

DRAFT
FINDING OF NO SIGNIFICANT IMPACT

Ballistic Evaluation Center

Picatinny Arsenal, New Jersey

August 2011

1. Proposed Action – The proposed action entails the construction and operation of a new Ballistic Evaluation Center (BEC) at the location of the existing BEC at Picatinny Arsenal, New Jersey. The proposed action includes the demolition of five antiquated buildings, construction and operation of a temporary facility, and construction of the new BEC. The facilities to be constructed for the BEC include a magazine, loading facility, administrative building, and multiple target recovery areas (slug butts). Ballistics operations would be temporarily maintained at the site of a former ballistic evaluation range during construction. Testing activities consist of firing inert projectiles from stationary gun hardstands into the slug butts to determine the performance characteristics of the weapon systems. The anticipated projectiles to be tested are tank rounds, howitzer rounds, and mortars. The temporary relocation of ballistic testing activities from the BEC will require upgrades to accommodate the proposed action. Those temporary activities will be collocated with the U.S. Navy's Guns and Weapons Tech Data Facility lot acceptance testing function. The Navy's Tech Data Facility is addressed in greater detail in the Base Realignment and Closure (BRAC05) Environmental Assessment (November 2008).

2. Description of Alternatives – Three alternatives to the Proposed Action were considered in this assessment. Two of these alternatives were dismissed after initial evaluation because they failed to maximize the utilization of existing resources and manpower located in the area of the existing BEC— thereby increasing project cost and schedule delays. These alternatives were: 1) construct new facility in a different location within the Arsenal, and 2) use of off-site facilities. Thus, only the No Action alternative was considered in detail in this assessment.

3. Anticipated Environmental Impacts – Constructing the BEC and the temporary facility at the proposed locations will meet the needs of the U.S. Army by expanding the ability of the Arsenal to carry out experimental evaluations of developmental large caliber weapons, projectiles and propellants; conduct malfunction investigations on fielded ammunition and weapons; and perform surveillance inspections of stockpiled ammunition in support of the ARDEC mission. The proposed action will be conducted at existing outdoor test areas that have previously used for the projected functions with the following anticipated impacts:

- Air emissions from testing activities have been modeled for known and suspected hazardous air pollutants (HAP). Lead was found to be the only HAP that exceeded the NJDEP Reference Concentration (RfC). The risk analysis conducted for cumulative impacts was found to be within acceptable limits using exposure modeling. In addition, predicted maximum monthly average lead concentrations were found to be well within Ambient Air Quality Standards.
- Noise impacts have been addressed in the "Picatinny Arsenal Installation Operational Noise Management Plan". The results of this study show that both the typical net explosive weight scenario, which produces a 115 dB noise contour, and the maximum new explosive weight utilization scenario, producing a 130 dB noise contour, minimally extends off the installation boundary. Therefore, noise complaints may occur but not to a greater extent than existing conditions
- Inorganic contaminants (metals) in excess of levels of concern were discovered in sediment samples at both proposed site locations. Monitoring will be employed to determine whether testing operations are

increasing the levels of contamination, which would lead to mitigation in the form of reduced testing or environmental controls.

- Results from groundwater sampling show a presence of TCE that is above regulatory limits at the Alternative BEF site at the 647 Test Area. Groundwater wells are not in place at the proposed BEC site but TCE can conservatively be assumed to exist. The incidence of TCE will require reinjection of groundwater encountered during construction dewatering operations and a vapor intrusion barrier may be appropriate to prevent volatile organic gases from entering newly constructed buildings at the sites but is not identified as a requirement.
- Unexploded ordnance (UXO) removal will result in the generation of a large amount of excess soil, which will require the protection of the pond located at the proposed site from both drawdown and contamination. Those excess soils will be tested for contamination on-site before removal unless prior approval is obtained from the Picatinny Environmental Affairs Division. In addition, a culvert that transmits water to the wetland area on the site must be maintained as functional during UXO removal and subsequent construction.
- The proposed action will impact area of exceptional resource value wetlands requiring an individual permit to be issued by the New Jersey Department of Environmental Protection. Compensation (mitigation) for the loss of wetland or transition areas would require a replacement in the ratio of 2:1.
- The proposed improvements to the BEC at the 636 Test Area are within a Category 1 flood hazard area. Vegetative disturbances in a previously disturbed area will require compensation at a 2:1 ratio, along with adherence to storm water management regulations with respect to runoff reductions and restoration to predevelopment hydrologic conditions.

4. Conclusion – Based on adherence to the above listed measures and conditions contained in the Environmental Assessment, the conclusion has been reached that constructing and operating the BEC and temporarily relocating outdoor large caliber weapons testing in the proposed locations would not constitute a major federal action significantly affecting the quality of the human environment within the meaning of Section 102 (2) (c) of the National Environmental Policy Act. Accordingly, preparation of an Environmental Impact Statement is not required. Therefore, the draft Finding of No Significant Impact (FNSI) is being made available for public review and comment for 30 days. A final decision would be rendered upon review and due consideration of the comments received.

5. Public Availability – The Environmental Assessment and this draft FNSI for the Proposed Action are available for public inspection at the Public Affairs Office, Picatinny Arsenal. General questions concerning this EA can be directed to Mr. Pete Rowland. Written comments should be mailed to Mr. Rowland at, Public Affairs Office, AMSRD-AAR-AO, Picatinny Arsenal, NJ 07806-5000. Public comment on this FNSI will be accepted for a period of 30 days from the date of this notice.

Approve:


HERB KOEHLER
LTC, LG
Garrison Commander

9-26-11

Date

Environmental Assessment and Draft Finding of No Significant Impact - Ballistic Evaluation Center

**Picatinny Arsenal
Morris County, New Jersey**

August 2011

Prepared by



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Revised by Picatinny Arsenal Environmental Affairs Division

EXECUTIVE SUMMARY

- (a) Lead Agency and Location:** U.S. Department of the Army, Picatinny Arsenal, New Jersey
- (b) Proposed Action:** Construction and Operation of Ballistic Evaluation Center at Picatinny Arsenal
- (c) Responsible Official:** LTC Herb Koehler, Garrison Commander
U.S. Army – Picatinny Arsenal, NJ

The U.S. Army proposes to construct and operate a Ballistic Evaluation Center (BEC) at Picatinny Arsenal, New Jersey. The proposed action would upgrade antiquated facilities that have been in use on the installation with the purpose of developing and evaluation munitions components. In order to accomplish this action while continuing this mission, the test and evaluation activities will be temporarily relocated to another on-site facility with a shared U.S. Navy function as a result of Base Realignment and Closure requirements. This environmental assessment (EA) assesses the potential environmental impacts associated with the construction and operation of the new facility. The majority of the impacts to the environment should prove to be minimal based on the re-use of existing facilities to conduct similar operations to those that have existed previously. Those potential adverse effects that may result from the construction and operation of the BEC can be avoided or reduced through implementation of monitoring, best management practices, and facility design. The following are issues identified as a result of the impact analysis conducted for the various environmental media:

- Air emissions from testing activities have been modeled for known and suspected hazardous air pollutants (HAP). Lead was found to be the only HAP that exceeded the NJDEP Reference Concentration (RfC). The risk analysis conducted for cumulative impacts was found to be within acceptable limits using exposure modeling. In addition, predicted maximum monthly average lead concentrations were found to be well within Ambient Air Quality Standards.
- Noise impacts have been addressed in the “Picatinny Arsenal Installation Operational Noise Management Plan”. The results of this study show that both the typical net explosive weight scenario, which produces a 115 dB noise contour, and the maximum new explosive weight utilization scenario, producing a 130 dB noise contour, minimally extends off the installation boundary. Therefore, noise complaints may occur but not to a greater extent than existing conditions.
- Inorganic contaminants (metals) in excess of levels of concern were discovered in sediment samples at both proposed site locations. Monitoring will be employed to determine whether testing operations are increasing the levels of contamination, which would lead to mitigation in the form of reduced testing or environmental controls.
- Unexploded ordnance (UXO) removal will result in the generation of a large amount of excess soil, which will require the protection of the pond located at the proposed site from both drawdown and contamination. Those excess soils will be tested for contamination on-site before removal unless prior approval is obtained from the Picatinny Environmental Affairs Division. In addition, a culvert that transmits water to the wetland area on the site must be maintained as functional during UXO removal and subsequent construction.

- The proposed action will impact area of exceptional resource value wetlands requiring an individual permit to be issued by the New Jersey Department of Environmental Protection. Compensation (mitigation) for the loss of wetland or transition areas would require a replacement in the ratio of 2:1.
- The proposed improvements to the BEC at the 636 Test Area are within a Category 1 flood hazard area. Vegetative disturbances in a previously disturbed area will require compensation at a 2:1 ratio, along with adherence to storm water management regulations with respect to runoff reductions and restoration to predevelopment hydrologic conditions.

On the basis of the findings presented in the EA, the Proposed Action would have limited environmental impacts on the resources selected for analysis. Also, implementation of the Proposed Action would not appreciably change the cumulative impacts on human health, the environment, or other resources. An Environmental Impact Statement is not required. Issuing a Finding of No Significant Impact would be appropriate.

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- B Picatinny Arsenal Soil Management Procedures during Construction Activities

1. Purpose and Need for the Action

1.1. Introduction and Statement of Need

The U.S. Army Research, Development, and Engineering Command, Armaments Research, Development, and Engineering Center (RDECOM-ARDEC) is located at the Picatinny Arsenal in Morris County, New Jersey. The mission of ARDEC is to develop armament and munitions technology and weapon systems. The Army has proposed the construction and operation of a new Ballistic Evaluation Center (BEC) at Picatinny Arsenal. This proposed facility would be used to carry out experimental evaluations of developmental large caliber weapons, projectiles and propellants; conduct malfunction investigations on fielded ammunition and weapons; and perform surveillance inspections of stockpiled ammunition in support of the ARDEC mission. These weapon system evaluations are conducted by the ballistic firing of inert projectiles into target recovery areas known as slug butts. The tests are typically conducted to determine the performance of either the projectile and its components or the firing weapon itself. The projectiles are recovered from the slug butts at set intervals or as necessary depending on the test parameters.

The new BEC would satisfy a need to centrally locate all facets of the weapon and ballistic testing organization. This would reduce the lead-time needed to evaluate new concepts, provide flexibility to make changes midstream as required, and allow for fine-tuning of designs resulting in optimum performance. A direct saving to the Army would also result from the reduction of overhead and maintenance costs associated with the existing antiquated ballistics evaluation structures. The current facility is antiquated in its size and capabilities. Multiple buildings and features are either outdated, lacking in appropriate facilities, or in need of demolition.

1.2. Minimum Performance Criteria

The minimum performance criteria for the facility that meets the above-described needs and objectives are:

1. The facility must be safe, secure, and in a sufficiently remote area;
2. The facility must accommodate live fire testing;
3. The facility must accommodate the personnel and equipment required for large caliber weapon testing;
4. The facility must maximize the utilization of existing resources and manpower. This will ensure the testing programs realize their maximum potential within the constraints of time and cost.

1.3. Summary of Proposed Action

The proposed action includes the construction and operation of a new state-of-the-art Ballistic Evaluation Center (Proposed BEC) at the location of the existing test area (636 Test Area). Construction will require the demolition of numerous antiquated structures totaling 4,493 square feet (Table 2-1). Ballistics operations will be temporarily conducted at the site of a former ballistic

evaluation range (647 Test Area) during construction of the Proposed BEC. The temporary test area will be referred to as the Proposed Alternative BEF moving forward in this assessment. The Proposed Alternative BEF site is shared with the Guns and Weapons Systems Tech Data Facility, which is a revitalized facility built for use by the U.S. Navy as part of the realignments mandated by the Base Realignment and Closure Commission recommendations. The Proposed BEC and the Proposed Alternative BEF will encompass approximately 2.0 and 0.75 acres, respectively.

1.4. Permits Potentially Required for the Action and Mitigation Measures

Permits, Plans, and Clearances

- Individual Freshwater Wetland Permit N.J.A.C. 7:7A
- Morris County Soil Erosion and Sediment Control Plan Certification for Land Disturbance Control (N.J.A.C. 2:90)
- New Jersey Department of Environmental Protection (NJDEP) Air Quality Permit and/or Certification for Minor Facilities (N.J.A.C. 7:27-8)
- Construction Activity Stormwater General Permit (NJ088323, N.J.A.C. 7:14A)
- Soil Clearance for Impacted Soils from the Picatinny Arsenal Environmental Affairs Division
- Permit to re-inject affected groundwater removed during construction
- Flood Hazard Area Permit
- UXO clearance
- NJDEP Post-Construction Program Design Checklist

1.5 Scope of the Analysis and Decision to be Made

This EA addresses the environmental impacts related to the construction and operation of the Proposed BEC to be located at Picatinny Arsenal. The EA has been prepared in accordance with the National Environmental Policy Act, regulations issued by the Council on Environmental Quality, 40 CFR Parts 1505-1508, and the Army's implementing procedures published in 32 CFR Part 651, Environmental Analysis of Army Actions.

This EA supports the decision-making process related to the proposed action. Specifically, the decision to construct and operate the Proposed BEC rests with the Garrison Commander as the owner of the property.

2. Description of the Proposed Action

2.1. Proposed Action Overview

The proposed project will be conducted in three phases:

- Demolition of existing buildings in the vicinity of the current BEC site (Test Area 636);
- Construction and operation of a temporary Alternative BEF at the 647 Test Area; and
- The construction and operation of the new Proposed BEC.

Details regarding the proposed action were taken from the Ballistics Evaluation Facility Planning Charrette Design Analysis (Louis Berger Group/Ammann & Whitney, 2005).

2.2. Demolition of Existing BEC Buildings

The proposed action will require the demolition of antiquated structures, totaling 4,493 square feet (Table 2-1).

