100	160	NA	960	826	NA	NA	NA	1.64E-05	11.8	0.4	15.6	42.8	41	31,600	38	0.25	59.7	1.2	21.9	200
W-OABG	AS01-SB57	AS01-SS57-0-1	07/21/04	0	1	SS	NA	NA	NA	NA	8,100	12,000	16,000	NA	63,100	82,500	NA	NA	NA	2.65E-05	11.2	5.2	59.5	15.8	517	30,400	939	0.44	45.5	5.5	58.3	841
E-OABG	AS01-SB58	AS01-SS58-0-1	07/21/04	0	1	SS	NA	NA	NA	NA	70	88	170	NA	843	709	NA	NA	NA	4.37E-05	11.2	0.46	14	39.7	39.8	28,700	43.7	0.23	57.4	0.24	22.1	180
E-OABG	AS01-SB59	AS01-SS59-0-1	07/21/04	0	1	SS	NA	NA	NA	NA	99	110	200	NA	976	865	NA	NA	NA	1.19E-05	12.7	0.37	16.4	42	44.1	32,400	45.3	0.24	62.9	0.25	24.9	181
E-OABG	AS01-SB71	AS01-SB71-1_5-2	09/23/04	1.5	2	SS	NA	14	26	13	440	440	51	440	1665	1639	1,500	2,500	140	2.16E-06	7	0.44	14.2	13.4	22.5	23,600	39.2	0.27	20.8	0.69	14.2	78.9
E-OABG	AS01-SB71	AS01-SS71-0-0_5	09/23/04	0	1	SS	NA	15	15	15	500	500	500	500	2,050	2,250	500	2,500	82	5.27E-06	9.5	1.8	15.1	27	35.6	28,700	61.5	0.23	42.8	0.7	23.4	179
E-OABG	AS01-SB72	AS01-SB72-4_5-5	09/23/04	4.5	5	SB	NA	2,800	11,000	77,000	470	470	470	470	2,115	2,115	75,000	30,000	1,800	1.85E-04	3.9	143	38.1	20.2	436	29,800	810	22.7	38.7	13.3	14.3	2,060
E-OABG	AS01-SB72	AS01-SS72-0-0_5	09/23/04	0	1	SS	NA	1,600	420	4,400	450	450	450	450	2,025	2,025	530,000	500	7,300	3.48E-04	7.2	373	319	27.7	248	54,200	814	56.3	56.0	12.3	17.8	2,060
E-OABG	AS01-SB73	AS01-SB73-1_5-2	09/23/04	1.5	2	SS	NA	12,000	12,000	170,000	400	400	400	400	1,800	1,800	76	2,500	500	2.09E-06	7.1	0.35	12.6	15	21.8	27,700	20.5	0.17	22.5	0.38	16.5	79.2
E-OABG	AS01-SB73	AS01-SS73-0-0_5	09/23/04	0	1	SS	NA	1,300	1,300	22,000	390	390	390	390	1,755	1,755	120	2,500	500	2.40E-05	8.7	2.1	37.6	16.3	172	40,700	111	0.42	37	41.2	30.2	311
E-OABG	AS01-SB74	AS01-SB74-4-4_5	09/23/04	4	5	SS	NA	15	3.3	57	460	460	460	460	2,070	2,070	100	2,500	500	6.82E-06	7	11.6	282	53.9	13,600	33,500	865	0.17	347	19.5	53.4	1,010
E-OABG	AS01-SB74	AS01-SS74-0-0_5	09/23/04	0	1	SS	NA	12	12	4.9	430	430	430	430	1,599	1,935	500	2,500	500	6.64E-06	7.5	0.7	31.1	18.5	94.9	31,600	66.8	0.34	29.3	0.97	19.5	182
W-OABG	AS01-TP02	AS01-TP02-0910	03/18/08	9	10	SB	NA	10	10	10	380	380	380	380	1,710	1,710	620	4,000	620	7.83E-08	6.6	0.43	13.4	6.7	16.4	32,900	9.7	0.11	19.2	1.1	16.3	64.9
W-OABG	AS01-TP03	AS01-TP03-0910	03/18/08	9	10	SB	NA	10	10	10	390	390	390	390	1,755	1,755	620	4,000	620	3.19E-07	5	0.23	10.7	11.6	14.3	24,200	11	0.11	14.5	1.2	16.2	49.2
W-OABG	AS01-TP04	AS01-TP04-0910	03/18/08	9	10	SB	NA	12	12	12	410	410	410	410	1,845	1,845	620	4,000	620	1.82E-07	4	0.2	8.8	7	9.2	19,700	8	0.12	13.2	1.2	11.8	43.7
W-OABG	AS01-TP05	AS01-DC01-0506	03/19/08	5	6	SB	NA	12	12	7,600	150	190	240	400	1,760	1,780	620	4,000	620	1.44E-04	6.2	8.2	27.2	20.3	704	27,500	178	5	46.1	104	57.2	1,440
W-OABG	AS01-TP05	AS01-TP05-0910	03/19/08	9	10	SB	NA	12	12	32	180	150	220	430	2,115	1,785	620	4,000	620	7.60E-05	6.7	6.6	19.3	17	278	28,800	153	2.7	40.6	69.6	70.8	420
W-OABG	AS01-TP06	AS01-TP06-0910	03/19/08	9	10	SB	NA	12	12	44	400	400	400	400	1,800	1,800	620	4,000	620	3.51E-07	4.6	0.27	13.2	3.7	9.4	26,900	6.7	0.12	11.6	0.19	13.2	51.1
W-OABG	AS01-TP07	AS01-DC03-0304	03/20/08	3	4	SS	NA	10	10	10	420	420	420	420	1,687	1,790	620	4,000	620	1.50E-05	7.9	1	27.7	13.4	563	33,400	99.4	0.043	27.9	1.3	19.3	926
W-OABG	AS01-TP07	AS01-TP07-0910	03/20/08	9	10	SB	NA	11	11	11	400	400	400	400	1,800	1,800	620	4,000	620	7.68E-08	5.6	0.23	12.5	6.8	17.2	25,900	9.9	0.063	14.1	1.2	15.6	67.9
W-OABG	AS01-TP08	AS01-TP08-0910	03/20/08	9	10	SB	NA	10	10	10	390	390	390	390	1,755	1,755	620	4,000	620	1.31E-07	4.3	0.23	9.8	8.5	11.4	20,700	9.1	0.12	12.7	0.17	13	44.5
W-OABG	AS01-TP09	AS01-DC02-0405	03/20/08	4	5	SS	NA	10	10	15	410	100	110	410	1,685	1,128	620	4,000	620	3.09E-05	7.2	8.3	36.8	13.2	69.3	23,600	179	0.12	203	1.6	994	721
W-OABG	AS01-TP09	AS01-TP09-0910	03/20/08	9	10	SB	NA	11	11	22	380	380	380	380	1,710	1,710	620	4,000	620	3.09E-07	4.9	0.2	11.5	13.1	16.9	24,700	12.2	0.11	17	1.2	18.8	62.2
W-OABG	AS01-TP10	AS01-TP10-0910	03/24/08	9	10	SB	NA	12	12	85	430	430	430	430	1,935	1,935	NA	NA	NA	NA	5	0.27	11.6	12.3	15.8	26,400	11.7	0.13	16.4	1.3	17.4	59.7
W-OABG	AS01-TP11	AS01-TP11-0910	03/24/08	9	10	SB	NA	16	16	24	490	490	490	490	2,080	2,080	620	4,000	620	NA	7.1	0.33	10.1	14.3	28.5	22,100	31.3	0.081	24.3	1.5	12.5	106
W-OABG	AS01-TP12	AS01-TP12-0809	03/25/08	8	9	SB	NA	12	12	150	480	480	480	480	2,160	2,160	NA	NA	NA	NA	5.9	0.29	10.9	10.1	15.8	26,700	11.9	0.049	15.7	1.4	17.5	61.4
W-OABG	AS01-TP13	AS01-TP13-0910	03/25/08	9	10	SB	NA	12	12	6,900	470	470	470	470	2,115	2,115	620	4,000	620	NA	4.7	0.29	10	10.4	11.5	20,600	10.1	0.14	17.3	1.4	13.3	51.5

Table 14
Outside Active Burning Grounds - Industrial Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS																									
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)											
						INDUSTRIAL SRGs - Surface Soil (SS):	450	300	1,100	810	8,800	2,100	21,000	2,100	29,000	18,000	10,000	370	120	9.60E-05	16.0	17.4	42.7	52.3	253	35,600	785	1.61	78.4	42.6	173	1,170
						INDUSTRIAL SRGs - Subsurface Soil (SB):	8,400	N/A	1,100	810	8,800	2,100	21,000	2,100	N/A	N/A	N/A	370	120	1.80E-04	16.0	130	N/A	20.9	11,000	33,000	830	39.0	N/A	N/A	N/A	N/A
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (total)	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc
W-OABG	AS01-TP14	AS01-DC04-0304	03/25/08	3	4	SS	NA	13	13	26,000	490	490	490	490	2,205	2,205	620	4,000	620	NA	5.1	0.31	9.4	11.6	20.6	19,600	14.5	0.062	18.9	0.18	13	61.6
W-OABG	AS01-TP14	AS01-TP14-0910	03/25/08	9	10	SB	NA	15	15	92,000	520	520	520	520	2,090	2,190	620	4,000	620	NA	9.2	0.6	14.4	19.1	42.3	25,700	36.5	0.71	29.7	0.31	16.1	125
W-OABG	AS01-TP15	AS01-TP15-0910	03/25/08	9	10	SB	NA	13	13	11,000	470	470	470	470	2,115	2,115	NA	NA	NA	NA	4.6	0.26	10.2	10.1	11.2	21,800	10	0.14	16.8	1.4	13.6	53.9
C-OABG	AS01-TP16	AS01-TP16-0809	03/25/08	8	9	SB	NA	16	16	62	500	500	500	500	2,050	2,000	620	4,000	620	8.28E-06	11.2	0.74	14.7	26.2	46.3	32,100	42.3	0.35	41.1	0.27	19.2	161
C-OABG	AS01-TP17	AS01-TP17-0809	03/25/08	8	9	SB	NA	14	14	14	470	470	470	470	1,885	1,990	620	4,000	620	4.70E-05	10.1	0.79	13.8	22.9	38.7	29,800	34.9	0.14	37	0.25	17.8	136
C-OABG	AS01-TP18	AS01-TP18-0910	03/26/08	9	10	SB	NA	10	10	10	380	380	380	380	1,710	1,710	620	4,000	620	NA	4.6	0.24	9.5	9.1	10.9	20,700	9.3	0.12	12.2	1.1	12.9	41.3
C-OABG	AS01-TP19	AS01-TP19-0910	03/26/08	9	10	SB	NA	10	10	6	390	390	390	390	1,755	1,755	NA	NA	NA	NA	3.8	0.21	7.7	8.5	10	17,600	8.3	0.12	10.4	1.2	11.1	35.3
C-OABG	AS01-TP20	AS01-TP20-0910	03/26/08	9	10	SB	NA	10	10	10	390	390	390	390	1,755	1,755	620	4,000	620	NA	3.8	0.21	8	8	10.1	19,300	8.3	0.12	11.6	1.2	12	41
C-OABG	AS01-TP21	AS01-TP21-0910	03/26/08	9	10	SB	NA	10	10	7	380	380	380	380	1,710	1,710	620	4,000	620	NA	3.7	0.19	8.2	7.8	10.3	17,200	10.1	0.12	11.3	1.2	11.2	37.1
C-OABG	AS01-TP22	AS01-TP22-0910	03/26/08	9	10	SB	NA	10	10	30	380	380	380	380	1,710	1,710	620	4,000	620	8.60E-08	4.7	0.26	9.1	8.9	9.7	21,400	8.6	0.12	13.3	1.2	12.3	47
E-OABG	AS01-TP23	AS01-DC12-0102	03/31/08	1	2	SS	NA	11	11	11	400	150	400	400	1,800	1,680	620	4,000	620	NA	5.9	0.45	10.4	9.6	22.4	19,300	93.7	0.17	16.2	0.67	15.9	81.5
E-OABG	AS01-TP23	AS01-TP23-0910	03/31/08	9	10	SB	NA	10	10	3	390	390	390	390	1,755	1,755	620	4,000	620	NA	4.4	0.12	9.2	8.4	11.8	21,300	11	0.054	12.5	1.2	13.1	41.5
E-OABG	AS01-TP24	AS01-TP24-0910	03/27/08	9	10	SB	NA	10	10	11	380	380	380	380	1,710	1,710	620	4,000	620	4.04E-08	4.4	0.21	9.3	9.2	12.8	21,400	9.3	0.12	12.4	1.2	13.5	42.4
E-OABG	AS01-TP25	AS01-DC13-0304	04/01/08	3	4	SS	NA	13	13	5	400	400	400	400	1,800	1,800	620	4,000	620	4.06E-07	8.2	2	31.7	11.3	29.9	25,800	45.8	0.31	94.1	0.91	20.1	253
E-OABG	AS01-TP25	AS01-TP25-0910	04/01/08	9	10	SB	NA	10	3	17	390	390	390	390	1,755	1,755	620	4,000	620	3.88E-08	5.3	0.26	11.2	9.3	13.8	24,500	29.1	0.12	13.7	1.2	15	48.4
E-OABG	AS01-TP26	AS01-TP26-0910	03/31/08	9	10	SB	NA	11	31	29	400	400	400	400	1,800	1,800	620	4,000	620	NA	3.9	0.22	8.6	8.8	10	18,600	7.5	0.06	14.3	1.2	10.8	43.5
E-OABG	AS01-TP27	AS01-DC10-0405	03/28/08	4	5	SS	NA	10	22	90	400	400	400	400	1,800	1,800	NA	NA	NA	NA	6.3	1.4	15.1	12.8	44.8	23,500	166	0.45	31.8	2.3	15.2	247
E-OABG	AS01-TP27	AS01-TP27-0910	03/28/08	9	10	SB	NA	10	26	62	360	360	360	360	1,620	1,620	NA	NA	NA	NA	5	1.9	11.3	10.2	15.1	23,100	10.9	0.046	17.5	0.72	13.7	51.4
E-OABG	AS01-TP28	AS01-DC09-0304	03/28/08	3	4	SS	NA	1,300	1,100	26,000	400	400	400	400	1,800	1,800	NA	NA	NA	NA	6.3	7.4	39.3	17.8	598	24,900	671	1.5	55.2	54.9	26	1,550
E-OABG	AS01-TP28	AS01-TP28-0910	03/28/08	9	10	SB	NA	10	20	12,000	400	400	400	400	1,800	1,800	620	4,000	620	NA	4.6	0.35	10.5	7.7	12.5	25,000	9.5	0.12	13.4	1.2	15.3	51.8
E-OABG	AS01-TP29	AS01-DC08-0304	03/28/08	3	4	SS	NA	10,000	10,000	70,000	380	380	380	380	1,710	1,710	NA	NA	NA	1.16E-06	6	1	12.1	10.3	23.9	25,700	25.2	4.9	19.3	4.4	16.6	285
E-OABG	AS01-TP29	AS01-TP29-0910	03/28/08	9	10	SB	NA	38,000	38,000	460,000	390	390	390	390	1655	1530	NA	NA	NA	NA	4.7	0.18	9.8	5.5	12.2	23,000	10.4	0.11	11.6	1.2	13	50.2
E-OABG	AS01-TP30	AS01-DC05-0203	03/27/08	2	3	SS	NA	13	13	11	420	420	420	420	1,740	1,674	NA	NA	NA	NA	9.4	8.4	77.7	25.5	779	30,900	197	2	75.9	4.6	19.3	840
E-OABG	AS01-TP30	AS01-TP30-0910	03/27/08	9	10	SB	NA	13	13	3	110	96	130	430	2,005	1,461	620	4,000	620	NA	6.1	0.71	9.3	22.7	489	19,800	30.4	0.072	25.9	0.38	10.8	142
W-OABG	AS01-TP32	AS01-TP32-0910	03/24/08	9	10	SB	NA	15	15	31	150	120	130	500	2,300	1,710	NA	NA	NA	NA	10.4	0.49	14.3	20.9	54.7	28,700	53.7	0.18	36.7	0.39	17.3	155
W-OABG	AS01-TP33	AS01-TP33-0607	03/25/08	6	7	SB	NA	13	13	170	490	490	490	490	2,205	2,205	NA	NA	NA	NA	4.9	0.27	9.1	9.9	16.1	20,600	12.1	0.099	17	1.5	12.3	55
C-OABG	AS01-TP34	AS01-TP34-0910	03/26/08	9	10	SB	NA	10	10	9	380	380	380	380	1,710	1,710	NA	NA	NA	NA	3.4	0.17	7.4	7	8.8	16,000	7.1	0.12	8.8	1.2	10	31.3
E-OABG	AS01-TP35	AS01-DC11-0203	03/31/08	2	3	SS	NA	11	11	11	390	390	390	390	1,755	1,755	620	4,000	620	NA	4.6	0.43	10.7	9.9	18.1	22,100	47.3	0.12	15.1	1.2	16.2	65.5
E-OABG	AS01-TP35	AS01-TP35-0910	03/31/08	9	10	SB	NA	10	10	12	390	390	390	390	1,755	1,755	NA	NA	NA	NA	4.7	1.9	10.1	11	12	22,600	10.1	0.04	14	0.57	14.2	48.3
E-OABG	AS01-TP36	AS01-DC07-0304	03/27/08	3	4	SS	NA	10	2	230,000	340	340	340	340	1,530	1,530	620	4,000	620	NA	4.4	0.35	7.7	11	15.3	16,400	14.3	0.052	15.5	0.17	10.8	49.2
E-OABG	AS01-TP36	AS01-TP36-0910	03/27/08	9	10	SB	NA	14	4	730,000	480	480	480	480	2,160	2,160	620	4,000	620	6.44E-06	4.1	0.28	8.2	8.2	13	17,800	12.1	0.15	13.7	0.25	10.5	49.3
E-OABG	AS01-TP37	AS01-DC06-0203	03/27/08	2	3	SS	NA	14	14	16	97	430	110	430	1,905	1,482	NA	NA	NA	NA	10	0.91	15.7	19.9	52.6	25,100	58.7	0.68	31.8	4	16.4	197
E-OABG	AS01-TP37	AS01-TP37-0910	03/27/08	9	10	SB	NA	12	12	19	420	420	420	420	1,890	1,890	NA	NA	NA	NA	7.6	0.73	10	12.7	32.3	19,800	62.4	0.25	21.4	0.7	12.6	196
E-OABG	AS01-TP38	AS01-TP38-0910	03/27/08	9	10	SB	NA	13	13	9	450	450	450	450	2,025	2,025	620	4,000	620	NA	5.2	0.59	7.7	37.8	43.5	21,100	20.5	0.055	30.4	1.4	9.5	114
E-OABG	B1-003	HCS-B1-3-1	07/17/92	1	2	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.5	3.4	46.9	14.5	79.9	28,400	173	0.28	25.7	1.1	17.9	383
E-OABG	B1-003	HCS-B1-3-S	07/17/92	0.5	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.4	22.9	51.4	28.4	309	27,200	793	0.56	44.2	5.8	34.7	1,290
E-OABG	B1-004	HCS-B1-4-S	07/17/92	0.5	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.4	57.1	100	39.8	780	122,000	12,100	1	107	12.6	18.1	3,860
E-OABG	B1-011	HCS-B1-11-2	07/17/92	0.5	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.8	46.8	99.8	26.8	1,390	81,100	993	4.6	102	104	97.5	3,350
E-OABG	B1-011	HCS-B1-11-S	07/17/92	1	2	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.2	154	103	31.6	855	45,700	6,680	2.5	74.1	24.8	30.3	2,160
E-OABG	B1-12S/12	HCS-B1-12-1	11/16/94	0	1	SS	NA	NA	NA	NA	380	380	380	380	1,710	1,710	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	B1-12S/12	HCS-B1-12-S	11/16/94	0	1	SS	NA	NA	NA	NA	68	500	92	500	2,020	1,617	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	B1-13S/13	HCS-B1-13-1	11/16/94	0	1	SS	NA	NA	NA	NA	88	70	82	370	1544	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	B1-13S/13	HCS-B1-13-S	11/16/94	0	1	SS	NA	NA	NA	NA	520	520	520	520	2,340	2,340	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	B1-C	HCS-B1-C	07/17/92	0	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.21E-04	7.3	3.3	10	5.5	81.9	10,500	4,990	2.1	11.4	8.9	5.6	291
E-OABG	B1-CS	HCS-B1-CS	06/20/94	1	2	SS	NA	NA	NA	NA	380	380	380	380	1,710	1,710	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	B2-003	HCS-B2-3-4	07/17/92	3	4	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.7	0.74	31.5	21.1	136	28,500	68.6	0.32	55.1	6.5	108	408
W-OABG	B2-003	HCS-B2-3-S	07/17/92	2	3	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.5	5.3	55.1	24.6	579	31,900	1,630	1.2	49.7	78.8	33.4	679
W-OABG	B2-004	HCS-B2-4-4	07/17/92	3	4	SS	NA	NA	NA	NA	1,700	1,400	1,500	230	7,136	11,530	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	B2-005	HCS-B2-5-3	07/17/92	2	3	SS	NA	NA	NA	NA	700	690	730	390	2,883	5,565	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	B2-006	HCS-B2-6-3	07/17/92	2	3	SS	NA	NA	NA	NA	95	83	100	490	1,918	1,127	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	B2-007	HCS-B2-7-3	07/17/92	2	3	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.9	0.71	15.3	18.9	54.5	30,400	74.6	0.4	38	2.1	14.6	163
W-OABG	B2-007	HCS-B2-7-S	07/17/92	1	2	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.3	1.9	29.8	25.6	2,150	25,100	272	2.7	40.3	121	82.7	636
W-OABG	B2-010	HCS-B2-10	07/17/92	5	6	SB	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11	37.5	110	30.6	1,970	31,300	472	16.8	185	106	100	4,230
W-OABG	B2-C	HCS-B2-C	07/17/92	0.5	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.88E-04	12.9	6.8	34	25.5	348	31,900	200	3.2	66.4	64.5	75.8	849
E-OABG	BG-003	HCS-BG-3	07/13/92	3	4	SS	6	NA	6	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-015	HCS-BG-15	07/13/92	3	4	SS	6	NA	6	26	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-023/023S/083	HCS-BG-23S	06/21/94	0	1	SS	11	NA	11	14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-084/084S/106	HCS-BG-106	07/13/92	11	12	SB	750	NA	750	2,500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-084/084S/106	HCS-BG-84	07/13/92	3	4	SS	6	NA	6	100	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-084/084S/106	HCS-BG-84S	06/20/94	0	1	SS	11	NA	11	110	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-098/098S	HCS-BG-98S	11/16/94	0	1	SS	1,800	NA	1,800	27,000	110	71	99	460	1,940	923	NA	NA	NA	NA	15.8	3.5	23.6	31.2	75.5	38,600	53.3	0.46	50.8	3.3	26.2	206
W-OABG	BG-099	HCS-BG-99	07/13/92	2	3	SS	6	NA	6	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-099	HCS-BG-99R	07/13/92	2	3	SS	6	NA	6	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-102/102S	HCS-BG-102	07/13/92	1	2	SS	260	NA	1,400	25,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-102/102S	HCS-BG-102S	11/16/94	0	1	SS	71	NA	29	890	100	80	120	450	1,847	980	NA	NA	NA	NA	11.4	2.9	13.1	38.6	37.3	32,600	37.1	0.14	58.8	1.5	20.1	210
E-OABG	BG-110/110S	HCS-BG-110	07/13/92	2	3	SS	27,000	NA	820	34,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-110/110S	HCS-BG-110S	11/16/94	0	1	SS	16,000	NA	1,600	26,000	85	61	84	440	1800	805	NA	NA	NA	NA	10.2	2.3	11.9	55.2	33.7	28,700	38.5	0.1	76.1	1.1	18.8	233
W-OABG	BG-112	HCS-BG-112	07/13/92	2	3	SS	33	NA	7	56	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-112	HCS-BG-112R	07/13/92	2	3	SS	7	NA	7	14	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-113	HCS-BG-113	07/13/92	2	3	SS	880	NA	880	94,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-113	HCS-BG-113S	11/15/94	0	1	SS	1,800	NA	1,800	8,000	100	85	170	57	1,900	1,331	NA	NA	NA	NA	14.8	3.1	19.9	37.2	49.8	35,200	57.6	0.48	53.3	2.7	24.5	192
W-OABG	BG-134	HCS-BG-134	11/16/94	2	3	SS	2,300	NA	1,500	230,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 14
Outside Active Burning Grounds - Industrial Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS																									
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)											
						INDUSTRIAL SRGs - Surface Soil (SS):	450	300	1,100	810	8,800	2,100	21,000	2,100	29,000	18,000	10,000	370	120	9.60E-05	16.0	17.4	42.7	52.3	253	35,600	785	1.61	78.4	42.6	173	1,170
						INDUSTRIAL SRGs - Subsurface Soil (SB):	8,400	N/A	1,100	810	8,800	2,100	21,000	2,100	N/A	N/A	N/A	370	120	1.80E-04	16.0	130	N/A	20.9	11,000	33,000	830	39.0	N/A	N/A	N/A	N/A
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (total)	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc
W-OABG	BG-135	HCS-BG-135	11/16/94	2	3	SS	11	NA	2	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-136	HCS-BG-136	11/16/94	2	3	SS	11	NA	56	730	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-137	HCS-BG-137	11/16/94	2	3	SS	12	NA	12	7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-138	HCS-BG-138	11/16/94	2	3	SS	1,300	NA	1,700	140,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-139	HCS-BG-139	11/15/94	2	3	SS	1,800	NA	1,800	4,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-140	HCS-BG-140	11/15/94	2	3	SS	2	NA	12	41	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-141	HCS-BG-141	11/16/94	2	3	SS	12	NA	12	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-142	HCS-BG-142	11/16/94	2	3	SS	12	NA	12	160	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-143	HCS-BG-143	11/16/94	2	3	SS	12	NA	12	15	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-144	HCS-BG-144	11/16/94	2	3	SS	12	NA	12	28	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-145	HCS-BG-145	11/16/94	2	3	SS	1	NA	12	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-146	HCS-BG-146	11/16/94	2	3	SS	1,600	NA	2,200	20,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-147	HCS-BG-147	11/16/94	2	3	SS	840	NA	480	53,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-148	HCS-BG-148	11/16/94	2	3	SS	24,000	NA	160	64,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-149	HCS-BG-149	11/16/94	2	3	SS	1,500	NA	1,500	6,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-150	HCS-BG-150	11/15/94	2	3	SS	1,500	NA	1,500	17,000	77	74	360	360	1,580	1,301	NA	NA	NA	NA	8.3	2.1	8.8	20.2	31.3	25,200	30.4	0.22	31.3	2.1	17.3	124
W-OABG	BG-151	HCS-BG-151	03/04/95	2	3	SS	12	NA	1	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-154	HCS-BG-154	10/27/98	2	3	SS	11	NA	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-155	HCS-BG-155	10/27/98	2	3	SS	11	NA	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-156	HCS-BG-156	10/27/98	2	3	SS	52	NA	11	900	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-157	HCS-BG-157	10/27/98	2	3	SS	11	NA	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-158	HCS-BG-158	10/27/98	2	3	SS	7,100	NA	11	46,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-159/160	HCS-BG-159	10/27/98	2	3	SS	11	NA	11	21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-159/160	HCS-BG-160	10/27/98	4	6	SB	11	NA	11	57	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-163/164	HCS-BG-163	10/27/98	2	3	SS	11	NA	11	21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-163/164	HCS-BG-164	10/27/98	4	6	SB	11	NA	11	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-166	HCS-BG-166	10/27/98	2	3	SS	3	NA	11	92,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-167/168	HCS-BG-167	10/27/98	2	3	SS	11	NA	11	51,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-167/168	HCS-BG-168	10/27/98	4	6	SB	3	NA	13	720	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-169	HCS-BG-169	10/27/98	2	3	SS	11	NA	11	11	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-170	HCS-BG-170	10/27/98	2	3	SS	11	NA	11	8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-172	HCS-BG-172	10/27/98	2	3	SS	11	NA	41	700	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-173	HCS-BG-173	10/27/98	2	3	SS	11	NA	4	390	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-174	HCS-BG-174	10/27/98	2	3	SS	6	NA	11	360,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-175/176	HCS-BG-175	10/27/98	2	3	SS	11	NA	11	99	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-175/176	HCS-BG-176	10/27/98	4	6	SB	11	NA	11	530	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-177/178	HCS-BG-177	10/27/98	2	3	SS	11	NA	11	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-177/178	HCS-BG-178	10/27/98	4	6	SB	11	NA	11	160	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
						UCL Current Conditions	2,613	133	602	63,813	3,035	1,760	3,731	231	8,717	26,167	27,577	10,727	2,080	5.95E-05	10.3	31.3	45.8	24.9	778	31,800	881	3.64	62.6	24.8	51.0	701
STEP 1 (SRG Ratio >10)																																
E-OABG	AS01-TP36	AS01-TP36-0910	03/27/08	9	10	SB	NA	14	4	730,000	480	480	480	480	2,160	2,160	620	4,000	620	6.44E-06	4.1	0.28	8.2	8.2	13	17,800	12.1	0.15	13.7	0.25	10.5	49.3
E-OABG	AS01-TP36	AS01-DC07-0304	03/27/08	3	4	SS	NA	10	2	230,000	340	340	340	340	1,530	1,530	620	4,000	620	NA	4.4	0.35	7.7	11	15.3	16,400	14.3	0.052	15.5	0.17	10.8	49.2
E-OABG	AS01-TP29	AS01-TP29-0910	03/28/08	9	10	SB	NA	38,000	38,000	460,000	390	390	390	390	1655	1530	NA	NA	NA	NA	4.7	0.18	9.8	5.5	12.2	23,000	10.4	0.11	11.6	1.2	13	50.2
E-OABG	AS01-TP29	AS01-DC08-0304	03/28/08	3	4	SS	NA	10,000	10,000	70,000	380	380	380	380	1,710	1,710	NA	NA	NA	1.16E-06	6	1	12.1	10.3	23.9	25,700	25.2	4.9	19.3	4.4	16.6	285
E-OABG	BG-174	HCS-BG-174	10/27/98	2	3	SS	6	NA	11	360,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-134	HCS-BG-134	11/16/94	2	3	SS	2,300	NA	1,500	230,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	AS01-SB73	AS01-SB73-1_5-2	09/23/04	1.5	2	SS	NA	12,000	12,000	170,000	400	400	400	400	1,800	1,800	76	2,500	500	2.09E-06	7.1	0.35	12.6	15	21.8	27,700	20.5	0.17	22.5	0.38	16.5	79.2
E-OABG	AS01-SB73	AS01-SS73-0-0_5	09/23/04	0	1	SS	NA	1,300	1,300	22,000	390	390	390	390	1,755	1,755	120	2,500	500	2.40E-05	8.7	2.1	37.6	16.3	172	40,700	111	0.42	37	41.2	30.2	311
W-OABG	BG-138	HCS-BG-138	11/16/94	2	3	SS	1,300	NA	1,700	140,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-113	HCS-BG-113	07/13/92	2	3	SS	880	NA	880	94,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-113	HCS-BG-113S	11/15/94	0	1	SS	1,800	NA	1,800	8,000	100	85	170	57	1,900	1,331	NA	NA	NA	NA	14.8	3.1	19.9	37.2	49.8	35,200	57.6	0.48	53.3	2.7	24.5	192
W-OABG	AS01-TP14	AS01-TP14-0910	03/25/08	9	10	SB	NA	15	15	92,000	520	520	520	520	2,090	2,190	620	4,000	620	NA	9.2	0.6	14.4	19.1	42.3	25,700	36.5	0.71	29.7	0.31	16.1	125
W-OABG	AS01-TP14	AS01-DC04-0304	03/25/08	3	4	SS	NA	13	13	26,000	490	490	490	490	2,205	2,205	620	4,000	620	NA	5.1	0.31	9.4	11.6	20.6	19,600	14.5	0.062	18.9	0.18	13	61.6
W-OABG	BG-166	HCS-BG-166	10/27/98	2	3	SS	3	NA	11	92,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	AS01-SB21	AS01-SS21-(0-1)	10/25/01	0	1	SS	NA	12	12	82,000	61	55	97	390	1,605	1,082	NA	NA	NA	NA	13.1	12.4	43.3	23.7	526	33,800	1,120	4.7	47.4	70.3	44.6	1,030
E-OABG	AS01-SB72	AS01-SB72-4_5-5	09/23/04	4.5	5	SB	NA	2,800	11,000	77,000	470	470	470	470	2,115	2,115	75,000	30,000	1,800	1.85E-04	3.9	143	38.1	20.2	436	29,800	810	22.7	38.7	13.3	14.3	2,060
E-OABG	AS01-SB72	AS01-SS72-0-0_5	09/23/04	0	1	SS	NA	1,600	420	4,400	450	450	450	450	2,025	2,025	530,000	500	7,300	3.48E-04	7.2	373	319	27.7	248	54,200	814	56.3	56.0	12.3	17.8	2,060
E-OABG	AS01-SB22	AS01-SS22-(0-1)	10/25/01	0	1	SS	NA	11	11	65,000	78	79	110	380	1,580	1,049	NA	NA	NA	NA	19.3	6.5	224	34.5	1,080	57,900	337	2.5	240	61	332	1,360
E-OABG	BG-148	HCS-BG-148	11/16/94	2	3	SS	24,000	NA	160	64,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-147	HCS-BG-147	11/16/94	2	3	SS	840	NA	480	53,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-167/168	HCS-BG-167	10/27/98	2	3	SS	11	NA	11	51,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-110/110S	HCS-BG-110	07/13/92	2	3	SS	27,000	NA	820	34,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-110/110S	HCS-BG-110S	11/16/94	0	1	SS	16,000	NA	1,600	26,000	85	61	84	440	1800	805	NA	NA	NA	NA	10.2	2.3	11.9	55.2	33.7	28,700	38.5	0.1	76.1	1.1	18.8	233
W-OABG	BG-158	HCS-BG-158	10/27/98	2	3	SS	7,100	NA	11	46,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	AS01-SB74	AS01-SB74-4-4_5	09/23/04	4	5	SS	NA	15	3.3	57	460	460	460	460	2,070	2,070	100	2,500	500	6.82E-06	7	11.6	282	53.9	13,600	33,500	865	0.17	347	19.5	53.4	1,010
E-OABG	AS01-SB53	AS01-SS53-0-1	07/21/04	0	1	SS	NA	1,800	1,800	36,000	34	40	75	NA	959	317	NA	NA	NA	1.34E-04	12.5	11	63.8	20	284	28,700	1,310	1	70.5	42.6	173	1,400
W-OABG	BG-098/098S	HCS-BG-98S	11/16/94	0	1	SS	1,800	NA	1,800	27,000	110	71	99	460	1,940	923	NA	NA	NA	NA	15.8	3.5	23.6	31.2	75.5	38,600	53.3	0.46	50.8	3.3	26.2	206
E-OABG	AS01-TP28	AS01-DC09-0304	03/28/08	3	4	SS	NA	1,300	1,100	26,000	400	400	400	400	1,800	1,800	NA	NA	NA	NA	6.3	7.4	39.3	17.8	598	24,900	671	1.5	55.2	54.9	26	1,550
W-OABG	AS01-SB26	AS01-SB26-(1-2)	10/23/01	1	2	SS	NA	12	12	25,000	130	130	170	400	1,760	1,338	NA	NA	NA	NA	20.6	0.72	20.8	28	64.9	36,500	73.4	0.7	42.1	1.2	21.4	212
W-OABG	AS01-SB26	AS01-SS26-(0-1)	10/23/01	0	1	SS	NA	13	13	120	180	160	240	430	1,867	2,109	NA	NA	NA	NA	18.4	0.77	17.9	43.9	55.2	34,500	55.1	0.18	83.7	1.3	25.7	207
E-OABG	BG-102/102S	HCS-BG-102	07/13/92	1	2	SS	260	NA	1,400	25,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	BG-102/102S	HCS-BG-102S	11/16/94	0	1	SS	71	NA	29	890	100	80	120	450	1,847	980	NA	NA	NA	NA	11.4	2.9	13.1	38.6	37.3	32,600	37.1	0.14	58.8	1.5	20.1	210

