

DEPARTMENT OF THE ARMY
US ARMY COMMUNICATIONS - ELECTRONICS COMMAND

ENVIRONMENTAL ASSESSMENT
AND
FINDING OF NO SIGNIFICANT IMPACT

CONSTRUCTION AND OPERATION OF A NEW US ARMY
ELECTRONICS RESEARCH AND DEVELOPMENT COMMAND
PULSE POWER CENTER

FORT MONMOUTH, NEW JERSEY

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I. Finding of No Significant Impact

1. The US Army Communications - Electronics Command (CECOM), a Major Subordinate Command of the US Army Materiel Development and Readiness Command (DARCOM), in cooperation with the US Army Electronics Research and Development Command (ERADCOM), a tenant activity at Fort Monmouth, N.J., has prepared an environmental assessment prior to the construction of a new US Army Pulse Power Center in Camp Charles Wood, a sub-post of Fort Monmouth.

2. This proposed unique facility is intended for the development and evaluation of high power/high voltage (HP/HV) components and sub-systems for military applications. The special features of the proposed facility are aimed at meeting the continually expanding needs of the Department of Defense (DOD). Absence of the proposed facility would jeopardize this country's defense capabilities, by severely restricting DOD mission accomplishments.

3. The Environmental Assessment documents the environmental, safety, and DOD mission considerations of the proposed action as well as of the potential alternative sites/actions.

4. Evaluation of the proposed action has not identified any environmental sensitivity of the proposed site which would result in significant degradation of the human environment at the proposed site by the taking of the proposed action.

Alternative sites/actions which had been considered in the assessment were found to lack the necessary features required for anticipated DOD missions.

5. The Environmental Assessment provides the basis for the conclusion that the proposed action is not expected to result in a significant adverse impact on the human environment, nor is it expected to be environmentally controversial. Army policy requires environmental evaluations as a prerequisite to military construction and new weapon systems development, serving to insure that national environmental goals are attained. The Environmental Assessment is available for review upon request from:

Commander
US Army Communications-Electronics Command
ATTN: SELHI-EH-EV
Fort Monmouth, New Jersey 07703

II. ENVIRONMENTAL ASSESSMENT

A. INTRODUCTION -

The following Environmental Assessment, supporting a Finding of No Significant Impact (FNSI), has been prepared prior to the proposed action and in accordance with the requirements of Army Regulation (AR) 200-2, Environmental Quality, Environmental Effects of Army Actions, 1 September 1981. The basic objectives specified in AR 200-2 are to plan, initiate and perform all actions/programs with consideration given to minimize adverse effects on the quality of the human environment without impairment to the Army mission. The scope of this assessment covers the proposed construction and operation of a new US Army Pulse Power Center to be located in Camp Charles Wood, a subpost of Fort Monmouth, New Jersey.

B. PURPOSE OF PROPOSED ACTION -

The mission of this proposed unique facility is the development and evaluation of modular components and subsystems for military applications. The four major technology areas are directed energy beam weapons, laser pulsers and optic and microwave transmitters. High power/high voltage (HP/HV) components and subsystems are required for such weapon systems as particle beams, high energy lasers and high energy microwave systems. These systems could not and cannot be developed and tested without the capabilities of this Electronics Research and Development Command (ERADCOM) facility. It is the focal point of all three services for evaluation of pulsed power components and will be used by a number of military contractors to conduct tests during component and HP/HV subassembly development. The special features of the proposed new building are aimed at meeting the continually developing needs of the Department of Defense.

C. NEED FOR PROPOSED ACTION -

The proposed facility is urgently needed for the following reasons:

1. The limited space of the existing facilities at the Evans Sub-Post impedes progress. The HP/HV laboratories now share the same area. Each job/experiment requires frequent assembly and disassembly of massive elements of pulsed power systems. This takes an inordinate amount of time and seriously limits mission accomplishments.
2. The present commercial power lines limit the operation of high power testing at the present facility.
3. The present World War II type wooden structures have no special safety features such as fire protection or area interlock systems. This deficiency results in a calculated, but limited, risk to personnel and equipment.