Table 2-1. Existing Ballistics Evaluation Center Buildings to be Demolished

Building Number	Description
630	Administrative Building
632	High Explosive Magazine
635	Storage Building
636	Ballistics Evaluation Center
636A	Storage Building
636C	Instrumentation Building
638	Slug Butt

2.3. Construction and Operation of the Ballistic Evaluation Facility

The Proposed BEC will be constructed at the location of the existing ballistics evaluation facility and will consist of the following structures:

1. A service magazine;
2. A loading building;
3. A storage building;
4. A new Ballistics Evaluation Building;
5. A digital imaging station and backdrop; and
6. Three target recovery areas (slug butts).

These structures are described below. The proposed locations of these facilities are depicted in Figures 1 and 2.

Service Magazine - The proposed service magazine would be located in the area currently occupied by building 632, which will be razed to facilitate the new construction. The footprint of the proposed service magazine will be approximately twice the size of the existing structure.

Loading Building – The current loading building (Building 633) will be partially demolished and upgraded as part of the proposed action. Upgrades to Building 633 would occur within its current footprint and include new roof, siding, doors, windows, HVAC, and electric.

Storage Building – The proposed storage building will be located at the same location as the current storage building (Building 635). The new storage facility will have essentially the same footprint as the existing storage facility. Potentially hazardous materials stored at the new facility include motor oil, rifle bore cleaner, acetone, paint and gasoline.

Ballistic Evaluation Building – The proposed Ballistic Evaluation Facility (BEF) will be located in essentially the same location as the existing BEF, which will be demolished. The footprint of the proposed facility will be approximately twice the size of the existing facility. The majority of the additional building footprint will cover previously disturbed ground (existing parking area). The proposed facility will contain firing bays, a work area, a maintenance bay, an inert storage area, an observation deck, a weapons storage area, and offices. Nineteen parking spaces will be installed between the proposed Ballistic Evaluation Building and Bear Swamp Road.

Digital Imaging Station – The proposed Digital Imaging Station will overlook the site's range from the southwest and consist of a long tunnel-like structure located mostly underground. Proposed designs have approximately 50% of the building located in a suspected wetland area, which would require an individual permit from the NJDEP.

Slug Butts – The existing slug butt used as a target recovery area will be demolished. The project plans call for up to three slug butts to be located at the site. The proposed target recovery areas would be constructed at the northwest end of the site. Each slug butt will extend approximately 40 feet into the hillside and require approximately 500 cubic yards of engineered fill to support the foundation. In order to place these structures in the required location, extensive rock excavation within the hillside will be necessary. Retaining walls will be required to support the adjoining hillside grades.

Sand Sifting Area – In addition to the above outlined building orientation, the site design provides for a sand sifting area. Sand from within the slug butts is periodically removed and cleaned of debris prior to disposal. These operations will be performed by a mobile sifting machine. In order to provide the desirable sifting area and also so as not to encroach on environmentally sensitive areas or nearby roadways, it will be necessary to excavate into the hillside similarly as mentioned for the slug butts.

General Ballistic Evaluation Facility Information – Minimal site clearing is required because the majority of the new construction will occupy previously disturbed areas. Clearing and grubbing of approximately 0.5 acre of habitat will be required for the following facilities: new parking lot, new 40' X 20' septic mound, a new 100,000 gallon fire protection tank, two new slug butts, expansion of Building 636 to the south, and the new digital imaging station.

Additional supporting facilities include sewage utilities, electrical service, storm drainage, paving, walks, curbs, and gutters. Paved areas will be designed to result in sheet flow of storm water into swales. Potable water for the proposed facility will be provided using bottled water coolers and generated sewage would be discharged to a septic system.

Testing activities will consist of firing inert projectiles from stationary weapon emplacements into one of the slug butt locations to determine the performance characteristics of the projectile, its components, and/or the firing weapon. Projectiles fired at this location will typically be 105- and 155-mm tank and howitzer rounds, 81- and 120-mm mortars, and 106-mm recoilless rifles. The test weapon apparatus will be situated on a concrete pad as currently configured. This configuration will allow for ease of cleanup from the concrete pad as part of the continuation of current best management plan implementation in the event of contamination produced at the firing point location. The inert nature of the projectiles also reduces the potential for contamination at the slug butt locations.

Unexploded Ordnance (UXO) Clearance – As an active range, UXO clearance is required in order to begin construction at the 636 Test Range for the Proposed BEC. The site must be deemed clear of UXO hazards by trained personnel who will identify down to prescribed depths the absence of material that can be suspected of being energetic material. In order to complete this function, the soil from the site will be removed and clean fill brought in as replacement once the soil is determined free of potential energetic contaminants. Soils currently on the proposed site location that will be relocated would be tested prior to removal so as not to risk the staging of contaminated soil. In the event soils are to remain on-site for reuse, soil testing would not be required. A soil erosion and sediment control plan is required and will be prepared and submitted to the Morris County Soil Conservation District prior to performing the UXO clearance.

The soil removal from the UXO clearance will require protection of the pond located on-site as well as the culvert that maintains the wetland area on the western side of the proposed site. The change in gradient necessitates precautionary measures to prevent water loss from the pond. A temporary barrier or berm will be needed to retain the water in the pond until the soil level elevations are restored.

2.4. Construction and Operation of the Alternative Ballistics Evaluation Facility

During the construction of the Proposed BEC, ballistics operations will be temporarily maintained at the 647 Test Area (Figures 1 and 3). The proposed site will be shared with a separate Guns and Weapons Systems Tech Data Facility, which is required to support U.S. Navy lot acceptance testing activities being relocated to Picatinny Arsenal. The shared site at the 647 Test Area will feature two new slug butts. One slug butt will be used by the Navy to test high-explosive rounds, while the other slug butt will be shared by the Army and Navy to test inert rounds. Construction activities at the Proposed Alternative BEF will result in the following five activities:

- A new exterior gun hardstand will be constructed;
- A new, pre-engineered bunker will be installed;
- Two new slug butts will be constructed approximately 255 feet downrange of the gun hardstand. One slug butt will be shared by the Army and Navy to test inert rounds. The area between the

hardstand and the slug butt is currently an old field comprised of meter-high forbs and grasses in the summer.

- A new 5,000 gallon septic holding tank; and
- The existing bunker (Building 647) will be demolished. Two new structures will be built to support the testing activities to be conducted at this site location.

These activities are addressed in greater detail in the “Environmental Assessment for BRAC 05 Realignment at Picatinny Arsenal, NJ”, dated November 2008.

The Valued Environmental Component matrix is presented below to show the potential impact of the project on the various environmental media:

Valued Environmental Component	Proposed Action	No Action Alternative
Air Quality	<p>Minor Impact – Annual emissions from proposed action include 2.47 TPY total hydrocarbons, 9.39 TPY NO_x, and 0.88 TPY PM₁₀. All listed values are below conformity thresholds established by 40 CFR 93.153(b). Conformity analysis shows de minimus effects from construction and operation of the BEC.</p> <p>Risk analysis modeling for lead show levels below NJDEP Reference Concentrations and within Ambient Air Quality Standards.</p>	No Impact
Cultural Resources	Minor to No Impact – SHPO consultation finalized with approval of Real Property Master Plan Facility Reduction Program Programmatic Agreement.	No Impact
Floodplains	Moderate Impact – Flood hazard analysis is needed because the pond on-site drains more than 50 acres, and there will be vegetative disturbance in previously undisturbed areas. Mitigation compensation into natural areas (undisturbed) must be provided at a 2:1 ratio.	No Impact
Storm Water	Minor Impact – Storm water controls will be needed for the land disturbance of greater than 5,000 square feet. Storm water management regulations require run-off reductions of 50% for the 2-year storm, 25% for the 10-year storm, and 20% for the 100-year storm. A storm water	No Impact

	encountered during construction activities will be re-injected.	
Wetlands	Minor Impact – Wetland areas have been identified adjacent to the pond and the area where the pond overflow pipe discharges. Permitting is required for disturbance within the delineated wetlands and transition areas, along with potential mitigation based on the extent of disturbance.	No Impact

3. Alternatives Considered

In accordance with both the Council on Environmental Quality (CEQ 1978) and Army regulations for the National Environmental Policy Act (NEPA), alternatives to the Proposed Action must be identified, including the No Action Alternative. Under Army regulations, alternatives may be eliminated from further analysis based on reasonable standards so long as the standards are not so narrow as to unnecessarily limit the alternatives (Title 32, Chapter V, Part 651.34).

3.1. Alternatives Considered and Dismissed from Detailed Analysis

3.1.1. Use Off-Site Facilities

The proposed BEC will serve a unique purpose; therefore there are no off-site facilities that possess the critical knowledge, skill and abilities to serve this purpose. Research and development would be negatively impacted by delays incurred by waiting for a contractor to develop adequate resources to mimic this capacity. In addition, the payback on testing resources is normally recovered through programmatic savings. It is unlikely that a private contractor would take the risk of developing a system in which they could not recover the costs of implementation. Finally, this alternative would not be able to leverage the resources and security systems available at Picatinny Arsenal. This would increase project costs and cause potential schedule delays. This alternative was rejected from further evaluation.

3.1.2. Use Alternative On-Site Location

There are no on-site locations considered to be adequate for the requirements of the Proposed BEC as its current and proposed future location. Safety and security are paramount to the success of the Proposed BEC. There are no other on-site locations of adequate size and remoteness to ensure adequate safety and security. Further, the use of any alternative on-site location would inherently require more resources and result in greater impacts than utilizing existing infrastructure. Increases in costs and potential schedule delays preclude any alternative on-site location. This alternative was rejected from further evaluation.

3.2. Alternatives Retained for Detailed Analysis

3.2.1. No Action Alternative

The Army is required to assess the potential environmental consequences of the No Action Alternative in addition to the Proposed Action. Development and testing of large caliber weapons is essential for the armament research mission at Picatinny Arsenal and current facilities are inadequate to meet that need. However, NEPA regulations (Title 32, Chapter V, Part 651.34(d)) also require that the “no action” alternative be carried through the EA as a baseline for comparison with the Proposed Action. The no action alternative is defined as maintaining the status quo, which in this case would be continuing the use of the existing ballistics evaluation facility at its current location.

4. Affected Environment

4.1 Current Land Use

4.1.1. Current BEC Facility

The Proposed BEC site is located within the footprint of the existing Ballistics Evaluation Facility at the 636 Test Area to the north of Picatinny Lake, near the Arsenal's northern boundary. This facility currently consists of a 100-meter horizontal range with four main gun positions. Weapons being tested are fired with zero degrees of barrel elevation into a concrete structure filled with sand known as a slug butt. Weapons tested include: 105-mm and 120-mm tank guns; 105-mm and 155-mm howitzers; 60-mm, 81-mm, and 120-mm mortar; and 106-mm recoilless rifles. Buildings and concrete and asphalt paved areas occupy the southern portion of the site. Existing buildings scheduled for demolition have the potential to contain asbestos, lead-based paint or other hazardous materials. The facility's range, consisting of filled or otherwise disturbed land, occupies the central portion of the site. Dirt roads provide access to the slug butt situated at the northwestern end of the site.

4.1.2. Proposed Alternative BEF Facility

The Proposed Alternative BEF facility, located at the 647 Test Area, is the site of a former ballistics evaluation range, and as such, also consists of developed and disturbed land. This area was used for large caliber weapon firings, small arms firings, and insensitive munitions tests. Building 647, along with gravel and asphalt paved areas are present in the southern portion of the site and the target recovery area is located at the northern end.

4.2. Air Quality

Picatinny Arsenal is located in Morris County, New Jersey. This county is in attainment for all National Ambient Air Quality Standards with the exception of ozone (8-hour) and particulate matter that is 2.5 micrometers or smaller in size (PM_{2.5}) (USEPA 2006a). The Arsenal manages its air resources in compliance with its facility-wide Title V Air Quality Permit.

4.3. Noise

The Proposed Action is located in the Test Range portion of the Center. Noise within this area is typically within the noise limits of Noise Zone III (AR 200-1, 2007, transportation noise = >75 dBA, impulsive noise = >70 dBC, and small arms noise = >104 dBP).

4.4. Soils

The soils in the general vicinity of the Proposed Action are of glacial origin, composed of silt deposits. These deposits are characterized by deep, well drained to somewhat poorly drained soils and gravelly, sandy and stony loams that overlie granitic gneiss.

Several remedial investigations have been conducted at the Arsenal – including the area around the Proposed Action. Figures provided by Ted Gabel of the Environmental Affairs Division (EAD) show that soil samples collected at the proposed BEC site do not exceed Levels of Concern (LOC). The Alternative BEF site contains one surface soil sample that exceeds an LOC (lead, sample = 3000 mg/kg, LOC = 600 mg/kg).

4.5. Surface Water and Sediment

The proposed action is subject to storm water management design and performance standards as a “major development” as the one-acre of disturbance threshold is exceeded. The storm water management rules set forth requirements for groundwater recharge, storm water runoff quantity control, storm water runoff quality control and a Special Water Resource Protection Area (SWRPA) or 300-foot buffer adjacent to Category One waters and their immediate tributaries.

Surface water features in close proximity to the Proposed BEC include the 3-acre Bear Swamp Pond located less than 50 feet to the northeast, and an open water brook 150 feet to the west draining the pond via underground culverts away from the Site (Figure 2). These surface water features serve as the headwaters to Bear Swamp Brook. Stormwater run-off from the asphalt paved parking and storage areas southeast of the site is diverted to the pond by an asphalt lined channel and a concrete culvert that run parallel to the Site’s southeastern boundary.

Past sampling at the Proposed BEC site has identified the presence of contamination. The analytical results from the Proposed BEC site indicate that one surface water sample collected from the pond exceeded the LOC for lead standard and multiple sediment samples exceeded LOCs for the metals cadmium, copper, lead, mercury, arsenic, and zinc.

The Proposed BEC and the Proposed Alternative BEF are not located within an Annual, 100-year, or 500-year floodplain.

4.6. Groundwater

There has been no ground water sampling in the area around the Proposed BEC site. However, the 647 Test Area is upgradient from the 636 Test Area, so the conservative assumption can be made that similar groundwater conditions exist for both sites.