Table 14
Outside Active Burning Grounds - Industrial Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATIONS																									
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)											
						INDUSTRIAL SRGs - Surface Soil (SS):	450	300	1,100	810	8,800	2,100	21,000	2,100	29,000	18,000	10,000	370	120	9.60E-05	16.0	17.4	42.7	52.3	253	35,600	785	1.61	78.4	42.6	173	1,170
						INDUSTRIAL SRGs - Subsurface Soil (SB):	8,400	N/A	1,100	810	8,800	2,100	21,000	2,100	N/A	N/A	N/A	370	120	1.80E-04	16.0	130	N/A	20.9	11,000	33,000	830	39.0	N/A	N/A	N/A	N/A
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (total)	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc
W-OABG	AS01-SB25	AS01-SB25-(1-2)	10/24/01	1	2	SS	NA	11	11	11	58,000	55,000	65,000	2,100	240,060	492,100	NA	NA	NA	NA	7.3	0.64	10	16.2	27.8	16,900	21.8	0.45	25	1.9	10.4	131
W-OABG	AS01-SB25	AS01-SS25-(0-1)	10/24/01	0	1	SS	NA	12	12	12	680	750	970	390	3,453	6,205	NA	NA	NA	NA	18.2	0.93	15.4	55.6	48.2	32,300	47.6	0.28	77.3	4	22.2	246
E-OABG	BG-146	HCS-BG-146	11/16/94	2	3	SS	1,600	NA	2,200	20,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
W-OABG	BG-150	HCS-BG-150	11/15/94	2	3	SS	1,500	NA	1,500	17,000	77	74	360	360	1,580	1,301	NA	NA	NA	NA	8.3	2.1	8.8	20.2	31.3	25,200	30.4	0.22	31.3	2.1	17.3	124
W-OABG	AS01-SB39	AS01-SB39-(1-2)	10/23/01	1	2	SS	NA	12	12	16,000	310	310	360	380	2,118	2,980	NA	NA	NA	NA	21.5	0.8	23.9	28.4	72	34,200	88.6	0.79	43.1	1.2	20.7	226
W-OABG	AS01-SB39	AS01-SS39-(0-1)	10/23/01	0	1	SS	NA	13	13	180	120	110	170	380	1,530	1,286	NA	NA	NA	NA	13.1	0.78	12.3	38.3	37.5	23,100	43.3	0.12	54.5	1.3	16.1	165
E-OABG	AS01-SB30	AS01-SB30-(1-2)	10/24/01	1	2	SS	NA	12	6.1	13,000	370	330	320	390	2,314	3,165	590	59,000	590	1.22E-05	31	12.4	112	40.3	332	122,000	2,540	4.5	63.6	43.1	26.6	999
E-OABG	AS01-SB30	AS01-SS30-(0-1)	10/24/01	0	1	SS	NA	14	14	26	220	240	290	440	1,844	2,286	670	67,000	670	3.72E-06	10.5	0.82	9.5	51.1	36.2	18,900	38.1	0.14	75.4	1.4	13.4	206
E-OABG	B1-004	HCS-B1-4-S	07/17/92	0.5	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.4	57.1	100	39.8	780	122,000	12,100	1	107	12.6	18.1	3,860
E-OABG	AS01-TP28	AS01-TP28-0910	03/28/08	9	10	SB	NA	10	20	12,000	400	400	400	400	1,800	1,800	620	4,000	620	NA	4.6	0.35	10.5	7.7	12.5	25,000	9.5	0.12	13.4	1.2	15.3	51.8
W-OABG	AS01-TP15	AS01-TP15-0910	03/25/08	9	10	SB	NA	13	13	11,000	470	470	470	470	2,115	2,115	NA	NA	NA	NA	4.6	0.26	10.2	10.1	11.2	21,800	10	0.14	16.8	1.4	13.6	53.9
					UCL Step 1		10.8	320	71.7	1,265	917	727	1,996	230	4,031	8,958	1,500	--	126	5.13E-05	9.83	17.8	29.7	23.9	349	29,023	648	1.65	45.9	27.5	57.8	658
					Maximum - All depths		52.0	850	730	7,600	8,100	12,000	21,000	230	63,100	82,500	1,500	--	140	2.21E-04	24.9	154	110	60.0	2,150	81,100	6,680	16.8	203	121	994	4,230
					Maximum - SS		52.0	850	730	6,400	8,100	12,000	21,000	230	63,100	82,500	1,500	--	140	2.21E-04	24.9	154	103	60.0	2,150	81,100	6,680	5.30	203	121	994	3,350
					Ecological PRG		450	300	--	2,500	--	--	--	--	29,000	18,000	10,000	65,000	10,000	9.60E-05	--	17.4	42.7	--	253	--	785	1.61	78.4	42.6	173	1,170
					Maximum ratio		0.12	2.83	--	2.56	--	--	--	--	2.18	4.58	0.15	--	0.01	2.31	--	8.85	2.41	--	8.50	--	8.51	3.29	2.59	2.84	5.75	2.86
STEP 2 (SRG Ratio >5)																																
W-OABG	AS01-TP05	AS01-DC01-0506	03/19/08	5	6	SB	NA	12	12	7,600	150	190	240	400	1,760	1,780	620	4,000	620	1.44E-04	6.2	8.2	27.2	20.3	704	27,500	178	5	46.1	104	57.2	1,440
E-OABG	B1-011	HCS-B1-11-S	07/17/92	1	2	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.2	154	103	31.6	855	45,700	6,680	2.5	74.1	24.8	30.3	2,160
E-OABG	B1-011	HCS-B1-11-2	07/17/92	0.5	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.8	46.8	99.8	26.8	1,390	81,100	993	4.6	102	104	97.5	3,350
W-OABG	AS01-TP13	AS01-TP13-0910	03/25/08	9	10	SB	NA	12	12	6,900	470	470	470	470	2,115	2,115	620	4,000	620	NA	4.7	0.29	10	10.4	11.5	20,600	10.1	0.14	17.3	1.4	13.3	51.5
W-OABG	B2-007	HCS-B2-7-S	07/17/92	1	2	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.3	1.9	29.8	25.6	2,150	25,100	272	2.7	40.3	121	82.7	636
E-OABG	AS01-SB52	AS01-SS52-0-1	07/21/04	0	1	SS	NA	300	560	6,400	46	55	91	NA	1026	426	NA	NA	NA	1.20E-04	8.6	4.5	42.7	20.3	253	57,100	591	2.1	50	2.4	22.4	1,170
E-OABG	BG-149	HCS-BG-149	11/16/94	2	3	SS	1,500	NA	1,500	6,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
E-OABG	B1-C	HCS-B1-C	07/17/92	0	1	SS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.21E-04	7.3	3.3	10	5.5	81.9	10,500	4,990	2.1	11.4	8.9	5.6	291
W-OABG	AS01-TP09	AS01-DC02-0405	03/20/08	4	5	SS	NA	10	10	15	410	100	110	410	1,685	1,128	620	4,000	620	3.09E-05	7.2	8.3	36.8	13.2	69.3	23,600	179	0.12	203	1.6	994	721
W-OABG	AS01-SB57	AS01-SS57-0-1	07/21/04	0	1	SS	NA	NA	NA	NA	8,100	12,000	16,000	NA	63,100	82,500	NA	NA	NA	2.65E-05	11.2	5.2	59.5	15.8	517	30,400	939	0.44	45.5	5.5	58.3	841
W-OABG	BG-139	HCS-BG-139	11/15/94	2	3	SS	1,800	NA	1,800	4,400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
					UCL Step 2		10.3	347	43.3	471	683	506	1,628	230	2,150	4,255	1,500	--	126	3.45E-05	9.81	10.2	25.2	24.4	257	27,696	188	1.53	42.2	16.3	26.1	525
					Maximum - All depths		52.0	850	730	3,600	7,500	9,000	21,000	230	14,760	72,300	1,500	--	140	1.88E-04	24.9	84.7	110	60.0	1,970	70,900	1,630	16.8	185	106	108	4,230
					Maximum - SS		52.0	850	730	3,600	7,500	9,000	21,000	230	14,760	72,300	1,500	--	140	1.88E-04	24.9	84.7	77.7	60.0	999	70,900	1,630	5.30	94.1	95.3	108	1,400
					Ecological PRG		450	300	--	2,500	--	--	--	--	29,000	18,000	10,000	65,000	10,000	9.60E-05	--	17.4	42.7	--	253	--	785	1.61	78.4	42.6	173	1,170
					Maximum ratio		0.12	2.83	--	1.44	--	--	--	--	0.51	4.02	0.15	--	0.01	1.96	--	4.87	1.82	--	3.95	--	2.08	3.29	1.20	2.24	0.62	1.20
STEP 3																																
W-OABG	AS01-SB34	AS01-SB34-(1-2)	10/25/01	1	2	SS	NA	12	12	23	210	190	280	390	1,570	2,116	600	60,000	600	7.28E-05	15.0	12.6	37.1	40.7	999	40,900	210	0.57	73.7	95.3	80.3	1,080
W-OABG	AS01-SB34	AS01-SS34-(0-1)	10/25/01	0	1	SS	NA	13	13	4.4	340	340	380	420	1,811	3,020	630	63,000	630	NA	16.5	0.93	15.0	60	59.8	32,300	49.7	0.41	78.9	9.8	21.4	283
W-OABG	AS01-SB48	AS01-SS48-0-1	07/20/04	0	1	SS	NA	850	610	3,600	64	81	150	NA	834	653	NA	NA	NA	NA	8.5	0.3	14.1	23.4	43.1	28,000	44.3	1	36.6	3.3	21.8	161
W-OABG	AS01-SB49	AS01-SS49-0-1	07/20/04	0	1	SS	NA	450	620	990	7,500	9,000	21,000	NA	14,760	72,300	NA	NA	NA	NA	12.4	0.069	19.7	34.6	43.5	32,300	44.9	0.36	54.5	0.54	21.8	181
					UCL Step 3		9.36	18.2	44.9	357	209	187	242	1,031	1,788	1,888	1,500	--	126	3.23E-05	9.61	10.5	25.4	23.5	247	27,360	193	1.58	41.8	14.4	25.2	526
					Maximum - All depths		52.0	320	730	2,700	1,700	1,400	1,500	230	7,136	11,530	1,500	--	140	1.88E-04	24.9	84.7	110	58.2	1,970	70,900	1,630	16.8	185	106	108	4,230
					Maximum - SS		52.0	320	730	2,700	1,700	1,400	1,500	230	7,136	11,530	1,500	--	140	1.88E-04	24.9	84.7	77.7	58.2	972	70,900	1,630	5.30	94.1	78.8	108	1,400
					Ecological PRG		450	300	--	2,500	--	--	--	--	29,000	18,000	10,000	65,000	10,000	9.60E-05	--	17.4	42.7	--	253	--	785	1.61	78.4	42.6	173	1,170
					Maximum ratio		0.12	1.07	--	1.08	--	--	--	--	0.25	0.64	0.15	--	0.01	1.96	--	4.87	1.82	--	3.84	--	2.08	3.29	1.20	1.85	0.62	1.20

Gray shaded concentrations indicate detections; NA - Not Analyzed

Notes:
µg/kg = microgram per kilogram
COC = constituent of concern
ft = foot
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification
mg/kg = miligram per kilogram
RDX = Hexahydro-1,2,5-trinitro-1,3,5-triazine
SRG = site remediation goal
VOC = volatile organic compound

Table 14
Outside Active Burning Grounds - Industrial Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATION-to-SRG RATIOS																								
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)											
						INDUSTRIAL SRGs - Surface Soil (SS):																									
						INDUSTRIAL SRGs - Subsurface Soil (SB):																									
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (total)	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc
W-OABG	22C-1	22C-1-T	10/26/95	0	1	SS															0.41	0.16	0.45		0.10	0.79	0.10	0.26	0.27	0.18	0.11	0.11
W-OABG	22C-2	22C-2-T	10/26/95	0	1	SS																	0.16			0.19	0.01					0.02
W-OABG	22D-1	22D-1-D	10/26/95	2	4	SS															0.41	0.06	0.32	0.25	0.09	0.76	0.03	0.34	0.22		0.12	0.08
W-OABG	22D-1	22D-1-T	10/26/95	0	1	SS															0.27	0.11	0.52		0.13	0.35	0.10	3.29	0.11	0.27	0.09	0.22
W-OABG	AOCM-1	AOCM-1-T	10/26/01	0	1	SS					0.02		0.01		0.06	0.07					1.04		0.37	0.82	0.18	0.88	0.07	0.21	0.78	0.06	0.21	0.19
W-OABG	AOCM-2	AOCM-2-T	10/26/01	0	1	SS					0.01		0.00		0.06	0.05					0.60		0.30	0.46	0.13	0.58	0.06	0.19	0.49	0.05	0.24	0.12
E-OABG	AS01-SB21	AS01-SS21-(0-1)	10/25/01	0	1	SS				101	0.01	0.03	0.00		0.06	0.06					0.82	0.71	1.01	0.45	2.08	0.95	1.43	2.92	0.60	1.65	0.26	0.88
E-OABG	AS01-SB22	AS01-SS22-(0-1)	10/25/01	0	1	SS				80.2	0.01	0.04	0.01		0.05	0.06					1.21	0.37	5.25	0.66	4.27	1.63	0.43	1.55	3.06	1.43	1.92	1.16
W-OABG	AS01-SB23	AS01-SS23-(0-1)	10/26/01	0	1	SS					0.01		0.01		0.06	0.06					0.64		0.53	0.36	0.23	0.69	0.06	0.15	0.37	0.28	0.14	0.20
W-OABG	AS01-SB24	AS01-SB24-(1-2)	10/24/01	1	2	SS									0.04						0.74		0.29	0.46	0.20	0.59	0.08	0.16	0.43		0.07	0.13
W-OABG	AS01-SB24	AS01-SS24-(0-1)	10/24/01	0	1	SS					0.09	0.32	0.04	0.02	0.13	0.35					0.90	0.04	0.27	1.11	0.16	0.72	0.05	0.18	1.01	0.04	0.10	0.20
W-OABG	AS01-SB25	AS01-SB25-(1-2)	10/24/01	1	2	SS					6.59	26.2	3.10	1.00	8.28	27.3					0.46		0.23	0.31	0.11	0.47	0.03	0.28	0.32	0.04	0.06	0.11
W-OABG	AS01-SB25	AS01-SS25-(0-1)	10/24/01	0	1	SS					0.08	0.36	0.05		0.12	0.34					1.14	0.05	0.36	1.06	0.19	0.91	0.06	0.17	0.99	0.09	0.13	0.21
W-OABG	AS01-SB26	AS01-SB26-(1-2)	10/23/01	1	2	SS				30.9	0.01	0.06	0.01		0.06	0.07					1.29		0.49	0.54	0.26	1.03	0.09	0.43	0.54		0.12	0.18
W-OABG	AS01-SB26	AS01-SS26-(0-1)	10/23/01	0	1	SS				0.15	0.02	0.08	0.01	0.20	0.06	0.12					1.15		0.42	0.84	0.22	0.97	0.07	0.11	1.07		0.15	0.18
W-OABG	AS01-SB27	AS01-SB27-(1-2)	10/23/01	1	2	SS					0.02	0.09	0.02		0.05	0.11					0.92		0.39	0.39	0.15	0.88	0.05	0.22	0.37		0.11	0.11
W-OABG	AS01-SB27	AS01-SS27-(0-1)	10/23/01	0	1	SS				0.02	0.02	0.08	0.01		0.06	0.10					0.69		0.27	0.74	0.16	0.62	0.06	0.09	0.71		0.09	0.14
W-OABG	AS01-SB28	AS01-SS28-(0-1)	10/26/01	0	1	SS				0.01	0.01		0.01		0.06	0.05					0.81		0.30	0.80	0.15	0.75	0.05	0.43	0.76		0.11	0.15
E-OABG	AS01-SB29	AS01-SS29-(0-1)	10/26/01	0	1	SS				0.02	0.01		0.00		0.06	0.07					0.90		0.31	0.76	0.14	0.75	0.06	0.10	0.69		0.13	0.14
E-OABG	AS01-SB30	AS01-SB30-(1-2)	10/24/01	1	2	SS			0.01	16.0	0.04	0.16	0.02		0.08	0.18				0.13	1.94	0.71	2.62	0.77	1.31	3.43	3.24	2.80	0.81	1.01	0.15	0.85
E-OABG	AS01-SB30	AS01-SS30-(0-1)	10/24/01	0	1	SS				0.03	0.03	0.11	0.01		0.06	0.13				0.04	0.66		0.22	0.98	0.14	0.53	0.05		0.96		0.08	0.18
W-OABG	AS01-SB33	AS01-SS33-(0-1)	10/26/01	0	1	SS					0.03		0.01		0.07	0.11				0.14	1.12		0.36	0.80	0.18	0.94	0.05	0.11	0.74	0.04	0.12	0.16
W-OABG	AS01-SB34	AS01-SB34-(1-2)	10/25/01	1	2	SS				0.03	0.02	0.09	0.01		0.05	0.12				0.76	0.94	0.72	0.87	0.78	3.95	1.15	0.27	0.35	0.94	2.24	0.46	0.92
W-OABG	AS01-SB34	AS01-SS34-(0-1)	10/25/01	0	1	SS				0.01	0.04	0.16	0.02		0.06	0.17					1.03	0.05	0.35	1.15	0.24	0.91	0.06	0.25	1.01	0.23	0.12	0.24
W-OABG	AS01-SB35	AS01-SS35-(0-1)	10/26/01	0	1	SS					0.02		0.01		0.05	0.08				0.06	0.86		0.30	0.75	0.15	0.78	0.06	0.11	0.70	0.04	0.11	0.16
W-OABG	AS01-SB36	AS01-SB36-(1-2)	10/25/01	1	2	SS					0.01	0.03	0.00		0.05	0.05				0.15	0.63	0.07	0.29	0.30	0.18	0.69	0.06	0.09	0.29	0.14	0.08	0.19
W-OABG	AS01-SB36	AS01-SS36-(0-1)	10/25/01	0	1	SS					0.01	0.05	0.01		0.05	0.07				0.18	1.12		0.39	0.78	0.18	0.98	0.06	0.11	0.72		0.13	0.17
W-OABG	AS01-SB37	AS01-SS37-(0-1)	10/26/01	0	1	SS					0.02		0.01		0.06	0.08				0.24	0.81	0.04	0.48	0.56	0.64	0.70	0.13	0.17	0.60	0.07	0.19	0.31
W-OABG	AS01-SB38	AS01-SB38-(1-2)	10/26/01	1	2	SS					0.02	0.08	0.01		0.05	0.08				0.01	0.67		0.33	0.29	0.09	0.79	0.04		0.24		0.11	0.07
W-OABG	AS01-SB38	AS01-SS38-(0-1)	10/26/01	0	1	SS					0.02	0.07	0.01		0.06	0.08				0.19	0.57		0.32	0.41	0.11	0.58	0.05		0.41		0.13	0.09
W-OABG	AS01-SB39	AS01-SB39-(1-2)	10/23/01	1	2	SS				19.8	0.04	0.15	0.02		0.07	0.17					1.34	0.05	0.56	0.54	0.28	0.96	0.11	0.49	0.55		0.12	0.19
W-OABG	AS01-SB39	AS01-SS39-(0-1)	10/23/01	0	1	SS				0.22	0.01	0.05	0.01		0.05	0.07					0.82		0.29	0.73	0.15	0.65	0.06		0.70		0.09	0.14
E-OABG	AS01-SB40	AS01-SB40-(1-2)	10/24/01	1	2	SS			0.01	0.02	0.03	0.15	0.02		0.08	0.18				0.06	0.63		0.31	0.37	0.13	0.59	0.07	0.22	0.32		0.08	0.09
E-OABG	AS01-SB40	AS01-SS40-(0-1)	10/24/01	0	1	SS				0.03	0.02	0.07	0.01		0.05	0.08				0.56	1.56	4.87	0.70	0.82	3.84	1.99	0.53	0.11	1.01		0.17	1.20
E-OABG	AS01-SB41	AS01-SB41-(1-2)	10/24/01	1	2	SS				0.04	0.03	0.10	0.01		0.06	0.11				0.01	0.89		0.28	0.40	0.15	0.75	0.06	0.16	0.39		0.09	0.14
E-OABG	AS01-SB41	AS01-SS41-(0-1)	10/24/01	0	1	SS					0.02	0.09	0.01		0.05	0.10				0.11	1.02	0.05	0.33	0.84	0.17	0.83	0.07	0.11	0.81		0.13	0.16
W-OABG	AS01-SB46	AS01-SS46-0-1	07/20/04	0	1	SS		0.01			0.01	0.04	0.01		0.03	0.04					0.69		0.33	0.89	0.15	0.83	0.05	0.11	0.82		0.11	0.16
W-OABG	AS01-SB47	AS01-SS47-0-1	07/20/04	0	1	SS					0.01	0.07	0.01		0.02	0.06					0.74		0.37	0.80	0.18	0.88	0.06	0.60	0.77	0.07	0.12	0.19
W-OABG	AS01-SB48	AS01-SS48-0-1	07/20/04	0	1	SS		2.83		4.44	0.01	0.04	0.01		0.03	0.04					0.53		0.33	0.45	0.17	0.79	0.06	0.62	0.47	0.08	0.13	0.14
W-OABG	AS01-SB49	AS01-SS49-0-1	07/20/04	0	1	SS		1.50		1.22	0.85	4.29	1.00		0.51	4.02					0.78		0.46	0.66	0.17	0.91	0.06	0.22	0.70		0.13	0.15
E-OABG	AS01-SB50	AS01-SS50-0-1	07/21/04	0	1	SS		0.04			0.00	0.01	0.00		0.03	0.01				0.03	0.37		0.24	0.20	0.07	0.59	0.09	0.06	0.20		0.09	0.05
E-OABG	AS01-SB51	AS01-SS51-0-1	07/21/04	0	1	SS		1.07	0.66	3.33	0.00	0.02	0.00		0.03	0.02				0.44	0.53	0.75	0.55	0.46	0.49	0.87	0.28	0.16	0.47		0.15	0.72
E-OABG	AS01-SB52	AS01-SS52-0-1	07/21/04	0	1	SS		1.00	0.51	7.90	0.01	0.03	0.00		0.04	0.02				1.25	0.54	0.26	1.00	0.39	1.00	1.60	0.75	1.30	0.64	0.06	0.13	1.00
E-OABG	AS01-SB53	AS01-SS53-0-1	07/21/04	0	1	SS				44.4	0.00	0.02	0.00		0.03	0.02				1.40	0.78	0.63	1.49	0.38	1.12	0.81	1.67	0.62	0.90	1.00	1.00	1.20
E-OABG	AS01-SB54	AS01-SS54-0-1	07/21/04	0	1	SS					0.01	0.06	0.01		0.03	0.05				0.19	0.80		0.40	0.71	0.17	0.91	0.06	0.19	0.72		0.15	0.15
W-OABG	AS01-SB56	AS01-SS56-0-1	07/21/04	0	1	SS					0.01	0.05	0.01		0.03	0.05				0.17	0.74		0.37	0.82	0.16	0.89	0.05	0.16	0.76		0.13	0.17
W-OABG	AS01-SB57	AS01-SS57-0-1	07/21/04	0	1	SS					0.92	5.71	0.76		2.18	4.58				0.28	0.70	0.30	1.39	0.30	2.04	0.85	1.20	0.27	0.58	0.13	0.34	0.72
E-OABG	AS01-SB58	AS01-SS58-0-1	07/21/04	0	1	SS					0.01	0.04	0.01		0.03	0.04				0.46	0.70		0.33	0.76	0.16	0.81	0.06	0.14	0.73		0.13	0.15
E-OABG	AS01-SB59	AS01-SS59-0-1	07/21/04	0	1	SS					0.01	0.05	0.01		0.03	0.05				0.12	0.79		0.38	0.80	0.17	0.91	0.06	0.15	0.80		0.14	0.15
E-OABG	AS01-SB71	AS01-SB71-1_5-2	09/23/04	1.5	2	SS			0.02	0.02			0.00		0.06	0.09	0.15		1.17	0.02	0.44	0.03	0.33	0.26	0.09	0.66	0.05	0.17	0.27	0.02	0.08	0.07
E-OABG	AS01-SB71	AS01-SS71-0-0_5	09/23/04	0	1	SS									0.07		0.05		0.68	0.05	0.59	0.10	0.35	0.52	0.14	0.81	0.08	0.14	0.55	0.02	0.14	0.15
E-OABG	AS01-SB72	AS01-SB72-4_5-5	09/23/04	4.5	5	SB			10.0	95.1								81.1	15.0	1.03	0.24	1.10		0.97	0.04	0.90	0.98	0.58				
E-OABG	AS01-SB72	AS01-SS72-0-0_5	09/23/04	0	1	SS		5.33	0.38	5.43							53.0	1.35	60.8	3.63	0.45	21.4	7.47	0.53	0.98	1.52	1.04	35.0	0.71	0.29	0.10	1.76
E-OABG	AS01-SB73	AS01-SB73-1_5-2	09/23/04	1.5	2	SS				210							0.01			0.02	0.44		0.30	0.29	0.09	0.78	0.03	0.11	0.29	0.01	0.10	0.07
E-OABG	AS01-SB73	AS01-SS73-0-0_5	09/23/04	0	1	SS				27.2							0.01			0.25	0.54	0.12	0.88	0.31	0.68	1.14	0.14	0.26	0.47	0.97	0.17	0.27
E-OABG	AS01-SB74	AS01-SB74-4-4_5	09/23/04	4	5	SS			0.00	0.07							0.01			0.07	0.44	0.67	6.60	1.03	53.8	0.94	1.10	0.11	4.43	0.46	0.31	0.86
E-OABG	AS01-SB74	AS01-SS74-0-0_5	09/23/04	0	1	SS				0.01					0.06					0.07	0.47	0.04	0.73	0.35	0.38	0.89	0.09	0.21	0.37	0.02	0.11	0.16
W-OABG	AS01-TP02	AS01-TP02-0910	03/18/08	9	10	SB														0.00	0.41	0.00		0.32	0.00	1.00	0.01					
W-OABG	AS01-TP03	AS01-TP03-0910	03/18/08	9	10	SB														0.00	0.31	0.00		0.56	0.00	0.73	0.01					
W-OABG	AS01-TP04	AS01-TP04-0910	03/18/08	9	10	SB														0.00	0.25	0.00		0.33	0.00	0.60	0.01					
W-OABG	AS01-TP05	AS01-DC01-0506	03/19/08	5	6	SB				9.38	0.02	0.09	0.01							0.80	0.39	0.06		0.97	0.06	0.83	0.21	0.13				
W-OABG	AS01-TP05	AS01-TP05-0910	03/19/08	9	10	SB				0.04	0.02	0.07	0.01							0.42	0.42	0.05		0.81	0.03	0.87	0.18	0.07				
W-OABG	AS01-TP06	AS01-TP06-0910	03/19/08	9	10	SB				0.05										0.00	0.29	0.00		0.18	0.00	0.82	0.01					
W-OABG	AS01-TP07	AS01-DC03-0304	03/20/08	3	4	SS									0.06	0.10				0.16	0.49	0.06	0.65	0.26	2.23	0.94	0.13	0.03	0.36	0.03	0.11	0.79
W-OABG	AS01-TP07	AS01-TP07-0910	03/20/08	9	10	SB														0.00	0.35	0.00		0.33	0.00	0.78	0.01	0.00				
W-OABG	AS01-TP08	AS01-TP08-0910	03/20/08	9	10	SB														0.00	0.27	0.00		0.41	0.00	0.63	0.01					
W-OABG	AS01-TP09	AS01-DC02-0405	03/20/08	4	5	SS				0.02		0.05	0.01		0.06	0.06				0.32	0.45	0.48	0.86	0.25	0.27	0.66	0.23		2.59	0.04	5.75	0.62
W-OABG	AS01-TP09	AS01-TP09-0910	03/20/08	9	10	SB				0.03										0.00	0.31	0.00		0.63	0.00	0.75	0.01					
W-OABG	AS01-TP10	AS01-TP10-0910	03/24/08	9	10	SB				0.10											0.31	0.00		0.59	0.00	0.80	0.01					
W-OABG	AS01-TP11	AS01-TP11-0910	03/24/08	9	10	SB				0.03											0.44	0.00		0.68	0.00	0.67	0.04					
W-OABG	AS01-TP12	AS01-TP12-0809	03/25/08	8	9	SB				0.19											0.37	0.00		0.48	0.00	0.81	0.01					
W-OABG	AS01-TP13	AS01-TP13-0910	03/25/08	9	10	SB				8.52											0.29	0.00		0.50	0.00	0.62	0.01					