4. The lack of adequate shielding causes electromagnetic interference with commercial radio, television and aircraft communications and navigation, plus the proximity of residences (as close as 60 feet) to the current facility may cause undue exposure to electromagnetic radiation. The lack of adequate shielding also makes it necessary to stop the testing of sensitive components during periods of potential observation from foreign collection platforms. This fact reduces testing by a substantial amount and could reduce it further should frequency of observation increase.

5. The negative long-term economics of operating and maintaining an outdated temporary pulsed power facility, as well as the immediate need for expansion of this unique facility to meet the growing Department of Defense requirements, require serious consideration of a new facility.

D. DESCRIPTION OF PROPOSED ACTION -

1. Description of Project:

The proposed new building would be a 40 foot high bay, pre-engineered steel structure, 60 feet wide and 120 feet long, without windows, adjoining a two-story laboratory/office building, 50 feet wide by 150 feet long, constructed on a slab on grade. The high bay area will be divided into two test stations each with a separately enclosed control room. An Electromagnetic Interference/Radio Frequency Interference (EMI/RFI) shield will be provided on the high bay interior to achieve a Faraday cage. This will prevent conduction and radiation of high frequency "noise" into the surrounding environment. Overhead door access and 20 ton bridge cranes will be provided for each high bay test station. Electrical safety interlocks shall be installed on all exit points to maintain integrity of the EMI/RFI shield.

The adjoining two-story laboratory/office building shall be of standard design with a pre-engineered steel exterior. The entire test lab facility is to have a self contained heating and air conditioning system, along with a humidity and dust control system. Environmental safeguards are designed into the facility. Any spills on the floor of the high bay area will be collected and stored in a separate holding tank. This tank could also be used for chemical waste generated in the support laboratory.

An outdoor substation /yard will contain power supply components. The yard will be completely fenced with vehicle access gates and contain an oil sump of sufficient capacity to contain a spill from the largest component. Power to the yard will be supplied via underground cable from an adjacent 34.5 KV commercial source. Water, gas, sanitary sewer and storm sewer services are available for tying in of the proposed facility.

Heating will be by an individual oil fired plant supplemented by heat recovery contribution of the operational electric energy. Cooling will be accomplished by a 160 ton unit.

2. Description of Environmental Setting

The site chosen for the proposed facility is located on a three acre triangular parcel of unimproved land on the northeast corner of Pearl Harbor and Pine Brook Roads, (See figure 1). The site is not within the 100 year flood plain. The proposed building will contain 22,000 square feet, a third of that constructed with a 40 foot ceiling (See figure 2) and would front on an existing dirt road. The building would be located on the south side of this road and the parking lot would be located on the north side of the road. Approximately 50% of the site is grassed, 30% is wooded and 20% is bare sandy soil. The nearest housing is 2500 feet away. The lands south of the proposed site are located in the Borough of Tinton Falls and are zoned industrial. The Garden State Parkway, a dualized eight lane major highway, rises above the surrounding land and runs parallel with Pearl Harbor Road approximately 200 feet to the west. The proposed site is already serviced by an existing road and has good visibility from Pearl Harbor Road. Tractor trailers servicing the site will have easy access to nearby Routes 18, 35 and the Garden State Parkway South. Most of the roadways leading from the major highways to the site pass through industrial or commercial zones avoiding residential development.

Personal parking shall be restricted to a 40 space parking lot on the north side of the access road. There shall be no parking in front of the building. Tractor trailers would park adjacent to the building overnight. The parking lot will be lighted as will be the front of the building and the outside electrical yard.

Types of vehicles used on proposed site and the approximate percent of each type is expected to be as follows:

Automobile	90%
1/4 ton pickup	5%
2 1/2 ton truck	3%
20 ton tractor trailer	1%
20 ton crane	1%

The vehicular traffic will be accessed by Pearl Harbor Road.

A New Jersey State Traffic Bureau Survey was conducted in January 1979 on Pine Brook Road in the immediate vicinity of the proposed facility site. The average daily traffic was determined to be 2,020 cars with an average one hour peak of 190 cars. It is expected that these figures fairly accurately represent current typical traffic conditions on Pine Brook Road.

The proposed site's open areas and unimproved dirt trails and roads are currently used for driver training and as a dirt motorbike riding area.