4.7. Wetland Resources

Initial inspections of the Proposed BEC site location (636 Test Area) identify wetlands adjacent to the pond north of the test area and also south of the test area where the pond overflow pipe discharges (Figure 2). Three delineated wetlands border the Proposed Alternative BEF site (647 Test Area), two along the western edge and one along the eastern edge (Figure 3).

4.8. Threatened and Endangered Species

According to the U.S. Army Environmental Center (USAEC), there is one federally listed endangered species, the Indiana bat (*Myotis sodalis*), and one federally listed threatened species, the bog turtle (*Clemmys muhlenbergii*), that are known to occur at Picatinny Arsenal. The Endangered Species Management Plans (ESMP) for each species has been completed. There are two additional state-listed endangered species, timber rattlesnake (*Crotalus horridus*) and bobcat (*Lynx rufus*), that are known to occur in the vicinity of the Proposed Action.

4.9. Historical, Archeological, and Cultural Resources

Several building assessments have been performed for the installation since 1982. These assessments have defined a total of 111 structures considered eligible for the National Register of Historic Places (NRHP) within a total of five NRHP eligible historic districts (Panamerican 1999a, 1999b, 2004a, 2004b). Twenty-six of these 111 structures are non-contributing to their representative districts and therefore not eligible for the NRHP, but still within their respective historic district boundaries for affects. The rehabilitation, renovation, ongoing maintenance, and potential demolition of these architectural resources and historic districts must be done in consultation with the State Historic Preservation Office (SHPO).

In 2007, Panamerican performed another historic building assessment for 332 additional buildings across the Arsenal for their eligibility to the NRHP. During this survey, the majority of the buildings within the Proposed BEC and the Proposed Alternate BEF project areas were historically assessed, except those buildings less than 45-50 years of age. The buildings within the Proposed BEC and the Proposed Alternate BEF project areas were assessed as not eligible for the NRHP (Nolte et al. 2007).

Phase I cultural resource surveys have been conducted for roughly 840 acres at Picatinny. From these surveys, the actual recorded inventory of archaeological sites at Picatinny consists of 22 prehistoric and 22 historic period sites. Additionally, previous historic map research and archaeological sensitivity models performed for Picatinny's Integrated Cultural Resource Management Plan (ICRMP; Ridgel 2003) have assessed that over 85+ potential historic archaeological sites have been recorded, and/or noted across the Arsenal. The majority of these potential archaeological sites have not been relocated, updated, or reevaluated for NRHP eligibility.

Per confirmation with the Picatinny Arsenal Cultural Resource Manager Jason Huggan, a Phase I cultural resource survey was performed in August 2007 by Panamerican Consultants, Inc. for an additional 175 acres across the Arsenal. Two areas in particular investigated during this most recent survey were at both the 636 Test Area the 647 Test Area. During this Phase I Survey, no cultural resources of significance were found at either of the areas for potential effects. A small stone wall enclosure was found in the 636 Area; however no cultural resources were recovered surrounding and/or within it. The stone enclosure is believed to be modern and not historically or archaeologically significant (Smith et al. 2008). Thus, significant cultural resources are not anticipated to be impacted or affected by the Proposed BEC and Proposed Alternate BEF. Finally, SHPO has given preliminary concurrence to the project through consultation of the 2010 Real Property Master Plan and Facility Reduction Program Programmatic Agreement.

4.10 Environmental Justice

Executive Order 12989, Environmental Justice in Minority Populations and Low-Income Populations, mandates that federal agencies identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of programs on minority population and low-income populations. A minority population is defined in this document as a group of people or a community experiencing common conditions of exposure or impact that consists of persons classified by the U.S. Bureau of the Census as Negro, Black, or African-American; Hispanic; Asian or Pacific Islander; American Indian, Eskimo, or Aleut; or other non-white persons. A low-income population is defined as a group of people or a community that, as a whole, lives below the national poverty level. The proposed facilities would not be located in or near a residential community or area, including communities of minority or low-income populations.

5. Environmental Consequences

The section includes a discussion of the environmental consequences of the Proposed Action and the No Action alternative.

5.1. Land Use

5.1.1. Effects of Proposed Action

Implementing the Proposed Action would not significantly affect land use at the Arsenal. The Proposed Action would result in minor changes to land use at the current sites. Ballistics operations are currently conducted at the Proposed BEC site and the Proposed Alternative BEF site is a former test site that although not currently in use remains listed as an active test area. The Proposed Action requires clearing and grubbing on approximately one acre of habitat (total for both sites).

5.1.2. Effects of the No Action Alternative

Implementing the No Action alternative would not significantly change land use patterns because no new structure would be built.

5.2. Air quality

5.2.1. Effects of Proposed Action

Implementing this action would not significantly affect local or regional air quality. The General Conformity Rule (40 CFR Part 15, Subpart W) ensures that federal actions in nonattainment and attainment/maintenance areas do not interfere with the state's timely attainment of the NAAQS. The general conformity rule is divided into two distinct parts: applicability analysis and conformity determination. If the action is exempt from the general conformity rule, a conformity determination is not required. Emissions from proposed actions are exempt if they are de minimis and are not regionally significant. De minimis emissions are emissions in a nonattainment area that are less than specified applicability thresholds. Regionally significant emissions are emissions of a criterion pollutant that represent 10 percent or more of the total for the area.

Morris County is in attainment for all NAAQS (USEPA 2006a) with the exception of ozone (8-hour; moderate) and particulate matter that is 2.5 micrometers or smaller in size (PM_{2.5}). The applicability threshold for NO_x and VOC (precursors of ozone) is 50 tons per year (TPY) since Morris County is a moderate nonattainment area inside an ozone transport region. There is currently no applicability threshold for PM_{2.5} so the most conservative (protective) threshold for PM₁₀ (70 TPY) is used in this assessment.

As shown in the air model, combined annual emissions from the construction and operation of the Proposed BEC and the Proposed Alternate BEF were estimated to be 2.47 tons total hydrocarbons, 9.39 tons NO_x and 0.88 PM₁₀. Emission factors for PM_{2.5} were unavailable but the PM₁₀ calculations

provide an overestimate of PM_{2.5} emissions. These values do not exceed the above-listed applicability thresholds nor do they constitute greater than 10 percent or more of the available regional emission inventory for these pollutants. As these air emissions would not have regionally significant impacts they are considered *de minimis* and a formal conformity determination is not required. See Appendix A for emissions calculations and a Record of Non-applicability for this Proposed Action. See Section 6 for a discussion of the cumulative effects of hazardous air pollutant emissions from the Proposed Action and existing sources.

5.2.2. Effects of the No Action Alternative

Implementing the No Action alternative would not significantly affect air quality because no new structure would be built.

5.3. Noise

5.3.1. Effects of Proposed Action

The U.S. Army Center for Health Promotion and Preventative Medicine (USACHPPM) conducted a facility-wide noise evaluation at the Arsenal (USACHPPM 2007). The USACHPPM report did not include an evaluation of the Proposed Action in isolation from the other sources of noise at the Arsenal. However, current operations for the large caliber testing at the 636 Test Area was analyzed. In addition, the cumulative impact of noise from the proposed action is addressed in Cumulative Effects Section of this Environmental Assessment (Section 6.2). The model used by USACHPPM takes into account the effects of weather, topography, land-water boundaries, etc. – all of which impacts the propagation of noise from a source. The Proposed Alternative BEF activities are considered adequately addressed in the USACHPPM noise model.

Implementing this Proposed Action would not significantly affect ambient noise levels at the facility, because the BEC has existed at Picatinny for a significant period of time and this facility has remained in compliance for standards for impulsive noise. The Proposed Action will not increase impulsive noise significantly over previous levels.

Noise sources associated with the Proposed Action will come from construction activities and the firing of the 155mm Howitzer and similar large caliber weapons at the Proposed Alternative BEF and the Proposed BEC. Construction for the Proposed Action would result in minor noise impacts. Construction activities would occur during the temporary period required for construction. Construction will be limited to daylight hours, thereby lessening potential noise impacts.

Noise from large caliber weapons is typically evaluated by using both the C-weighted day-night level (CDNL) and a measure of the peak sound pressure level [PK15 (met)] (AR 200-1, 2007, Table 14-2). As the CDNL of the Proposed Action is difficult to estimate without modeling, only the PK15 (met) metric is evaluated in this section. See the Cumulative Effects Section (Section 6.2) for a discussion of the modeled CDNL and PK15 (met) data.

Table 5-1. PK15 (met) guidelines for potential risk of noise complaints associated with impulsive noise.

Predicted Sound Level (dBP) [PK15 (met)]	Risk of Complaints
<115	Low risk of complaints
115-130	Moderate risk of complaints
>130-140	High risk of noise complaints.
>140	Threshold for permanent physiological damage to unprotected human ears; high risk of physiological and structural damage claims
Note: For rapid fire test programs and/or programs that involve many repetitions of impulse noise, reduce allowed sound levels by 15 dBP.	
Table adapted from Table 14-2, AR 200-1 (12/13/2007)	

The peak predicted noise level for a 155-mm Howitzer is provided in Table 5-2. Noise levels are presented for several distances from the source and for three azimuths (position of receptor relative to the barrel; 0° = receptor facing the barrel, 90° = receptor to the side of the barrel and 180° degrees = receptor behind the barrel).

Table 5-2. Predicted peak noise levels for the firing of a 155-mm Howitzer

Distance (meters)	Predicted Noise Level (dBP) at three azimuths		
	0°	90°	180°
500	136-146	131-141	122-132
1000	125-135	120-130	111-121
2000	113-125	108-120	99-111
3000	106-119	101-114	92-105
4000	101-115	96-110	87-101
5000	97-112	92-107	83-98

Notes: 1) Source - Daniel Reichard, USACHPPM, August 2008

This analysis presents three different conclusions depending on the orientation of the receptor with respect to the large caliber weapon (Tables 5-1 and 5-2):

0° Azimuth – The direction of fire (0° Azimuth) for the Proposed BEF will be to the WNW (~290 degrees). The closest off-site receptors in this general direction are a few residences located along Route 15 near Tierneys Corner. These residences are located approximately 4000 meters away and would represent a low risk of noise complaints.

The direction of fire for the Proposed Alternative BEF will be to the NW (~320 degrees). The closest off-site receptors in this general direction are the residences around Longwood Lake. These residences are located within 2000 meters of the Proposed Alternative BEF and may represent a source of moderate noise complaints.

90° Azimuth – For this azimuth (90° to either side of the Howitzer) the closest off-site receptors to the Proposed BEF are the residences along Berkshire Valley Road near its intersection with Route 15 (~2500 m from the Proposed BEF) and the residences around Longwood Lake (~3000 m distant). The risk of noise complaints related to this source should be a low.

With respect to the 90° azimuth and the Proposed Alternative BEF, the closest off-site receptors are the residences around Longwood Lake which are within 2000 meters of the Proposed Alternative BEF and may represent a low-to-medium source of noise complaints.

180° Azimuth – There are no offsite receptors within about 2000 meters of either the Proposed BEC or the Proposed Alternate BEF in this direction. Thus there should be a low risk of noise complaints from off-site receptors in this direction.

The majority of the area within the 115 dB noise contour for the Proposed BEC and the Proposed Alternate BEF is devoid of off-site receptors. A moderate risk of noise complaints may exist for the residences at Longwood Lake. However, it is likely that the simplistic analysis presented in this section overestimates the risk of complaints. This methodology does not take into account the barrier between the Proposed Action and the Longwood Lake receptors (the top of Green Pond Mountain) or the fact that these residences were constructed at a lower elevation than the Proposed Action (800 vs. 1100 feet) – which does not facilitate a line-of-sight propagation of sound waves.

5.3.2. Effects of the No Action Alternative

Implementing the No Action alternative is likely to have similar impacts to what was described above. Given that impulsive noise has existed historically at the installation, the same or smaller modeled contours would likely exist regardless of implementation of the Proposed Action. The No Action alternative therefore poses no risk of dangerous impulsive noise levels and low risk of noise complaints to offsite receptors.

5.4. Soils

5.4.1. Effects of Proposed Action

Soil erosion and sediment control measures will be implemented in accordance with the New Jersey Soil Erosion and Sediment Control Act. Hay bails or silt fences will be placed around all soil piles. Storm drains/sewers will be protected by hay bails. Stone mats to provide erosion control will protect entrances and exits to the construction site. Implementation of these control measures will minimize soil erosion and sediment runoff and will protect surface waters so there are no environmental impacts.

The excavation for the Proposed Action, which includes the UXO clearance prior to construction, will result in excess soil. Excavation is required to conduct UXO clearance to depths that allow for the safety at the site for construction activities. No contaminants were found to be above levels of concern in the prior surface soil sampling done at the proposed site location. However, because the limited sampling results were taken over ten years ago and the site has been used extensively since as evidenced by the known buried UXO's, soil clearance procedures will be required as outlined in the

Soil Clearance Policy, Appendix B. In accordance with the Soil Clearance Policy, excess soil that cannot be reused will be tested per NJDEP Tech Regulations prior to relocation from the site and staging at another location. If construction activities preclude the testing of the soil piles that are generated at the site, the Picatinny Arsenal Environmental Affairs Division could grant an alternative storage location that would not impact environmentally sensitive areas.

For operation activities, best management practices will be implemented to, at a minimum, maintain the existing condition of the proposed site to include regular site maintenance and cleanup. In addition, baseline sampling will be instituted with periodic sampling afterwards to be performed to determine whether test activities are a source of contamination on the site. Sampling will follow previous protocols in order to maintain a consistency of those sampling events already conducted. Inorganic material (metals) and explosives will be the analytical parameters tested in a random grid sample to investigate contaminant levels in an unbiased approach. Initial sampling will be conducted semi-annually, and followed by annual sampling after the first year of operation should there be no appreciable increase in contamination towards action levels.

5.4.2. Effects of the No Action Alternative

Implementing the No Action alternative would not significantly affect soil.