Table 14
Outside Active Burning Grounds - Industrial Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATION-to-SRG RATIOS																							
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)											
						INDUSTRIAL SRGs - Surface Soil (SS):																								
						INDUSTRIAL SRGs - Subsurface Soil (SB):																								
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (total)	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc
W-OABG	AS01-TP14	AS01-DC04-0304	03/25/08	3	4	SS				32.1											0.32	0.02	0.22	0.22	0.08	0.55	0.02		0.24	0.00	0.08	0.05
W-OABG	AS01-TP14	AS01-TP14-0910	03/25/08	9	10	SB				114											0.58	0.00		0.91	0.00	0.78	0.04	0.02				
W-OABG	AS01-TP15	AS01-TP15-0910	03/25/08	9	10	SB				13.6											0.29	0.00		0.48	0.00	0.66	0.01					
C-OABG	AS01-TP16	AS01-TP16-0809	03/25/08	8	9	SB				0.08										0.05	0.70	0.01		1.25	0.00	0.97	0.05	0.01				
C-OABG	AS01-TP17	AS01-TP17-0809	03/25/08	8	9	SB														0.26	0.63	0.01		1.10	0.00	0.90	0.04					
C-OABG	AS01-TP18	AS01-TP18-0910	03/26/08	9	10	SB															0.29	0.00		0.44	0.00	0.63	0.01					
C-OABG	AS01-TP19	AS01-TP19-0910	03/26/08	9	10	SB				0.01											0.24	0.00		0.41	0.00	0.53	0.01					
C-OABG	AS01-TP20	AS01-TP20-0910	03/26/08	9	10	SB															0.24	0.00		0.38	0.00	0.58	0.01					
C-OABG	AS01-TP21	AS01-TP21-0910	03/26/08	9	10	SB				0.01											0.23	0.00		0.37	0.00	0.52	0.01					
C-OABG	AS01-TP22	AS01-TP22-0910	03/26/08	9	10	SB				0.04										0.00	0.29	0.00		0.43	0.00	0.65	0.01					
E-OABG	AS01-TP23	AS01-DC12-0102	03/31/08	1	2	SS						0.07				0.09					0.37	0.03	0.24	0.18	0.09	0.54	0.12	0.11	0.21	0.02	0.09	0.07
E-OABG	AS01-TP23	AS01-TP23-0910	03/31/08	9	10	SB				0.00											0.28	0.00		0.40	0.00	0.65	0.01	0.00				
E-OABG	AS01-TP24	AS01-TP24-0910	03/27/08	9	10	SB				0.01										0.00	0.28	0.00		0.44	0.00	0.65	0.01					
E-OABG	AS01-TP25	AS01-DC13-0304	04/01/08	3	4	SS				0.01										0.00	0.51	0.11	0.74	0.22	0.12	0.72	0.06	0.19	1.20	0.02	0.12	0.22
E-OABG	AS01-TP25	AS01-TP25-0910	04/01/08	9	10	SB			0.00	0.02										0.00	0.33	0.00		0.44	0.00	0.74	0.04					
E-OABG	AS01-TP26	AS01-TP26-0910	03/31/08	9	10	SB			0.03	0.04											0.24	0.00		0.42	0.00	0.56	0.01	0.00				
E-OABG	AS01-TP27	AS01-DC10-0405	03/28/08	4	5	SS			0.02	0.11											0.39	0.08	0.35	0.24	0.18	0.66	0.21	0.28	0.41	0.05	0.09	0.21
E-OABG	AS01-TP27	AS01-TP27-0910	03/28/08	9	10	SB			0.02	0.08											0.31	0.01		0.49	0.00	0.70	0.01					
E-OABG	AS01-TP28	AS01-DC09-0304	03/28/08	3	4	SS			1.00	32.1											0.39	0.43	0.92	0.34	2.36	0.70	0.85	0.93	0.70	1.29	0.15	1.32
E-OABG	AS01-TP28	AS01-TP28-0910	03/28/08	9	10	SB			0.02	14.8											0.29	0.00		0.37	0.00	0.76	0.01					
E-OABG	AS01-TP29	AS01-DC08-0304	03/28/08	3	4	SS				86.4										0.01	0.38	0.06	0.28	0.20	0.09	0.72	0.03	3.04	0.25	0.10	0.10	0.24
E-OABG	AS01-TP29	AS01-TP29-0910	03/28/08	9	10	SB				568											0.29	0.00		0.26	0.00	0.70	0.01					
E-OABG	AS01-TP30	AS01-DC05-0203	03/27/08	2	3	SS				0.01					0.06	0.09					0.59	0.48	1.82	0.49	3.08	0.87	0.25	1.24	0.97	0.11	0.11	0.72
E-OABG	AS01-TP30	AS01-TP30-0910	03/27/08	9	10	SB				0.00	0.01	0.05	0.01								0.38	0.01		1.09	0.04	0.60	0.04					
W-OABG	AS01-TP32	AS01-TP32-0910	03/24/08	9	10	SB				0.04	0.02	0.06	0.01								0.65	0.00		1.00	0.00	0.87	0.06					
W-OABG	AS01-TP33	AS01-TP33-0607	03/25/08	6	7	SB				0.21											0.31	0.00		0.47	0.00	0.62	0.01					
C-OABG	AS01-TP34	AS01-TP34-0910	03/26/08	9	10	SB				0.01											0.21	0.00		0.33	0.00	0.48	0.01					
E-OABG	AS01-TP35	AS01-DC11-0203	03/31/08	2	3	SS															0.29	0.02	0.25	0.19	0.07	0.62	0.06	0.07	0.19	0.03	0.09	0.06
E-OABG	AS01-TP35	AS01-TP35-0910	03/31/08	9	10	SB				0.01											0.29	0.01		0.53	0.00	0.68	0.01	0.00				
E-OABG	AS01-TP36	AS01-DC07-0304	03/27/08	3	4	SS			0.00	284											0.28	0.02	0.18	0.21	0.06	0.46	0.02		0.20	0.00	0.06	0.04
E-OABG	AS01-TP36	AS01-TP36-0910	03/27/08	9	10	SB			0.00	901										0.04	0.26	0.00		0.39	0.00	0.54	0.01					
E-OABG	AS01-TP37	AS01-DC06-0203	03/27/08	2	3	SS				0.02	0.01		0.01		0.07	0.08					0.63	0.05	0.37	0.38	0.21	0.71	0.07	0.42	0.41	0.09	0.09	0.17
E-OABG	AS01-TP37	AS01-TP37-0910	03/27/08	9	10	SB				0.02											0.48	0.01		0.61	0.00	0.60	0.08	0.01				
E-OABG	AS01-TP38	AS01-TP38-0910	03/27/08	9	10	SB				0.01											0.33	0.00		1.81	0.00	0.64	0.02					
E-OABG	B1-003	HCS-B1-3-1	07/17/92	1	2	SS															0.28	0.20	1.10	0.28	0.32	0.80	0.22	0.17	0.33	0.03	0.10	0.33
E-OABG	B1-003	HCS-B1-3-S	07/17/92	0.5	1	SS															0.90	1.32	1.20	0.54	1.22	0.76	1.01	0.35	0.56	0.14	0.20	1.10
E-OABG	B1-004	HCS-B1-4-S	07/17/92	0.5	1	SS															0.53	3.28	2.34	0.76	3.08	3.43	15.4	0.62	1.36	0.30	0.10	3.30
E-OABG	B1-011	HCS-B1-11-2	07/17/92	0.5	1	SS															0.80	2.69	2.34	0.51	5.49	2.28	1.26	2.86	1.30	2.44	0.56	2.86
E-OABG	B1-011	HCS-B1-11-S	07/17/92	1	2	SS															0.89	8.85	2.41	0.60	3.38	1.28	8.51	1.55	0.95	0.58	0.18	1.85
E-OABG	B1-12S/12	HCS-B1-12-1	11/16/94	0	1	SS																										
E-OABG	B1-12S/12	HCS-B1-12-S	11/16/94	0	1	SS					0.01		0.00		0.07	0.09																
E-OABG	B1-13S/13	HCS-B1-13-1	11/16/94	0	1	SS					0.01	0.03	0.00		0.05	0.04																
E-OABG	B1-13S/13	HCS-B1-13-S	11/16/94	0	1	SS																										
E-OABG	B1-C	HCS-B1-C	07/17/92	0	1	SS														2.31	0.46	0.19	0.23	0.11	0.32	0.29	6.36	1.30	0.15	0.21	0.03	0.25
E-OABG	B1-CS	HCS-B1-CS	06/20/94	1	2	SS																										
W-OABG	B2-003	HCS-B2-3-4	07/17/92	3	4	SS															0.48		0.74	0.40	0.54	0.80	0.09	0.20	0.70	0.15	0.62	0.35
W-OABG	B2-003	HCS-B2-3-S	07/17/92	2	3	SS															0.59	0.30	1.29	0.47	2.29	0.90	2.08	0.75	0.63	1.85	0.19	0.58
W-OABG	B2-004	HCS-B2-4-4	07/17/92	3	4	SS					0.19	0.67	0.07	0.11	0.25	0.64																
W-OABG	B2-005	HCS-B2-5-3	07/17/92	2	3	SS					0.08	0.33	0.03		0.10	0.31																
W-OABG	B2-006	HCS-B2-6-3	07/17/92	2	3	SS					0.01	0.04	0.00		0.07	0.06																
W-OABG	B2-007	HCS-B2-7-3	07/17/92	2	3	SS															0.43		0.36	0.36	0.22	0.85	0.10	0.25	0.48	0.05	0.08	0.14
W-OABG	B2-007	HCS-B2-7-S	07/17/92	1	2	SS															0.89	0.11	0.70	0.49	8.50	0.71	0.35	1.68	0.51	2.84	0.48	0.54
W-OABG	B2-010	HCS-B2-10	07/17/92	5	6	SB															0.69	0.29		1.46	0.18	0.95	0.57	0.43				
W-OABG	B2-C	HCS-B2-C	07/17/92	0.5	1	SS														1.96	0.81	0.39	0.80	0.49	1.38	0.90	0.25	1.99	0.85	1.51	0.44	0.73
E-OABG	BG-003	HCS-BG-3	07/13/92	3	4	SS				0.01																						
W-OABG	BG-015	HCS-BG-15	07/13/92	3	4	SS				0.03																						
E-OABG	BG-023/023S/083	HCS-BG-23S	06/21/94	0	1	SS																										
E-OABG	BG-084/084S/106	HCS-BG-106	07/13/92	11	12	SB				3.09																						
E-OABG	BG-084/084S/106	HCS-BG-84	07/13/92	3	4	SS				0.12																						
E-OABG	BG-084/084S/106	HCS-BG-84S	06/20/94	0	1	SS				0.14																						
W-OABG	BG-098/098S	HCS-BG-98S	11/16/94	0	1	SS				33.3	0.01	0.03	0.00		0.07	0.05					0.99		0.55	0.60	0.30	1.08	0.07	0.29	0.65	0.08	0.15	0.18
W-OABG	BG-099	HCS-BG-99	07/13/92	2	3	SS				0.01																						
W-OABG	BG-099	HCS-BG-99R	07/13/92	2	3	SS				0.01																						
E-OABG	BG-102/102S	HCS-BG-102	07/13/92	1	2	SS	0.58		1.27	30.9																						
E-OABG	BG-102/102S	HCS-BG-102S	11/16/94	0	1	SS			0.03	1.10	0.01	0.04	0.01		0.06	0.05					0.71		0.31	0.74	0.15	0.92	0.05	0.09	0.75		0.12	0.18
E-OABG	BG-110/110S	HCS-BG-110	07/13/92	2	3	SS	60.0			42.0																						
E-OABG	BG-110/110S	HCS-BG-110S	11/16/94	0	1	SS	35.6			32.1	0.01	0.03	0.00		0.06	0.04					0.64		0.28	1.06	0.13	0.81	0.05	0.06	0.97		0.11	0.20
W-OABG	BG-112	HCS-BG-112	07/13/92	2	3	SS	0.07			0.07																						
W-OABG	BG-112	HCS-BG-112R	07/13/92	2	3	SS				0.02																						
W-OABG	BG-113	HCS-BG-113	07/13/92	2	3	SS				116																						
W-OABG	BG-113	HCS-BG-113S	11/15/94	0	1	SS				9.88	0.01	0.04	0.01	0.03	0.07	0.07					0.93	0.18	0.47	0.71	0.20	0.99	0.07	0.30	0.68	0.06	0.14	0.16
W-OABG	BG-134	HCS-BG-134	11/16/94	2	3	SS	5.11			284																						

Table 14
Outside Active Burning Grounds - Industrial Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

							COC CONCENTRATION-to-SRG RATIOS																								
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)											
						INDUSTRIAL SRGs - Surface Soil (SS):																									
						INDUSTRIAL SRGs - Subsurface Soil (SB):																									
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (total)	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc
W-OABG	BG-135	HCS-BG-135	11/16/94	2	3	SS			0.00	0.09																						
W-OABG	BG-136	HCS-BG-136	11/16/94	2	3	SS	0.02			0.90																						
W-OABG	BG-137	HCS-BG-137	11/16/94	2	3	SS				0.01																						
W-OABG	BG-138	HCS-BG-138	11/16/94	2	3	SS	2.89			173																						
W-OABG	BG-139	HCS-BG-139	11/15/94	2	3	SS				5.43																						
W-OABG	BG-140	HCS-BG-140	11/15/94	2	3	SS	0.00			0.05																						
W-OABG	BG-141	HCS-BG-141	11/16/94	2	3	SS				0.01																						
W-OABG	BG-142	HCS-BG-142	11/16/94	2	3	SS	0.03			0.20																						
E-OABG	BG-143	HCS-BG-143	11/16/94	2	3	SS				0.02																						
E-OABG	BG-144	HCS-BG-144	11/16/94	2	3	SS				0.03																						
E-OABG	BG-145	HCS-BG-145	11/16/94	2	3	SS	0.00			0.01																						
E-OABG	BG-146	HCS-BG-146	11/16/94	2	3	SS			2.00	24.7																						
E-OABG	BG-147	HCS-BG-147	11/16/94	2	3	SS	1.87		0.44	65.4																						
E-OABG	BG-148	HCS-BG-148	11/16/94	2	3	SS	53.3		0.15	79.0																						
E-OABG	BG-149	HCS-BG-149	11/16/94	2	3	SS				7.90																						
W-OABG	BG-150	HCS-BG-150	11/15/94	2	3	SS				21.0	0.01	0.04			0.05	0.07					0.52		0.21	0.39	0.12	0.71	0.04	0.14	0.40	0.05	0.10	0.11
W-OABG	BG-151	HCS-BG-151	03/04/95	2	3	SS			0.00																							
W-OABG	BG-154	HCS-BG-154	10/27/98	2	3	SS																										
W-OABG	BG-155	HCS-BG-155	10/27/98	2	3	SS																										
W-OABG	BG-156	HCS-BG-156	10/27/98	2	3	SS	0.12			1.11																						
W-OABG	BG-157	HCS-BG-157	10/27/98	2	3	SS																										
W-OABG	BG-158	HCS-BG-158	10/27/98	2	3	SS	15.8			56.8																						
W-OABG	BG-159/160	HCS-BG-159	10/27/98	2	3	SS				0.03																						
W-OABG	BG-159/160	HCS-BG-160	10/27/98	4	6	SB				0.07																						
W-OABG	BG-163/164	HCS-BG-163	10/27/98	2	3	SS				0.03																						
W-OABG	BG-163/164	HCS-BG-164	10/27/98	4	6	SB				0.00																						
W-OABG	BG-166	HCS-BG-166	10/27/98	2	3	SS	0.01			114																						
W-OABG	BG-167/168	HCS-BG-167	10/27/98	2	3	SS				63.0																						
W-OABG	BG-167/168	HCS-BG-168	10/27/98	4	6	SB	0.00			0.89																						
E-OABG	BG-169	HCS-BG-169	10/27/98	2	3	SS																										
E-OABG	BG-170	HCS-BG-170	10/27/98	2	3	SS				0.01																						
E-OABG	BG-172	HCS-BG-172	10/27/98	2	3	SS			0.04	0.86																						
E-OABG	BG-173	HCS-BG-173	10/27/98	2	3	SS			0.00	0.48																						
E-OABG	BG-174	HCS-BG-174	10/27/98	2	3	SS	0.01			444																						
E-OABG	BG-175/176	HCS-BG-175	10/27/98	2	3	SS				0.12																						
E-OABG	BG-175/176	HCS-BG-176	10/27/98	4	6	SB				0.65																						
E-OABG	BG-177/178	HCS-BG-177	10/27/98	2	3	SS				0.05																						
E-OABG	BG-177/178	HCS-BG-178	10/27/98	4	6	SB				0.20																						
						UCL Current Conditions																									
	STEP 1 (SRG Ratio >10)																															
E-OABG	AS01-TP36	AS01-TP36-0910	03/27/08	9	10	SB			0.00	901										0.04	0.26	0.00		0.39	0.00	0.54	0.01					
E-OABG	AS01-TP36	AS01-DC07-0304	03/27/08	3	4	SS			0.00	284											0.28	0.02	0.18	0.21	0.06	0.46	0.02		0.20	0.00	0.06	0.04
E-OABG	AS01-TP29	AS01-TP29-0910	03/28/08	9	10	SB				568											0.29	0.00		0.26	0.00	0.70	0.01					
E-OABG	AS01-TP29	AS01-DC08-0304	03/28/08	3	4	SS				86.4										0.01	0.38	0.06	0.28	0.20	0.09	0.72	0.03	3.04	0.25	0.10	0.10	0.24
E-OABG	BG-174	HCS-BG-174	10/27/98	2	3	SS	0.01			444																						
W-OABG	BG-134	HCS-BG-134	11/16/94	2	3	SS	5.11			284																						
E-OABG	AS01-SB73	AS01-SB73-1_5-2	09/23/04	1.5	2	SS				210							0.01			0.02	0.44		0.30	0.29	0.09	0.78	0.03	0.11	0.29	0.01	0.10	0.07
E-OABG	AS01-SB73	AS01-SS73-0-0_5	09/23/04	0	1	SS				27.2							0.01			0.25	0.54	0.12	0.88	0.31	0.68	1.14	0.14	0.26	0.47	0.97	0.17	0.27
W-OABG	BG-138	HCS-BG-138	11/16/94	2	3	SS	2.89			173																						
W-OABG	BG-113	HCS-BG-113	07/13/92	2	3	SS				116																						
W-OABG	BG-113	HCS-BG-113S	11/15/94	0	1	SS				9.88	0.01	0.04	0.01	0.03	0.07	0.07					0.93	0.18	0.47	0.71	0.20	0.99	0.07	0.30	0.68	0.06	0.14	0.16
W-OABG	AS01-TP14	AS01-TP14-0910	03/25/08	9	10	SB				114											0.58	0.00		0.91	0.00	0.78	0.04	0.02				
W-OABG	AS01-TP14	AS01-DC04-0304	03/25/08	3	4	SS				32.1											0.32	0.02	0.22	0.22	0.08	0.55	0.02		0.24	0.00	0.08	0.05
W-OABG	BG-166	HCS-BG-166	10/27/98	2	3	SS	0.01			114																						
E-OABG	AS01-SB21	AS01-SS21-(0-1)	10/25/01	0	1	SS				101	0.01	0.03	0.00		0.06	0.06					0.82	0.71	1.01	0.45	2.08	0.95	1.43	2.92	0.60	1.65	0.26	0.88
E-OABG	AS01-SB72	AS01-SB72-4_5-5	09/23/04	4.5	5	SB			10.0	95.1								81.1	15.0	1.03	0.24	1.10		0.97	0.04	0.90	0.98	0.58				
E-OABG	AS01-SB72	AS01-SS72-0-0_5	09/23/04	0	1	SS		5.33	0.38	5.43							53.0	1.35	60.8	3.63	0.45	21.4	7.47	0.53	0.98	1.52	1.04	35.0	0.71	0.29	0.10	1.76
E-OABG	AS01-SB22	AS01-SS22-(0-1)	10/25/01	0	1	SS				80.2	0.01	0.04	0.01		0.05	0.06					1.21	0.37	5.25	0.66	4.27	1.63	0.43	1.55	3.06	1.43	1.92	1.16
E-OABG	BG-148	HCS-BG-148	11/16/94	2	3	SS	53.3		0.15	79.0																						
E-OABG	BG-147	HCS-BG-147	11/16/94	2	3	SS	1.87		0.44	65.4																						
W-OABG	BG-167/168	HCS-BG-167	10/27/98	2	3	SS				63.0																						
E-OABG	BG-110/110S	HCS-BG-110	07/13/92	2	3	SS	60.0			42.0																						
E-OABG	BG-110/110S	HCS-BG-110S	11/16/94	0	1	SS	35.6			32.1	0.01	0.03	0.00		0.06	0.04					0.64		0.28	1.06	0.13	0.81	0.05	0.06	0.97		0.11	0.20
W-OABG	BG-158	HCS-BG-158	10/27/98	2	3	SS	15.8			56.8																						
E-OABG	AS01-SB74	AS01-SB74-4-4_5	09/23/04	4	5	SS			0.00	0.07							0.01			0.07	0.44	0.67	6.60	1.03	53.8	0.94	1.10	0.11	4.43	0.46	0.31	0.86
E-OABG	AS01-SB53	AS01-SS53-0-1	07/21/04	0	1	SS				44.4	0.00	0.02	0.00		0.03	0.02				1.40	0.78	0.63	1.49	0.38	1.12	0.81	1.67	0.62	0.90	1.00	1.00	1.20
W-OABG	BG-098/098S	HCS-BG-98S	11/16/94	0	1	SS				33.3	0.01	0.03	0.00		0.07	0.05					0.99		0.55	0.60	0.30	1.08	0.07	0.29	0.65	0.08	0.15	0.18
E-OABG	AS01-TP28	AS01-DC09-0304	03/28/08	3	4	SS			1.00	32.1											0.39	0.43	0.92	0.34	2.36	0.70	0.85	0.93	0.70	1.29	0.15	1.32
W-OABG	AS01-SB26	AS01-SB26-(1-2)	10/23/01	1	2	SS				30.9	0.01	0.06	0.01		0.06	0.07					1.29		0.49	0.54	0.26	1.03	0.09	0.43	0.54		0.12	0.18
W-OABG	AS01-SB26	AS01-SS26-(0-1)	10/23/01	0	1	SS				0.15	0.02	0.08	0.01	0.20	0.06	0.12					1.15		0.42	0.84	0.22	0.97	0.07	0.11	1.07		0.15	0.18
E-OABG	BG-102/102S	HCS-BG-102	07/13/92	1	2	SS	0.58		1.27	30.9																						
E-OABG	BG-102/102S	HCS-BG-102S	11/16/94	0	1	SS			0.03	1.10	0.01	0.04	0.01		0.06	0.05					0.71		0.31	0.74	0.15	0.92	0.05	0.09	0.75		0.12	0.18

Table 14
Outside Active Burning Grounds - Industrial Removal Scenario (UCL)
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