The site of the proposed facility is not at nor in the vicinity of an historic site in or nominated for a register of local, state or federal historic places.

There are no known rare, exotic or endangered species of wildlife or vegetation either on or adjacent to the proposed site.

The topography on the site is rather uniform with a gentle roll. Elevations range from 60 feet near Pine Brook Road to 73 feet at the northern portion of the site. Drainage from the property is in two directions. The division in drainage directions lies about 500 feet north of Pine Brook Road, which forms the high portion of the property. Runoff on the southern portion flows toward the southeast while runoff from the northern portion of the property flows north. All drainage from the property goes into two branches of Wampum Brook and hence into the Shrewsbury River.

The proposed lab site is underlain by the Vincentown Formation of the Paleocene Age. This formation in Monmouth County consists of calcareous sand and less fossiliferous quartz sand of marine origin. The exact thickness of the formation at the proposed facility site has not been determined; however, the formation ranges in thickness from 20 to 100 feet.

The Vincentown Formation is one of about six or seven aquifers in Monmouth County utilized for potable water supply. It is considered to be an important source for domestic wells with yields ranging from 10 to 50 gallons per minute.

The soils present on the site are of the Eresboro Series consisting of a sandy loam with excessive natural drainage. The parent material consists of unconsolidated, stratified alluvial material deposited during the Quaternary period. This material is quite thin and overlies the Vincentown formation.

E. ALTERNATIVES CONSIDERED

1. Construct new facility at Evans. Main drawback to this alternative is the relative isolation from main activities of Fort Monmouth, which results in a complete lack of support services as well as unique security problems. The distinct possibility of future vacation of the rest of the Evans area would further aggravate the above deficiencies due to increased isolation.

2. Move the entire Evans Pulse Power operation to an existing building in Camp Charles Wood. The only existing buildings potentially suitable for the operation of the facility at the required levels of technology, safety, security and efficiency would be building 2700 (Hexagon) and building 2525. However, careful review of operational, construction and cost problems eliminate the Hexagon from site consideration. While building 2525 meets some of the operational requirements, the remaining requirements including mission expansion would require extensive modification which would easily exceed prudent investment levels for this aged, modified warehouse.

3. Utilize a facility operated by private industry in order to accomplish mission objectives. Such a private facility does not exist anywhere within the continental United States. Furthermore, private industry appears reluctant to invest in such a facility which would be strictly limited to military application and which would provide a minimal return on investment to industry.

4. No action alternative. Should the proposed facility not be constructed, the research and development work in the fields of directed energy laser, particle beam and microwave weaponry will not be of a level sufficient to meet critical planned objectives of the three services of the Department of Defense.

F. ENVIRONMENTAL IMPACT OF PROPOSED ACTION AND ALTERNATIVES

1. Proposed Action. The proposed project has been assessed and is not expected to have a significant impact on the existing human environment.

(a) Electromagnetic and Radio Frequency Interference (EMI/RFI). The EMI/RFI shielding will abate impact on the human environment to the extent that any broadcast emissions from the building will not exceed 1 watt of power; the equivalent of the power of a citizens band radio transmitter. Therefore, it is concluded that there will be no significant impact on the human environment.

(b) Water Quality. Surface drainage from the proposed site will be collected by storm drains and subsequently discharged into the Shrewsbury River via two branches of the Wampum Brook. This is not expected to have a significant impact on surface water quality. Chemical wastes generated by the proposed site activities as well as oil spills from the electrical yard will be effectively isolated from the environment and will not impact on the quality of either surface or ground water.

(c) Air Quality. Neither the operation of the oil-fueled heating plant nor the vehicular activity at the proposed site are expected to have a significant impact on the human environment.

(d) Solid and Hazardous Waste. Collection, storage and disposal of all wastes generated at the proposed site will involve environmentally sound methods and will comply with all applicable local, state and federal laws and regulations. Therefore, no significant impact is expected on the human environment.

(e) Land Use. The current use of the proposed site is driver training and minibike area. The proposed construction of the new facility is not expected to have a significant adverse effect on these uses since the site occupies a relatively small portion of the total area available for such uses. In fact, the proposed facility and associated landscaping and formalized land use are expected to have a beneficial effect on the immediate environment from the standpoint of soil erosion and general site aesthetics.