5.5. Surface Water and Sediment

5.5.1. Effects of Proposed Action

Potential Impact to Surface Water and Sediment from Facility Construction and Operation – Potential impacts to surface water quality could arise from construction and operations at the proposed site. Disturbance of soils and sediment as a result of activities for the proposed action raises concerns about migration of compounds to surface water and sediment. Site characterization has been performed to determine contaminant levels in sediment and surface water at the 636 Test Area. Sampling results show contaminant levels that exceed the levels of concern in the sediment (Figure 4). For copper, lead, mercury, and cadmium, the background levels are equal to the regulated levels of concern. Chromium is the only contaminant of concern detected in the sediment where the background level is less than the level of concern. The presence of contaminant levels that exceed the levels of concern for metals in the sediment compels mitigation control measures to prevent this sediment from reaching the surface water features at the proposed site, which serve as the headwaters of Bear Swamp Brook. During construction, soil erosion and sediment control procedures will be implemented in accordance with the New Jersey Soil Erosion and Sediment Control Act. The control features will be in place to prevent the off-site migration of the sediment during construction and facility operation. As discussed for surface soil, baseline monitoring procedures will be employed to determine whether testing operations are contributing to contamination in sediment or surface water at the proposed site. The analytical parameters will follow the previously identified contaminants identified as being above levels of concern for the metals copper, lead, mercury, cadmium, and chromium and explosives.

The soil removal from the UXO clearance will require protection of the pond located on-site as well as the culvert that maintains the wetland area on the western side of the proposed site. The change in gradient necessitates precautionary measures to prevent water loss from the pond. A temporary barrier or berm will be needed to retain the water in the pond until the soil level elevations are restored.

The Army Operational Range Assessment Program – The conclusions given in the Operational Range Assessment Program (ORAP) Phase I Qualitative Assessment Report (July 2008) found sampling results to be inconclusive when determining whether the constituents of concern have the potential to migrate off-range and affect human and/or ecological receptors. In addition to the sampling requirements mentioned in the previous section of this document, best management practices will be integrated into standard operating procedures with the goal of preventing potential contamination from migrating from the test area. These actions will include regular site maintenance, in addition to erosion controls. If future sampling shows an impact from on-site testing, activities may be interrupted or curtailed until mitigation measures are developed and implemented.

Flood Hazard Area – The site for the Proposed BEC at the 636 Test Area is within 300 feet of a Category One riparian zone, which requires a flood hazard area (FHA) permit. Flood hazard area delineation will be submitted to NJDEP for review with vegetative disturbances requiring 2:1 mitigation. FHA regulations require a zero net fill for the 10- and 100-year storm events. Storm water management measures are required for any land disturbance of more than one-acre or an increase in impervious area of ¼-acre, which is applicable for this project.

Storm Water Management – Storm water management regulations require run-off reductions of 50% for the 2-year storm, 25% for the 10-year storm, and 20% for the 100-year storm. Designs identify multiple methods to manage storm water management impacts, including two aboveground storm water basin/rain gardens. The storm water basin/rain gardens will be designed to meet the regulated standards for water quality, water quantity, and recharge.

5.5.2. Effects of the No Action Alternative

Implementing the No Action alternative would not significantly affect the site surface water quality.

5.6. Ground Water

5.6.1. Effects of Proposed Action

There are detectable concentrations of TCE in the shallow ground water near the Proposed Alternative BEF site (647 Test Area). Proper management of this issue will result in no significant impact to the environment, construction workers or on-site personnel. The proposed BEC does not have a documented issue with groundwater contamination. However, the 647 Test Area is upgradient from the 636 Test Area, so the conservative assumption can be made that similar groundwater conditions exist for both sites.

The TCE concentrations from groundwater samples from the three monitoring wells located closest to the proposed Alternative BEF location range from 9.5 to 39 ug/L. In light of these TCE concentrations, two issues are discussed below: 1) the management of shallow ground water encountered during construction activities, and 2) potential vapor intrusion into the completed inhabitable structures.

Management of Shallow Ground Water during Construction – Affected shallow ground water may be encountered during construction activities and will be managed to prevent run off and construction worker exposure. All excavated soil will be dewatered on-site and the water re-injected into the ground from where it came. This will be accomplished by constructing lined dewatering pits to collect water runoff. The re-injection of site groundwater will require a permit from the NJDEP. Affected groundwater would be re-injected into areas known to be previously affected with TCE. Construction workers who come into contact with affected groundwater will be required to wear appropriate personal protective equipment (PPE).

Vapor Intrusion Pathway - The presence of volatile organic compounds in ground water creates the potential for chemical vapors to migrate through subsurface soils, which can potentially impact the indoor air quality of nearby buildings (NJDEP 2005). The accumulation of volatile vapors in impacted structures can result in potential acute and chronic health concerns (NJDEP 2005).

There are two regulatory standards that may apply to this proposed action. The NJDEP vapor intrusion ground water screening level for TCE is 1.0 µg/L. According to the NJDEP guidance, groundwater TCE levels that exceed the screening levels indicate that the vapor intrusion pathway is of potential concern and that further evaluation and/or potential remediation of the pathway is necessary. The USEPA's generic screening level for TCE is 5.3 ug/L (USEPA 2002). According to this guidance, if measured groundwater concentrations do not exceed this value, this pathway is considered incomplete.

Since the ground water TCE concentrations measured at the site for the Proposed Alternative BEF are higher than both of these standards and also conservatively assumed to be higher at the proposed BEC, a vapor intrusion barrier may be appropriate, though not identified as necessary.

5.6.2. Effects of the No Action Alternative

Implementing the No Action alternative would not significantly affect ground water resources.

5.7. Wetland Resources

5.7.1. Effects of Proposed Action

Any disturbance of wetland areas is regulated under the New Jersey Freshwater Wetlands Protection Act Rules (N.J.A.C 7:7A). Activities that occur in a regulated wetland or the transition area of a regulated wetland is subject to permitting and potential mitigation. Because all wetland areas on Picatinny Arsenal are deemed to be of exceptional resource value, a 150-foot wetland buffer will be established once the wetlands are delineated. Wetland regulations allow for a redevelopment waiver for those areas that have been previously disturbed, i.e. free of vegetation. However, if the proposed

action requires vegetative disturbance within a wetland area, or its associated transition area, an application for an Individual Freshwater Wetlands Permit would be required. The individual permit would require mitigation for wetlands or transition areas impacted.

The site sifting operation to be used once the Proposed BEC is operational is proposed to be located near the wetland area at the proposed BEC location. This placement will require a retaining wall on the north and east sides of the sifting area to protect the wetland area. The site of the sifting area is proposed so as not to encroach on 20th Avenue alleviating safety concerns. The Digital Imaging Station is proposed to be constructed with approximately 50% of the building located in the suspected wetland area, which would require individual permitting from the NJDEP.

Disruption of soils and sediment as a result of construction activities for the Proposed Action raises concerns about migration of contaminants to wetlands. However, because the amount of land disturbance exceeds 5,000 square feet, adherence to a Soil Erosion and Sediment Control Plan submitted to and approved by the Morris County Soil Conservation District will be required to control erosion of soil and sediment during construction. Also, Army policy requires a site with soil disturbance of greater than 5,000 square feet be returned to its predevelopment hydrological condition with regard to the temperature, rate, volume, and duration of flow.

5.7.2. Effects of the No Action Alternative

Implementing the No Action alternative would not significantly affect the wetland resources at the installation.

5.8. Threatened and Endangered Species

5.8.1. Effects of Proposed Action

The area for the Proposed Action is semi-industrial land build on urban fill. Approximately half of the Proposed BEC site consists of developed (40%) and forested (10%) cover. The remaining half consists of disturbed early successional land. Developed land includes areas occupied by structures, asphalt pavement, concrete slabs and gravel with no vegetation cover. One-half acre of previously undisturbed land will be cleared/grubbed at the site, which will include trees. In accordance with the endangered species management plan for the Indiana bat, tree cutting will be coordinated with the installation's Natural Resource Manager and is only allowed from 16 November through 31 March. In addition, the Migratory Bird Treaty Act prohibits the clearing of brush from 15 April to 15 August.

5.8.2. Effects of the No Action Alternative

Implementing the No Action alternative would not significantly affect threatened and endangered species or other natural resources.

5.9. Historical, Architectural, Archeological, and Cultural Resources

5.9.1. Effects of Proposed Action

Implementing the Proposed Action would not significantly affect historical, archeological or cultural resources of Picatinny Arsenal. Cultural resources are not anticipated to be impacted or affected by the Proposed BEC and Proposed Alternate BEF. None of the structures that would be demolished as part of the Proposed BEC activities are listed as NRHP eligible. Any remaining historic buildings, structures, or districts that are currently listed or eligible for listing on the NRHP would be unaffected by the Proposed BEC project.

5.9.2. Effects of the No Action Alternative

Implementing the No Action alternative would not significantly affect the historical, architectural, archeological or cultural resources of the Arsenal.

6. Cumulative Effects

Army NEPA guidelines require that the cumulative effects of a Proposed Action be addressed in the EA. Cumulative effects are impacts to the environment resulting from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Based on the analysis presented in this EA, noise and air pollutants are the two areas that could reasonably be considered an issue with regard to cumulative effects and will be addressed further.

6.1. Identifying Cumulative Effects Issues

The first step in a cumulative effects analysis is to identify the potentially significant effects associated with the Proposed Action (CEQ 1997). This EA focuses on the direct and indirect effects of the Proposed Action and the No Action Alternative, which indicates that the most likely potential project-related impacts to have cumulative effects are noise and the emission of hazardous air pollutants (HAPs). There is a low likelihood of cumulative impacts to the other environmental resources at the site, i.e., soil, sediment, wetlands, surface water, groundwater, and threatened and endangered species. As described in the previous sections these resources are not likely to be heavily impacted, given that most of the Proposed Action will utilize already cleared or disturbed land. However, sampling measures will be implemented to monitor the level of contaminants that may be introduced as part of the operational activities.

After identifying those potentially significant effects associated with the Proposed Action, the spatial and temporal scope of the cumulative analysis as well as the other actions (past, present and future) that may effect the resources are identified (CEQ, 1997)

Table 6-1 Project impact zone and the past, present and reasonably foreseeable future actions that are applicable to a cumulative analysis for the Proposed Action.

Cumulative Effect	Geographic Scope	Temporal Scope	Applicable Past, Present & Reasonably Foreseeable Actions
Noise	Entire Arsenal as well as offsite receptors	5 years	All present and potential future sources of noise at the Arsenal
Hazardous Air Pollutants	Entire Arsenal	5 years	All present and potential future sources of HAPs at the Arsenal

6.2. Noise

Large caliber weapons and other impulsive noise (demolition operations etc.) were modeled by USACHPPM (2007) using the BNOISE2 (Version 1.3) computer modeling program. Since there are multiple testing activities occurring at any given time on Picatinny Arsenal, all of which have the ability to generate substantial noise, it is prudent to evaluate the sum of these activities rather than the individual parts. In effect, this provides a “worst case scenario” for large caliber and impulsive noise on the installation. Thus, the noise contours modeled for the Arsenal are for combined testing operations, which include the Proposed BEC.

Army Regulation (AR) 200-1 (2007) defines noise zones and recommended land use guidelines for large caliber weapons noise using C-weighted DNL (CDNL). Although this metric is effective for land use planning, experience at Army installations has shown that complaints from large caliber weapons and demolition training/testing are usually attributed to a single loud event, at a particular point in time, versus the average noise dose received at any one location. Complaints are often received from areas that are considered “acceptable” with the noise environment using the CDNL criteria stated in AR 200-1. To this end, the Army has adopted the practice of assessing large caliber weapons noise using both the CDNL and the PK15(met) metrics.

Model Results using CNNL Metric - The CDNL Noise Zones II and III for combined operations are completely contained within the installation boundary and are compatible with Federal guidelines (AR 200-1, 2007).

Model Results using PK 15 (met) Metric – As described above, modeling using PK15 (met) provides a better means to assess the *risk* of noise complaints in areas that have been deemed “acceptable” using the CDNL metric. USACHPPM uses the guidelines presented in Table 5-1 of this assessment to evaluate this metric.

Due to the variance and frequency of certain testing operations at areas other than the BEC, two separate PK15 (met) noise contours were modeled. The first is considered a normal or typical net explosive weight (NEW) utilization scenario, meaning what is most common or likely to be utilized on a day to day basis. The second is a maximum NEW utilization scenario, where those operations that are relatively infrequent, but are considerably loud are included. Although the “maximum” does provide a worst case, this segregation was determined to provide a better understanding of the complaint risk for a typical day of testing on the Arsenal.

The risk of complaints from typical testing operations is considered low. With the exception of two locations the 130 dB noise contour is entirely contained within the installation boundary. The contour leaves the boundary northwest of the BEC and just south of Building 3620. There are no sensitive receptors within the 130 dB noise contour. The 115 dB noise contour extends beyond the boundary to the east and across the valley to the west. However there are few, if any, sensitive receptors within the 115 dB noise contour.

The risk of complaints from the maximum scenario is considered moderate. Much like the typical scenario, the 130 dB noise contour is contained within the Picatinny boundary, with the exception of two areas west-northwest. There are no sensitive receptors within the 130 dB noise contour. The 115 dB noise contour extends well beyond the Picatinny boundary to the east and west and contains several private residences and other sensitive receptors in the Lake Telemark and White Meadow Lake Areas, as well as those areas along State Highway 15.

To summarize, the incremental effect of the Proposed Action is not cumulatively considerable for the following reasons:

1. A BEC has already existed historically at Picatinny and remained in compliance for standards for impulsive noise. The Proposed BEC would therefore not likely increase impulsive noise above previous levels.

2. A reasonable worst case scenario only produced a moderate risk of noise complaints. Given the nature of the BEC as a testing facility with limited shots fired each day, actual noise generation is likely to be substantially less than what was modeled.

6.3. Hazardous Air Pollutants (HAPs)

The incremental HAP impact of the Proposed Action was assessed using a facility-wide air dispersion model. Computer simulations using the AERMOD model were carried out to model air quality impacts (AECOM, 2010).