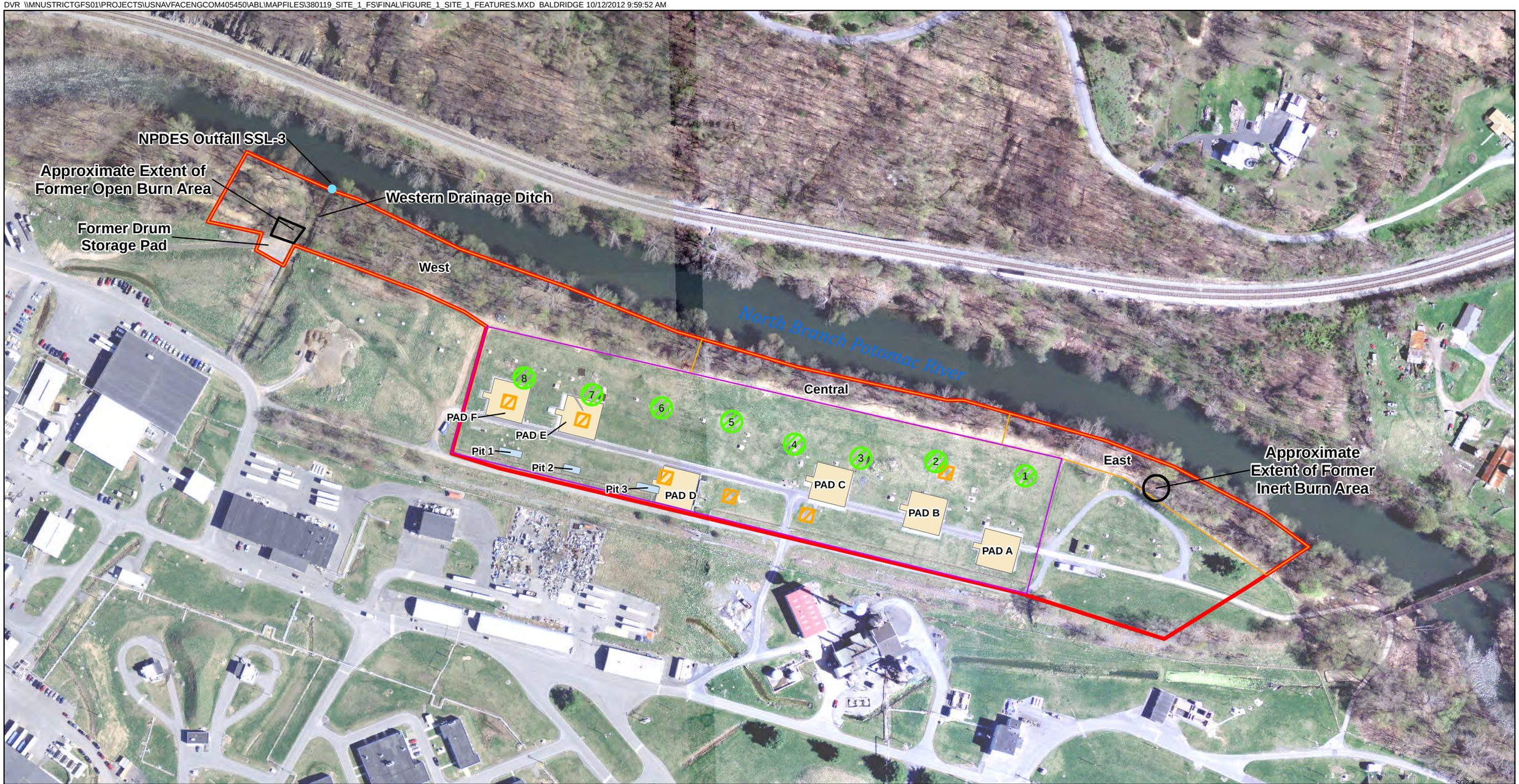
Area	Station ID	Sample ID	Sample Date	Top of Sample (ft)	Sample Bottom (ft)	Sample Designation	1,2-Dichloroethene (total)	Methyl acetate	Tetrachloroethene	Trichloroethene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Dibenz(a,h)anthracene	Total PAHs - LMW	Total PAHs - HMW	HMX	Nitroglycerin	RDX	TEQs	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Mercury	Nickel	Silver	Vanadium	Zinc
							COC CONCENTRATION-to-SRG RATIOS																									
							VOCs (ug/kg)				SVOCs (ug/kg)						Explosives (ug/kg)			Dioxins/ Furans (mg/kg)	Metals (mg/kg)											
						INDUSTRIAL SRGs - Surface Soil (SS):																										
						INDUSTRIAL SRGs - Subsurface Soil (SB):																										
W-OABG	AS01-SB25	AS01-SB25-(1-2)	10/24/01	1	2	SS					6.59	26.2	3.10	1.00	8.28	27.3					0.46		0.23	0.31	0.11	0.47	0.03	0.28	0.32	0.04	0.06	0.11
W-OABG	AS01-SB25	AS01-SS25-(0-1)	10/24/01	0	1	SS					0.08	0.36	0.05		0.12	0.34					1.14	0.05	0.36	1.06	0.19	0.91	0.06	0.17	0.99	0.09	0.13	0.21
E-OABG	BG-146	HCS-BG-146	11/16/94	2	3	SS			2.00	24.7																						
W-OABG	BG-150	HCS-BG-150	11/15/94	2	3	SS				21.0	0.01	0.04			0.05	0.07					0.52		0.21	0.39	0.12	0.71	0.04	0.14	0.40	0.05	0.10	0.11
W-OABG	AS01-SB39	AS01-SB39-(1-2)	10/23/01	1	2	SS				19.8	0.04	0.15	0.02		0.07	0.17					1.34	0.05	0.56	0.54	0.28	0.96	0.11	0.49	0.55		0.12	0.19
W-OABG	AS01-SB39	AS01-SS39-(0-1)	10/23/01	0	1	SS				0.22	0.01	0.05	0.01		0.05	0.07					0.82		0.29	0.73	0.15	0.65	0.06		0.70		0.09	0.14
E-OABG	AS01-SB30	AS01-SB30-(1-2)	10/24/01	1	2	SS			0.01	16.0	0.04	0.16	0.02		0.08	0.18				0.13	1.94	0.71	2.62	0.77	1.31	3.43	3.24	2.80	0.81	1.01	0.15	0.85
E-OABG	AS01-SB30	AS01-SS30-(0-1)	10/24/01	0	1	SS				0.03	0.03	0.11	0.01		0.06	0.13				0.04	0.66		0.22	0.98	0.14	0.53	0.05		0.96		0.08	0.18
E-OABG	B1-004	HCS-B1-4-S	07/17/92	0.5	1	SS															0.53	3.28	2.34	0.76	3.08	3.43	15.4	0.62	1.36	0.30	0.10	3.30
E-OABG	AS01-TP28	AS01-TP28-0910	03/28/08	9	10	SB			0.02	14.8											0.29	0.00		0.37	0.00	0.76	0.01					
W-OABG	AS01-TP15	AS01-TP15-0910	03/25/08	9	10	SB				13.6											0.29	0.00		0.48	0.00	0.66	0.01					
						UCL Step 1																										
						Maximum - All depths	0.12	2.83	0.66	9.38	0.92	5.71	1.00	0.11	2.18	4.58	0.15	--	1.17	2.31	1.56	8.85	2.41	1.81	8.50	2.28	8.51	3.29	2.59	2.84	5.75	2.86
						Maximum - SS	0.12	2.83	0.66	7.90	0.92	5.71	1.00	0.11	2.18	4.58	0.15	--	1.17	2.31	1.56	8.85	2.41	1.15	8.50	2.28	8.51	3.29	2.59	2.84	5.75	2.86
						Ecological PRG																										
						Maximum ratio																										
	STEP 2 (SRG Ratio >5)																															
W-OABG	AS01-TP05	AS01-DC01-0506	03/19/08	5	6	SB				9.38	0.02	0.09	0.01							0.80	0.39	0.06		0.97	0.06	0.83	0.21	0.13				
E-OABG	B1-011	HCS-B1-11-S	07/17/92	1	2	SS															0.89	8.85	2.41	0.60	3.38	1.28	8.51	1.55	0.95	0.58	0.18	1.85
E-OABG	B1-011	HCS-B1-11-2	07/17/92	0.5	1	SS															0.80	2.69	2.34	0.51	5.49	2.28	1.26	2.86	1.30	2.44	0.56	2.86
W-OABG	AS01-TP13	AS01-TP13-0910	03/25/08	9	10	SB				8.52											0.29	0.00		0.50	0.00	0.62	0.01					
W-OABG	B2-007	HCS-B2-7-S	07/17/92	1	2	SS															0.89	0.11	0.70	0.49	8.50	0.71	0.35	1.68	0.51	2.84	0.48	0.54
E-OABG	AS01-SB52	AS01-SS52-0-1	07/21/04	0	1	SS		1.00	0.51	7.90	0.01	0.03	0.00		0.04	0.02				1.25	0.54	0.26	1.00	0.39	1.00	1.60	0.75	1.30	0.64	0.06	0.13	1.00
E-OABG	BG-149	HCS-BG-149	11/16/94	2	3	SS				7.90																						
E-OABG	B1-C	HCS-B1-C	07/17/92	0	1	SS														2.31	0.46	0.19	0.23	0.11	0.32	0.29	6.36	1.30	0.15	0.21	0.03	0.25
W-OABG	AS01-TP09	AS01-DC02-0405	03/20/08	4	5	SS				0.02		0.05	0.01		0.06	0.06				0.32	0.45	0.48	0.86	0.25	0.27	0.66	0.23		2.59	0.04	5.75	0.62
W-OABG	AS01-SB57	AS01-SS57-0-1	07/21/04	0	1	SS					0.92	5.71	0.76		2.18	4.58				0.28	0.70	0.30	1.39	0.30	2.04	0.85	1.20	0.27	0.58	0.13	0.34	0.72
W-OABG	BG-139	HCS-BG-139	11/15/94	2	3	SS				5.43																						
						UCL Step 2																										
						Maximum - All depths	0.12	2.83	0.66	4.44	0.85	4.29	1.00	0.11	0.51	4.02	0.15	--	1.17	1.96	1.56	4.87	1.82	1.81	3.95	1.99	2.08	3.29	1.20	2.24	0.62	1.20
						Maximum - SS	0.12	2.83	0.66	4.44	0.85	4.29	1.00	0.11	0.51	4.02	0.15	--	1.17	1.96	1.56	4.87	1.82	1.15	3.95	1.99	2.08	3.29	1.20	2.24	0.62	1.20
						Ecological PRG																										
						Maximum ratio																										
	STEP 3																															
W-OABG	AS01-SB34	AS01-SB34-(1-2)	10/25/01	1	2	SS				0.03	0.02	0.09	0.01		0.05	0.12				0.76	0.94	0.72	0.87	0.78	3.95	1.15	0.27	0.35	0.94	2.24	0.46	0.92
W-OABG	AS01-SB34	AS01-SS34-(0-1)	10/25/01	0	1	SS				0.01	0.04	0.16	0.02		0.06	0.17					1.03	0.05	0.35	1.15	0.24	0.91	0.06	0.25	1.01	0.23	0.12	0.24
W-OABG	AS01-SB48	AS01-SS48-0-1	07/20/04	0	1	SS		2.83		4.44	0.01	0.04	0.01		0.03	0.04					0.53		0.33	0.45	0.17	0.79	0.06	0.62	0.47	0.08	0.13	0.14
W-OABG	AS01-SB49	AS01-SS49-0-1	07/20/04	0	1	SS		1.50		1.22	0.85	4.29	1.00		0.51	4.02					0.78		0.46	0.66	0.17	0.91	0.06	0.22	0.70		0.13	0.15
						UCL Step 3																										
						Maximum - All depths	0.12	1.07	0.66	3.33	0.19	0.67	0.07	0.11	0.25	0.64	0.15	--	1.17	1.96	1.56	4.87	1.82	1.81	3.84	1.99	2.08	3.29	1.20	1.85	0.62	1.20
						Maximum - SS	0.12	1.07	0.66	3.33	0.19	0.67	0.07	0.11	0.25	0.64	0.15	--	1.17	1.96	1.56	4.87	1.82	1.11	3.84	1.99	2.08	3.29	1.20	1.85	0.62	1.20
						Ecological PRG																										
						Maximum ratio																										

Gray shaded concentrations indicate detections; NA - Not Analyzed

Notes:
µg/kg = microgram per kilogram
COC = constituent of concern
ft = foot
HMX = Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ID = identification
mg/kg = miligram per kilogram
RDX = Hexahydro-1,2,5-trinitro-1,3,5-triazine
SRG = site remediation goal
VOC = volatile organic compound

Figures

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\ABL\MAPFILES\380119_SITE_1_FS\FINAL\FIGURE_1_SITE_1_FEATURES.MXD BALDRIDGE 10/12/2012 9:59:52 AM



Legend

- NPDES Outfall SSL-3
- Former Inert and Open Burn Area
- Former Disposal Pits
- Active Burning Ground
- Outside Active Burning Ground
- Former Earthen Burn Pads
- Approximate location of former burn pans
- Current Concrete Burn Pads
- Site 1 Boundary

N

0 100 200 Feet

1 inch = 200 feet

Figure 1
Site 1 Features
Site Remediation Goal Selection Process and
Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

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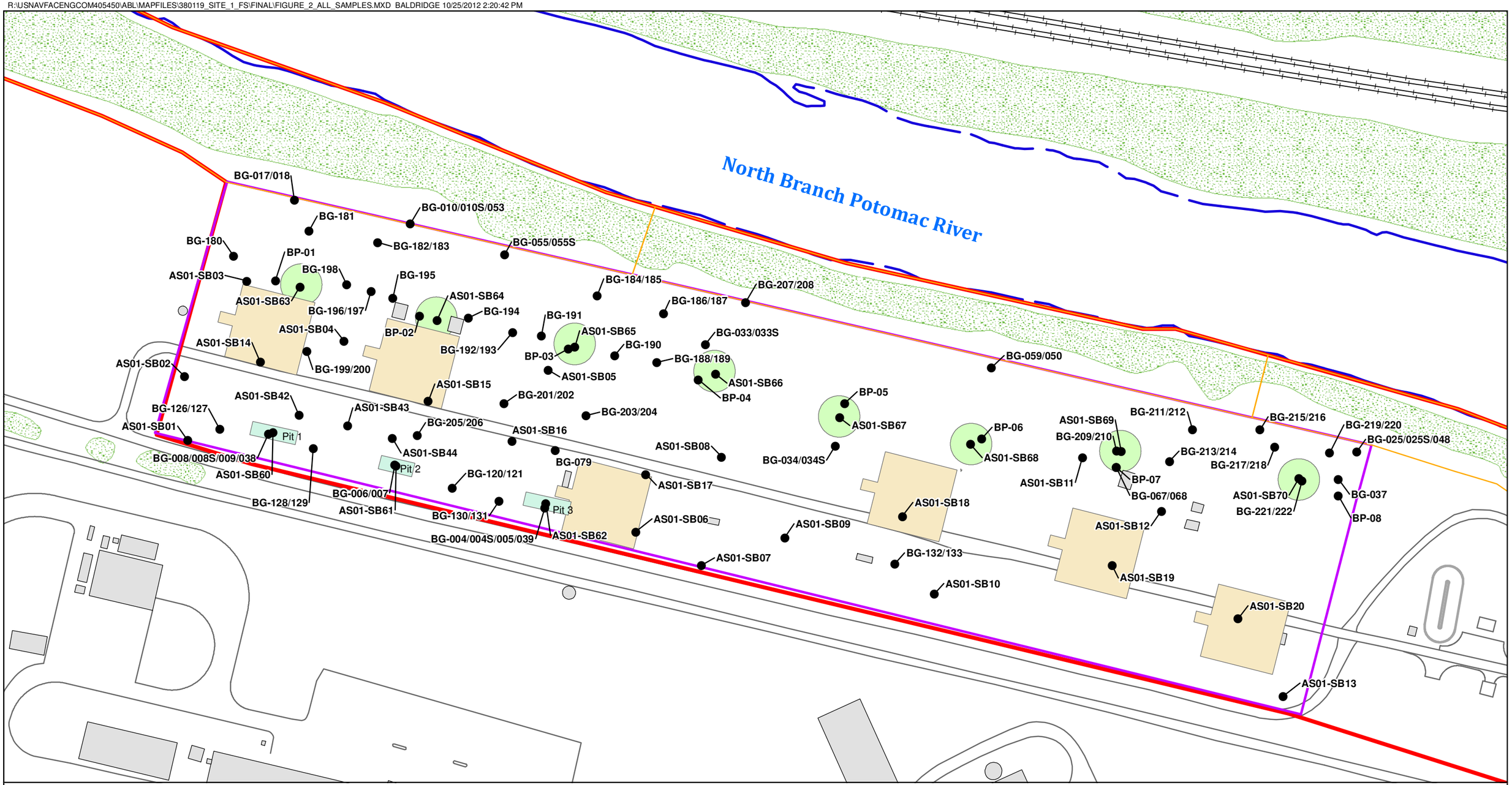
R:\USNAVFACENGCOM405450\ABL\MAPFILES\380119_SITE_1_FS\FINAL\FIGURE_2_ALL_SAMPLES.MXD BALDRIDGE 10/25/2012 2:20:42 PM



Legend

- Sample location included in the ABG data set
- Water
- Roads
- Railroads
- Former Earthen Burn Pads
- Former Disposal Pits
- Structures
- Current Concrete Burn Pads
- Outside Active Burning Ground
- Active Burning Ground
- Site 1 Boundary
- Vegetation

N

0 50 100 Feet

1 inch = 100 feet

Figure 2
Site 1 ABG Sample Locations
Site Remediation Goal Selection Process and
Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

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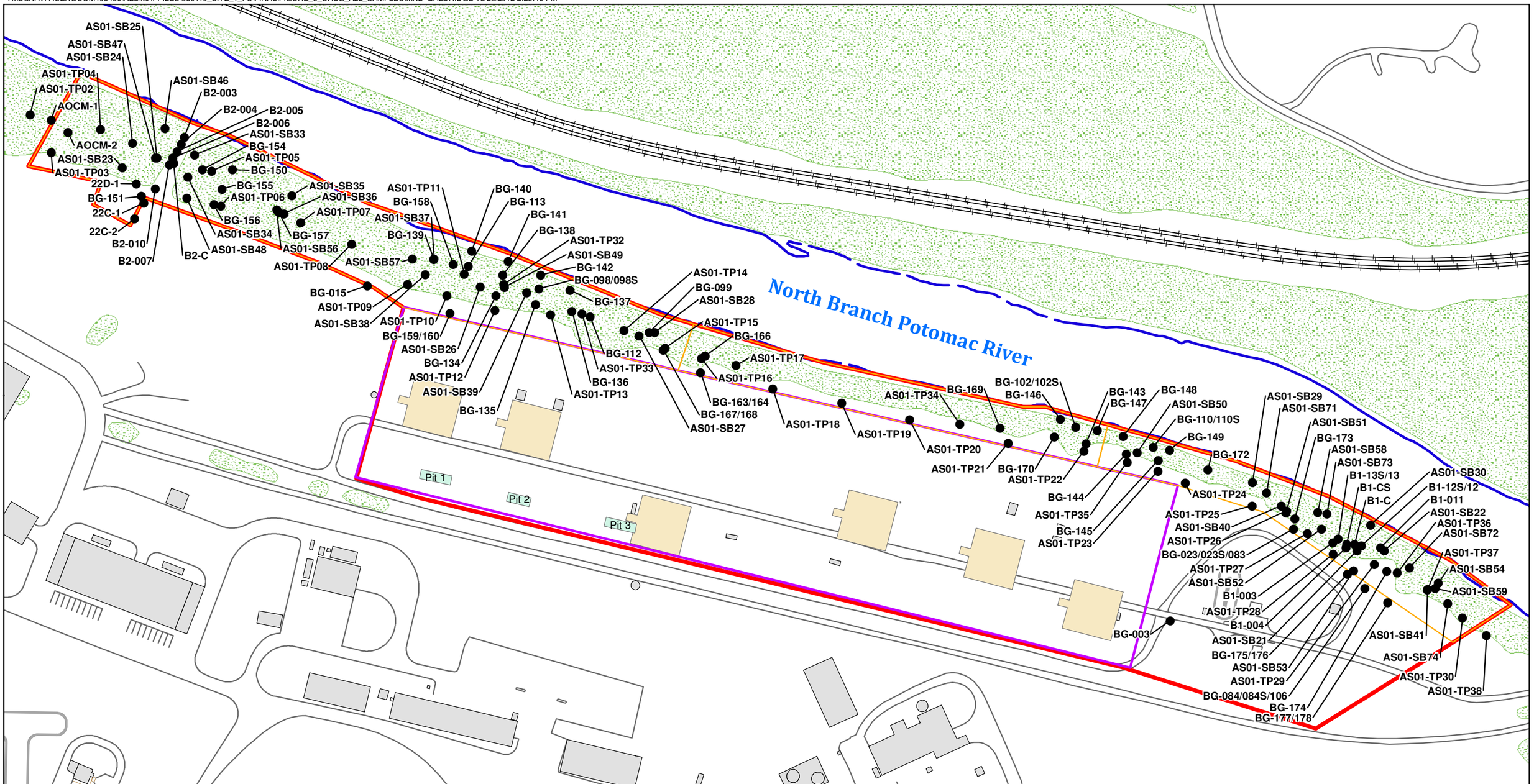
R:\USNAVFACENGCOM405450\ABL\MAPFILES\380119_SITE_1_FS\FINAL\FIGURE_3_OABG_ALL_SAMPLES.MXD BALDRIDGE 10/25/2012 2:23:40 PM



Legend

- Sample location included in the OABG data set
- Water
- Roads
- Railroads
- Former Disposal Pits
- Structures
- Current Concrete Burn Pads
- Outside Active Burning Ground
- Active Burning Ground
- Site 1 Boundary
- Vegetation

N

0 75 150 Feet

1 inch = 150 feet

Figure 3
Site 1 OABG Sample Locations
Site Remediation Goal Selection Process and
Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

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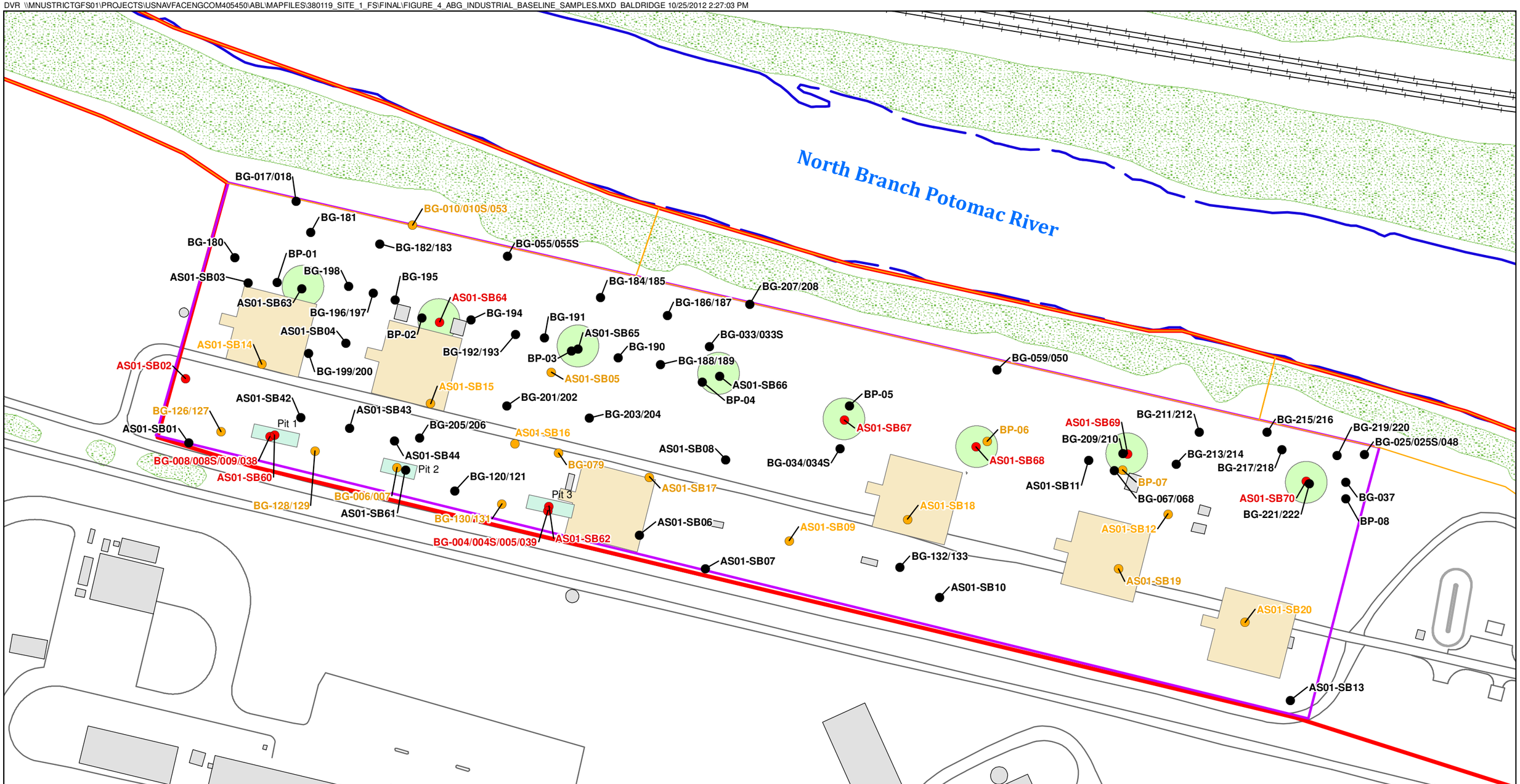
DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\ABL\MAPFILES\380119_SITE_1_FS\FINAL\FIGURE_4_ABG_INDUSTRIAL_BASELINE_SAMPLES.MXD BALDRIDGE 10/25/2012 2:27:03 PM



Legend

- Does not exceed ABG industrial SRG
- Exceeds ABG industrial SRG; SRG ratio > 5.0
- Exceeds ABG industrial SRG; 1.0 < SRG ratio ≤ 5.0
- Water
- Roads
- Railroads
- Former Disposal Pits
- Structures
- Active Burning Ground
- Outside Active Burning Ground
- Former Earthen Burn Pads
- Current Concrete Burn Pads
- Vegetation
- Site 1 Boundary

N

0 50 100 Feet

1 inch = 100 feet

Figure 4
Site 1 ABG Baseline Industrial SRG Scenario
Site Remediation Goal Selection Process and
Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

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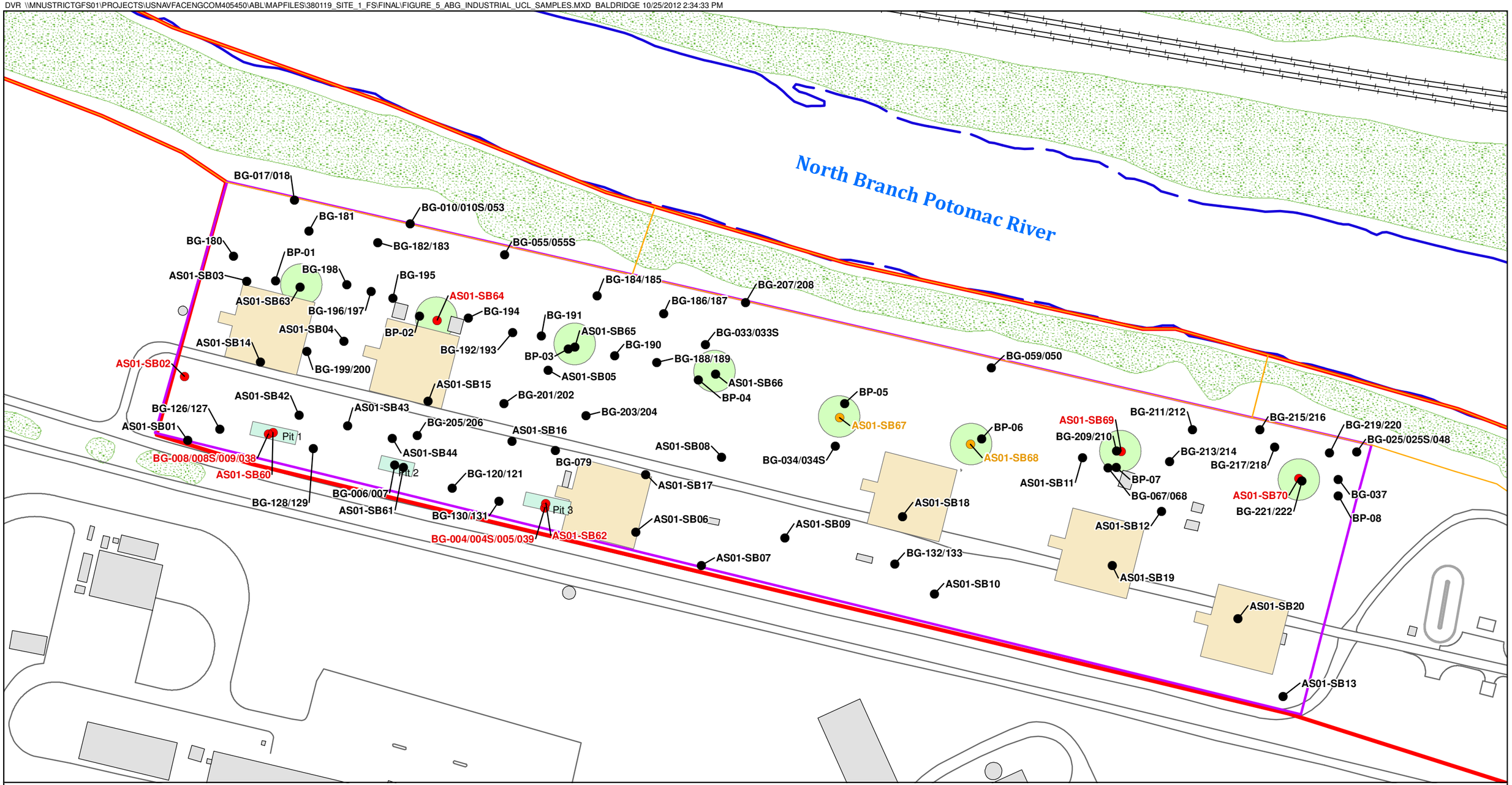
DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\ABL\MAPFILES\380119_SITE_1_FS\FINAL\FIGURE_5_ABG_INDUSTRIAL_UCL_SAMPLES.MXD BALDRIDGE 10/25/2012 2:34:33 PM



Legend

- Removal not required for the 95% UCL to achieve the ABG industrial SRG
- Removal required for the 95% UCL to achieve the ABG industrial SRG
- Removal not required for the 95% UCL to achieve the ABG industrial SRG; however, sample removed because SRG ratio > 5.0
- Water
- Roads
- Railroads
- Former Disposal Pits
- Structures
- Active Burning Ground
- Outside Active Burning Ground
- Former Earthen Burn Pads
- Current Concrete Burn Pads
- Vegetation
- Site 1 Boundary

N

0 50 100 Feet

1 inch = 100 feet

Figure 5
Site 1 ABG UCL Industrial SRG Scenario
Site Remediation Goal Selection Process and
Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

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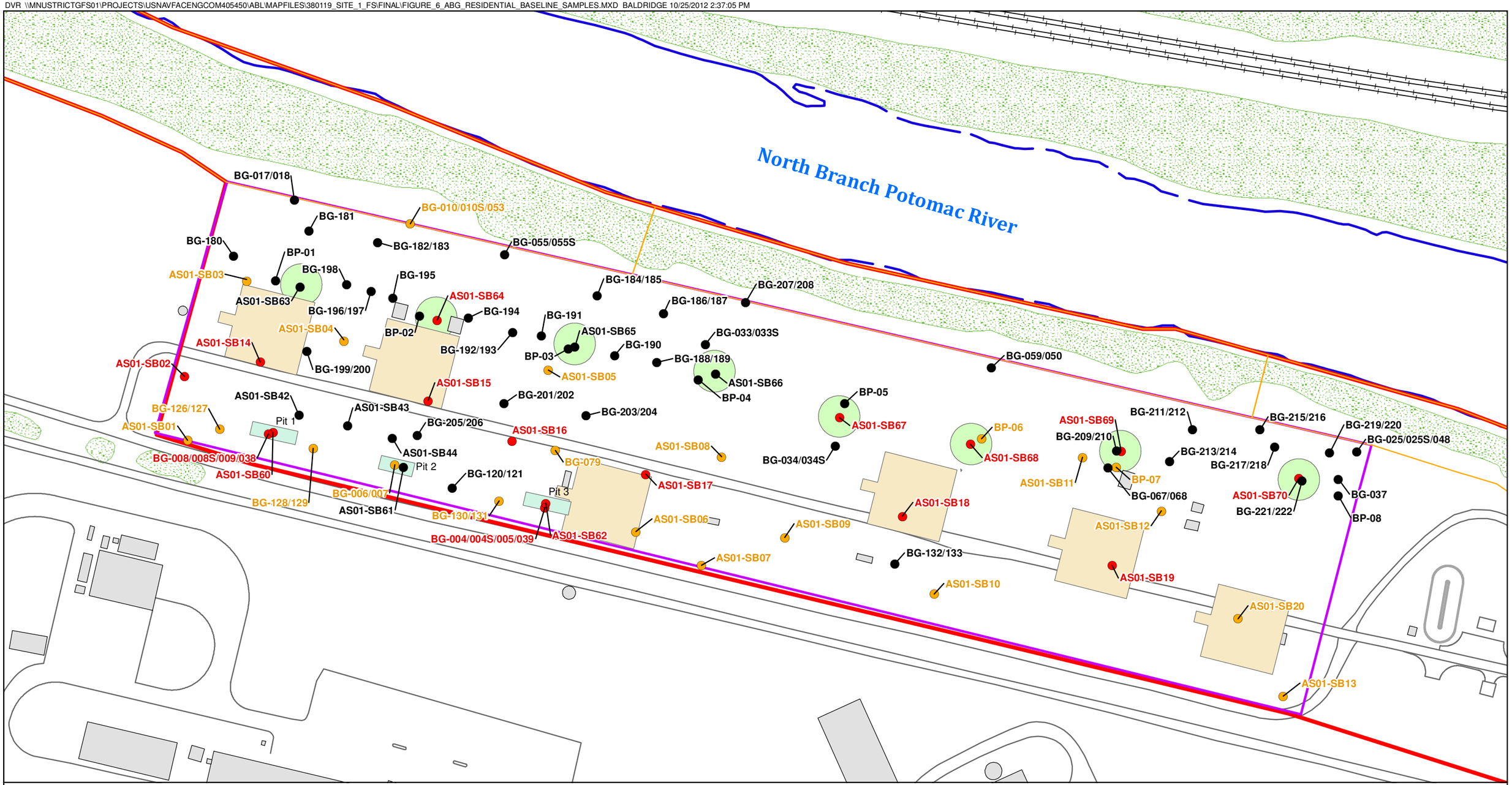
DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\ABL\MAPFILES\380119_SITE_1_FS\FINAL\FIGURE_6_ABG_RESIDENTIAL_BASELINE_SAMPLES.MXD BALDRIDGE 10/25/2012 2:37:05 PM



Legend

- Does not exceed ABG residential SRG
- Exceeds ABG residential SRG; SRG ratio > 5.0
- Exceeds ABG residential SRG; 1.0 < SRG ratio ≤ 5.0
- Water
- Roads
- Railroads
- Former Disposal Pits
- Structures
- Active Burning Ground
- Outside Active Burning Ground
- Former Earthen Burn Pads
- Current Concrete Burn Pads
- Vegetation
- Site 1 Boundary

N

0 50 100 Feet

1 inch = 100 feet

Figure 6
Site 1 ABG Baseline Residential SRG Scenario
Site Remediation Goal Selection Process and
Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