(f) Noise. The electrical and general work noises associated with the missions within the proposed facility will be effectively abated by acoustical insulation. Exterior noises emanating from the electrical yard and vehicular activity are expected to have no significant impact on the human environment, particularly since the nearest residences are 2500 feet away from the proposed site.

(g) Flora and Fauna. No endangered species of plants or animals have been identified in or near the proposed site. The grass and general landscaping which will be provided should adequately offset the effects of construction on this site.

(h) Historical/Archaeological Sites. No sites of historical or archaeological significance have been identified on or immediately adjacent the proposed site.

(i) Traffic. The New Jersey State Traffic Bureau had surveyed traffic volume on Pine Brook Road in January 1979. The survey revealed average daily traffic of 2,020 cars with an average one hour peak of 190 cars.

Proposed facility staffing is estimated at 35-40 employees, working an eight hour day. No public transportation is available at this site and for purposes of this evaluation carpooling is neglected. There are three possible directions to the proposed facility. South on Pearl Harbor Road; West on Pine Brook Road from Hope Road; East on Pine Brook Road from Wayside Road. Traffic from 40 cars will be assumed to divide equally in the three directions, thereby, providing an estimated 6.6% additional traffic volume at the peak hour on Pine Brook Road. Traffic volume contribution by the proposed facility to the other approach roads would be expected to be of similar magnitude. On an average daily basis the additional contribution would be approximately 0.6%. Note that although traffic volume figures from the Traffic Bureau reflect 1979 figures, it is expected that traffic volume would remain virtually unchanged by the time construction of the proposed facility would be completed. Therefore, it is expected that this aspect of the proposed facility would have no significant impact on the human environment.

(j) General. The adjacent areas contain office, laboratory and warehouse facilities with associated automobile parking and activity similar in nature to the proposed facility and with a similar degree of impact on the human environment. This proposed facility is totally consistent with current land use of the immediate surrounding area, associated with Department of Defense activity, as well as being consistent with existing zoning in the private sector along Pine Brook Road.

2. Construct new facility at Evans. The net environmental impact of a new facility at Evans would be similar in degree and scope to that proposed for Camp Charles Wood. The proposed new facility, if constructed at Evans, may improve the overall human environment particularly from the standpoint of greatly improved EMI/RFI shielding as well as protection of surface and ground water contamination from potential oil spills in the electrical yard.

Due to present and future mission requirements as discussed earlier, such an alternative is not considered a viable one.

3. Move entire Evans' Pulse Power operation to an existing building in Camp Charles Wood. The net environmental impact of such a facility would be identical to that of the proposed action. No additional environmental benefits would be realized from this alternative action. Due to the specific deficiencies and limitation inherent in this alternative, further consideration has not been given.

4. Utilize a facility operated by private industry. The net environmental impact of such an alternative would be expected to be similar to the proposed action. However, since such a private facility does not exist, the environmental setting in which one would exist is unknown and hence a precise environmental impact cannot be evaluated. Furthermore, such a private facility is not expected to be constructed in the foreseeable future due to lack of adequate investment incentive as earlier discussed.

5. No action alternative. If mission requirements were, out of necessity, to be provided within the existing facility at Evans, safety and environmental factors would remain unchanged. A significant deterioration of safety conditions would be expected as power requirements of the projects would increase and the aged wooden structures would continue to deteriorate. Protection of the human environment would increasingly become more difficult should mission workloads and requirements accelerate as is anticipated. This is the least favored of all alternatives from all perspectives considered.