In total, the concentrations of 19 HAPs were modeled from 130 sources at the Arsenal. The overall results of this model are presented in Table 6-2. More information concerning this air dispersion model can be found in a separate report (AECOM, 2010).

Modeled HAP concentrations were compared to their corresponding Inhalation Reference Concentration (RfC) to determine risk. The RfC is defined as the continuous inhalation exposure of a chemical that is likely to be without risk of deleterious effects during the lifetime of the receptor. The following cumulative impact discussion focuses on lead because no other HAP exceeded its reference concentration.

Table 6-2. Dispersion Modeling Results for Lead

Source	Maximum Predicted Monthly Concentration ($\mu\text{g}/\text{m}^3$)	Maximum Predicted 24-Hour Concentration ($\mu\text{g}/\text{m}^3$)
Maximum Modeled Facility-Wide Concentration	0.018	0.13
Contribution from Range 647 (Alt BEF)	0.00005	0.00064
Contribution from Range 636 (BEC)	0.00005 ¹	0.00004
NAAQS (3-month average)	0.15	NA
NJDEP Guidance RfC	NA	0.10

¹ The model result for the maximum predicted monthly lead contribution from Range 636 was negligible ($0.0 \mu\text{g}/\text{m}^3$). This value was conservatively set to equal the contribution from Range 647. BEC = Ballistic Evaluation Center or Range 636, Alt BEF = Alternative Ballistic Evaluation Facility or Range 647, NAAQS = Nation Ambient Air Quality Standards, NJDEP = New Jersey Department of Environment, RfC = Reference Concentration

Maximum Facility-Wide Model Results for Lead within Picatinny Arsenal – Predicted ambient air concentrations for lead were compared to two standards:

1. NJDEP RfC – the level where there will be no significant risk to prenatal and/or child development. The NJDEP criterion is $0.1 \mu\text{g}/\text{m}^3$ based on a 24-hour averaging period (NJDEP 2007). This reference criterion is not a regulatory requirement; it is a goal the NJDEP would like facilities to attempt to achieve. The predicted maximum 24-hour lead concentration within the boundary of the Arsenal of $0.13 \mu\text{g}/\text{m}^3$ is greater than the NJDEP criterion.

There are two ways that the modeled lead concentration can be compared to the NJDEP RfC. The first way is to compare these values directly. This comparison is overly conservative as it assumes that an individual will spend 24 hours/day, 365 days/year, for 25 standing at the area of highest lead concentration.

The second way the modeled value can be compared to the RfC is by using exposure modeling. An exposure model allows for various exposure parameters to be set at more realistic values. Using exposure modeling, an individual will spend 18 hours/day, 365 days/year, for 25 years standing at the area of highest lead concentration ($0.13 \mu\text{g}/\text{m}^3$) with the resultant exposure being equal to the NJDEP RfC criterion of $0.1 \mu\text{g}/\text{m}^3$.

2. USEPA and NJDEP Ambient Air Quality Standard (AAQS) which is designed to protect human health and the environment from inhalation exposure. The standard is 0.15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) based on a 3-month averaging period (USEPA 2008). This standard was derived as an acceptable inhalation exposure after accounting for all other potential routes of human exposure to lead, including ingestion of soil, paint, food and water. The predicted maximum monthly average lead concentration for the Arsenal as a whole is $0.018 \mu\text{g}/\text{m}^3$ – a value that is well within the AAQS.

The Incremental Impact of the Proposed Action – This analysis shows that the modeled maximum monthly lead concentration from the Proposed BEC represents only 0.004% of the Arsenal total and the Proposed Alternative BEF represents 0.064% of this total. Likewise, the contribution of these units to the facility-wide model maximum 24-hour lead concentrations is small. Both of these actions (construction of the Proposed BEC and the Proposed Alternative BEF) represent only 0.03% of the Arsenal total. Consequently, the cumulative concentration of HAPs would not be expected to increase significantly due to the construction and operation of the BEC and the Alternative BEF.

7. Conclusions Regarding the Impacts of the Proposed Action

The Proposed Action involving the construction of a new BEC at the site of the existing 636 Test Area and a temporarily maintained Alternative BEF at the 647 Test Area has been reviewed to identify the extent of environmental impacts that would result potentially result. In addition to the Proposed Action alternative, the No Action alternative was evaluated. The evaluation reached the following conclusions:

- Air emissions from testing activities have been modeled for known and suspected hazardous air pollutants (HAP). Lead was found to be the only HAP that exceeded the NJDEP Reference Concentration (RfC). The risk analysis conducted for cumulative impacts was found to be within acceptable limits using exposure modeling. In addition, predicted maximum monthly average lead concentrations were found to be well within Ambient Air Quality Standards.
- Noise impacts have been addressed in the “Picatinny Arsenal Installation Operational Noise Management Plan”. The results of this study show that both the typical net explosive weight scenario, which produces a 115 dB noise contour, and the maximum new explosive weight utilization scenario, producing a 130 dB noise contour, minimally extends off the installation boundary. Therefore, noise complaints may occur but not to a greater extent than existing conditions.
- Inorganic contaminants (metals) in excess of levels of concern were discovered in sediment samples at both proposed site locations. Monitoring will be employed to determine whether testing operations are increasing the levels of contamination, which would lead to mitigation in the form of reduced testing or environmental controls.
- Results from groundwater sampling show a presence of TCE that is above regulatory limits at the Alternative BEF site at the 647 Test Area. Groundwater wells are not in place at the proposed BEC site but TCE can conservatively be assumed to exist. The incidence of TCE will require reinjection of groundwater encountered during construction dewatering operations and a vapor intrusion barrier may be appropriate to prevent volatile organic gases from entering newly constructed buildings at the sites but is not identified as a requirement.
- Wetland areas exist at both proposed site locations with the wetlands at the 647 Test Area delineated and issued a permit by the NJDEP. The wetlands at the 636 Test Area remains to be delineated and any disturbance to the wetlands or transition area will require a permit and mitigation that will be part of that permit.
- The proposed improvements to the BEC at the 636 Test Area are within a Category 1 flood hazard area. Vegetative disturbances in a previously disturbed area will require compensation at a 2:1 ratio, along with adherence to storm water management regulations with respect to runoff reductions and restoration to predevelopment hydrologic conditions.
- Unexploded ordnance (UXO) removal will result in the generation of a large amount of excess soil, which will require the protection of the pond located at the proposed site from both drawdown and contamination. Those excess soils will be tested for contamination on-site before removal unless prior approval is obtained from the Picatinny Environmental Affairs Division. In addition, a culvert that transmits water to the wetland area on the site must be maintained as functional during UXO removal and subsequent construction.
- The potential impacts from the proposed action on other media areas will be controlled through close coordination with the Natural Resources Manager and Cultural Resources Manager. Tree cutting is limited to between 15 November and 1 April. Construction activities will cease and the Cultural Resources Manager notified of any suspected archaeological find.

Adherence to the above listed requirements and conditions allow for the environmental impact analysis presented in this document to result in the conclusion for a Finding of No Significant Impact (FNSI) for the Proposed Action.

8. List of Preparers, Agencies and Person Consulted

The following individuals were responsible for preparing this Environmental Assessment:

<u>Individual</u>	<u>Title</u>	<u>Organization</u>
Mr. Lyle Trumbull	NEPA Consultant	O'Brien & Gere
Ms. Anne Power	Air Quality Consultant	O'Brien & Gere

The following individuals were contacted during the preparation of this assessment:

<u>Individual</u>	<u>Primary Area of Concern</u>	<u>Organization</u>
Mr. Wesley Myers	NEPA	Picatinny Arsenal
Mr. Jonathan Van De Venter	Natural Resources	Picatinny Arsenal
Ms. Carl Appelquist	Land Management	Picatinny Arsenal
Mr. Bob Smith	Air Impacts	Picatinny Arsenal
Mr. Ted Gabel	CERCLA	Picatinny Arsenal
Mr. Paul Reibel	Sampling Protocols	Picatinny Arsenal
Mr. Joe Clark	Hazardous Waste	Picatinny Arsenal
Mr. Jason Huggan	Cultural Resources	Picatinny Arsenal
Mr. Jeff Frye	Engineer (Customer)	Picatinny Arsenal
Mr. Daniel Reichard	Noise	USACHPPM
Ms. Carol Ann McLaughlin	Noise	Picatinny Arsenal

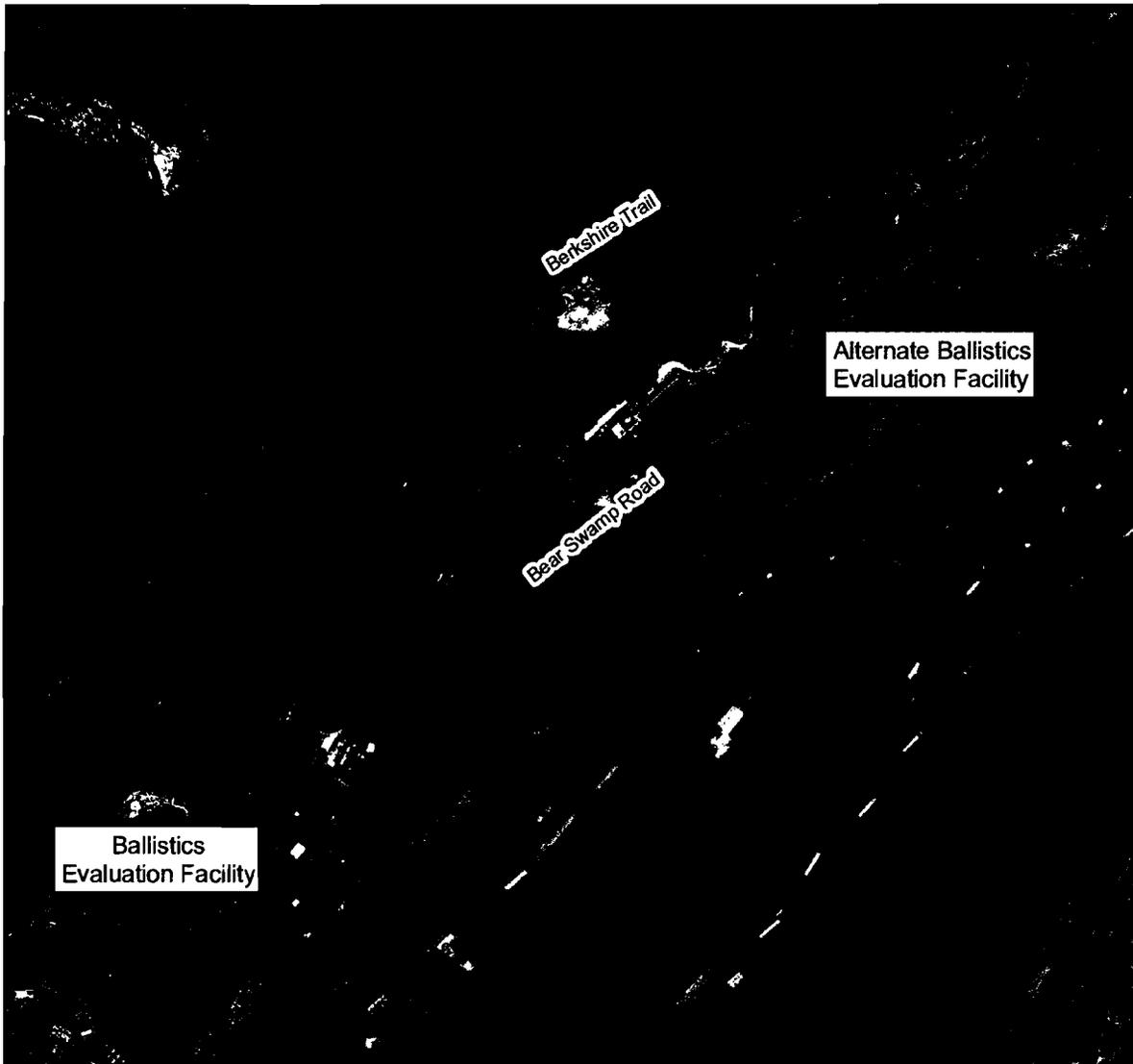
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FIGURES

FIGURE 1



ARDEC - Ballistics Evaluation Facility
Environmental Assessment
Picatinny Arsenal, NJ