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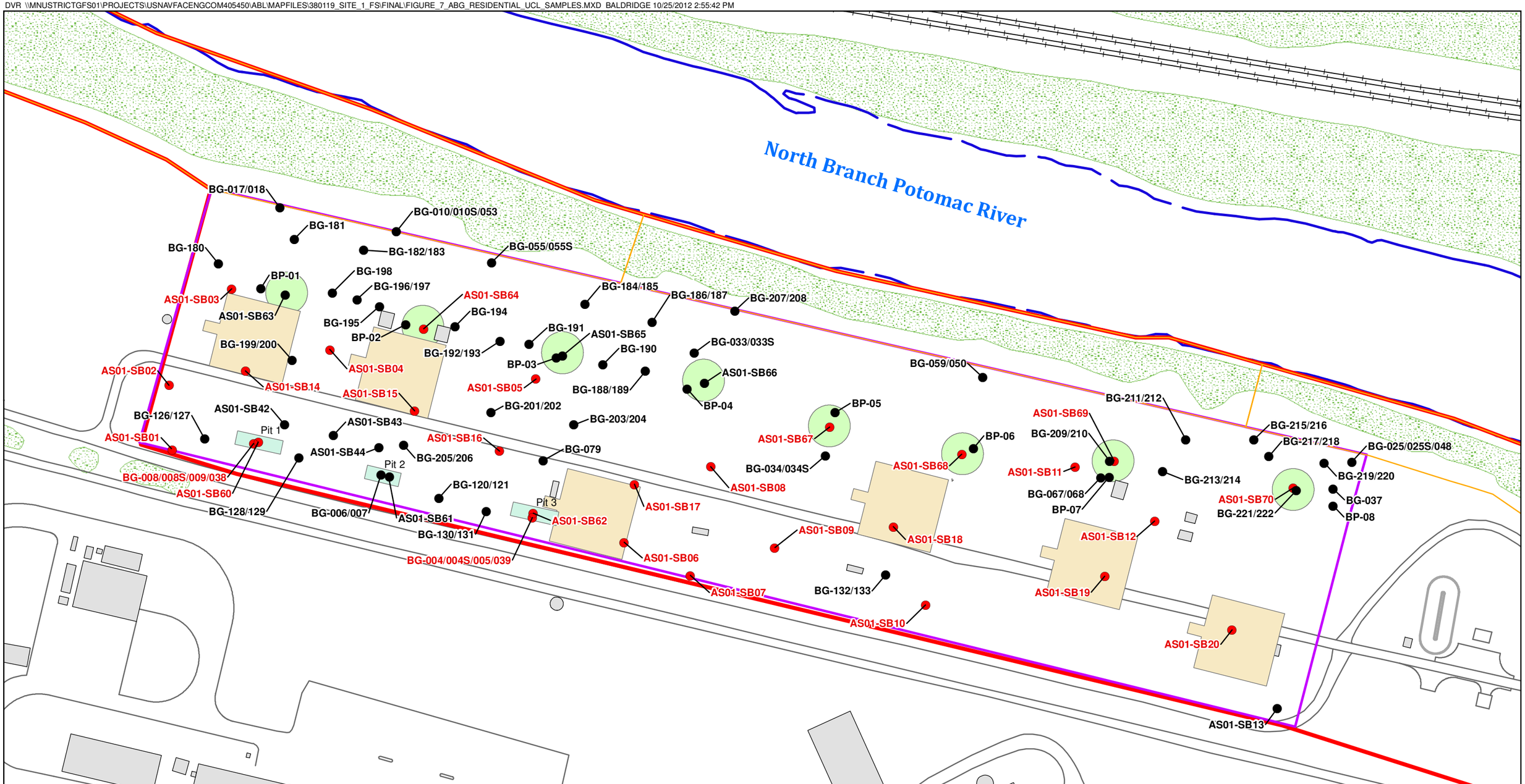
DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\ABL\MAPFILES\380119_SITE_1_FS\FINAL\FIGURE_7_ABG_RESIDENTIAL_UCL_SAMPLES.MXD BALDRIDGE 10/25/2012 2:55:42 PM



Legend

- Removal not required for the 95% UCL to achieve the ABG residential SRG
- Removal required for the 95% UCL to achieve the ABG residential SRG
- Water
- Roads
- Railroads
- Former Disposal Pits
- Structures
- Active Burning Ground
- Outside Active Burning Ground
- Current Concrete Burn Pads
- Former Earthen Burn Pads
- Vegetation
- Site 1 Boundary

N

0 50 100 Feet

1 inch = 100 feet

Figure 7
Site 1 ABG UCL Residential SRG Scenario
Site Remediation Goal Selection Process and
Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

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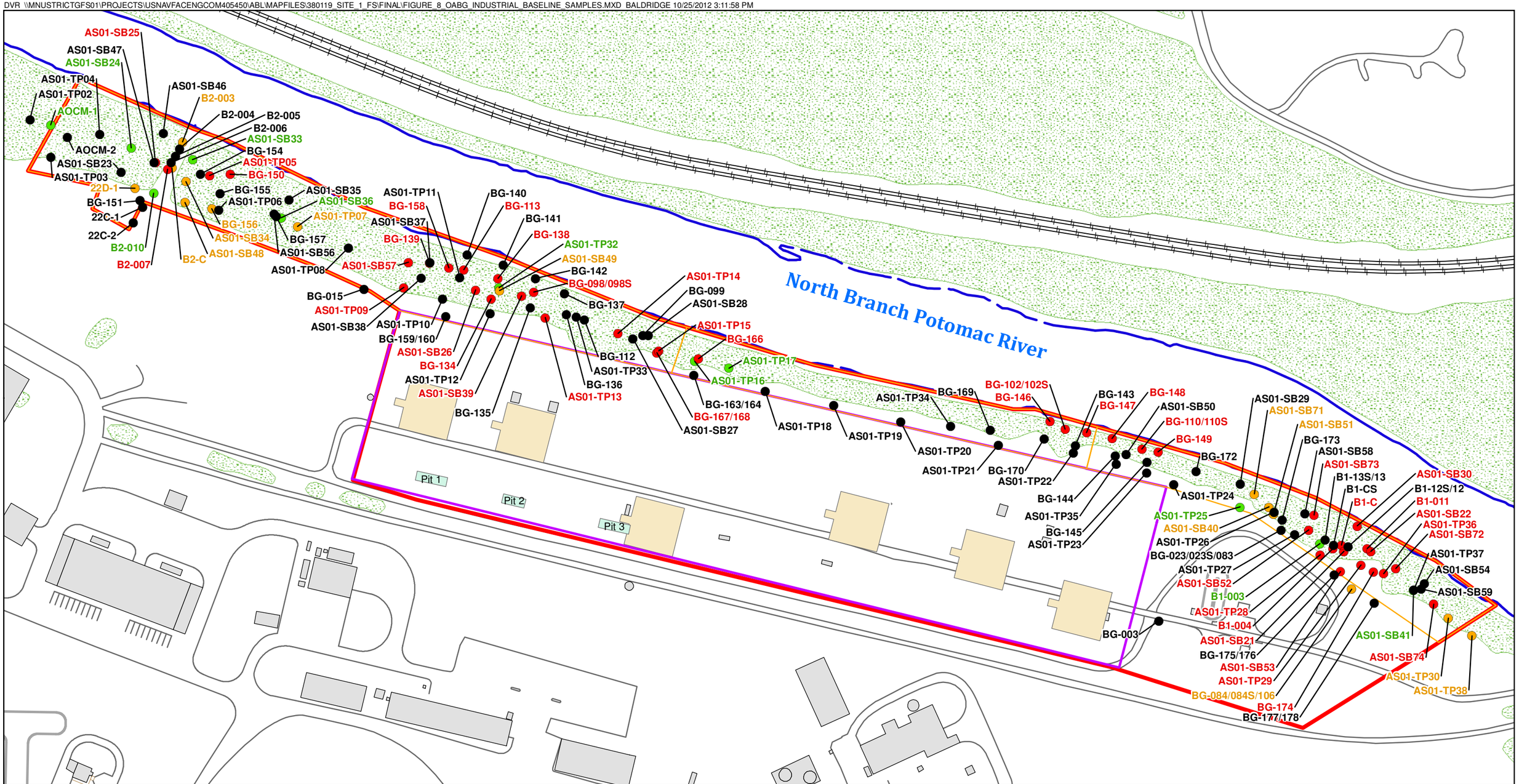
DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\ABL\MAPFILES\380119_SITE_1_FS\FINAL\FIGURE_8_OABG_INDUSTRIAL_BASELINE_SAMPLES.MXD BALDRIDGE 10/25/2012 3:11:58 PM



Legend

- Does not exceed OABG industrial SRG
- Exceeds OABG industrial SRG; SRG ratio > 5.0
- Exceeds OABG industrial SRG; 1.5 < SRG ratio ≤ 5.0
- Exceeds OABG industrial SRG; 1.0 < SRG ≤ 1.5
- Water
- Roads
- Railroads
- Former Disposal Pits
- Structures
- Active Burning Ground
- Outside Active Burning Ground
- Current Concrete Burn Pads
- Vegetation
- Site 1 Boundary

N

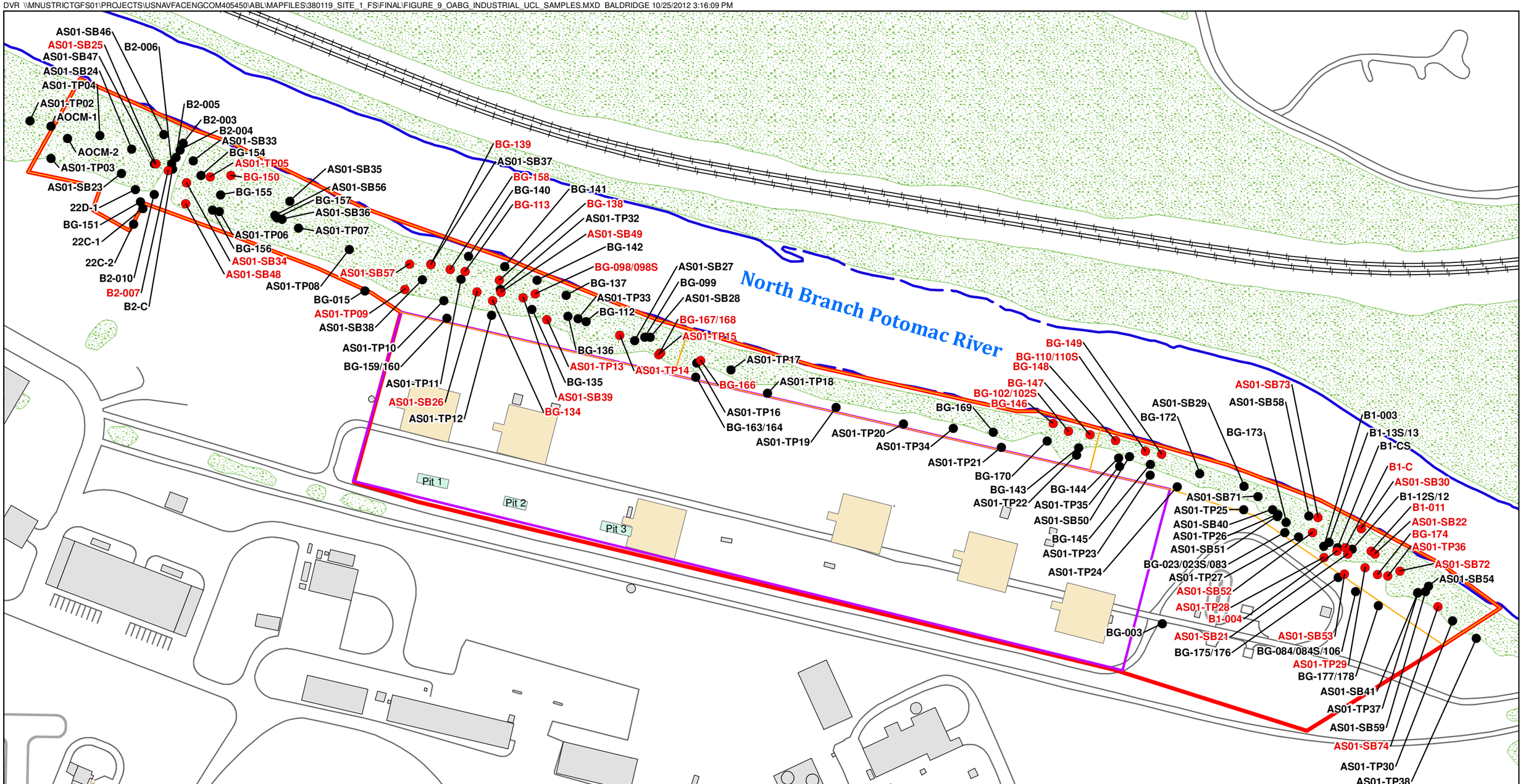
0 75 150 Feet

1 inch = 150 feet

Figure 8
Site 1 OABG Baseline Industrial SRG Scenario
Site Remediation Goal Selection Process and
Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

CH2MHILL

DVR \\MNUSTRICTGFS01\PROJECTS\USNAVFACENGCOM405450\ABL\MAPFILES\380119_SITE_1_FS\FINAL\FIGURE_9_OABG_INDUSTRIAL_UCL_SAMPLES.MXD BALDRIDGE 10/25/2012 3:16:09 PM



Legend

- Removal not required for the 95% UCL to achieve the OABG industrial SRG
- Removal required for the 95% UCL to achieve the OABG industrial SRG
- Water
- Roads
- Railroads
- Former Disposal Pits
- Structures
- Active Burning Ground
- Outside Active Burning Ground
- Current Concrete Burn Pads
- Vegetation
- Site 1 Boundary

N

0 75 150 Feet

1 inch = 150 feet

Figure 9
Site 1 OABG UCL Industrial SRG Scenario
Site Remediation Goal Selection Process and
Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

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Attachment A
Supporting Calculations for
Human Health Risk Based PRGs

Table A-1
Summary of PRGs Calculated for COCs for OABG
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

Constituent	Industrial Worker PRGs (mg/kg)	Basis of PRG	Construction Worker PRGs (mg/kg)	Basis of PRG	Residential PRGs (mg/kg)	Basis of PRG
Tetrachloroethene	61	HI = 0.5	124	HQ = 1	37	HI = 0.5
Trichloroethene	4	HI = 0.5	70	HQ = 0.5	2.5	HI = 0.5
Benzo(a)anthracene	21	CR = 10^{-5}	214	CR = 10^{-5}	1.5	CR = 10^{-5}
Benzo(a)pyrene	2.1	CR = 10^{-5}	21	CR = 10^{-5}	0.15	CR = 10^{-5}
Benzo(b)fluoranthene	21	CR = 10^{-5}	214	CR = 10^{-5}	1.5	CR = 10^{-5}
Benzo(k)fluoranthene	211	CR = 10^{-5}	2136	CR = 10^{-5}	15	CR = 10^{-5}
Dibenz(a,h)anthracene	2.1	CR = 10^{-5}	21	CR = 10^{-5}	0.15	CR = 10^{-5}
Indeno(1,2,3-cd)pyrene	21	CR = 10^{-5}	214	CR = 10^{-5}	1.5	CR = 10^{-5}
2,3,7,8-TCDD (dioxin)	0.00018	CR = 10^{-5}	0.0015	CR = 10^{-5}	0.000025	HI = 0.5
Antimony	284	HI = 1	103	HI = 1	26	HI = 1
Arsenic	16	CR = 10^{-5}	85	HI = 1	3.9	CR = 10^{-5}
Cadmium	792	HI = 1	140	HI = 1	70	HI = 1
Chromium (III)	252266	HI = 1	140444	HI = 1	37199	HI = 1
Copper	19174	HI = 0.5	6014	HI = 0.5	1522	HI = 0.5
Iron	335553	HI = 0.5	105237	HI = 0.5	26629	HI = 0.5
Lead	1235	ALM	618	ALM	418	IEUBK
Manganese	4222	HI = 0.5	2034	HI = 0.5	543	HI = 0.5
Mercury	79	HI = 0.5	65	HI = 1	8.4	HI = 0.5
Thallium	5	HI = 0.5	6.0	HI = 0.5	0.38	HI = 0.5
Vanadium	2397	HI = 0.5	752	HI = 0.5	190	HI = 0.5

Notes: HI = Hazard Index CR = Cancer Risk ALM = Adult Lead Model
IEUBK = Integrated Exposure Update Biokinetic Model for Lead in Children

Table A-2
Summary of PRGs Calculated for COCs for FDP
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

Constituent	Industrial Worker PRGs (mg/kg)	Basis of PRG	Construction Worker PRGs (mg/kg)	Basis of PRG	Residential PRGs (mg/kg)	Basis of PRG
Trichloroethene	4	HI = 0.5	70	HI = 0.5	2.5	HI = 0.5
2,3,7,8-TCDD (dioxin)	0.00018	CR = 10^{-5}	0.0015	CR = 10^{-5}	0.000025	HI = 0.5
Arsenic	16	CR = 10^{-5}	85	HI = 1	3.9	CR = 10^{-5}
Iron	671107	HI = 1	210474	HI = 1	53259	HI = 1
Manganese	8445	HI = 1	2034	HI = 0.5	1087	HI = 1
Thallium	4.8	HI = 0.5	6.0	HI = 0.5	0.38	HI = 0.5
Vanadium	2397	HI = 0.5	752	HI = 0.5	190	HI = 0.5

Notes: HI = Hazard Index CR = Cancer Risk

Table A-3
Summary of PRGs Calculated for COCs for ABG
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

Constituent	Industrial Worker PRGs (mg/kg)	Basis of PRG	Construction Worker PRGs (mg/kg)	Basis of PRG	Residential PRGs (mg/kg)	Basis of PRG
Perchlorate	671	HI = 1	210	HI = 1	53	HI = 1
Arsenic	16	CR = 10^{-5}	85	HI = 1	3.9	CR = 10^{-5}
Iron	671107	HI = 1	210474	HI = 1	53259	HI = 1
Manganese	8445	HI = 1	4068	HI = 1	1087	HI = 1
Thallium	4.8	HI = 0.5	6.0	HI = 0.5	0.38	HI = 0.5
Vanadium	2397	HI = 0.5	752	HI = 0.5	190	HI = 0.5

Notes: HI = Hazard Index CR = Cancer Risk

Table A-4

Human Health Risk-Based Preliminary Remediation Goals

Child Residential Scenario (Noncarcinogenic) for OABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Chronic Oral RfD (RfDo) (mg/kg-day)	Chronic Dermal RfD (RfDd) (mg/kg-day)	Chronic Inhalation RfC (RfC) (mg/m^3)	Target Organ	Absorption Factor (ABS)	Volatilization Factor (VF) (m^3/kg)	An	Bn	Cn	Noncarcinogen PRG HQ = 0.1 (mg/kg)	HQ = 0.5 (mg/kg)	HQ = 1 (mg/kg)	PRG (mg/kg)	Target HQ[1] (mg/kg)
VOCs														
Tetrachloroethene	6.0E-03	6.0E-03	4.0E-02	Neurological	1.0E-02	2.1E+03	3.3E-02	9.3E-04	1.2E-02	7.4E+00	3.7E+01	7.4E+01	**3.7E+01**	0.5
Trichloroethene	5.0E-04	5.0E-04	2.0E-03	Development and Adult Immunotoxicity, Fetal Cardiac	1.0E-02	2.7E+03	4.0E-01	1.1E-02	1.8E-01	4.9E-01	2.5E+00	4.9E+00	**2.5E+00**	0.5
SVOCs														
Benzo(a)anthracene	NA	NA	NA											
Benzo(a)pyrene	NA	NA	NA											
Benzo(b)fluoranthene	NA	NA	NA											
Benzo(k)fluoranthene	NA	NA	NA											
Dibenz(a,h)anthracene	NA	NA	NA											
Indeno(1,2,3-cd)pyrene	NA	NA	NA											
Dioxins/Furans														
2,3,7,8-TCDD (dioxin)	7.0E-10	7.0E-10	4.0E-08	Sperm, Developmental, Liver, Development, Endocrine	3.0E-02	NA	2.9E+05	2.4E+04	1.9E-02	5.1E-06	2.5E-05	5.1E-05	**2.5E-05**	0.5
Inorganics														
Antimony	4.0E-04	6.0E-05	NA	Longevitiy, Blood	1.0E-02	NA	5.0E-01	9.3E-02		2.6E+00	1.3E+01	2.6E+01	**2.6E+01**	1
Arsenic	3.0E-04	3.0E-04	1.5E-05	Skin, Vascular	3.0E-02	NA	6.7E-01	5.6E-02	5.1E-05	2.2E+00	1.1E+01	2.2E+01	**2.2E+01**	1
Cadmium	1.0E-03	2.5E-05	2.0E-05	Kidney	1.0E-03	NA	2.0E-01	2.2E-02	3.8E-05	7.0E+00	3.5E+01	7.0E+01	**7.0E+01**	1
Chromium (III)	1.5E+00	2.0E-02	NA	Not identified	1.0E-02	NA	1.3E-04	2.9E-04		3.7E+03	1.9E+04	3.7E+04	**3.7E+04**	1
Copper	4.0E-02	4.0E-02	NA	Gastrointestinal	1.0E-02	NA	5.0E-03	1.4E-04		3.0E+02	1.5E+03	3.0E+03	**1.5E+03**	0.5
Iron	7.0E-01	7.0E-01	NA	Gastrointestinal	1.0E-02	NA	2.9E-04	8.0E-06		5.3E+03	2.7E+04	5.3E+04	**2.7E+04**	0.5
Manganese	2.4E-02	9.6E-04	5.0E-05	CNS	1.0E-02	NA	8.3E-03	5.8E-03	1.5E-05	1.1E+02	5.4E+02	1.1E+03	**5.4E+02**	0.5
Mercury	3.0E-04	2.1E-05	3.0E-04	Immune System	1.0E-02	NA	6.7E-01	2.7E-01	2.5E-06	1.7E+00	8.4E+00	1.7E+01	**8.4E+00**	0.5
Thallium	1.0E-05	1.0E-05	NA	Hair	1.0E-02	NA	2.0E+01	5.6E-01		7.6E-02	3.8E-01	7.6E-01	**3.8E-01**	0.5
Vanadium	5.0E-03	5.0E-03	NA	Hair	1.0E-02	NA	4.0E-02	1.1E-03		3.8E+01	1.9E+02	3.8E+02	**1.9E+02**	0.5

Noncarcinogenic calculations:

$$\textbf{Soil PRG (mg/kg)} = \frac{\text{Target HQ} \times AT_n}{EF \times ED \times (An/BW + Bn/BW + Cn)}$$

An = $1/RfDo \times IRS/10^6$ mg/kg

Bn = $1/RfDd \times SA \times AF \times ABS \times 1/10^6$ mg/kg

Cn = $1/RfC \times (1/PEF + 1/VF)$

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	15
ATnc - Averaging time for noncarcinogens (days)	2,190
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	350
ED - Exposure duration (year)	6
IRS - Ingestion rate (mg/day)	200
SA - Skin surface area (cm^2)	2,800
AF - Soil to Skin Adherence Factor (mg/cm^2-day)	0.2
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

1 Target HQ calculated so that total HQ for a target organ does not exceed 1.

VF - calculated on Table A-5a, only included in calculation for VOCs.

NA - Not available/Not applicable

Table A-5

Risk-Based Preliminary Remediation Goals

Child/Adult Residential Scenario (Carcinogenic) for OABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Oral Slope Factor (CSFo) (kg-day/mg)	Dermal Slope Factor (CSFd) (kg-day/mg)	Inhalation Unit Risk (IUR) $(ug/m^3)^{-1}$	Absorption Factor (ABS)	Volatilization Factor (VF) (m^3/kg)	Ac	Bc	Cn	Carcinogen Ingestion PRG Risk = 1E-06 (mg/kg)	Risk = 1E-05 (mg/kg)	Risk = 1E-04 (mg/kg)
VOCs											
Tetrachloroethene	2.1E-03	2.1E-03	2.6E-07	1.0E-02	2.1E+03	2.4E-07	7.6E-09	3.1E-06	2.2E+01	2.2E+02	2.2E+03
Trichloroethene[1]	4.6E-02	4.6E-02	4.1E-06	1.0E-02	2.7E+03	7.9E-03	2.3E-04	4.0E-02	5.3E-01	5.3E+00	5.3E+01
SVOCs											
Benzo(a)anthracene[1]	7.3E-01	7.3E-01	1.1E-04	1.3E-01	NA	1.3E-01	4.8E-02	2.2E-06	1.5E-01	1.5E+00	1.5E+01
Benzo(a)pyrene[1]	7.3E+00	7.3E+00	1.1E-03	1.3E-01	NA	1.3E+00	4.8E-01	2.2E-05	1.5E-02	1.5E-01	1.5E+00
Benzo(b)fluoranthene[1]	7.3E-01	7.3E-01	1.1E-04	1.3E-01	NA	1.3E-01	4.8E-02	2.2E-06	1.5E-01	1.5E+00	1.5E+01
Benzo(k)fluoranthene[1]	7.3E-02	7.3E-02	1.1E-04	1.3E-01	NA	1.3E-02	4.8E-03	2.2E-06	1.5E+00	1.5E+01	1.5E+02
Dibenz(a,h)anthracene[1]	7.3E+00	7.3E+00	1.2E-03	1.3E-01	NA	1.3E+00	4.8E-01	2.4E-05	1.5E-02	1.5E-01	1.5E+00
Indeno(1,2,3-cd)pyrene[1]	7.3E-01	7.3E-01	1.1E-04	1.3E-01	NA	1.3E-01	4.8E-02	2.2E-06	1.5E-01	1.5E+00	1.5E+01
Dioxins/Furans											
2,3,7,8-TCDD (dioxin)	1.3E+05	1.3E+05	3.8E+01	3.0E-02	NA	1.5E+01	1.4E+00	8.6E-04	4.5E-06	4.5E-05	4.5E-04
Inorganics											
Antimony	NA	NA									
Arsenic	1.5E+00	1.5E+00	4.3E-03	3.0E-02	NA	1.7E-04	1.6E-05	9.8E-08	3.9E-01	3.9E+00	3.9E+01
Cadmium	NA	NA	1.8E-03	1.0E-02	NA			4.1E-08	1.8E+03	1.8E+04	1.8E+05
Chromium (III)	NA	NA									
Copper	NA	NA									
Iron	NA	NA									
Manganese	NA	NA									
Mercury	NA	NA									
Thallium	NA	NA									
Vanadium	NA	NA									

Carcinogen calculations (for all chemicals except those that act via a mutagenic mode of action):

$$\text{Soil RBC (mg/kg)} = \frac{TR \times AT_c}{EF \times (Ac + Bc + Cc)}$$

Ac = CSFo x IRS/10^6 mg/kg

Bc = CSFd x DA-adj x ABS x 1/10^6 mg/kg

Cc = IUR x 1000 ug/mg x (1/VF + 1/PEF) x ED x ET x 1 day/24 hours

Carcinogen calculations (for chemicals that act via a mutagenic mode of action):

$$\text{Soil RBC (mg/kg)} = \frac{TR \times AT_c}{Ac + Bc + Cc}$$

Ac = CSFo x EF x IFSMadj x 1/10^6 mg/kg

Bc = CSFd x EF x $DFSM_{adj}$ x ABS x 1/10^6 mg/kg

Cc = see Table A-5b

EXPOSURE ASSUMPTIONS	
ATc - Averaging time for carcinogens (days)	25550
EF - Exposure frequency (days/year)	350
ED - Exposure duration (year)	30
ET - Exposure time (hour/day)	24
IRS - Ingestion rate (mg-year/kg-day)	114
IFSMadj - Mutagenic resident soil ingestion rate[2] (mg-year/kg-day)	489.5
DA-adj - Skin surface area (mg-year/kg-day)	361
DFSMadj - Mutagenic resident soil dermal contact factor (mg-year/kg-day)	1445
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

NA - Not available/Not applicable

VF - calculated on Table A-5a, only included in calculation for VOCs.

1 - chemical acts via mutagenic mode of action

Table A-5a

Calculation of Chemical Specific Volatilization Factors
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Diffusivity in Air (D_i) (cm^2/s)	Henry's Law Constant (H') (unitless)	Diffusivity in Water (D_w) (cm^2/s)	Soil Organic Carbon Partition Coeff. (K_{oc}) (cm^3/g)	Soil Water Partition Coeff. ($K_d = K_{oc} \times F_{oc}$) ($g/cm^3$)	Solubility in Water (S) (mg/L)	Apparent Diffusivity (D_A) (cm^2/s)	Volatilization Factor (VF) (m^3/kg)
Volatile Organics								
Tetrachloroethene	7.20E-02	7.54E-01	8.20E-06	1.55E+02	9.30E-01	2.00E+02	2.47E-03	2.13E+03
Trichloroethene	7.90E-02	4.22E-01	9.10E-06	1.66E+02	9.96E-01	1.10E+03	1.51E-03	2.72E+03

Volatilization factor (VF) = (m^3/kg)

$$\frac{Q/C_{vol} * (3.14 * D_A * T)^{1/2} * 10^{-4}\ (m^2/cm^2)}{2 * r_b * D_A}$$

Apparent Diffusivity (D_A) = (cm^2/s)

$$\frac{[(Q_a^{10/3} * D_i * H' + Q_w^{10/3} * D_w)/n^2]}{(r_b * K_d + Q_w + Q_a * H')}$$

oil Saturation Concentration (C_{sat}) = (mg/kg)

$$S/r_b * (K_d * r_b + Q_w + H' * Q_a)$$

Parameters	Values
Q/C_{vol} - Inverse of the geometric mean air concentration to the volatilization flux at the center of a 0.5-acre-square source (g/m2-s per kg/m3) for Huntington, WV	58.17
T - Exposure interval(s)	9.5E+08
r_b - Soil bulk density (g/cm^3)	1.5
Q_a - Air-filled soil porosity (L_{air}/L_{soil}) = n - Q_w	0.28
n - Total soil porosity (L_{pore}/L_{soil}) = 1 - (r_b/r_s)	0.43
Q_w - Water-filled soil porosity (L_{water}/L_{soil})	0.15
r_s - Soil particle density (g/cm^3)	2.65
f_{oc} - fraction organic carbon in soil (g/g)	0.006

NA = Not available
Chemical and physical properties from USEPA, 2002, Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24.