G. AGENCIES AND/OR PERSON CONSULTED

1. Mr. Stephen Levy, Chief, Pulse Power Technology Branch
Power Source Division, ERADCOM, Fort Monmouth, New Jersey
2. Mr. John Bushnell, Master Planner, Division of Engineering & Housing,
Fort Monmouth, New Jersey
3. Mr. Robert Huguley, Principal Environmental Planner
Monmouth County Planning Board,
Freehold, New Jersey
4. Mr. L. E. Nickels, Nickels Engineering, Inc.
New Berlin, Wisconsin
5. New Jersey State Traffic Bureau
Trenton, New Jersey

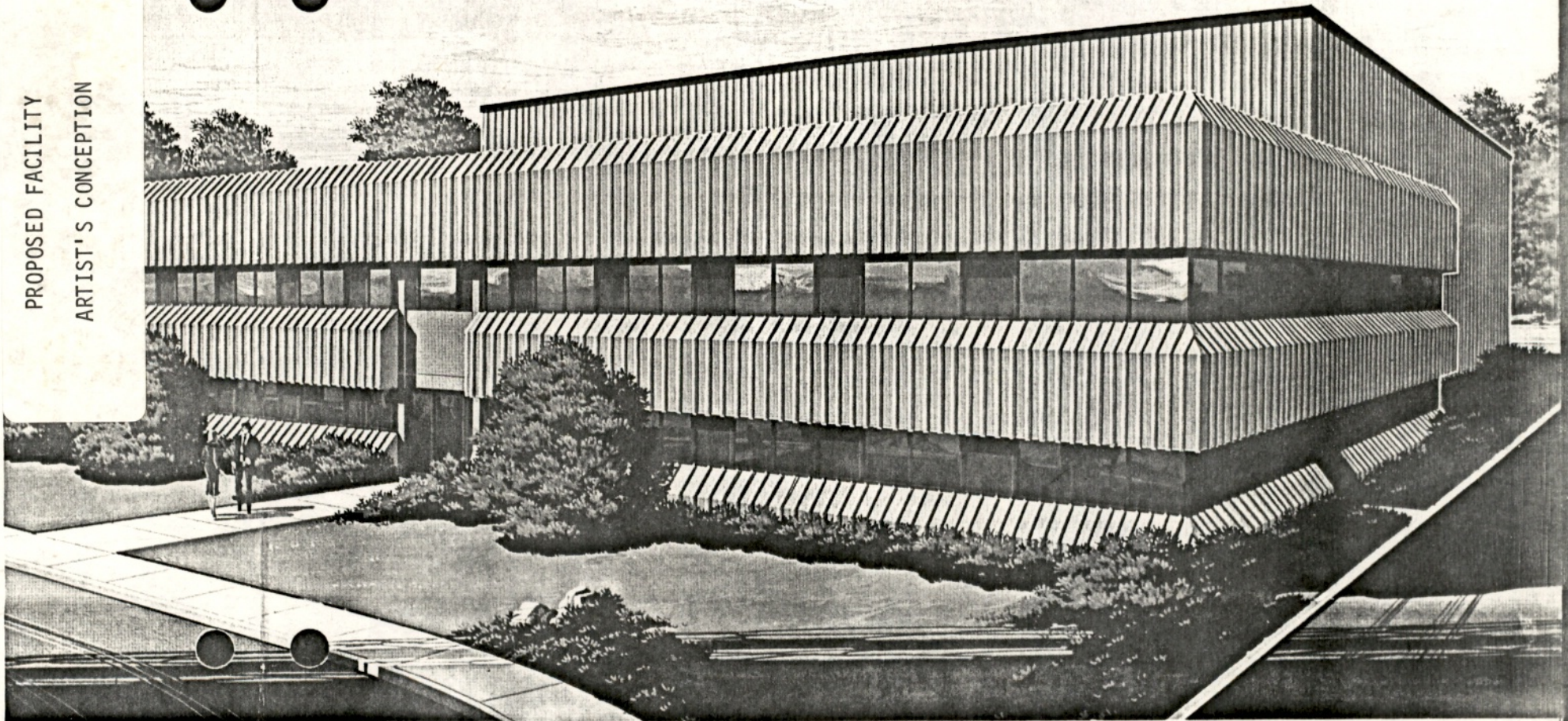
H. CONCLUSION

The proposed action is not expected to result in a significant adverse impact on the human environment nor is it expected to be environmentally controversial. Therefore, an environmental impact statement is not required and a Finding of No Significant Impact (FNSI) has been prepared.

Pulse Power Center

PROPOSED FACILITY
ARTIST'S CONCEPTION

INCLOSURE 2



**Electronics Research and Development Command
Fort Monmouth, New Jersey**