Location Plan

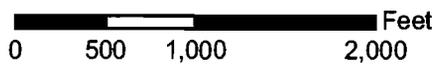
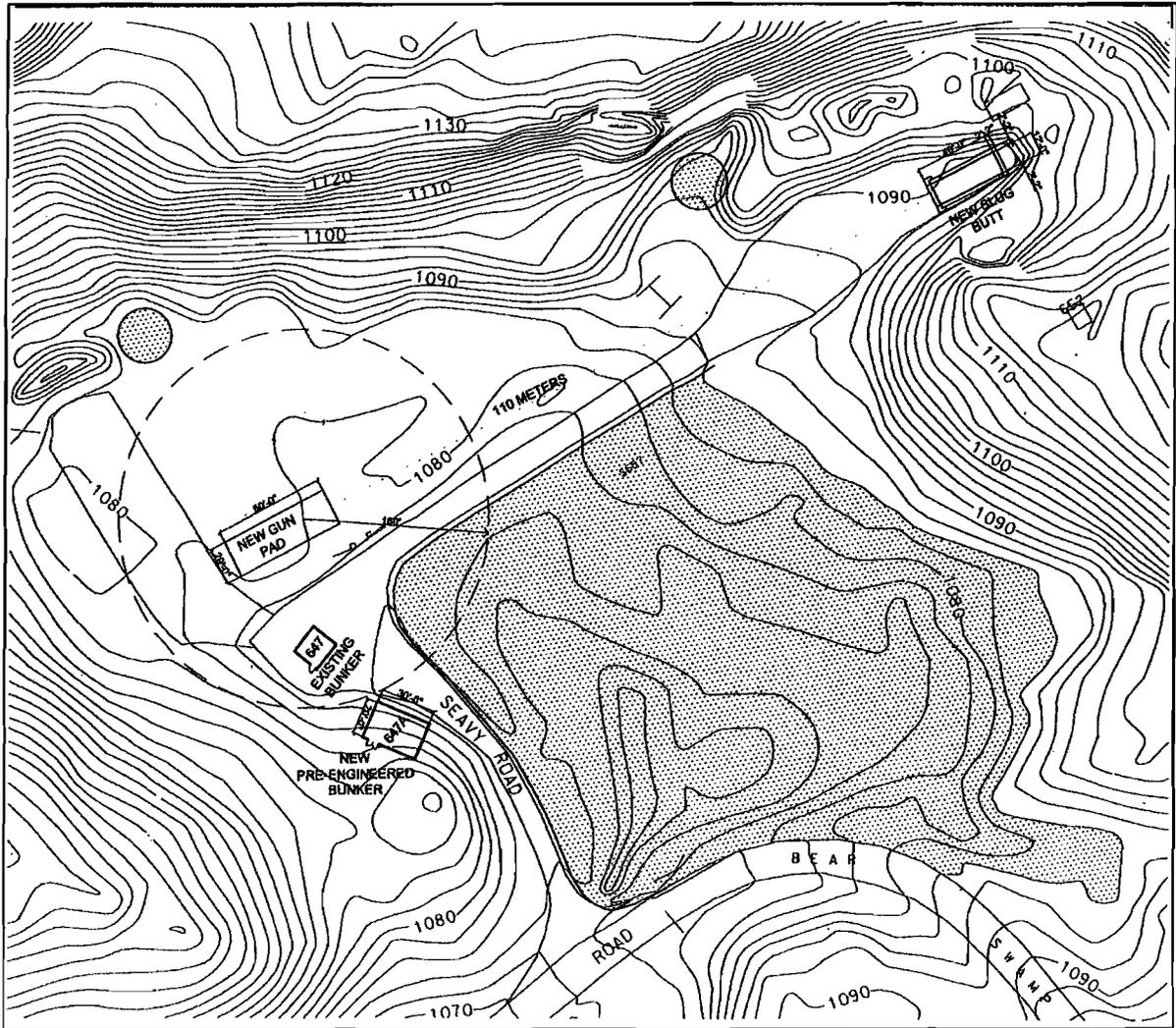


FIGURE 3



ARDEC - Alternative Ballistics Evaluation Facility
Environmental Assessment
Picatinny Arsenal, NJ

Legend

 Wetlands

Site Plan

 Feet
0 45 90 180



636 TEST AREA (GUNSHEDED) SD#11
 636 TEST AREA (GUNSHEDED) SD#15
 636 TEST AREA (GUNSHEDED) SD#16

DRAWN BY
 S. Wate 01/18/0

636 TEST AREA (GUNSHEDED) SD#11

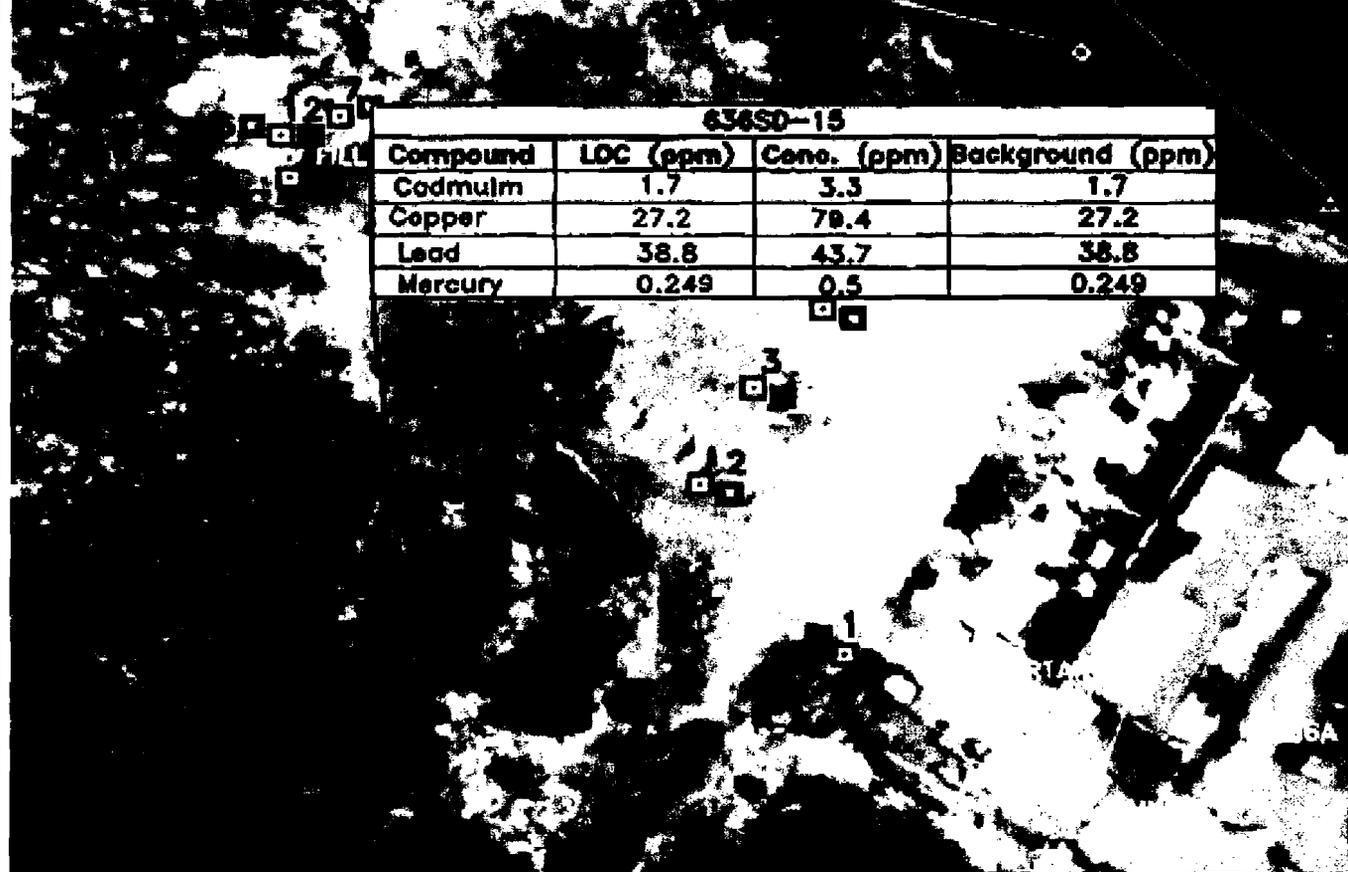
Compound	LOC (ppm)	Conc. (ppm)	Background (ppm)
Chromium	26	43	23.8
Copper	27.2	58	27.2
Lead	38.8	260	38.8

636 TEST AREA (GUNSHEDED)

Compound	LOC (ppm)	Conc. (ppm)
Copper	27.2	
Lead	38.8	
Mercury	0.249	

636 TEST AREA (GUNSHEDED) SD#15A

Compound	LOC (ppm)	Conc. (ppm)	Background (ppm)
Chromium	26	67	23.8
Copper	27.2	210	27.2
Lead	38.8	130	38.8



636SD-15

Compound	LOC (ppm)	Conc. (ppm)	Background (ppm)
Cadmium	1.7	3.3	1.7
Copper	27.2	79.4	27.2
Lead	38.8	43.7	38.8
Mercury	0.249	0.5	0.249

636 TEST AREA (GUNSHEDED)

Compound	LOC (ppm)	Conc. (ppm)
Copper	27.2	32
Lead	38.8	110

636SD-16

Compound	LOC (ppm)	Conc. (ppm)	Background (ppm)
Arsenic	16.0	18.9	16.0
Cadmium	1.7	2.5	1.7
Copper	27.2	205	27.2
Lead	38.8	160	38.8
Zinc	171	221	171

636 TEST AREA (GUNSHEDED)

Compound	LOC (ppm)	Conc. (ppm)
Lead	5	

APPENDIX A

Air Emissions Calculation and Record of Non-Applicability

Emissions Calculations

Emissions of total Volatile Organic Compounds (VOC), total Nitrogen Oxides (NO_x) and particulate matter that is 2.5 micrometers or smaller in size (PM_{2.5}) resulting from construction and operation of the Ballistic Evaluation Facility and the Alternative Ballistic Evaluation Facility are the subject of this appendix. As a conservative measure, VOC emissions were estimated as total hydrocarbon emissions and PM_{2.5} emissions were estimated as PM₁₀. Emission estimates were made for the following emission sources:

- Material usage emissions (asphalt, paint, etc.) - Appendix A, Table 2
- Explosive detonation emissions for construction of water tower and slug butts – Appendix A, Table 3
- Construction emissions Alternative Site - Appendix A, Table 4
- Ballistic Evaluation Facility demolition emissions – Appendix A, Table 5
- Ballistic Evaluation Facility construction emissions – Appendix A, Table 6
- Ordinance detonation – Appendix A, Table 7
- Emergency generator emissions – Appendix A, Table 8
- Fire pumps (two) emissions – Appendix A, Table 9
- Degreaser (two) emissions – Appendix A Table 10

Applicability Determination

Combined annual emissions from the construction and operation of the Ballistic Evaluation Facility and the Alternative Ballistic Evaluation Facility were estimated to be 2.47 TPY total hydrocarbons, 9.39 TPY NO_x and 0.88 TPY PM₁₀ (Appendix A, Table 1). These values are below the conformity thresholds established by 40 CFR 93.153 (b) of 50 TPY for VOCs and NO_x and 70 TPY for PM₁₀ and are not regionally significant. The Record of Non-Applicability to the General Conformity Rule for the Proposed Action is included in subsequent page of this appendix as are the associated emission calculations.

MEMORANDUM OF RECORD

Subject: Record of Non-Applicability (RONA) to the General Conformity Rule for the Proposed Action to construct the Ballistic Evaluation Facility (BEF) and the Alternative Ballistic Evaluation Facility (Alt BEF) at Picatinny Arsenal, New Jersey.

Date Prepared: April 13, 2009

The Proposed Action would include the construction of a new BEF at the location of the existing Ballistics Evaluation Facility. Construction would also require the demolition of five antiquated buildings, totaling 4,493 square feet, which are currently used by the Weapon & Ballistic Test Team. Ballistics operations would be temporarily maintained at area 647, the site of a former ballistic evaluation range, during construction. Area 647 would require upgrade to accommodate the temporary activity. The proposed BEF and the Alt BEF cover approximately 2.0 and 0.75 acres of land, respectively.

General Conformity under the Clean Air Act, Section 176 has been evaluated according to the requirements of 40 CFR 93, Subpart B. The requirements of this rule are not applicable to this Proposed Action for the following reason:

Total direct and indirect emissions from this Proposed Action have been estimated at 2.47 TPY VOCs (estimated conservatively as total hydrocarbons), 9.39 TPY NO_x, and 0.88 TPY PM_{2.5} (estimated conservatively as PM₁₀) which are below the conformity threshold established by 40 CFR 93.153 (b) of 50 TPY for VOCs and NO_x and 70 TPY for PM₁₀ and are not regionally significant.

Supporting documentation and emission estimates:

- Are Attached
- Are included in the Environmental Assessment
- Other (not necessary)

Table 1
Ballistic Evaluation Facility - Picatinny Arsenal
Estimated Air Emissions Justifying Record of Non-Applicability (RONA)

Emission Summary

Construction emissions:

Pollutant	Emission Rate (tons)	Emission Rate (tpy)
NO _x	7.17	4.78
PM ₁₀	0.81	0.54
VOC	1.54	1.02

Operating emissions:

Pollutant	Emission Rate (tpy)
NO _x	4.61
PM ₁₀	0.34
VOC	1.44

Total Emission from Proposed Action

Pollutant	Emission Rate (tpy)
NO _x	9.39
PM ₁₀	0.88
VOC	2.47



**Table 2
Ballistic Evaluation Facility - Picatinny Arsenal
Estimated Air Emissions Justifying Record of Non-Applicability (RONA)**

Material Usage Emission Estimates

Material	Use	VOC Emission Factor	Units	Area Covered⁴ (sf)	Quantity Used	Units	VOC Emission Rate (lbs)	VOC Emission Rate (tons)
Asphalt ¹	Paving	0.04	lb/ton	NA	109	tons	4	0.002
Paint/epoxy ²	Interior walls, concrete	3.7	lb/gal	0	123.8	gal	458	0.23
Concrete sealer ³	Lab and range floors	3.7	lb/gal	0	15.0	gal	55	0.03
Concrete floor hardener ³	Vehicle bay	3.7	lb/gal	0	62.6	gal	232	0.12
<i>TOTAL</i>							<i>749</i>	<i>0.37</i>

NOTES:

¹Emission factor obtained from guidance from the California Air Resources Board titled "Comparison of Asphalt Paving Emission Factors" dated May 11, 2005. Information contained in that guidance is based on emission factor information from Emission Inventory Improvement Program (EIIP) Volume III, Chapter 17, Table 17.5-2, January 2001.

²Paint usage estimate is based on 350 sf/gal using two coats. Emission factor for architectural coatings obtained from EIIP, Volume III, Chapter 3, Table 5-2, 11/2/95, for solvent based coatings.

³Paint usage estimate is based on 150 sf/gal using a single coat. Emission factor for architectural coatings obtained from EIIP, Volume III, Chapter 3, Table 5-2, 11/2/95, for solvent based coatings.

⁴Obtained from Project Detail Report.



Table 3
Ballistic Evaluation Facility - Picatinny Arsenal
Estimated Air Emissions Justifying Record of Non-Applicability (RONA)

Explosives Detonation Emission Estimates

Material	Use	Quantity Used (tons)	NO_x Emission Factor (lb/ton)	NO_x Emission Rate (tons)
Ammonium nitrate explosive, loaded, packed & blown	Excavation for slug butts @ both sites	0.63	17	0.01
	Excavation for Water Storage Tanks	0.03	17	0.0003
<i>TOTAL</i>				<i>0.01</i>

NOTE:

Emission factor obtained from AP-42, Volume I, Table 13.3-1, 2/80.