Table A-5b

Calculation of Inhalation Factor for Risk-Based Preliminary Remediation Goals For COCs With Mutagenic Mode of Action
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, West Virginia

Exposure Route	Chemical	IUR	C_{0-2}	C_{2-6}	C_{6-16}	C_{16-30}	Cc
		$(ug/m^3)^{-1}$	0-2 yrs	2-6 yrs	6-16 years	16-30 yrs	
Inhalation	Trichloroethene	4.1E-06	8.2E-05	4.9E-05	1.2E-04	5.7E-05	4.0E-02
	Benzo(a)anthracene	1.1E-04	2.2E-03	1.3E-03	3.3E-03	1.5E-03	2.2E-06
	Benzo(a)pyrene	1.1E-03	2.2E-02	1.3E-02	3.3E-02	1.5E-02	2.2E-05
	Benzo(b)fluoranthene	1.1E-04	2.2E-03	1.3E-03	3.3E-03	1.5E-03	2.2E-06
	Benzo(k)fluoranthene	1.1E-04	2.2E-03	1.3E-03	3.3E-03	1.5E-03	2.2E-06
	Dibenz(a,h)anthracene	1.2E-03	2.4E-02	1.4E-02	3.6E-02	1.7E-02	2.4E-05
	Indeno(1,2,3-cd)pyrene	1.1E-04	2.2E-03	1.3E-03	3.3E-03	1.5E-03	2.2E-06

Equations

$\mathbf{C_{0-2}} = ED_{0-2} \times IUR \times 10$

$\mathbf{C_{2-6}} = ED_{2-6} \times IUR \times 3$

$\mathbf{C_{6-16}} = ED_{6-16} \times IUR \times 3$

$\mathbf{C_{16-30}} = ED1_{6-30} \times IUR \times 1$

$\mathbf{Cc} = EF \times ET \times 1\ day/24\ hours \times 1000\ ug/mg \times (C_{0-2} + C_{2-6} + C_{6-16} + C_{16-30}) \times (1/PEF + 1/VF)$

EXPOSURE ASSUMPTIONS	
EF - Exposure frequency (days/year)	350
ED_{0-2} - Exposure duration (year)	2
ED_{2-6} - Exposure duration (year)	4
ED_{6-16} - Exposure duration (year)	10
ED_{16-30} - Exposure duration (year)	14
ET - Exposure Time (hours/day)	24
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09
VF - Volitilization Factor (m^3/kg)	see Table A-5a

Table A-6

Human Health Risk-Based Preliminary Remediation Goals

Child Residential Scenario (Noncarcinogenic) for FDP

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Chronic Oral RfD (RfDo) (mg/kg-day)	Chronic Dermal RfD (RfDd) (mg/kg-day)	Chronic Inhalation RfC (RfC) (mg/m^3)	Target Organ	Absorption Factor (ABS)	Volatilization Factor (VF) (m^3/kg)	An	Bn	Cn	Noncarcinogen PRG HQ = 0.1 (mg/kg)	HQ = 0.5 (mg/kg)	HQ = 1 (mg/kg)	PRG (mg/kg)	Target HQ[1] (mg/kg)
VOCs														
Trichloroethene	5.0E-04	5.0E-04	2.0E-03	Development and Adult Immunotoxicity, Fetal Cardiac	1.0E-02	2.7E+03	4.0E-01	1.1E-02	1.8E-01	4.9E-01	2.5E+00	4.9E+00	**2.5E+00**	0.5
Dioxins/Furans														
2,3,7,8-TCDD (dioxin)	7.0E-10	7.0E-10	4.0E-08	Sperm, Developmental, Liver, Development, Endocrine	3.0E-02	NA	2.9E+05	2.4E+04	1.9E-02	5.1E-06	2.5E-05	5.1E-05	**2.5E-05**	0.5
Inorganics														
Arsenic	3.0E-04	3.0E-04	1.5E-05	Skin, Vascular	3.0E-02	NA	6.7E-01	5.6E-02	5.1E-05	2.2E+00	1.1E+01	2.2E+01	**2.2E+01**	1
Iron	7.0E-01	7.0E-01	NA	Gastrointestinal	1.0E-02	NA	2.9E-04	8.0E-06	NA	5.3E+03	2.7E+04	5.3E+04	**5.3E+04**	1
Manganese	2.4E-02	9.6E-04	5.0E-05	CNS	1.0E-02	NA	8.3E-03	5.8E-03	1.5E-05	1.1E+02	5.4E+02	1.1E+03	**1.1E+03**	1
Thallium	1.0E-05	1.0E-05	NA	Hair	1.0E-02	NA	2.0E+01	5.6E-01	NA	7.6E-02	3.8E-01	7.6E-01	**3.8E-01**	0.5
Vanadium	5.0E-03	5.0E-03	NA	Hair	1.0E-02	NA	4.0E-02	1.1E-03	NA	3.8E+01	1.9E+02	3.8E+02	**1.9E+02**	0.5

Noncarcinogenic calculations:

$$\textbf{Soil PRG (mg/kg)} = \frac{\text{Target HQ} \times AT_n}{EF \times ED \times (An/BW + Bn/BW + Cn)}$$

An = $1/RfDo \times IRS/10^6$ mg/kg

Bn = $1/RfDd \times SA \times AF \times ABS \times 1/10^6$ mg/kg

Cn = $1/RfC \times (1/PEF + 1/VF)$

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	15
ATnc - Averaging time for noncarcinogens (days)	2,190
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	350
ED - Exposure duration (year)	6
IRS - Ingestion rate (mg/day)	200
SA - Skin surface area (cm^2)	2,800
AF - Soil to Skin Adherence Factor (mg/cm^2-day)	0.2
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

1 Target HQ calculated so that total HQ for a target organ does not exceed 1.

VF - calculated on Table A-5a, only included in calculation for VOCs.

NA - Not available/Not applicable

Table A-7

Human Health Risk-Based Preliminary Remediation Goals

Child/Adult Residential Scenario (Carcinogenic) for FDP

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Oral Slope Factor (CSFo) (kg-day/mg)	Dermal Slope Factor (CSFd) (kg-day/mg)	Inhalation Unit Risk (IUR) $(ug/m^3)^{-1}$	Absorption Factor (ABS)	Volatilization Factor (VF) (m^3/kg)	Ac	Bc	Cc	Carcinogen Ingestion PRG Risk = 1E-06 (mg/kg)	Risk = 1E-05 (mg/kg)	Risk = 1E-04 (mg/kg)
VOCs											
Trichloroethene[1]	4.6E-02	4.6E-02	4.1E-06	1.0E-02	2.7E+03	7.9E-03	2.3E-04	4.0E-02	5.3E-01	5.3E+00	5.3E+01
Dioxins/Furans											
2,3,7,8-TCDD (dioxin)	1.3E+05	1.3E+05	3.8E+01	3.0E-02	NA	1.5E+01	1.4E+00	8.6E-04	4.5E-06	4.5E-05	4.5E-04
Inorganics											
Arsenic	1.5E+00	1.5E+00	4.3E-03	3.0E-02	NA	1.7E-04	1.6E-05	9.8E-08	3.9E-01	3.9E+00	3.9E+01
Iron	NA	NA	NA								
Manganese	NA	NA	NA								
Thallium	NA	NA	NA								
Vanadium	NA	NA	NA								

Carcinogen calculations:

$$\text{Soil RBC (mg/kg)} = \frac{TR \times AT_c}{EF \times (Ac + Bc + Cc)}$$

Ac = CSFo x IRS/10^6 mg/kg

Bc = CSFd x DA-adj x ABS x 1/10^6 mg/kg

Cc = IUR x 1000 ug/mg x (1/VF + 1/PEF) x ED x ET x 1 day/24 hours

Carcinogen calculations (for chemicals that act via a mutagenic mode of action):

$$\text{Soil RBC (mg/kg)} = \frac{TR \times AT_c}{Ac + Bc + Cc}$$

Ac = CSFo x EF x IFSMadj x 1/10^6 mg/kg

Bc = CSFd x EF x $DFSM_{adj}$ x ABS x 1/10^6 mg/kg

Cc = see Table A-5b

EXPOSURE ASSUMPTIONS	
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	350
ED - Exposure duration (year)	30
ET - Exposure time (hour/day)	24
IRS - Ingestion rate (mg-year/kg-day)	114
IFSMadj - Mutagenic resident soil ingestion rate[2] (mg-year/kg-day)	489.5
DA-adj - Skin surface area (mg-year/kg-day)	361
DFSMadj - Mutagenic resident soil dermal contact factor (mg-year/kg-day)	1445
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

NA - Not available/Not applicable

VF - calculated on Table A-5a, only included in calculation for VOCs.

1 - chemical acts via mutagenic mode of action

Table A-8

Human Health Risk-Based Preliminary Remediation Goals

Child Residential Scenario (Noncarcinogenic) for ABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Chronic Oral RfD (RfDo) (mg/kg-day)	Chronic Dermal RfD (RfDd) (mg/kg-day)	Chronic Inhalation RfC (RfC) (mg/m^3)	Target Organ	Absorption Factor (ABS)	An	Bn	Cn	Noncarcinogen PRG HQ = 0.1 (mg/kg)	HQ = 0.5 (mg/kg)	HQ = 1 (mg/kg)	PRG (mg/kg)	Target HQ[1] (mg/kg)
Explosives													
Perchlorate	7.0E-04	7.0E-04	NA	Thyroid	1.0E-02	2.9E-01	8.0E-03	NA	5.3E+00	2.7E+01	5.3E+01	**5.3E+01**	1
Inorganics													
Arsenic	3.0E-04	3.0E-04	1.5E-05	Skin, Vascular	3.0E-02	6.7E-01	5.6E-02	5.1E-05	2.2E+00	1.1E+01	2.2E+01	**2.2E+01**	1
Iron	7.0E-01	7.0E-01	NA	Gastrointestinal	1.0E-02	2.9E-04	8.0E-06	NA	5.3E+03	2.7E+04	5.3E+04	**5.3E+04**	1
Manganese	2.4E-02	9.6E-04	5.0E-05	CNS	1.0E-02	8.3E-03	5.8E-03	1.5E-05	1.1E+02	5.4E+02	1.1E+03	**1.1E+03**	1
Thallium	1.0E-05	1.0E-05	NA	Hair	1.0E-02	2.0E+01	5.6E-01	NA	7.6E-02	3.8E-01	7.6E-01	**3.8E-01**	0.5
Vanadium	5.0E-03	5.0E-03	NA	Hair	1.0E-02	4.0E-02	1.1E-03	NA	3.8E+01	1.9E+02	3.8E+02	**1.9E+02**	0.5

Noncarcinogenic calculations:

$$\textbf{Soil PRG (mg/kg)} = \frac{\text{Target HQ} \times AT_n}{EF \times ED \times (An/BW + Bn/BW + Cn)}$$

An = $1/RfDo \times IRS/10^6$ mg/kg

Bn = $1/RfDd \times SA \times AF \times ABS \times 1/10^6$ mg/kg

Cn = $1/RfC \times (1/PEF)$

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	15
ATnc - Averaging time for noncarcinogens (days)	2,190
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	350
ED - Exposure duration (year)	6
IRS - Ingestion rate (mg/day)	200
SA - Skin surface area (cm^2)	2,800
AF - Soil to Skin Adherence Factor (mg/cm^2-day)	0.2
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

1 Target HQ calculated so that total HQ for a target organ does not exceed 1.

NA - Not available/Not applicable

TableA-9

Human Health Risk-Based Preliminary Remediation Goals

Child/Adult Residential Scenario (Carcinogenic) for ABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Oral Slope Factor (CSFo) (kg-day/mg)	Dermal Slope Factor (CSFd) (kg-day/mg)	Inhalation Unit Risk (IUR) $(ug/m^3)^{-1}$	Absorption Factor (ABS)	Volatilization Factor (VF) (m^3/kg)	Ac	Bc	Cc	Carcinogen Ingestion PRG Risk = 1E-06 (mg/kg)	Risk = 1E-05 (mg/kg)	Risk = 1E-04 (mg/kg)
Explosives											
Perchlorate	NA	NA	NA								
Inorganics											
Arsenic	1.5E+00	1.5E+00	4.3E-03	3.0E-02	NA	1.7E-04	1.6E-05	9.8E-08	3.9E-01	3.9E+00	3.9E+01
Iron	NA	NA	NA								
Manganese	NA	NA	NA								
Thallium	NA	NA	NA								
Vanadium	NA	NA	NA								

Carcinogen calculations:

$$\textbf{Soil RBC (mg/kg)} = \frac{TR \times AT_c}{EF \times (Ac + Bc + Cc)}$$

Ac = CSFo x IRS/10^6 mg/kg

Bc = CSFd x DA-adj x ABS x 1/10^6 mg/kg

Cc = IUR x 1000 ug/mg x (1/PEF) x ED x ET x 1 day/24 hours

EXPOSURE ASSUMPTIONS	
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	350
ED - Exposure duration (year)	30
ET - Exposure time (hour/day)	24
IRS - Ingestion rate (mg-year/kg-day)	114
DA-adj - Skin surface area (mg-year/kg-day)	361
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

NA - Not available/Not applicable

Table A-10

Recommended Human Health Risk-Based Preliminary Remediation Goals for Soil

Residential Scenario

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	OABG		FDP		ABG	
	Recommended Soil PRG (mg/kg)	Basis	Recommended Soil PRG (mg/kg)	Basis	Recommended Soil PRG (mg/kg)	Basis
VOCs						
Tetrachloroethene	3.7E+01	Child, HQ=0.5				
Trichloroethene	2.5E+00	Child, HQ=0.5	2.5E+00	Child, HQ=0.5		
SVOCs						
Benzo(a)anthracene	1.5E+00	Lifetime, CR = 10^{-5}				
Benzo(a)pyrene	1.5E-01	Lifetime, CR = 10^{-5}				
Benzo(b)fluoranthene	1.5E+00	Lifetime, CR = 10^{-5}				
Benzo(k)fluoranthene	1.5E+01	Lifetime, CR = 10^{-5}				
Dibenz(a,h)anthracene	1.5E-01	Lifetime, CR = 10^{-5}				
Indeno(1,2,3-cd)pyrene	1.5E+00	Lifetime, CR = 10^{-5}				
Dioxins/Furans						
2,3,7,8-TCDD (dioxin)	2.5E-05	Child, HQ=0.5	2.5E-05	Child, HQ=0.5		
Explosives						
Perchlorate					5.3E+01	Child, HQ=1
Inorganics						
Antimony	2.6E+01	Child, HQ=1				
Arsenic	3.9E+00	Lifetime, CR = 10^{-5}	3.9E+00	Lifetime, CR = 10^{-5}	3.9E+00	Lifetime, CR = 10^{-5}
Cadmium	7.0E+01	Child, HQ=1				
Chromium (III)	3.7E+04	Child, HQ=1				
Copper	1.5E+03	Child, HQ=0.5				
Iron	2.7E+04	Child, HQ=0.5	5.3E+04	Child, HQ=1	5.3E+04	Child, HQ=1
Manganese	5.4E+02	Child, HQ=0.5	1.1E+03	Child, HQ=1	1.1E+03	Child, HQ=1
Mercury	8.4E+00	Child, HQ=0.5				
Thallium	3.8E-01	Child, HQ=0.5	3.8E-01	Child, HQ=0.5	3.8E-01	Child, HQ=0.5
Vanadium	1.9E+02	Child, HQ=0.5	1.9E+02	Child, HQ=0.5	1.9E+02	Child, HQ=0.5

Notes:

1. For constituents with basis of CR = 10^{-5}, PRG for CR =10^{-5} less than PRG for applicable HQ.
2. Used CR of 10^{-5} to keep overall carcinogenic risk equal to or below 10^{-4}.
3. Applicable HQ chosen to keep total HI for each target organ equal to or less than 1.

Table A-11

Human Health Risk-Based Preliminary Remediation Goals

Industrial Worker Scenario (Noncarcinogenic) for OABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Chronic Oral RfD (RfDo) (mg/kg-day)	Chronic Dermal RfD (RfDd) (mg/kg-day)	Chronic Inhalation RfC (RfC) (mg/m^3)	Target Organ	Absorption Factor (ABS) (unitless)	Volatilization Factor (VF) (m^3/kg)	An	Bn	Cn	Noncarcinogen PRG HQ = 0.1 (mg/kg)	HQ = 0.5 (mg/kg)	HQ = 1 (mg/kg)	PRG (mg/kg)	Target HQ[1] (mg/kg)
VOCs														
Tetrachloroethene	6.0E-03	6.0E-03	4.0E-02	Neurological	1.0E-02	2.1E+03	1.7E-02	1.1E-03	1.2E-02	1.2E+01	6.1E+01	1.2E+02	**6.1E+01**	0.5
Trichloroethene	5.0E-04	5.0E-04	2.0E-03	Development and Adult Immunotoxicity, Fetal Cardiac	1.0E-02	2.7E+03	2.0E-01	1.3E-02	1.8E-01	7.8E-01	3.9E+00	7.8E+00	**3.9E+00**	0.5
SVOCs														
Benzo(a)anthracene	NA	NA	NA		1.3E-01									
Benzo(a)pyrene	NA	NA	NA		1.3E-01									
Benzo(b)fluoranthene	NA	NA	NA		1.3E-01									
Benzo(k)fluoranthene	NA	NA	NA		1.3E-01									
Dibenz(a,h)anthracene	NA	NA	NA		1.3E-01									
Indeno(1,2,3-cd)pyrene	NA	NA	NA		1.3E-01									
Dioxins/Furans														
2,3,7,8-TCDD (dioxin)	7.0E-10	7.0E-10	4.0E-08	Sperm, Developmental, Liver, Development, Endocrine	3.0E-02	NA	1.4E+05	2.8E+04	1.9E-02	6.0E-05	3.0E-04	6.0E-04	**3.0E-04**	0.5
Inorganics														
Antimony	4.0E-04	6.0E-05	NA	Longevitiy, Blood	1.0E-02	NA	2.5E-01	1.1E-01	NA	2.8E+01	1.4E+02	2.8E+02	**2.8E+02**	1
Arsenic	3.0E-04	3.0E-04	1.5E-05	Skin, Vascular	3.0E-02	NA	3.3E-01	6.6E-02	5.1E-05	2.5E+01	1.3E+02	2.5E+02	**2.5E+02**	1
Cadmium	1.0E-03	2.5E-05	2.0E-05	Kidney	1.0E-03	NA	1.0E-01	2.6E-02	3.8E-05	7.9E+01	4.0E+02	7.9E+02	**7.9E+02**	1
Chromium (III)	1.5E+00	2.0E-02	NA	Not identified	1.0E-02	NA	6.7E-05	3.4E-04	NA	2.5E+04	1.3E+05	2.5E+05	**2.5E+05**	1
Copper	4.0E-02	4.0E-02	NA	Gastrointestinal	1.0E-02	NA	2.5E-03	1.7E-04	NA	3.8E+03	1.9E+04	3.8E+04	**1.9E+04**	0.5
Iron	7.0E-01	7.0E-01	NA	Gastrointestinal	1.0E-02	NA	1.4E-04	9.4E-06	NA	6.7E+04	3.4E+05	6.7E+05	**3.4E+05**	0.5
Manganese	2.4E-02	9.6E-04	5.0E-05	CNS	1.0E-02	NA	4.2E-03	6.9E-03	1.5E-05	8.4E+02	4.2E+03	8.4E+03	**4.2E+03**	0.5
Mercury	3.0E-04	2.1E-05	3.0E-04	Immune System	1.0E-02	NA	3.3E-01	3.1E-01	2.5E-06	1.6E+01	7.9E+01	1.6E+02	**7.9E+01**	0.5
Thallium	1.0E-05	1.0E-05	NA	Hair	1.0E-02	NA	1.0E+01	6.6E-01	NA	9.6E-01	4.8E+00	9.6E+00	**4.8E+00**	0.5
Vanadium	5.0E-03	5.0E-03	NA	Hair	1.0E-02	NA	2.0E-02	1.3E-03	NA	4.8E+02	2.4E+03	4.8E+03	**2.4E+03**	0.5

Noncarcinogenic calculations:

$$\textbf{Soil RBC (mg/kg)} = \frac{\text{Target HQ} \times AT_n}{EF \times ED \times (An/BW + Bn/BW + Cn)}$$

An = $1/RfDo \times IRS/10^6$ mg/kg

Bn = $1/RfDd \times SA \times AF \times ABS \times 1/10^6$ mg/kg

Cn = $1/RfC \times (1/PEF + 1/VF)$

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	70
ATnc - Averaging time for noncarcinogens (days)	9,125
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	250
ED - Exposure duration (year)	25
ET - Exposure Time (hours/day)	8
IRS - Ingestion rate (mg/day)	100
SSA - Skin surface area (m^3)	3,300
AF - Soil to Skin Adherence Factor (mg/cm^2)	0.2
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

NA - Not available/Not applicable

VF - calculated on Table A-5a, only included in calculation for VOCs.

ABS from EPA's *Risk Assessment Guidance for Superfund Volume 1: Human health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment)*. EPA/540/R/99/005. July 2004.

Table A-12

Human Health Risk-Based Preliminary Remediation Goals

Industrial Worker Scenario (Carcinogenic) for OABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Oral Slope Factor (CSFo) (kg-day/mg)	Dermal Slope Factor (CSFd) (kg-day/mg)	Inhalation Unit Risk (IUR) $(ug/m^3)^{-1}$	Absorption Factor (ABS) (unitless)	Volatilization Factor (VF) (m^3/kg)	Ac	Bc	Cc	Carcinogen PRG Risk = 1E-06 (mg/kg)	Carcinogen PRG Risk = 1E-05 (mg/kg)	Carcinogen PRG Risk = 1E-04 (mg/kg)
VOCs											
Tetrachloroethene	2.1E-03	2.1E-03	2.6E-07	1.0E-02	2.1E+03	3.0E-09	2.0E-10	4.1E-08	9.3E+01	9.3E+02	9.3E+03
Trichloroethene	4.6E-02	4.6E-02	4.1E-06	1.0E-02	2.7E+03	6.6E-08	4.3E-09	5.0E-07	7.1E+00	7.1E+01	7.1E+02
SVOCs											
Benzo(a)anthracene	7.3E-01	7.3E-01	1.1E-04	1.3E-01		1.0E-06	8.9E-07	2.8E-11	2.1E+00	2.1E+01	2.1E+02
Benzo(a)pyrene	7.3E+00	7.3E+00	1.1E-03	1.3E-01		1.0E-05	8.9E-06	2.8E-10	2.1E-01	2.1E+00	2.1E+01
Benzo(b)fluoranthene	7.3E-01	7.3E-01	1.1E-04	1.3E-01		1.0E-06	8.9E-07	2.8E-11	2.1E+00	2.1E+01	2.1E+02
Benzo(k)fluoranthene	7.3E-02	7.3E-02	1.1E-04	1.3E-01		1.0E-07	8.9E-08	2.8E-11	2.1E+01	2.1E+02	2.1E+03
Dibenz(a,h)anthracene	7.3E+00	7.3E+00	1.2E-03	1.3E-01		1.0E-05	8.9E-06	3.0E-10	2.1E-01	2.1E+00	2.1E+01
Indeno(1,2,3-cd)pyrene	7.3E-01	7.3E-01	1.1E-04	1.3E-01		1.0E-06	8.9E-07	2.8E-11	2.1E+00	2.1E+01	2.1E+02
Dioxins/Furans											
2,3,7,8-TCDD (dioxin)	1.3E+05	1.3E+05	3.8E+01	3.0E-02		1.9E-01	3.7E-02	9.6E-06	1.8E-05	1.8E-04	1.8E-03
Inorganics											
Antimony	NA	NA	NA	1.0E-02							
Arsenic	1.5E+00	1.5E+00	4.3E-03	3.0E-02		2.1E-06	4.2E-07	1.1E-09	1.6E+00	1.6E+01	1.6E+02
Cadmium	NA	NA	1.8E-03	1.0E-03		NA	NA	4.5E-10	9.0E+03	9.0E+04	9.0E+05
Chromium (III)	NA	NA	NA	1.0E-02							
Copper	NA	NA	NA	1.0E-02							
Iron	NA	NA	NA	1.0E-02							
Manganese	NA	NA	NA	1.0E-02							
Mercury	NA	NA	NA	1.0E-02							
Thallium	NA	NA	NA	1.0E-02							
Vanadium	NA	NA	NA	1.0E-02							

Carcinogen calculations:

$$\textbf{Soil RBC (mg/kg)} = \frac{TR \times AT_c}{EF \times ED \times (Ac + Bc + Cc)}$$

Ac = CSFo x IRS/10^6 mg/kg x 1/BW

Bc = CSFd x SSA x AF x ABS x 1/10^6 mg/kg x 1/BW

Cc = IUR x 1000 ug/mg x (1/VF + 1/PEF) x ET x 1 day/24 hours

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	70
ATnc - Averaging time for noncarcinogens (days)	9,125
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	250
ED - Exposure duration (year)	25
ET - Exposure Time (hours/day)	8
IRS - Ingestion rate (mg/day)	100
SSA - Skin surface area (m^3)	3,300
AF - Soil to Skin Adherence Factor (mg/cm^2)	0.2
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

NA - Not available/Not applicable

VF - calculated on Table A-5a, only included in calculation for VOCs.

ABS from EPA's *Risk Assessment Guidance for Superfund Volume 1: Human health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment*). EPA/540/R/99/005. July 2004.

Table A-13

Human Health Risk-Based Preliminary Remediation Goals

Industrial Worker Scenario (Noncarcinogenic) for FDP

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Chronic Oral RfD (RfDo) (mg/kg-day)	Chronic Dermal RfD (RfDd) (mg/kg-day)	Chronic Inhalation RfC (RfC) (mg/m^3)	Target Organ	Absorption Factor (ABS) (unitless)	Volatilization Factor (VF) (m^3/kg)	An	Bn	Cn	Noncarcinogen PRG HQ = 0.1 (mg/kg)	HQ = 0.5 (mg/kg)	HQ = 1 (mg/kg)	PRG (mg/kg)	Target HQ[1] (mg/kg)
VOCs														
Trichloroethene	5.0E-04	5.0E-04	2.0E-03	Development and Adult Immunotoxicity, Fetal Cardiac	1.0E-02	2.7E+03	2.0E-01	1.3E-02	1.8E-01	7.8E-01	3.9E+00	7.8E+00	**3.9E+00**	0.5
Dioxins/Furans														
2,3,7,8-TCDD (dioxin)	7.0E-10	7.0E-10	4.0E-08	Sperm, Developmental, Liver, Development, Endocrine	3.0E-02	NA	1.4E+05	2.8E+04	1.9E-02	6.0E-05	3.0E-04	6.0E-04	**3.0E-04**	0.5
Inorganics														
Arsenic	3.0E-04	3.0E-04	1.5E-05	Skin, Vascular	3.0E-02	NA	3.3E-01	6.6E-02	5.1E-05	2.5E+01	1.3E+02	2.5E+02	**2.5E+02**	1
Iron	7.0E-01	7.0E-01	NA	Gastrointestinal	1.0E-02	NA	1.4E-04	9.4E-06	NA	6.7E+04	3.4E+05	6.7E+05	**6.7E+05**	1
Manganese	2.4E-02	9.6E-04	5.0E-05	CNS	1.0E-02	NA	4.2E-03	6.9E-03	1.5E-05	8.4E+02	4.2E+03	8.4E+03	**8.4E+03**	1
Thallium	1.0E-05	1.0E-05	NA	Hair	1.0E-02	NA	1.0E+01	6.6E-01	NA	9.6E-01	4.8E+00	9.6E+00	**4.8E+00**	0.5
Vanadium	5.0E-03	5.0E-03	NA	Hair	1.0E-02	NA	2.0E-02	1.3E-03	NA	4.8E+02	2.4E+03	4.8E+03	**2.4E+03**	0.5

Noncarcinogenic calculations:

$$\textbf{Soil RBC (mg/kg)} = \frac{\text{Target HQ} \times AT_n}{EF \times ED \times (An/BW + Bn/BW + Cn)}$$

An = $1/RfDo \times IRS/10^6$ mg/kg

Bn = $1/RfDd \times SA \times AF \times ABS \times 1/10^6$ mg/kg

Cn = $1/RfC \times (1/PEF + 1/VF)$

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	70
ATnc - Averaging time for noncarcinogens (days)	9,125
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	250
ED - Exposure duration (year)	25
ET - Exposure Time (hours/day)	8
IRS - Ingestion rate (mg/day)	100
SSA - Skin surface area (m^3)	3,300
AF - Soil to Skin Adherence Factor (mg/cm^2)	0.2
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

VF - calculated on Table A-5a, only included in calculation for VOCs.

NA - Not available/Not applicable

Table A-14

Human Health Risk-Based Preliminary Remediation Goals

Industrial Worker Scenario (Carcinogenic) for FDP

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Oral Slope Factor (CSFo) (kg-day/mg)	Dermal Slope Factor (CSFd) (kg-day/mg)	Inhalation Unit Risk (IUR) $(ug/m^3)^{-1}$	Absorption Factor (ABS) (unitless)	Volatilization Factor (VF) (m^3/kg)	Ac	Bc	Cc	Carcinogen PRG Risk = 1E-06 (mg/kg)	Risk = 1E-05 (mg/kg)	Risk = 1E-04 (mg/kg)
VOCs											
Trichloroethene	4.6E-02	4.6E-02	4.1E-06	1.0E-02	2.7E+03	6.6E-08	4.3E-09	5.0E-07	7.1E+00	7.1E+01	7.1E+02
Dioxins/Furans											
2,3,7,8-TCDD (dioxin)	1.3E+05	1.3E+05	3.8E+01	3.0E-02		1.9E-01	3.7E-02	9.6E-06	1.8E-05	1.8E-04	1.8E-03
Inorganics											
Arsenic	1.5E+00	1.5E+00	4.3E-03	3.0E-02		2.1E-06	4.2E-07	1.1E-09	1.6E+00	1.6E+01	1.6E+02
Iron	NA	NA	NA	1.0E-02							
Manganese	NA	NA	NA	1.0E-02							
Thallium	NA	NA	NA	1.0E-02							
Vanadium	NA	NA	NA	1.0E-02							

Carcinogen calculations:

$$\textbf{Soil RBC (mg/kg)} = \frac{TR \times AT_c}{EF \times ED \times (Ac + Bc + Cc)}$$

Ac = CSFo x IRS/10^6 mg/kg x 1/BW

Bc = CSFd x SSA x AF x ABS x 1/10^6 mg/kg x 1/BW

Cc = IUR x 1000 ug/mg x (1/VF + 1/PEF) x ET x 1 day/24 hours

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	70
ATnc - Averaging time for noncarcinogens (days)	9,125
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	250
ED - Exposure duration (year)	25
ET - Exposure Time (hours/day)	8
IRS - Ingestion rate (mg/day)	100
SSA - Skin surface area (m^3)	3,300
AF - Soil to Skin Adherence Factor (mg/cm^2)	0.2
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

NA - Not available/Not applicable

VF - calculated on Table A-5a, only included in calculation for VOCs.