Explosive detonation for the construction of the slug butts



Table 4
Ballistic Evaluation Facility - Picatinny Arsenal
Estimated Air Emissions Justifying Record of Non-Applicability (RONA)

Equipment Usage Emission Estimates - Alternate Site Construction

Equipment Type	Use	Number of Units	Fuel Type	Equipment Rating (hp)	Load Factor ¹	Per Unit Usage (hrs/day)	Days Used	Annual Usage (hrs)	Emission Factors ^{2,4}			Emission Rates		
									VOC (g/hp/hr)	NOx (g/hp/hr)	PM ₁₀ (g/hp/hr)	VOC (lb)	NOx (lb)	PM ₁₀ (lb)
Excavator	Excavation of site	1	Diesel	125	59%	8	5	40	0.7	10.75	0.96	4.55	69.91	6.24
Wheel loader	Clearing & Grubbing, Excav., etc.	1	Diesel	200	59%	8	5	40	0.61	10.3	0.81	6.35	107.18	8.43
Scraper	Roadway soil excavation	1	Diesel	300	59%	8	4	32	0.71	8.70	1.29	8.87	108.64	16.11
Dozer	Grubbing and stacking	1	Diesel	105	59%	8	4	32	0.54	9	0.58	2.36	39.33	2.53
Track drill	Excavation	1	Diesel	200	53%	8	10	80	0.54	9	0.58	10.10	168.26	10.84
Hydraulic Excavator	Excavation	1	Diesel	200	53%	8	10	80	0.54	9	0.58	10.10	168.26	10.84
Vibratory soil compactor	Soil compac./found. prep	1	Diesel	150	43%	8	30	240	0.8	9.3	0.75	27.30	317.39	25.60
Paving equipment	Paving	1	Diesel	150	59%	8	7	56	1.03	11.01	0.90	11.25	120.30	9.83
Crane	Building construction	1	Diesel	194	43%	8	60	480	1.26	10.3	0.96	111.23	909.3	84.75
Welder	Building construction	1	Diesel	19	21%	8	60	480	1.2	8	1.0	5.07	33.78	4.22
Mixer	Concrete slab	1	Diesel	300	43%	8	5	40	1.01	11.01	0.9	11.49	125.25	10.24
Air Compressor	Power for pneumatic tools	1	Diesel	37	43%	8	60	480	1.2	8	1.0	20.20	134.69	16.84
Aerial Lift	Conduct work on power lines, building construction, parking lot lights	2	Diesel	43	21%	4	30	120	1.57	14	1.0	3.75	33.45	2.39
Grader	Grade site after excavation	1	Diesel	147	59%	8	5	40	1.1	9.6	1.0	8.41	73.42	7.65
Stump Grinder	Remove Stumps in portion of construction area		Diesel	75	43%	8	5	40	1.2	8	1.0	3.41	22.75	2.84
Chain saw	Remove trees/brush in portion of construction area	4	Gasoline	2	43%	8	5	40	526.3	0.9	3.6	39.91	0.07	0.27
Chipper	Dipose of trees	2	Diesel	75	43%	8	5	40	1.2	8	1.0	3.41	22.75	2.84

Equipment Type	Use	Number of Units	Fuel Type	Trips/Day	Mile/Trip*	Days Used	Total Miles Driven	Emission Factors ^{3,4}			Emission Rates		
								VOC (g/mile)	NOx (g/mile)	PM ₁₀ (g/mile)	VOC (lb)	NOx (lb)	PM ₁₀ (lb)
Privately Owned Vehicles	Employees Commute to work	20	Gasoline	2	30	60	72,000	0.544	0.593	0.42	86.4	94.1	66.7
Trucks	Pull & deliver construction equipment	2	Diesel	2	30	20	2,400	0.6	1.18	0.42	3.3	6.2	2.2
Dump Truck	Excavation, new lot construction, fill for area near wells and tree cover area	2	Diesel	8	25	30	12,000	2.1	6.49	0.42	55.6	171.7	11.1

NA = Not applicable, variable

* Based on 30 mile commute for employees and various milage for construction vehicles

	VOC	NOx	PM10
Total Pounds	433.0	2,726.7	302.47
Total Tons	0.22	1.36	0.15

NOTES:

¹Load factors obtained from *Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling*, EPA 420-P-04-005, Table 10, April 2004.

²Equipment emission factors obtained from *Nonroad Engine and Vehicle Emission Study*, Appendix I, EPA 460/3-91-02, November 1991.

³Vehicle emission factors obtained from AP-42, Volume II, Appendix H.

⁴Vehicle and equipment emission factors for VOC were unavailable. Therefore, the hydrocarbons emission factors were conservatively assumed to represent VOC.



**Table 5
Ballistic Evaluation Facility - Picatinny Arsenal
Estimated Air Emissions Justifying Record of Non-Applicability (RONA)**

Equipment Usage Emission Estimates - BEF Demolition

Equipment Type	Use	Number of Units	Fuel Type	Equipment Rating (hp)	Load Factor ¹	Per Unit Usage (hrs/day)	Days Used	Annual Usage (hrs)	Emission Factors ^{2,4}			Emission Rates		
									VOC (g/hp/hr)	NOx (g/hp/hr)	PM ₁₀ (g/hp/hr)	VOC (lb)	NOx (lb)	PM ₁₀ (lb)
Wheel loader	Demolition debris removal	1	Diesel	200	59%	8	0	14	0.61	10.3	0.81	2.22	37.51	2.95

Equipment Type	Use	Number of Units	Fuel Type	Trips/Day	Mile/Trip*	Days Used	Total Miles Driven	Emission Factors ^{3,4}			Emission Rates		
								VOC (g/mile)	NOx (g/mile)	PM ₁₀ (g/mile)	VOC (lb)	NOx (lb)	PM ₁₀ (lb)
Privately Owned Vehicles	Employees Commute to work	25	Gasoline	2	30	14	21,000	0.544	0.593	0.42	25.2	27.5	19.4
Dump Truck	Excavation, new lot construction, fill for area near wells and tree cover area	4	Diesel	8	25	14	11,200	2.1	6.49	0.42	51.9	160.3	10.4

NA = Not applicable, variable

* Based on 30 mile commute for employees and various mileage for construction vehicles

	VOC	NOx	PM10
Total Pounds	79.3	225.2	32.77
Total Tons	0.04	0.11	0.02

NOTES:

¹Load factors obtained from *Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling*, EPA 420-P-04-005, Table 10, April 2004.

²Equipment emission factors obtained from *Nonroad Engine and Vehicle Emission Study*, Appendix I, EPA 460/3-91-02, November 1991.

³Vehicle emission factors obtained from AP-42, Volume II, Appendix H.

⁴Vehicle and equipment emission factors for VOC were unavailable. Therefore, the hydrocarbons emission factors were conservatively assumed to represent VOC.



Table 6
Ballistic Evaluation Facility - Picatinny Arsenal
Estimated Air Emissions Justifying Record of Non-Applicability (RONA)

Equipment Usage Emission Estimates - BEF Construction

Equipment Type	Use	Number of Units	Fuel Type	Equipment Rating (hp)	Load Factor ¹	Per Unit Usage (hrs/day)	Days Used	Annual Usage (hrs)	Emission Factors ^{2,4}			Emission Rates		
									VOC (g/hp/hr)	NOx (g/hp/hr)	PM ₁₀ (g/hp/hr)	VOC (lb)	NOx (lb)	PM ₁₀ (lb)
Excavator	Excavation of site	1	Diesel	125	59%	8	40	320	0.7	10.75	0.96	36.42	559.32	49.95
Wheel loader	Clearing & Grubbing, Excav., etc.	2	Diesel	200	59%	8	40	320	0.61	10.3	0.81	101.56	1714.89	134.86
Scraper	Roadway soil excavation	1	Diesel	300	59%	8	20	160	0.71	8.70	1.29	44.33	543.19	80.54
Dozer	Grubbing and stacking	1	Diesel	200	59%	8	30	240	0.54	9	0.58	33.72	561.92	36.21
Track drill	Excavation	1	Diesel	200	53%	8	30	240	0.54	9	0.58	30.29	504.77	32.53
Hydraulic Excavator	Excavation	1	Diesel	200	53%	8	40	320	0.54	9	0.58	40.38	673.03	43.37
Vibratory soil compactor	Soil compac./found. prep	1	Diesel	150	43%	8	15	120	0.8	9.3	0.75	13.65	158.69	12.80
Paving equipment	Paving	1	Diesel	150	59%	8	20	160	1.03	11.01	0.90	32.15	343.71	28.10
Crane	Building construction	1	Diesel	194	43%	8	200	1,600	1.26	10.3	0.96	370.76	3,030.8	282.49
Welder	Building construction	1	Diesel	19	21%	8	130	1,040	1.2	8	1.0	10.98	73.19	9.15
Mixer	Concrete slab	1	Diesel	300	43%	8	15	120	1.01	11.01	0.9	34.47	375.75	30.71
Air Compressor	Power for pneumatic tools	1	Diesel	37	43%	8	80	640	1.2	8	1.0	26.94	179.59	22.45
Paver	Construct new parking area	1	Diesel	99	59%	8	10	80	0.8	10.3	0.9	8.24	106.11	9.27
Aerial Lift	Conduct work on power lines, building construction, parking lot lights	2	Diesel	43	21%	4	100	400	1.57	14	1.0	25.00	222.97	15.93
Grader	Grade site after excavation	1	Diesel	147	59%	8	20	160	1.1	9.6	1.0	33.65	293.70	30.59

Equipment Type	Use	Number of Units	Fuel Type	Trips/Day	Mile/Trip*	Days Used	Total Miles Driven	Emission Factors ^{3,4}			Emission Rates		
								VOC (g/mile)	NOx (g/mile)	PM ₁₀ (g/mile)	VOC (lb)	NOx (lb)	PM ₁₀ (lb)
Privately Owned Vehicles	Employees Commute to work	25	Gasoline	2	30	260	390,000	0.544	0.593	0.42	467.7	509.9	361.1
Trucks	Pull & deliver construction equipment	2	Diesel	2	30	130	15,600	0.6	1.18	0.42	21.7	40.6	14.4
Dump Truck	Excavation, new lot construction, fill for area near wells and tree cover area	4	Diesel	8	25	130	104,000	2.1	6.49	0.42	481.5	1488.0	96.3

NA = Not applicable, variable

* Based on 30 mile commute for employees and various milage for construction vehicles

	VOC	NOx	PM10
Total Pounds	1,813.4	11,380.1	1,290.81
Total Tons	0.91	5.69	0.65

NOTES:

¹Load factors obtained from *Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling*, EPA 420-P-04-005, Table 10, April 2004.

²Equipment emission factors obtained from *Nonroad Engine and Vehicle Emission Study*, Appendix I, EPA 460/3-91-02, November 1991.

³Vehicle emission factors obtained from AP-42, Volume II, Appendix H.

⁴Vehicle and equipment emission factors for VOC were unavailable. Therefore, the hydrocarbons emission factors were conservatively assumed to represent VOC.



**Table 7
Ballistic Evaluation Facility - Picatinny Arsenal
Estimated Air Emissions Justifying Record of Non-Applicability (RONA)**

Ordnance Detonation Emission Estimates

Pollutant	Emission Factor (lb/item)	Quantity Used (rounds/yr)	Emission Rate (lbs/yr)	Emission Rate (tons/yr)
PM ₁₀	0.1	441	43.11	0.02
Particulate cyanide	1.2E-01	441	50.72	0.03
Total HAP	2.4E-01	441	107.33	0.05
NOx	2.2E-01	441	98.89	0.05

NOTES:

Emission factors obtained from AP-42, Volume II, Tables 15.4.4-1 and 15.4.4-2, for D540, M3 and M3A1 155-mm Propelling Charges. This type of ordnance is typical of that used in the M199 Howitzer during training operations. Rounds per year were obtained from the 2007 facility wide noise evaluation.



Table 8
Ballistic Evaluation Facility - Picatinny Arsenal
Estimated Air Emissions Justifying Record of Non-Applicability (RONA)
Emergency Generator Emissions

Engine efficiency ^(a) :	28%	
Rated output:	235	hp
Rated output:	175	kW
Estimated max fuel consumption ^(a) :	15.2	gph
Diesel heating value:	140	MMBtu/10 ³ gal

#2 Fuel Oil Emissions

Pollutant	Emission Factor	Units	Source	Emissions (tons/year)
Nitrogen oxides (NO _x)	4.41	lb/MMBtu	AP-42, Table 3.3-1, 10/96	2.35
Particulate Matter (PM) ^(b)	0.31	lb/MMBtu	AP-42, Table 3.3-1, 10/96	0.17
Volatile Organic Compounds (VOC)	0.35	lb/MMBtu	AP-42, Table 3.3-1, 10/96	0.19
<i>Hazardous Air Pollutants (HAP)</i>				
Benzene	9.33E-04	lb/MMBtu	AP-42, Table 3.3-2, 10/96	4.98E-04
Toluene	4.09E-04	lb/MMBtu	AP-42, Table 3.3-2, 10/96	2.18E-04
Xylene	2.85E-04	lb/MMBtu	AP-42, Table 3.3-2, 10/96	1.52E-04
Propylene	2.58E-03	lb/MMBtu	AP-42, Table 3.3-2, 10/96	1.38E-03
1,3-Butadiene	3.91E-05	lb/MMBtu	AP-42, Table 3.3-2, 10/96	2.09E-05
Formaldehyde	1.18E-03	lb/MMBtu	AP-42, Table 3.3-2, 10/96	6.30E-04
Acetaldehyde	7.67E-04	lb/MMBtu	AP-42, Table 3.3-2, 10/96	4.09E-04
Acrolein	9.25E-05	lb/MMBtu	AP-42, Table 3.3-2, 10/96	4.94E-05
Naphthalene	8.48E-05	lb/MMBtu	AP-42, Table 3.3-2, 10/96	4.53E-05
			<i>Total HAP</i>	<i>3.40E-03</i>

^(a) Maximum fuel consumption estimates assume a mechanical efficiency of 28% from *Perry's Chemical Engineer's Handbook*, 7th Ed..