Table A-15

Human Health Risk-Based Preliminary Remediation Goals

Industrial Worker Scenario (Noncarcinogenic) for ABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Chronic Oral RfD (RfDo) (mg/kg-day)	Chronic Dermal RfD (RfDd) (mg/kg-day)	Chronic Inhalation RfC (RfC) (mg/m^3)	Target Organ	Absorption Factor (ABS) (unitless)	An	Bn	Cn	Noncarcinogen PRG HQ = 0.1 (mg/kg)	HQ = 0.5 (mg/kg)	HQ = 1 (mg/kg)	PRG (mg/kg)	Target HQ[1] (mg/kg)
Explosives													
Perchlorate	7.0E-04	7.0E-04	NA	Thyroid	1.0E-02	1.4E-01	9.4E-03	NA	6.7E+01	3.4E+02	6.7E+02	**6.7E+02**	1
Inorganics													
Arsenic	3.0E-04	3.0E-04	1.5E-05	Skin, Vascular	3.0E-02	3.3E-01	6.6E-02	5.1E-05	2.5E+01	1.3E+02	2.5E+02	**2.5E+02**	1
Iron	7.0E-01	7.0E-01	NA	Gastrointestinal	1.0E-02	1.4E-04	9.4E-06	NA	6.7E+04	3.4E+05	6.7E+05	**6.7E+05**	1
Manganese	2.4E-02	9.6E-04	5.0E-05	CNS	1.0E-02	4.2E-03	6.9E-03	1.5E-05	8.4E+02	4.2E+03	8.4E+03	**8.4E+03**	1
Thallium	1.0E-05	1.0E-05	NA	Hair	1.0E-02	1.0E+01	6.6E-01	NA	9.6E-01	4.8E+00	9.6E+00	**4.8E+00**	0.5
Vanadium	5.0E-03	5.0E-03	NA	Hair	1.0E-02	2.0E-02	1.3E-03	NA	4.8E+02	2.4E+03	4.8E+03	**2.4E+03**	0.5

Noncarcinogenic calculations:

$$\textbf{Soil RBC (mg/kg)} = \frac{\text{Target HQ} \times AT_n}{EF \times ED \times (An/BW + Bn/BW + Cn)}$$

An = $1/RfDo \times IRS/10^6$ mg/kg

Bn = $1/RfDd \times SA \times AF \times ABS \times 1/10^6$ mg/kg

Cn = $1/RfC \times (1/PEF)$

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	70
ATnc - Averaging time for noncarcinogens (days)	9,125
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	250
ED - Exposure duration (year)	25
ET - Exposure Time (hours/day)	8
IRS - Ingestion rate (mg/day)	100
SSA - Skin surface area (m^3)	3,300
AF - Soil to Skin Adherence Factor (mg/cm^2)	0.2
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

NA - Not available/Not applicable

Table A-16

Human Health Risk-Based Preliminary Remediation Goals

Industrial Worker Scenario (Carcinogenic) for ABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Oral Slope Factor (CSFo) (kg-day/mg)	Dermal Slope Factor (CSFd) (kg-day/mg)	Inhalation Unit Risk (IUR) $(ug/m^3)^{-1}$	Absorption Factor (ABS) (unitless)	Volatilization Factor (VF) (m^3/kg)	Ac	Bc	Cc	Carcinogen PRG Risk = 1E-06 (mg/kg)	Risk = 1E-05 (mg/kg)	Risk = 1E-04 (mg/kg)
Explosives											
Perchlorate	NA	NA	NA	1.0E-02							
Inorganics											
Arsenic	1.5E+00	1.5E+00	4.3E-03	3.0E-02		2.1E-06	4.2E-07	1.1E-09	1.6E+00	1.6E+01	1.6E+02
Iron	NA	NA	NA	1.0E-02							
Manganese	NA	NA	NA	1.0E-02							
Thallium	NA	NA	NA	1.0E-02							
Vanadium	NA	NA	NA	1.0E-02							

Carcinogen calculations:

$$\textbf{Soil RBC (mg/kg)} = \frac{TR \times AT_c}{EF \times ED \times (Ac + Bc + Cc)}$$

Ac = CSFo x IRS/10^6 mg/kg x 1/BW

Bc = CSFd x SSA x AF x ABS x 1/10^6 mg/kg x 1/BW

Cc = IUR x 1000 ug/mg x (1/VF + 1/PEF) x ET x 1 day/24 hours

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	70
ATnc - Averaging time for noncarcinogens (days)	9,125
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	250
ED - Exposure duration (year)	25
ET - Exposure Time (hours/day)	8
IRS - Ingestion rate (mg/day)	100
SSA - Skin surface area (m^3)	3,300
AF - Soil to Skin Adherence Factor (mg/cm^2)	0.2
ABS - Absorption Factor (unitless)	chemical specific
IRA - Inhalation Rate (m^3/hour)	0.83
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

NA - Not available/Not applicable

VF - calculated on Table A-5a, only included in calculation for VOCs.

Table A-17

Human Health Risk-Based Preliminary Remediation Goals

Construction Worker Scenario (Noncarcinogenic) for OABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Subchronic Oral RfD (RfDo) (mg/kg-day)	Subchronic Dermal RfD (RfDd) (mg/kg-day)	Subchronic Inhalation RfC (RfC) (mg/m^3)	Target Organ	Absorption Factor (ABS)	Volatilization Factor (VF) (m^3/kg)	An	Bn	Cn	Noncarcinogen PRG HQ = 0.1 (mg/kg)	HQ = 0.5 (mg/kg)	HQ = 1 (mg/kg)	PRG (mg/kg)	Target HQ[1] (mg/kg)
VOCs														
Tetrachloroethene	1.0E-01	1.0E-01	4.0E-02	Liver	1.0E-02	2.1E+03	3.3E-03	9.9E-05	1.2E-02	1.2E+01	6.2E+01	1.2E+02	**1.2E+02**	1
Trichloroethene	5.0E-04	5.0E-04	5.4E-01	Development, Adult Immunotoxicity, Fetal Cardiac, Neurological	1.0E-02	2.7E+03	6.6E-01	2.0E-02	6.8E-04	1.4E+01	7.0E+01	1.4E+02	**7.0E+01**	0.5
SVOCs														
Benzo(a)anthracene	NA	NA	NA		1.3E-01									
Benzo(a)pyrene	NA	NA	NA		1.3E-01									
Benzo(b)fluoranthene	NA	NA	NA		1.3E-01									
Benzo(k)fluoranthene	NA	NA	NA		1.3E-01									
Dibenz(a,h)anthracene	NA	NA	NA		1.3E-01									
Indeno(1,2,3-cd)pyrene	NA	NA	NA		1.3E-01									
Dioxins/Furans														
2,3,7,8-TCDD (dioxin)	2.0E-08	2.0E-08	4.0E-08	Lymphatic	3.0E-02	NA	1.7E+04	1.5E+03	1.9E-02	5.7E-04	2.8E-03	5.7E-03	**5.7E-03**	1
Inorganics														
Antimony	4.0E-04	6.0E-05	NA	Blood	1.0E-02	NA	8.3E-01	1.7E-01	NA	1.0E+01	5.2E+01	1.0E+02	**1.0E+02**	1
Arsenic	3.0E-04	3.0E-04	1.5E-05	Skin, Vascular	3.0E-02	NA	1.1E+00	9.9E-02	5.1E-05	8.5E+00	4.2E+01	8.5E+01	**8.5E+01**	1
Cadmium	1.0E-03	2.5E-05	2.0E-05	Kidney	1.0E-02	NA	3.3E-01	4.0E-01	3.8E-05	1.4E+01	7.0E+01	1.4E+02	**1.4E+02**	1
Chromium (III)	1.5E+00	2.0E-02	NA	Not identified	1.0E-02	NA	2.2E-04	5.1E-04	NA	1.4E+04	7.0E+04	1.4E+05	**1.4E+05**	1
Copper	4.0E-02	4.0E-02	NA	Gastrointestinal	1.0E-02	NA	8.3E-03	2.5E-04	NA	1.2E+03	6.0E+03	1.2E+04	**6.0E+03**	0.5
Iron	7.0E-01	7.0E-01	NA	Gastrointestinal	1.0E-02	NA	4.7E-04	1.4E-05	NA	2.1E+04	1.1E+05	2.1E+05	**1.1E+05**	0.5
Manganese	2.4E-02	9.6E-04	5.0E-05	CNS	1.0E-02	NA	1.4E-02	1.0E-02	1.5E-05	4.1E+02	2.0E+03	4.1E+03	**2.0E+03**	0.5
Mercury	3.0E-04	2.1E-05	3.0E-04	Immune System	1.0E-02	NA	1.1E+00	4.7E-01	2.5E-06	6.5E+00	3.3E+01	6.5E+01	**6.5E+01**	1
Thallium	4.0E-05	4.0E-05	NA	Hair	1.0E-02	NA	8.3E+00	2.5E-01	NA	1.2E+00	6.0E+00	1.2E+01	**6.0E+00**	0.5
Vanadium	5.0E-03	5.0E-03	NA	Hair	1.0E-02	NA	6.6E-02	2.0E-03	NA	1.5E+02	7.5E+02	1.5E+03	**7.5E+02**	0.5

Noncarcinogenic calculations:

$$\textbf{Soil PRG (mg/kg)} = \frac{\text{Target HQ} \times AT_n}{EF \times ED \times (An/BW + Bn/BW + Cn)}$$

An = $1/RfDo \times IRS/10^6$ mg/kg

Bn = $1/RfDd \times SA \times AF \times ABS \times 1/10^6$ mg/kg

Cn = $1/RfC \times (1/PEF + 1/VF)$

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	70
ATnc - Averaging time for noncarcinogens (days)	365
EF - Exposure frequency (days/year)	250
ED - Exposure duration (year)	1
IRS - Ingestion rate (mg/day)	330
SA - Skin surface area (cm^2)	3,300
AF - Soil to Skin Adherence Factor (mg/cm^2-day)	0.3
ABS - Absorption Factor (unitless)	chemical specific
IRA - Inhalation Rate (m^3/day)	20
ET -Exposure Time (hour/day)	8
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

VF - calculated on Table A-5a, only included in calculation for VOCs.

1 Target HQ calculated so that total HQ for a target organ does not exceed 1.

Table A-18

Human Health Risk-Based Preliminary Remediation Goals

Construction Worker Scenario (Carcinogenic) for OABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Oral Slope Factor (CSFo) (kg-day/mg)	Dermal Slope Factor (CSFd) (kg-day/mg)	Inhalation Unit Risk (IUR) $(ug/m^3)^{-1}$	Absorption Factor (ABS)	Volatilization Factor (VF)	Ac	Bc	Cc	Carcinogen Ingestion PRG Risk = 1E-06 (mg/kg)	Risk = 1E-05 (mg/kg)	Risk = 1E-04 (mg/kg)
VOCs											
Tetrachloroethene	2.1E-03	2.1E-03	2.6E-07	1.0E-02	2.1E+03	9.9E-09	3.0E-10	4.1E-08	2.0E+03	2.0E+04	2.0E+05
Trichloroethene	4.6E-02	4.6E-02	4.1E-06	1.0E-02	2.7E+03	2.2E-07	6.5E-09	5.0E-07	1.4E+02	1.4E+03	1.4E+04
SVOCs											
Benzo(a)anthracene	7.3E-01	7.3E-01	1.1E-04	1.3E-01		3.4E-06	1.3E-06	2.8E-11	2.1E+01	2.1E+02	2.1E+03
Benzo(a)pyrene	7.3E+00	7.3E+00	1.1E-03	1.3E-01		3.4E-05	1.3E-05	2.8E-10	2.1E+00	2.1E+01	2.1E+02
Benzo(b)fluoranthene	7.3E-01	7.3E-01	1.1E-04	1.3E-01		3.4E-06	1.3E-06	2.8E-11	2.1E+01	2.1E+02	2.1E+03
Benzo(k)fluoranthene	7.3E-02	7.3E-02	1.1E-04	1.3E-01		3.4E-07	1.3E-07	2.8E-11	2.1E+02	2.1E+03	2.1E+04
Dibenz(a,h)anthracene	7.3E+00	7.3E+00	1.2E-03	1.3E-01		3.4E-05	1.3E-05	3.0E-10	2.1E+00	2.1E+01	2.1E+02
Indeno(1,2,3-cd)pyrene	7.3E-01	7.3E-01	1.1E-04	1.3E-01		3.4E-06	1.3E-06	2.8E-11	2.1E+01	2.1E+02	2.1E+03
Dioxins/Furans											
2,3,7,8-TCDD (dioxin)	1.3E+05	1.3E+05	3.8E+01	3.0E-02		6.1E-01	5.5E-02	9.6E-06	1.5E-04	1.5E-03	1.5E-02
Inorganics											
Antimony	NA	NA	NA	1.0E-02							
Arsenic	1.5E+00	1.5E+00	4.3E-03	3.0E-02		7.1E-06	6.4E-07	1.1E-09	1.3E+01	1.3E+02	1.3E+03
Cadmium	NA	NA	1.8E-03	1.0E-03				4.5E-10	2.2E+05	2.2E+06	2.2E+07
Chromium (III)	NA	NA	NA	1.0E-02							
Copper	NA	NA	NA	1.0E-02							
Iron	NA	NA	NA	1.0E-02							
Manganese	NA	NA	NA	1.0E-02							
Mercury	NA	NA	NA	1.0E-02							
Thallium	NA	NA	NA	1.0E-02							
Vanadium	NA	NA	NA	1.0E-02							

Carcinogen calculations:

$$\textbf{Soil RBC (mg/kg)} = \frac{TR \times AT_c}{EF \times ED \times (Ac + Bc + Cc)}$$

Ac = CSFo x IRS/10^6 mg/kg x 1/BW

Bc = CSFd x SSA x AF x ABS x 1/10^6 mg/kg x 1/BW

Cc = IUR x 1000 ug/mg x (1/VF + 1/PEF) x ET x 1 day/24 hours

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	70
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	250
ED - Exposure duration (year)	1
ET - Exposure Time (hours/day)	8
IRS - Ingestion rate (mg/day)	330
SA - Skin surface area (cm^2)	3,300
AF - Soil to Skin Adherence Factor (mg/cm^2-day)	0.3
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

NA - No reference dose or slope factor available.

VF - calculated on Table A-5a, only included in calculation for VOCs.

Table A-19

Human Health Risk-Based Preliminary Remediation Goals

Construction Worker Scenario (Noncarcinogenic) for FDP

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Chronic Oral RfD (RfDo) (mg/kg-day)	Chronic Dermal RfD (RfDd) (mg/kg-day)	Subchronic Inhalation RfC (RfC) (mg/m^3)	Target Organ	Absorption Factor (ABS)	Volatilization Factor (VF) (m^3/kg)	An	Bn	Cn	Noncarcinogen PRG HQ = 0.1 (mg/kg)	HQ = 0.5 (mg/kg)	HQ = 1 (mg/kg)	PRG (mg/kg)	Target HQ[1] (mg/kg)
VOCs														
Trichloroethene	5.0E-04	5.0E-04	5.4E-01	Development, Adult Immunotoxicity, Fetal Cardiac, Neurological	1.0E-02	2.7E+03	6.6E-01	2.0E-02	6.8E-04	1.4E+01	7.0E+01	1.4E+02	**7.0E+01**	0.5
Dioxins/Furans														
2,3,7,8-TCDD (dioxin)	2.0E-08	2.0E-08	4.0E-08	Lymphatic	3.0E-02	NA	1.7E+04	1.5E+03	1.9E-02	5.7E-04	2.8E-03	5.7E-03	**5.7E-03**	1
Inorganics														
Arsenic	3.0E-04	3.0E-04	1.5E-05	Skin, Vascular	3.0E-02	NA	1.1E+00	9.9E-02	5.1E-05	8.5E+00	4.2E+01	8.5E+01	**8.5E+01**	1
Iron	7.0E-01	7.0E-01	NA	Gastrointestinal	1.0E-02	NA	4.7E-04	1.4E-05	NA	2.1E+04	1.1E+05	2.1E+05	**2.1E+05**	1
Manganese	2.4E-02	9.6E-04	5.0E-05	CNS	1.0E-02	NA	1.4E-02	1.0E-02	1.5E-05	4.1E+02	2.0E+03	4.1E+03	**2.0E+03**	0.5
Thallium	4.0E-05	4.0E-05	NA	Hair	1.0E-02	NA	8.3E+00	2.5E-01	NA	1.2E+00	6.0E+00	1.2E+01	**6.0E+00**	0.5
Vanadium	5.0E-03	5.0E-03	NA	Hair	1.0E-02	NA	6.6E-02	2.0E-03	NA	1.5E+02	7.5E+02	1.5E+03	**7.5E+02**	0.5

Noncarcinogenic calculations:

$$\textbf{Soil PRG (mg/kg)} = \frac{\text{Target HQ} \times AT_n}{EF \times ED \times (An/BW + Bn/BW + Cn)}$$

An = $1/RfDo \times IRS/10^6$ mg/kg

Bn = $1/RfDd \times SA \times AF \times ABS \times 1/10^6$ mg/kg

Cn = $1/RfC \times (1/PEF + 1/VF)$

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	70
ATnc - Averaging time for noncarcinogens (days)	365
EF - Exposure frequency (days/year)	250
ED - Exposure duration (year)	1
IRS - Ingestion rate (mg/day)	330
SA - Skin surface area (cm^2)	3,300
AF - Soil to Skin Adherence Factor (mg/cm^2-day)	0.3
ABS - Absorption Factor (unitless)	chemical specific
IRA - Inhalation Rate (m^3/day)	20
ET -Exposure Time (hour/day)	8
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

VF - calculated on Table A-5a, only included in calculation for VOCs.

1 Target HQ calculated so that total HQ for a target organ does not exceed 1.

Table A-20

Human Health Risk-Based Preliminary Remediation Goals

Construction Worker Scenario (Carcinogenic) for FDP

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Oral Slope Factor (CSFo) (kg-day/mg)	Dermal Slope Factor (CSFd) (kg-day/mg)	Inhalation Unit Risk (IUR) $(ug/m^3)^{-1}$	Absorption Factor (ABS)	Volatilization Factor (VF) (m^3/kg)	Ac	Bc	Cc	Carcinogen Ingestion PRG Risk = 1E-06 (mg/kg)	Risk = 1E-05 (mg/kg)	Risk = 1E-04 (mg/kg)
VOCs											
Trichloroethene	4.6E-02	4.6E-02	4.1E-06	1.0E-02	2.7E+03	2.2E-07	6.5E-09	5.0E-07	1.4E+02	1.4E+03	1.4E+04
Dioxins/Furans											
2,3,7,8-TCDD (dioxin)	1.3E+05	1.3E+05	4.1E-06	3.0E-02	NA	6.1E-01	5.5E-02	1.0E-12	1.5E-04	1.5E-03	1.5E-02
Inorganics											
Arsenic	1.5E+00	1.5E+00	4.3E-03	3.0E-02	NA	7.1E-06	6.4E-07	1.1E-09	1.3E+01	1.3E+02	1.3E+03
Iron	NA	NA	NA	1.0E-02	NA						
Manganese	NA	NA	NA	1.0E-02	NA						
Thallium	NA	NA	NA	1.0E-02	NA						
Vanadium	NA	NA	NA	1.0E-02	NA						

Carcinogen calculations:

$$\textbf{Soil RBC (mg/kg)} = \frac{TR \times AT_c}{EF \times ED \times (Ac + Bc + Cc)}$$

Ac = CSFo x IRS/10^6 mg/kg x 1/BW

Bc = CSFd x SSA x AF x ABS x 1/10^6 mg/kg x 1/BW

Cc = IUR x 1000 ug/mg x (1/VF + 1/PEF) x ET x 1 day/24 hours

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	70
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	250
ED - Exposure duration (year)	1
ET - Exposure Time (hours/day)	8
IRS - Ingestion rate (mg/day)	330
SA - Skin surface area (cm^2)	3,300
AF - Soil to Skin Adherence Factor (mg/cm^2-day)	0.3
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

NA - No reference dose or slope factor available.

VF - calculated on Table D-5a

Table A-21

Human Health Risk-Based Preliminary Remediation Goals

Construction Worker Scenario (Noncarcinogenic) for ABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Chronic Oral RfD (RfDo) (mg/kg-day)	Chronic Dermal RfD (RfDd) (mg/kg-day)	Subchronic Inhalation RfC (RfC) (mg/m^3)	Target Organ	Absorption Factor (ABS)	An	Bn	Bn	Noncarcinogen PRG HQ = 0.1 (mg/kg)	HQ = 0.5 (mg/kg)	HQ = 1 (mg/kg)	PRG (mg/kg)	Target HQ[1] (mg/kg)
Explosives													
Perchlorate	7.0E-04	7.0E-04	NA	Thyroid	1.0E-02	4.7E-01	1.4E-02	NA	2.1E+01	1.1E+02	2.1E+02	**2.1E+02**	1
Inorganics													
Arsenic	3.0E-04	3.0E-04	1.5E-05	Skin, Vascular	3.0E-02	1.1E+00	9.9E-02	5.1E-05	8.5E+00	4.2E+01	8.5E+01	**8.5E+01**	1
Iron	7.0E-01	7.0E-01	NA	Gastrointestinal	1.0E-02	4.7E-04	1.4E-05	NA	2.1E+04	1.1E+05	2.1E+05	**2.1E+05**	1
Manganese	2.4E-02	9.6E-04	5.0E-05	CNS	1.0E-02	1.4E-02	1.0E-02	1.5E-05	4.1E+02	2.0E+03	4.1E+03	**4.1E+03**	1
Thallium	4.0E-05	4.0E-05	NA	Hair	1.0E-02	8.3E+00	2.5E-01	NA	1.2E+00	6.0E+00	1.2E+01	**6.0E+00**	0.5
Vanadium	5.0E-03	5.0E-03	NA	Hair	1.0E-02	6.6E-02	2.0E-03	NA	1.5E+02	7.5E+02	1.5E+03	**7.5E+02**	0.5

Noncarcinogenic calculations:

$$\textbf{Soil PRG (mg/kg)} = \frac{\text{Target HQ} \times AT_n}{EF \times ED \times (An/BW + Bn/BW + Cn)}$$

An = $1/RfDo \times IRS/10^6$ mg/kg

Bn = $1/RfDd \times SA \times AF \times ABS \times 1/10^6$ mg/kg

Cn = $1/RfC \times (1/PEF)$

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	70
ATnc - Averaging time for noncarcinogens (days)	365
EF - Exposure frequency (days/year)	250
ED - Exposure duration (year)	1
IRS - Ingestion rate (mg/day)	330
SA - Skin surface area (cm^2)	3,300
AF - Soil to Skin Adherence Factor (mg/cm^2-day)	0.3
ABS - Absorption Factor (unitless)	chemical specific
IRA - Inhalation Rate (m^3/day)	20
ET -Exposure Time (hour/day)	8
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

1 Target HQ calculated so that total HQ for a target organ does not exceed 1.

Table A-22

Human Health Risk-Based Preliminary Remediation Goals

Construction Worker Scenario (Carcinogenic) for ABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	Oral Slope Factor (CSFo) (kg-day/mg)	Dermal Slope Factor (CSFd) (kg-day/mg)	Inhalation Unit Risk (IUR) $(ug/m^3)^{-1}$	Absorption Factor (ABS)	Volatilization Factor (VF) (m^3/kg)	Ac	Bc	Cc	Carcinogen Ingestion PRG Risk = 1E-06 (mg/kg)	Risk = 1E-05 (mg/kg)	Risk = 1E-04 (mg/kg)
Explosives											
Perchlorate	NA	NA	NA	1.0E-02	NA						
Inorganics											
Arsenic	1.5E+00	1.5E+00	4.3E-03	3.0E-02	NA	7.1E-06	6.4E-07	1.1E-09	1.3E+01	1.3E+02	1.3E+03
Iron	NA	NA	NA	1.0E-02	NA						
Manganese	NA	NA	NA	1.0E-02	NA						
Thallium	NA	NA	NA	1.0E-02	NA						
Vanadium	NA	NA	NA	1.0E-02	NA						

Carcinogen calculations:

$$\textbf{Soil RBC (mg/kg)} = \frac{TR \times AT_c}{EF \times ED \times (Ac + Bc + Cc)}$$

Ac = CSFo x IRS/10^6 mg/kg x 1/BW

Bc = CSFd x SSA x AF x ABS x 1/10^6 mg/kg x 1/BW

Cc = IUR x 1000 ug/mg x (1/VF + 1/PEF) x ET x 1 day/24 hours

EXPOSURE ASSUMPTIONS	
BW - Body weight (kilograms)	70
ATc - Averaging time for carcinogens (days)	25,550
EF - Exposure frequency (days/year)	250
ED - Exposure duration (year)	1
ET - Exposure Time (hours/day)	8
IRS - Ingestion rate (mg/day)	330
SA - Skin surface area (cm^2)	3,300
AF - Soil to Skin Adherence Factor (mg/cm^2-day)	0.3
ABS - Absorption Factor (unitless)	chemical specific
PEF - Particulate Emission Factor (m^3/kg)	1.32E+09

NA - No reference dose or slope factor available.

Table A-23

Human Health Risk-Based Preliminary Remediation Goals

Construction Worker Scenario (Lead) for OABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 6/21/09

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
$PbB_{fetal,\ 0.95}$	95th percentile PbB in fetus	ug/dL	10	10
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.8	2.1
PbB_0	Baseline PbB	ug/dL	1.0	1.5
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.100	0.100
$AF_{S,\ D}$	Absorption fraction (same for soil and dust)	--	0.12	0.12
$EF_{S,\ D}$	Exposure frequency (same for soil and dust)	days/yr	219	219
$AT_{S,\ D}$	Averaging time (same for soil and dust)	days/yr	365	365
PRG		**ppm**	**1,120**	**618**

Table A-24

Human Health Risk-Based Preliminary Remediation Goals

Industrial Worker Scenario (Lead) for OABG

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

U.S. EPA Technical Review Workgroup for Lead, Adult Lead Committee

Version date 6/21/09

Variable	Description of Variable	Units	GSDi and PbBo from Analysis of NHANES 1999-2004	GSDi and PbBo from Analysis of NHANES III (Phases 1&2)
$PbB_{fetal,\ 0.95}$	95th percentile PbB in fetus	ug/dL	10	10
$R_{fetal/maternal}$	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	ug/dL per ug/day	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.8	2.1
PbB_0	Baseline PbB	ug/dL	1.0	1.5
IR_S	Soil ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
$AF_{S,\ D}$	Absorption fraction (same for soil and dust)	--	0.12	0.12
$EF_{S,\ D}$	Exposure frequency (same for soil and dust)	days/yr	219	219
$AT_{S,\ D}$	Averaging time (same for soil and dust)	days/yr	365	365
PRG		**ppm**	**2,240**	**1,235**

Table A-25

Recommended Human Health Risk-Based Preliminary Remediation Goals for Soil

Industrial Scenario

Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1

Allegany Ballistics Laboratory, Rocket Center, West Virginia

Chemical	OABG				FDP				ABG			
	Industrial Worker		Construction Worker		Industrial Worker		Construction Worker		Industrial Worker		Construction Worker	
	Recommended Soil PRG (mg/kg)	Basis	Recommended Soil PRG (mg/kg)	Basis	Recommended Soil PRG (mg/kg)	Basis	Recommended Soil PRG (mg/kg)	Basis	Recommended Soil PRG (mg/kg)	Basis	Recommended Soil PRG (mg/kg)	Basis
VOCs												
Tetrachloroethene	6.1E+01	HQ = 0.5	1.2E+02	HQ = 1								
Trichloroethene	3.9E+00	HQ = 0.5	7.0E+01	HQ = 0.5	3.9E+00	HQ = 0.5	7.0E+01	HQ = 0.5				
SVOCs												
Benzo(a)anthracene	2.1E+01	CR = 10^{-5}	2.1E+02	CR = 10^{-5}								
Benzo(a)pyrene	2.1E+00	CR = 10^{-5}	2.1E+01	CR = 10^{-5}								
Benzo(b)fluoranthene	2.1E+01	CR = 10^{-5}	2.1E+02	CR = 10^{-5}								
Benzo(k)fluoranthene	2.1E+02	CR = 10^{-5}	2.1E+03	CR = 10^{-5}								
Dibenz(a,h)anthracene	2.1E+00	CR = 10^{-5}	2.1E+01	CR = 10^{-5}								
Indeno(1,2,3-cd)pyrene	2.1E+01	CR = 10^{-5}	2.1E+02	CR = 10^{-5}								
Dioxins/Furans												
2,3,7,8-TCDD (dioxin)	1.8E-04	CR = 10^{-5}	1.5E-03	CR = 10^{-5}	1.8E-04	CR = 10^{-5}	1.5E-03	CR = 10^{-5}				
Explosives												
Perchlorate									6.7E+02	HQ=1	2.1E+02	HQ = 1
Inorganics												
Antimony	2.8E+02	HQ = 1	1.0E+02	HQ = 1								
Arsenic	1.6E+01	CR = 10^{-5}	8.5E+01	HQ = 1	1.6E+01	CR = 10^{-5}	8.5E+01	HQ = 1	1.6E+01	CR = 10^{-5}	8.5E+01	HQ = 1
Cadmium	7.9E+02	HQ = 1	1.4E+02	HQ = 1								
Chromium (III)	2.5E+05	HQ = 1	1.4E+05	HQ = 1								
Copper	1.9E+04	HQ = 0.5	6.0E+03	HQ = 0.5								
Iron	3.4E+05	HQ = 0.5	1.1E+05	HQ = 0.5	6.7E+05	HQ = 1	2.1E+05	HQ = 1	6.7E+05	HQ = 1	2.1E+05	HQ = 1
Manganese	4.2E+03	HQ = 0.5	2.0E+03	HQ = 0.5	8.4E+03	HQ = 1	2.0E+03	HQ = 0.5	8.4E+03	HQ = 1	4.1E+03	HQ = 1
Mercury	7.9E+01	HQ = 0.5	6.5E+01	HQ = 1								
Thallium	4.8E+00	HQ = 0.5	6.0E+00	HQ = 0.5	4.8E+00	HQ = 0.5	6.0E+00	HQ = 0.5	4.8E+00	HQ = 0.5	6.0E+00	HQ = 0.5
Vanadium	2.4E+03	HQ = 0.5	7.5E+02	HQ = 0.5	2.4E+03	HQ = 0.5	7.5E+02	HQ = 0.5	2.4E+03	HQ = 0.5	7.5E+02	HQ = 0.5

Notes:

1. For constituents with basis of CR = 10^{5}, PRG for CR =10^{-5} less than PRG for applicable HQ.
2. Used CR of 10^{-5} to keep overall carcinogenic risk below 10^{-4}.
3. Applicable HQ chosen to keep total HI for each target organ equal to or less than 1.

Attachment B
Supporting Calculations for Ecological Risk Based PRGs

TABLE B.1
Summary of Ecological Risk-Based PRGs
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

Chemical	Ecological Chemical of Concern				Soil PRG		
	OABG (Floodplain)		ABG/FDP (Upland)				
	Surface Soil	Food Web	Surface Soil	Food Web	Value	Units	Basis
Metals							
Cadmium	X	X			17.4	mg/kg	Back-calculated food web (shrew LOAEL)[1]
Chromium	X				42.7	mg/kg	Soil invertebrate toxicity test NOEC (survival)[2]
Copper	X		X		253	mg/kg	Soil invertebrate toxicity test NOEC (survival)[2]
Lead	X	X	X		785	mg/kg	Back-calculated food web (robin LOAEL)[1]
Mercury	X	X	X		1.61	mg/kg	Back-calculated food web (shrew LOAEL)[1]
Nickel	X				78.4	mg/kg	Maximum reference concentration[3]
Silver	X				42.6	mg/kg	Soil invertebrate toxicity test NOEC (reproduction)[2]
Vanadium	X				173	mg/kg	Soil invertebrate toxicity test NOEC (reproduction)[2]
Zinc	X	X			1,170	mg/kg	Soil invertebrate toxicity test NOEC (survival)[2]
Semivolatile Organic Compounds							
2-Nitroaniline			X		--	--	Insufficient data to develop a PRG
PAHs, Low Molecular Weight[4]	X				29,000	ug/kg	Eco-SSL (USEPA 2007) - soil invertebrates
PAHs, High Molecular Weight[5]	X				18,000	ug/kg	Eco-SSL (USEPA 2007) - soil invertebrates
Explosives							
1,3,5-Trinitrobenzene			X		--	--	Insufficient data to develop a PRG
HMX	X		X		10,000	ug/kg	Soil screening value (Talmage et al. 1999)[6]
Nitroglycerin	X		X		65,000	ug/kg	Soil screening value (NRCC 2006)
Perchlorate			X		1,000	ug/kg	Soil screening value (USEPA 2002) - soil invertebrates
RDX	X		X		10,000	ug/kg	Soil screening value (Talmage et al. 1999)[6]
Volatile Organic Compounds							
1,2-Dichloroethene	X				450	ug/kg	Soil screening value (MHSPE 2000)[7]
Methyl acetate	X				300	ug/kg	Soil invertebrate toxicity test NOEC (survival)[2]
Trichloroethene	X				2,500	ug/kg	Soil screening value (MHSPE 2000)[7]
Dioxin/furans							
Total dioxin/furans (TEQ)[8]		X			9.60E-05	mg/kg	Back-calculated food web (weasel LOAEL)[1]

[1] See Table B.2
[2] See Table B.3
[3] Due to small sample sizes (n=4), the maximum reference concentration was used in place of the 95% UCL
[4] PAH compounds with 3 or fewer rings
[5] PAH compounds with 4 or more rings
[6] LOEC with uncertainty factor of 5
[7] Geometric mean of the target and intervention values
[8] Based upon 2,3,7,8-TCDD equivalents, mammalian TEFs, and the 17 individual dioxin/furan congeners

TABLE B.2-1
Derivation of Ecological Risk-Based PRGs For Cadmium Based Upon Food Web Models for the Short-tailed Shrew
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

Chemical	Surface Soil Concentration (mg/kg)	Soil-Worm BAF	Terrestrial Invertebrate Concentration (mg/kg dw)	Soil-Plant BAF	Terrestrial Plant Concentration (mg/kg dw)	Soil-Mammal BAF	Small Mammal Concentration (mg/kg dw)	Surface Water Concentration (mg/L)	Dietary Intake (mg/kg/day)	LOAEL TRV (mg/kg/d)	LOAEL HQ
Cadmium	17.4	7.66	133	0.514	8.94	2.212	38.5	0.00027	9.97	10.0	1.0

$$DI_x = \frac{[[\sum_i (FIR)(FC_{xi})(PDF_i)] + [(FIR)(SC_x)(PDS)] + [(WIR)(WC_x)]]}{BW}$$

DI = Chemical-specifi = Dietary intake for chemical (mg chemical/kg body weight/day)
FIR = 0.0015 = Food ingestion rate (kg/day dry weight)
FCxi = Chemical-specifi = Concentration of chemical in food item (soil invertebrates, dry weight basis)
PDFi = 0.823 = Proportion of diet composed of food item (soil invertebrates, dry weight basis)
FCxi = Chemical-specifi = Concentration of chemical in food item (terrestrial plants, dry weight basis)
PDFi = 0.047 = Proportion of diet composed of food item (terrestrial plants, dry weight basis)
FCxi = Chemical-specifi = Concentration of chemical in food item (small mammals, dry weight basis)
PDFi = 0.00 = Proportion of diet composed of food item (small mammals, dry weight basis)
SCx = Chemical-specifi = Concentration of chemical in soil (mg/kg, dry weight)
PDS = 0.13 = Proportion of diet composed of soil (dry weight basis)
WIR = 0.0038 = Water ingestion rate (L/day)
WC = Chemical-specifi = Concentration of chemical in water (mg/L)
BW = 0.0169 = Body weight (kg)

TABLE B.2-2
Derivation of Ecological Risk-Based PRGs for Lead Based Upon Food Web Models for the American Robin
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

Chemical	Surface Soil Concentration (mg/kg)	Soil-Worm BAF	Terrestrial Invertebrate Concentration (mg/kg dw)	Soil-Plant BAF	Terrestrial Plant Concentration (mg/kg dw)	Soil-Mammal BAF	Small Mammal Concentration (mg/kg dw)	Surface Water Concentration (mg/L)	Dietary Intake (mg/kg/day)	LOAEL TRV (mg/kg/d)	LOAEL HQ
Lead	785	0.31	243	0.038	29.8	0.148	116	0.0014	11.3	11.3	1.0

$$DI_x = \frac{[[\sum_i (FIR)(FC_{xi})(PDF_i)] + [(FIR)(SC_x)(PDS)] + [(WIR)(WC_x)]]}{BW}$$

DI = Chemical-specifi = Dietary intake for chemical (mg chemical/kg body weight/day)
FIR = 0.0055 = Food ingestion rate (kg/day dry weight)
FCxi = Chemical-specifi = Concentration of chemical in food item (soil invertebrates, dry weight basis)
PDFi = 0.436 = Proportion of diet composed of food item (soil invertebrates, dry weight basis)
FCxi = Chemical-specifi = Concentration of chemical in food item (terrestrial plants, dry weight basis)
PDFi = 0.516 = Proportion of diet composed of food item (terrestrial plants, dry weight basis)
FCxi = Chemical-specifi = Concentration of chemical in food item (small mammals, dry weight basis)
PDFi = 0.00 = Proportion of diet composed of food item (small mammals, dry weight basis)
SCx = Chemical-specifi = Concentration of chemical in soil (mg/kg, dry weight)
PDS = 0.048 = Proportion of diet composed of soil (dry weight basis)
WIR = 0.0106 = Water ingestion rate (L/day)
WC = Chemical-specifi = Concentration of chemical in water (mg/L)
BW = 0.0773 = Body weight (kg)

TABLE B.2-3
Derivation of Ecological Risk-Based PRGs For Mercury Based Upon Food Web Models for the Short-tailed Shrew
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

Chemical	Surface Soil Concentration (mg/kg)	Soil-Worm BAF	Terrestrial Invertebrate Concentration (mg/kg dw)	Soil-Plant BAF	Terrestrial Plant Concentration (mg/kg dw)	Soil-Mammal BAF	Small Mammal Concentration (mg/kg dw)	Surface Water Concentration (mg/L)	Dietary Intake (mg/kg/day)	LOAEL TRV (mg/kg/d)	LOAEL HQ
Mercury	1.61	1.19	1.92	0.344	0.55	0.067	0.11	0.000086	0.16	0.16	1.0

$$DI_x = \frac{[[\sum_i (FIR)(FC_{xi})(PDF_i)] + [(FIR)(SC_x)(PDS)] + [(WIR)(WC_x)]]}{BW}$$

DI = Chemical-specifi = Dietary intake for chemical (mg chemical/kg body weight/day)
FIR = 0.0015 = Food ingestion rate (kg/day dry weight)
FCxi = Chemical-specifi = Concentration of chemical in food item (soil invertebrates, dry weight basis)
PDFi = 0.823 = Proportion of diet composed of food item (soil invertebrates, dry weight basis)
FCxi = Chemical-specifi = Concentration of chemical in food item (terrestrial plants, dry weight basis)
PDFi = 0.047 = Proportion of diet composed of food item (terrestrial plants, dry weight basis)
FCxi = Chemical-specifi = Concentration of chemical in food item (small mammals, dry weight basis)
PDFi = 0.00 = Proportion of diet composed of food item (small mammals, dry weight basis)
SCx = Chemical-specifi = Concentration of chemical in soil (mg/kg, dry weight)
PDS = 0.13 = Proportion of diet composed of soil (dry weight basis)
WIR = 0.0038 = Water ingestion rate (L/day)
WC = Chemical-specifi = Concentration of chemical in water (mg/L)
BW = 0.0169 = Body weight (kg)

TABLE B.2-4
Derivation of Ecological Risk-Based PRGs for Dioxins Based Upon Food Web Models for the Long-tailed Weasel
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

Chemical	Surface Soil Concentration (mg/kg)	Soil-Worm BAF	Terrestrial Invertebrate Concentration (mg/kg dw)	Soil-Plant BAF	Terrestrial Plant Concentration (mg/kg dw)	Soil-Mammal BAF	Small Mammal Concentration (mg/kg dw)	Surface Water Concentration (mg/L)	Dietary Intake (mg/kg/day)	LOAEL TRV (mg/kg/d)	LOAEL HQ
Dioxin (TEQ)	9.60E-05	0.88	0.000084	0.0065	0.00000062	1.07	0.00010	0.00	0.000010	0.00001	1.0

$$DI_x = \frac{[[\sum_i (FIR)(FC_{xi})(PDF_i)] + [(FIR)(SC_x)(PDS)] + [(WIR)(WC_x)]]}{BW}$$

DI = Chemical-specifi = Dietary intake for chemical (mg chemical/kg body weight/day)
FIR = 0.0142 = Food ingestion rate (kg/day dry weight)
FCxi = Chemical-specifi = Concentration of chemical in food item (soil invertebrates, dry weight basis)
PDFi = 0.00 = Proportion of diet composed of food item (soil invertebrates, dry weight basis)
FCxi = Chemical-specifi = Concentration of chemical in food item (terrestrial plants, dry weight basis)
PDFi = 0.00 = Proportion of diet composed of food item (terrestrial plants, dry weight basis)
FCxi = Chemical-specifi = Concentration of chemical in food item (small mammals, dry weight basis)
PDFi = 0.972 = Proportion of diet composed of food item (small mammals, dry weight basis)
SCx = Chemical-specifi = Concentration of chemical in soil (mg/kg, dry weight)
PDS = 0.028 = Proportion of diet composed of soil (dry weight basis)
WIR = 0.0176 = Water ingestion rate (L/day)
WC = Chemical-specifi = Concentration of chemical in water (mg/L)
BW = 0.1470 = Body weight (kg)

TABLE B.3-1
Derivation of Ecological Risk-Based PRGs Based Upon Soil Invertebrate Toxicity Tests - Survival Endpoint
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

Sample	Mean Survival (%)	Significant Difference			Impacted?	Methyl acetate UG/KG	Chromium MG/KG	Copper MG/KG	Zinc MG/KG
		Control	Ref 1	Ref 2					
Lab Control	97.5	NA			--				
Reference 1/AS01-SS45-(0-1)	47.5		NA		No	3.30	12.1	24.1	163
AS01-SS50-(0-1)	87.5				No	11.0	10.4	17.4	63.2
AS01-SS52-(0-1)	70.0				No	300	42.7	253	1,170
AS01-SS58-(0-1)	92.5				No	ND or NA	14.0	39.8	180
					Maximum = NOEC:	300	42.7	253	1,170
AS01-SS46-(0-1)	10.0	√			Yes	2.90	14.2	37.8	191
AS01-SS47-(0-1)	7.50	√			Yes	ND or NA	15.7	46.6	217
AS01-SS48-(0-1)	12.5	√			Yes	850	14.1	43.1	161
AS01-SS49-(0-1)	45.0	√			Yes	450	19.7	43.5	181
AS01-SS51-(0-1)	5.00	√			Yes	320	23.5	123	845
AS01-SS53-(0-1)	17.5	√			Yes	ND or NA	63.8	284	1,400
AS01-SS54-(0-1)	7.50	√			Yes	ND or NA	17.1	44.1	176
Reference 2/AS01-SS55-(0-1)	12.5	√		NA	Yes	ND or NA	11.5	26.7	181
AS01-SS56-(0-1)	70.0	√			Yes	ND or NA	15.6	41.0	200
AS01-SS57-(0-1)	72.5	√			Yes	ND or NA	59.5	517	841
AS01-SS59-(0-1)	75.0	√			Yes	ND or NA	16.4	44.1	181

√ indicates a statistically significant decrease in response

TABLE B.3-2
Derivation of Ecological Risk-Based PRGs Based Upon Soil Invertebrate Toxicity Tests - Reproduction Endpoint
Site Remediation Goal Selection Process and Evaluation of Target Remediation Areas in Soil at Site 1
Allegany Ballistics Laboratory, Rocket Center, WV

Sample	No. of Juveniles	No. of Cocoons	Sign of Reproduction	Impacted?	Silver MG/KG	Vanadium MG/KG
Lab Control	0.25	11.5	Yes	--		
Reference 1/AS01-SS45-(0-1)	0	4.00	Yes	No	ND	15.5
AS01-SS47-(0-1)	0.50	0.25	Yes	No	2.90	21.3
AS01-SS49-(0-1)	0	2.50	Yes	No	ND	21.8
AS01-SS50-(0-1)	0.25	0.50	Yes	No	ND	16.1
AS01-SS52-(0-1)	0	0.50	Yes	No	2.40	22.4
AS01-SS53-(0-1)	0	3.75	Yes	No	42.6	173
AS01-SS54-(0-1)	0.50	1.50	Yes	No	ND	25.4
AS01-SS56-(0-1)	0.25	1.50	Yes	No	ND	21.9
AS01-SS57-(0-1)	0.50	0.50	Yes	No	5.50	58.3
AS01-SS58-(0-1)	0	3.75	Yes	No	ND	22.1
AS01-SS59-(0-1)	0	0.25	Yes	No	ND	24.9
				Maximum = NOEC:	42.6	173
AS01-SS46-(0-1)	0	0	No	Yes	ND	18.3
AS01-SS48-(0-1)	0	0	No	Yes	3.30	21.8
AS01-SS51-(0-1)	0	0	No	Yes	ND	26.5
Reference 2/AS01-SS55-(0-1)	0	0	No	Yes	ND	16.0

√ indicates a statistically significant decrease in response

Attachment C
Comments and Navy Responses

Comments and Navy Responses to the

Draft Technical Memorandum Site Remediation Goal Selection Process and Evaluation of Areas of Contaminated Soil for Remediation at Site 1 Allegany Ballistics Laboratory, Rocket Center, West Virginia

USEPA'S COMMENTS DATED August 17, 2012 on the *Site Remediation Goal Selection Process and Evaluation of Areas of Contaminated Soil for Remediation at Site 1 Technical Memorandum, Allegany Ballistics Laboratory, Rocket Center, West Virginia, March 2012*

Comments submitted by Sarah Kloss, EPA RPM

General Comments

1. EPA concurs with the site specific remediation goals that are contained in this memorandum as long as they are up to date in accordance with comment 3 below. Based on our own analysis of the data, we also concur with the areas that should be targeted for remediation. However, there are concerns related to the field application of the remedial goals. These concerns do not affect the "areas of contaminated soil for remediation" or the "remedial goals." Thus, while the EPA concurs with the memo in the scope of defining remediation areas and remedial goals, it is important to note that concurrence with this memo does not include concurrence with any language that implies agreements as to how the remedial goals will be used in the field if an excavation remedial action is selected. For example the introductory paragraph notes that "this memorandum presents the method for determining how the SRGs will be applied through a comparison of the 95% upper confidence limit (UCL) of site-wide soil concentrations within the active burning grounds (ABG) and outside active burning grounds (OABG)." This language suggests that there is an agreement related to field application of the 95% UCL, which there is not. Concerns with the use of the 95% UCL include: removing sample concentrations from the dataset without replacing them with the concentrations left in place and the use of the calculated UCL in relation to a do-not-exceed value. Again, regardless of our issues with the methodology used in the UCL calculations, our own analysis highlights basically the same areas requiring remediation; thus, there is enough information to proceed with the FS. For further details about the issues with the way the UCL is being used, we suggest a meeting with EPA technical support.

   Navy Response: The SRGs have been updated to incorporate changes in toxicity criteria, drinking water standards and/or risk methodology as presented in the spring 2012 RSL table. See general comment #3 for details.

   It was not the Navy's intention for the technical memorandum to address how the post remedial action confirmation sampling would be interpreted or how the remedial goals will be used in the field if an excavation remedial action is selected. The Introduction section has been revised to state,

   > **"This technical memorandum presents the proposed site remediation goals (SRGs) and method for applying a 95% upper confidence limit (UCL) of site-wide soil concentrations within the active burning grounds (ABG) and outside active burning grounds (OABG) to determine areas of concern (AOCs) that will be targeted for remediation in Operable Unit 4 (OU-4), Site 1 soil, at Allegany Ballistics Laboratory (ABL) located in Rocket Center, West Virginia. The human health and ecological preliminary remediation goals (PRGs) and site-specific soil-**

to-groundwater leaching considerations discussed herein supersede previous partnering team discussions and decisions regarding Site 1 SRGs.

The Navy, in partnership with West Virginia Department of Environmental Protection (WVDEP) and the US Environmental Protection Agency (EPA), will utilize the AOCs presented in this memo to define the general areas of concern in soil for use as part of the remedial alternative development and comparison in the Feasibility Study (FS). This technical memorandum does not address how the post remedial action confirmation sampling will be interpreted or how the remedial goals will be used in the field if an excavation alternative is selected as the final remedy. Furthermore, additional data collection efforts may be necessary to refine remedial target areas presented in this memo prior to selection of the final remedy which will be presented in the Record of Decision (ROD) in accordance with the Navy's Environmental Restoration Program, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidance (EPA, 1999), the National Oil and Hazardous Substance Pollution Contingency Plan (Title 40 Code of Federal Regulations Part 300 et seq.), and other relevant EPA guidance."

Concerns regarding the methods used to conduct the 95% UCL were discussed on the August 15, 2012 conference call with technical support staff from EPA, NAVFAC, and CH2MHILL. The team agreed that although there are multiple ways to run the 95% UCL to determine the focused remediation areas, the outcome remains the same as stated in EPA's general comment #1. Therefore changes to the use of the 95% UCL are not recommended at this time.

2. Ecological Risk: Tables 9 through 14 present the results of the iterative removal of contaminated soil locations under various human exposure scenarios. The memo indicates that each of these scenarios included evaluation using ecological remedial goals. This information may be included in the color-coding of the tables, yet no legend is provided to demonstrate which areas require removal for protection of ecological protection. The BTAG requests that a legend be provided to reviewers to enable tracking of the remedial goal driving the selection of soil areas for removal to meet the 95% UCL objective. Figures indicating areas requiring remediation by exposure scenario (e.g., human industrial, ecological) would also clarify factors defining areas of remediation.

   Navy Response: Although the removal scenarios evaluated are labeled "industrial" or "residential", they are not human exposure scenarios per se. The SRGs used to define the potential removal areas are the lower of the human health PRGs, the ecological PRGs, and the groundwater SSLs, plus a consideration of facility-specific or site-specific background data and site-specific groundwater concentration data, as summarized in Tables 7 and 8. The "industrial" versus "residential" designation simply refers to which of the human health-based PRGs (residential or industrial) was used in the SRG derivation for that scenario. As shown on Table 7, for the ABG, the selected SRG for five of the 11 final COCs (3 explosives and 2 metals) was based upon the ecological PRG (the other 6 were based upon one of the other PRGs since they were lower than the ecological PRG for those constituents). As shown on Table 8, for the OABG, the selected SRG for 14 of the 26 final COCs (for the industrial scenario) was based upon the ecological PRG. The color coding in Tables 9 through 14

does not relate to the PRG used to define the SRG; a legend describing the color coding has been added to Tables 9 through 14.

The potential removal areas identified were derived considering all three exposure/risk categories (human health, ecological, and leaching to groundwater), and background, simultaneously, as is appropriate for an evaluation to support the FS. Because the SRGs are not used as not-to-exceed values in the UCL scenarios, it would be very difficult to identify removal areas based on each of the individual PRGs since the removal of samples in the first steps of the analysis (which may be driven by a COC whose SRG is based upon a non-ecological PRG) impacts what samples are removed in later steps (and thus the ultimate removal area) Therefore, no modifications or additional figures are recommended.

3. The PRGs and SSLs should be updated based on changes in toxicity criteria, drinking water standards and/or risk methodology as presented in the current spring 2012 RSL table.

   Navy Response: The PRGs and SSLs have been updated based on the changes in toxicity criteria, drinking water standards and/or risk methodology as presented in the current spring 2012 RSL table. In addition, the arsenic background concentration previously reported was incorrect. The arsenic background was revised and reevaluated during the revision process. The ABG COCs that have been affected:

   - **Human health PRG – 2,3,7,8-TCDD for residential scenario**
   - **SSL – 2-nitroaniline, 1,3,5-trinitrobenzene, HMX, nitroglycerin, cobalt, iron, manganese, and vanadium**
   - **SRG – arsenic for residential scenario, and manganese for residential and industrial scenario**

   The OABG COCs that have been affected:

   - **Human health PRG – PCE for residential and industrial scenarios, 2,3,7,8-TCDD for residential scenario, and manganese for residential and industrial scenarios**
   - **SSL - Bromodichloromethane, methyl acetate, HMX, nitroglycerin, cobalt, iron, manganese, nickel, silver, vanadium, and zinc**
   - **SRG – arsenic for residential scenario, bromodichloromethane for residential and industrial scenarios, nitroglycerin for residential and industrial scenario, subsurface cobalt for residential and industrial scenarios, and iron for industrial scenario. In addition, there was a typo for the industrial SRG for benzo(b)fluoranthene, which has been corrected.**

Tables 3 and 5 through 14 have been revised to reflect the changes.

Specific Comments

1. The Site Specific Soil Screening Levels discussion should explain (in the narrative) the input parameters that were used to calculate the dilution attenuation factor (DAF) and what this input to the SSL equation represents.

   Navy Response: The DAF equation " $DAF = 1 + \frac{Kid}{IL}$ **" has been added to the Procedure for Calculating SSLs section to explain the input parameters that were used to calculate the DAF. All input parameters for the DAF are already included in Table 3. The fourth, fifth, and sixth sentence in the section have been revised to state, "Typically, lateral groundwater flux within the underlying aquifer is much greater than the vertical recharge and a dilution attenuation factor (DAF) has been used in calculating the SSL. The groundwater protection standard (C_w) is the product of the potable groundwater standard (MCL or RSL) and the DAF. The C_w term in the diluted standard. The input parameters to the SSL equilibrium equation and DAF equation are listed in Table 3."**

2. The Perchlorate SSL discussion includes a final paragraph that mentions DAFs. Table 4 also includes DAFs for perchlorate calculation. It's unclear how the DAF was used in the given formula. Further, it's unclear how the exposure duration input parameter was calculated.

   Navy Response: The DAF is used in the perchlorate approach (mass limited SSL) in the same manner as used for the other parameters (infinite mass) as discussed in specific comment 1. The exposure duration parameter is not calculated, but provided by EPA in the guidance documents as 70 years.

WVDEP'S COMMENTS DATED August 9, 2012 on the *Site Remediation Goal Selection Process and Evaluation of Areas of Contaminated Soil for Remediation at Site 1 Technical Memorandum, Allegany Ballistics Laboratory, Rocket Center, West Virginia, March 2012*

Comments submitted by Thomas Bass, WVDEP RPM

General Comments:

1. The approach outlined in the document identified above, attempts to provide a statistical approach to delineate the aerial extent of contamination for future remediation. This process is based on the ranges of contaminant concentrations reported for samples obtained throughout the 2 identified areas (ABG and OABG) and focuses on the highest values. While the approach appears to identify likely source areas, there is considerable uncertainty regarding the lateral and vertical extents of contamination. Unfortunately this uncertainty is exacerbated by defining areas of contamination on the basis of contaminant levels without consideration of the spatial relationships between samples identified as "contaminated".

   Navy Response: It is agreed that there is some uncertainty in the lateral and vertical extents of the areas of concern to be targeted for remediation. In an effort to eliminate the uncertainties, a pre-design study will be conducted to refine the areas of concern and bound the lateral and vertical limits of excavation. During the August 2012 partnering meeting, given the site understanding and low potential for the areas of concern to significantly increase/decrease, the Team agreed that the pre-design study is not necessary to select a remedy, and prepare the proposed remedial action plan and record of decision. However, the results will be used to support future Team decisions and refine the design once the final remedy is selected.

   The Introduction section has been revised to state,

   > **"This technical memorandum presents the proposed site remediation goals (SRGs) and method for applying a 95% upper confidence limit (UCL) of site-wide soil concentrations within the active burning grounds (ABG) and outside active burning grounds (OABG) to determine areas of concern (AOCs) that will be targeted for remediation in Operable Unit 4 (OU-4), Site 1 soil, at Allegany Ballistics Laboratory (ABL) located in Rocket Center, West Virginia. The human health and ecological preliminary remediation goals (PRGs) and site-specific soil-to-groundwater leaching considerations discussed herein supersede previous partnering team discussions and decisions regarding Site 1 SRGs.**
   >
   > **The Navy, in partnership with WVDEP and the EPA, will utilize the AOCs presented in this memo to define the general areas of concern in soil for use as part of the remedial alternative development and comparison in the Feasibility Study (FS). This technical memorandum does not address how the post remedial action confirmation sampling will be interpreted or how the remedial goals will be used in the field if an excavation alternative is selected as the final remedy. Furthermore, additional data collection efforts may be necessary to refine remedial target areas presented in this memo prior to selection of the final remedy which will be presented in the Record of Decision (ROD) in accordance with the**

Navy's Environmental Restoration Program, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) guidance (EPA, 1999), the National Oil and Hazardous Substance Pollution Contingency Plan (Title 40 Code of Federal Regulations Part 300 et seq.), and other relevant EPA guidance."

2. A primary objective of the future remedial action should conform to the requirements of §47 CSR 12.3.2.b.

   Where the concentration of a certain constituent exceeds an otherwise applicable groundwater quality standard due to human-induced contamination, no further contamination by that constituent shall be allowed and every reasonable effort shall be made to identify, remove or mitigate the source of such contamination and to strive, where practical, to reduce the level of contamination over time to support drinking water use.

   Given this requirement, as well as the issue identified above, WVDEP cannot support deviating from the calculated remedial target concentrations as currently approved.

   Navy Response: Compliance with the referenced statute is established by the inclusion of 47 CSR 57-4.1 as an ARAR in the forthcoming revised draft FS.

USEPA'S COMMENTS RECEIVED VIA EMAIL on January 4, 2013 on the *Site Remediation Goal Selection Process and Evaluation of Areas of Contaminated Soil for Remediation at Site 1 Technical Memorandum, Allegany Ballistics Laboratory, Rocket Center, West Virginia, October 2012*

Comments submitted by Sarah Kloss, EPA RPM and Navy Responses

1. PCE – The Report states that the RfC was not considered in the remedial goal for PCE because the inhalation pathway was not previously a risk driver. However, consideration of changes in toxicity criteria for the inhalation route will result in the non-cancer remedial goals (as calculated using the calculator in the RSL Table and site-specific exposure parameters at an HI=1) of 86 mg/kg for the resident; 410 mg/kg for the industrial worker; and, 357 mg/kg for the construction worker, to drive the risk for PCE when the cancer remedial goals are set at 1E-05. Please consider revising the remedial goals for PCE to include the inhalation route based on current toxicity criteria and appropriate consideration of target risk and target organs.

   Response: *The remedial goals for PCE based on non-cancer have been updated to include the inhalation route. Table 8 and Attachment A have been revised accordingly.*

2. TCE – The Report states that the RfC was not considered in the remedial goal for TCE because the inhalation pathway was not previously a risk driver. However, consideration of changes in toxicity criteria for the inhalation route will result in the non-cancer remedial goals (as calculated using the calculator in the RSL Table and site-specific exposure parameters at an HI=1) of 4.4 mg/kg for the residential scenario; 20 mg/kg for the industrial scenario; and, 18 mg/kg for the construction worker, to drive the risk for TCE when the cancer remedial goals are set at 1E-05. Please consider revising the remedial goals for TCE to include the inhalation route based on current toxicity criteria and appropriate consideration of target risk and target organs.

   Response: *The remedial goals for TCE based on non-cancer have been updated to include the inhalation route. Tables 7, 8, and Attachment A have been revised accordingly.*

3. Dioxin Remedial Goals: For the construction worker, the non-cancer remedial goal of 1.99E-04 mg/kg at an HI=1 (as calculated using the online RSL calculator and site-specific exposure parameters) is more protective than the cancer remedial goal of 1.5E-03mg/kg at a cancer risk of 1E-05. Note that it appears that an incorrect oral RfD was used in the calculations on Table A-19. The unit risk on Table A-20 should also be corrected. The oral RfD for Dioxin is 7E-10 mg/kg/day, not 2E-08 mg/kg/day. The inhalation unit risk for dioxin is 3.8E+01 (ug/m3)-1, not 4.1E-06 (ug/m3)-1. Please consider revising the remedial goals for Dioxin for the construction worker using current toxicity criteria and appropriate consideration of target risks and target organs.

   Response: *The subchronic oral RfD of 2E-08 mg/kg-day for dioxin from the ATSDR Toxicity Profile for Chloridated Dibenzo-p-Dioxins (December 1998) was used for the construction worker scenario, as the construction worker was assumed to be exposed to site soil for less than 7 years (for 1 year). Therefore, no change is recommended.*

4. Manganese- The revised remedial goals do not reflect current toxicity criteria for the *non-dietary* pathway including the RfC for all exposure scenarios. The remedial goals at an HI=1 calculated using the online RSL calculator are 1,800 mg/kg (900 mg/kg at HI=0.5) for the resident; 2.3E+04 mg/kg (11,500 mg/kg at HI=0.5) for the industrial worker; and, 7,250 mg/kg (HI=1) for the construction worker. Please consider revising the remedial goals for manganese for all exposure scenarios using current toxicity criteria and appropriate consideration of target organs.

   Response: *The remedial goals for manganese have been updated using the RfD for the non-dietary pathway. Additionally, the inhalation pathway has been included in the remedial goals calculation for non-cancer using the RfD for manganese (pathway added based on Comments 1 and 2). Tables 7, 8, and Attachment A have been revised accordingly.*

5. Thallium – The revised remedial goal for thallium does not reflect changes in the RfD for the construction worker. The remedial goal at an HI=1 using the online RSL calculator and revised RfD of 1E-05 mg/kg/day is 3.1 mg/kg, not 12 mg/kg. Please consider revising the remedial goal for thallium for the construction worker using current toxicity criteria and appropriate consideration of target organs.

   Response: *The subchronic oral RfD of 4E-05 mg/kg-day for dioxin thallium from the Risk Assessment Information System database was used for the construction worker scenario, as the construction worker was assumed to be exposed to site soil for less than 7 years (for 1 year). Therefore, no change recommended.*

6. Note that table 8 indicates that the DAF used is 236, not 232 (see table 3.) Please use a consistent DAF.

   Response: Table 3 has been revised to reflect a DAF of 236.

7. Page 7, Number 2. The Report defines surface soil as between 0-5 feet below ground. It should be noted that this is the surface soil depth for ecological risk. For human health risk, surface soil is considered between 0-2 ft below ground surface.

   Response: *Page 7, Number 2 was revised eliminate the discussion on soil depth. The next numbered bullet in the text indicates the assumption for 0-5 ft is based on ecological receptor exposures as agreed by the Team.*

   The location and depth of each soil sample was identified. Sample locations are shown on Figures 2 and 3. The evaluation was conducted separately for the ABG and OABG and each evaluation used a combined surface soil and subsurface soil data set. The following text has been deleted from Number 2, "Based on previous agreements during the PRG development process, surface soil was defined as 0 to 5 feet below ground surface (bgs) and subsurface soil was defined as greater than 5 feet bgs."