^(b) Per AP-42, all particulate is assumed to be ≤1 μm in size.

Total Emissions	lbs/hr	tons/year
Nitrogen oxides (NO _x)	9.41	2.35
Particulate Matter (PM)	0.66	0.17
Volatile Organic Compounds (VOC)	0.75	0.19
Total HAP	1.36E-02	3.40E-03

Sample Calculation - #2 Fuel Oil (diesel)

Emission Factor = lb/MMBtu

Fuel Consumption x Heating Value x Emission Factor x 500 hours/yr / 2,000 lb/ton = tons/yr

NOTE:

Maximum potential emissions limited to 500 hours per year.



Table 9
Ballistic Evaluation Facility - Picatinny Arsenal
Estimated Air Emissions Justifying Record of Non-Applicability (RONA)

2 X Fire Pump Emissions

Engine efficiency ^(a) :	28%		
Rated output:	1100	hp	
Rated output:	820	kW	(2 pumps @ 410 kW each)
Estimated max fuel consumption ^(a) :	71.4	gph	
Diesel heating value:	140	MMBtu/10 ³ gal	

#2 Fuel Oil Emissions

Pollutant	Emission Factor	Units	Source	Emissions (tons/year)
Nitrogen oxides (NO _x)	4.41	lb/MMBtu	AP-42, Table 3.3-1, 10/96	2.21
Particulate Matter (PM) ^(b)	0.31	lb/MMBtu	AP-42, Table 3.3-1, 10/96	0.16
Volatile Organic Compounds (VOC)	0.35	lb/MMBtu	AP-42, Table 3.3-1, 10/96	0.18
<i>Hazardous Air Pollutants (HAP)</i>				
Benzene	9.33E-04	lb/MMBtu	AP-42, Table 3.3-2, 10/96	4.67E-04
Toluene	4.09E-04	lb/MMBtu	AP-42, Table 3.3-2, 10/96	2.05E-04
Xylene	2.85E-04	lb/MMBtu	AP-42, Table 3.3-2, 10/96	1.43E-04
Propylene	2.58E-03	lb/MMBtu	AP-42, Table 3.3-2, 10/96	1.29E-03
1,3-Butadiene	3.91E-05	lb/MMBtu	AP-42, Table 3.3-2, 10/96	1.96E-05
Formaldehyde	1.18E-03	lb/MMBtu	AP-42, Table 3.3-2, 10/96	5.90E-04
Acetaldehyde	7.67E-04	lb/MMBtu	AP-42, Table 3.3-2, 10/96	3.84E-04
Acrolein	9.25E-05	lb/MMBtu	AP-42, Table 3.3-2, 10/96	4.63E-05
Naphthalene	8.48E-05	lb/MMBtu	AP-42, Table 3.3-2, 10/96	4.24E-05
			<i>Total HAP</i>	<i>3.19E-03</i>

^(a) Maximum fuel consumption estimates assume a mechanical efficiency of 28% from *Perry's Chemical Engineer's Handbook*, 7th Ed..

^(b) Per AP-42, all particulate is assumed to be ≤1 μm in size.

Total Emissions	lbs/hr	tons/year
Nitrogen oxides (NO _x)	8.82	2.21
Particulate Matter (PM)	0.62	0.16
Volatile Organic Compounds (VOC)	0.70	0.18
Total HAP	1.27E-02	3.19E-03

Sample Calculation - #2 Fuel Oil (diesel)

Emission Factor = lb/MMBtu

Fuel Consumption x Heating Value x Emission Factor x 100 hours/yr / 2,000 lb/ton = tons/yr

NOTE:

Maximum potential emissions limited to 100 hours per year.

410kW direct injection, turbo-charged Caterpillar 3412DIT diesel engine



Table 10
Armament Integration Facility - Picatinny Arsenal
Estimated Air Emissions Justifying Record of Non-Applicability (RONA)

2 X Degreasers

Mass Flux Evaporation from one part degreaser in Stagnant Air (final emissions are doubled for two degreasers)		
R_{IG}	Universal ideal gas constant, atm*ft ³ /lbmol/R	0.7302
t_{op}	Potential operating schedule, hr/yr [1]	8,760
t_{op_act}	Actual operating schedule, hr/yr [2]	2,221
L	Tank length, ft	4.0
W	Tank width, ft	4.0
Δh	Height of headspace above entek dip, ft	0.25
SA_{solv}	Liquid surface area of solvent in tank, ft ²	16.0
T_{air}	Ambient temperature, deg F	70
P_{amb}	Ambient pressure, atm	1.0
MW_{air}	Molecular weight of air, lb/lbmol	29
μ_{air}	Air viscosity, cP	0.0182
ρ_{air}	Air density, lb/cf	0.0750
ΣV_{air}	Molecular diffusion volume of air [3]	19.7
Type	Solvent type	Methanol
Description	Solvent description	Pure solvent
i	Component type in solvent	Methanol
Structure	Component structure	CH ₃ OH
CAS#	Component CAS registry number	67-56-1
HAP	Emission type generated by component evaporation	Hazardous Air Pollutant
x_i	Liquid phase mass fraction of component in solvent	1.0
T_{bath}	Solvent bath temperature, deg F	70
MW_i	Molecular weight of component, lb/lbmol	32.04
C1_i	Vapor pressure constant of component [4]	81.77
C2_i	Vapor pressure constant of component [4]	-6867.0
C3_i	Vapor pressure constant of component [4]	-8.7080
C4_i	Vapor pressure constant of component [4]	7.1926E-06
C5_i	Vapor pressure constant of component [4]	2
VP_i	Vapor pressure of component at T _{bath} , mmHg	106.81

(continued on next page...)

(continued)

Σv_i	Molecular diffusion volume of component [5]	31.25
D_{i-air}	Diffusion coefficient of component in air, cm ² /s [6]	0.1562
$y1_i$	Vapor phase mass fraction of component at vapor-liquid interface [7]	0.141
$y2_i$	Vapor phase mass fraction of component at top of tank [8]	0
N_i	Mass flux of component from tank liquid surface, lb/hr/ft ² [9]	0.030
E_{i_hourly}	Uncontrolled hourly mass emission of component per tank, lb/hr	0.486
$E_{i_annual_pot}$	Potential annual mass emission of VOC per tank, TPY	2.128
$E_{i_annual_act}$	Actual annual mass emission of VOC per tank, TPY	0.540
Actual annual mass emission of VOC for two tanks, TPY		1.079

Notes:

[1] - Annual operating time conservatively based on continuous uncovered operation.

[2] - Actual operating time based on production data provided by Apollo Metals.

[3] - For use in the Fuller, et al. method of estimating diffusion coefficients; tabulated in "The Properties of Gases & Liquids", 5th ed., Poling, Prausnitz, and O'Connell, p 11.11.

[4] - Vapor pressure constants from "Perry's Chemical Engineers' Handbook," 7th ed., 1997.

[5] - For use in the Fuller, et al. method of estimating diffusion coefficients; estimated by group contribution theory from "The Properties of Gases & Liquids", 5th ed., Poling, Prausnitz, and O'Connell, p 11.10.

[6] - Estimated using the Fuller, et al. method in "The Properties of Gases & Liquids".

[7] - Assumed vapor-liquid equilibrium at the solvent-air interface:

$$y1_i = x_i \left(\frac{VP_i}{P_{amb}} \right)$$

[8] - Assumed far field VOC concentration is negligible (i.e. - vapors are carried away by ambient air).

[9] - Mass flux of reference compound through stagnant air at top of tank:

$$N_i = \left(\frac{P_{amb} \times D_{i-air} \times MW_i}{R_{JG} \times T_{air} \times \Delta h} \right) \ln \left(\frac{1 - y2_i}{1 - y1_i} \right)$$



APPENDIX B

Soil Management Procedures During Construction Activities

**Picatinny Arsenal
Environmental Affairs Division**

Soil Management SOP Protocol Summary

For

Soil Management Procedures during Construction

Prepared: July 2003
Revised: November 2004

Prepared by:

Chugach Industries, Inc.

Environmental Office

Approved By:  1 Nov 2004

Ted Gabel,
Project Manager of the Installation Restoration Program
Environmental Affairs Directorate, Picatinny

SITE CONSTRUCTION MANAGER'S STATEMENT

I have read or have read to me the Guidelines established in this SOP protocol summary. I certify to the best of my ability that the operation as described within this SOP protocol summary can be conducted in a safe, healthy and environmentally sound manner. I have ensured that all operators are trained and are familiar with the requirements of this SOP protocol summary and of the operation/activity. If deviations/alterations to the SOP are required, I will ensure that the operation is discontinued until the revised SOP is staffed for approval. Furthermore, if unexpected safety, health or environmental hazards are identified, I will ensure that the operation is discontinued until the hazard has been eliminated.

Name of Site Construction Manager, Title

Date

Picatinny Arsenal Environmental Affairs Office

Soil Management SOP Protocol Summary

1. Purpose

This SOP protocol summary sheet provides DPW project managers and contractor's information and requirements regarding Picatinny's soil management policies. Detailed requirements are provided in the Installation's Soil Management SOP. This SOP and associated documents are available on Picatinny's Environmental Management (PEM's) network website.

Picatinny is listed as a U.S. Environmental Protection Agency (USEPA) Superfund site and is federally mandated to address soil and groundwater contamination identified at the installation. Many areas of the base have been investigated and contain levels of contamination requiring remediation. Consequently, excavated or disturbed soils must be properly managed to minimize potential risk to the Picatinny community as well as ensure compliance with Federal and State regulatory requirements.

This summary sheet identifies the general soil management and environmental protection considerations that must be addressed when soils at Picatinny Arsenal are disturbed during construction activities. Failure to comply with Picatinny's required soil management policies may result in a Notice of Violation (NOV) with associated penalties.

2. Scope

This document briefly summarizes requirements for soil covering, soil movement and soil management activities associated with construction at Picatinny. This SOP does not address Safety or UXO approvals. Project proponents should consult the safety office to obtain guidance in this area.

3. General Procedures

Pre-Construction Requirements:

- All construction projects or any project which, will result in the excavation or movement of soil, *must first* complete and submit an **Environmental Work Request for Site Clearance form (Attachment 1)** to the Environmental Affairs Directorate (EAD) for review and approval. **This requirement will be waived for emergency repairs to underground utilities. However, EAD/Chugach must be notified @ ext. 8010 within 24 hours to coordinate

management of any excess soil issues associated with the emergency response activity.

Site Construction/Project Implementation Requirements:

- If excess soil is generated during construction activities, the DPW construction manager must complete and submit a **Potentially Contaminated Soil Management Record (Attachment 2)** to Elaine Comings at EAD/Chugach (ext.8010/ fax 8020). This information is used to determine if the soil will be tested..
- Excess soil that cannot be utilized at the project site (i.e. visually contaminated soil or soil which cannot be used for backfilling or re-grading purposes) must be properly stockpiled for future use or disposal. Soil should be placed on and covered with plastic sheeting. Run-off and run-on controls must be used.
- The POC's must provide immediate notification to the EAD office if any obvious signs of contamination (i.e. stains, odors and/or buried drums or containers) are encountered during excavation activities. Soils that appear contaminated should not be put back into the excavation. Those affected soils must be segregated and placed on/covered with plastic.
- Excess soil must be transported from the construction site to a designated Installation storage area. Construction managers must forward a completed **Excess Soil Manifest and Record Document (Attachment 3)** to EAD and contact Elaine Comings @ ext. 8010 for instructions on where to transport excess material.
- In general, soil piles must remain segregated according to Building or Site location and each stockpile must be staked, tagged and labeled for future identification. Information regarding the source location, date of excavation, date of sampling (if completed), estimated soil volume and the project POC must be included.

POTENTIALLY CONTAMINATED
SOIL MANAGEMENT
Manifest and Record

PROJECT NAME: _____

DPW PM: _____
CORPS PM: _____
CONTRACTOR PM: _____

DATE: _____

LOCATION OF PROJECT: _____
LOCATION OF PILE: _____
PROJECTED/ACTUAL VOLUME OF PILE (TONS/YDS): _____
DATE PILE EXCAVATED: _____
DPW PM: _____ **DATE:** _____

SOIL HAS BEEN STORED AT: _____ **DATE:** _____
DPW PM: _____

MAP MUST BE ATTACHED _____

EAD POC: _____

ENVIRONMENTAL OFFICE – NOT FOR USE BY DPW OR CONTRACTOR

DATE SOIL MANIFEST SUBMITTED _____
DATE PLAN APPROVED _____
DATE SOIL SAMPLED _____
DATE RESULTS MADE _____
ANALYSIS # _____
APPROVED EROSION CONTROL PLAN YES_ NO _____

SOIL IS CLEAN _____
SOIL IS SOLID WASTE _____
SOIL IS HAZARDOUS _____
DATE AND # DIRECTIVE SENT TO DPW _____

EXCESS SOIL MANAGEMENT
Manifest and Record

PROJECT NAME: _____

SITE CLEARANCE #: _____

DATE: _____

DPW PM: _____

CORPS PM: _____

CONTRACTOR PM: _____

LOCATION OF PROJECT _____

LOCATION OF EXCAVATION _____

PROJECTED/ACTUAL SIZE OF PILE _____

SOIL HAS BEEN STORED AT _____

LOCATION OF PILE _____

DATE _____

DPW PM _____

SOIL HAS BEEN TAKEN TO _____

LOCATION OF PILE _____

DATE _____

DPW PM _____

MAP MUST BE ATTACHED _____

SOIL IS CLEAN: YES _____

NO _____

SOIL IS SOLID WASTE: YES _____

NO _____