MORTON HOFFMAN AND COMPANY, INC.
URBAN AND ECONOMIC CONSULTANTS

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IMPLICATIONS OF A POWER PLANT LOCATED ON THE BAINBRIDGE SITE FOR MARKETABILITY OF REMAINING PORTIONS OF THE TRACT

Prepared for:

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Prepared by:

Morton Hoffman and Company, Inc.
Urban and Economic Consultants

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I. INTRODUCTION

As stipulated under our contract with the Maryland Department of Economic and Community Development, this report is prepared in order to assist the Department and the Cecil County Commissioners in judging the suitability of locating a fossil fuel or nuclear power plant on surplus portions of the Bainbridge Naval Training Center Site. Over the next few years, the Department of Defense will release approximately 1,150 acres at Bainbridge for reuse. The Power Plant Siting Program of the State of Maryland is proposing the location of a fossil fuel or nuclear plant occupying up to approximately 525 acres in the north central portion of the site, leaving 625 acres for reuse for industrial, residential, and/or other types of reuse. The question examined in this report is the degree to which partial use of the site for a fossil fuel or nuclear generating facility would aid or hinder the marketing of the remainder of the tract for other appropriate uses. In undertaking this evaluation over the relatively brief time period available, the consultant relied upon literature research and interviews with utility company personnel, industrial and other developers, professional and trade association officials, real estate brokers, and Federal, state, and county government agency representatives in a wide variety of locations

The conclusions presented here are by no means definitive as the experience record of multiple use development adjacent to electrical generating sites is extremely limited. Research has yielded mainly instances to date of adjoining recreational/open space uses planned in conjunction with power plant development, although some innovations with regard to industry are beginning to occur. Other findings represent: (1) judgments of interviewees and (2) the consultant's evaluation of how fossil fuel plants have historically developed and impacted adjacent uses and how government and private institutions have accommodated and responded to the planned siting of nuclear reactors.

Sections III-A and III-B of this report describe characteristics of power plants that may act as deterrents to certain kinds of development in land adjacent to a power plant. Sections III-C and III-D describe potential advantages to be derived from a location near a power plant and possible advantages to Cecil County associated with a power plant. Section IV summarizes the attitudes of selected interviewees in the land development field toward development near a power plant. Section V presents the preliminary marketability and development conclusions.

II. SUMMARY OF FINDINGS

The immediately following paragraphs summarize briefly the consultant's judgment of the impact of a nuclear or fossil fuel plant on reuse of the remainder of the Bainbridge site insofar as preliminary conclusions may be drawn from the survey.

1. Recreational/Open Space Uses

There does not appear to be any problem in utilizing for recreational or open space use all or part of the balance of the Bainbridge site not devoted to a nuclear or fossil fuel plant.

2. Agricultural Use

Agricultural use (exclusive of dairy farming, if a nuclear plant is located on the site) could take place on available portions of the Bainbridge tract.

3. Commercial and Office Uses

Due to environmental effects--emissions and aesthetic features (stacks, cooling towers, storage areas, wastes, etc.) of both nuclear and fossil fuel plants--there may be some problems encountered in marketing portions of the Bainbridge site for government or private office or commercial purposes. These do not presently appear to be insurmountable,

particularly should the site have strong competitive advantages for such uses. Population density limits used in evaluating power plant sites by the Atomic Energy Commission (AEC) would have to be met and could possibly constrain the volume and intensity of development. These standards are somewhat flexible, but study to date by the Power Plant Siting Program's consultant suggests that they could limit development on the Bainbridge tract. They require further investigation in subsequent phases of this consultant's study. Finally, there would have to be adequate safety plans to assure emergency evacuation of the working population on the site. Current practice, according to AEC officials, is to assign costs, if any, of special safety measures to the utility plant operators.

4. Residential and Institutional Uses

Residential and/or institutional uses should be considered for the Bainbridge tract. Developers of residential and/or institutional uses with a resident population might be reluctant, at least initially, to select the Bainbridge tract. Potential users might regard negatively the aesthetic and environmental characteristics of both a nuclear and fossil fuel plant, particularly if other sites of equal merit are available. Furthermore, public concern about safety near a nuclear plant, whether justified or not, might cause residential developers to regard marketability as a problem requiring more than normal promotional efforts. Finally, AEC population density standards, without precluding some residential use of the site, could possibly limit the volume and intensity of such development.

5. Industrial Use

National experience that the consultant has learned of, to date, indicates that there is no significant obstacle to the location of industry adjacent to either fossil or nuclear fuel plants with the following exception. The location of industries storing or processing explosive chemicals, flammable or toxic gasses or munitions would not likely be suitable because of AEC safety regulations.

There are possibilities that low grade waste heat of industrial quality produced by a power plant and the availability of a high amount of electricity could attract to Bainbridge industries needing these resources. Aluminum processors, for example, require large amounts of electricity, and certain metal processors make use of intensive heat. In the latter case, the high energy user could be located anywhere within a plant's power grid, and other market considerations, such as transportation access, site characteristics, and the like would probably be more important in site selection than location adjacent to a power plant. In the former case, there is insufficient experience with waste heat technology and economics to demonstrate clearly the benefit of location adjacent to a power plant. However, such concurrent use does represent a possible benefit of a power plant. In addition, the improvement of rail access to the site being considered for a fossil fuel plant, may serve as an attraction for industry since Bainbridge currently lacks this important asset.

6. General Conclusions

In summary, it appears from the analysis to date that the location of a nuclear or fossil fuel power plant at Bainbridge would not preclude marketing or development of the remaining available portions of the tract for any major category of land use. Most industry would likely be neutrally affected by the plant location except insofar as a plant offered rail access. Residential, office, and commercial marketability might depend on stronger than normal promotional efforts to overcome concerns about safety near a nuclear plant, and maximum effort would have to be made to minimize any plant aesthetic or emission characteristics that could potentially be unattractive. Recreational use would not be adversely affected, and potential for utilization of buffer areas for recreation and open space exists. Population density limits of AEC could constrain the combined volume and intensity of overall development of the tract.

Given these findings, Cecil County would have to weigh the considerable tax advantages that would accrue from a plant. Developers would have to weigh the locational benefits of other sites in the county against Bainbridge in terms of access, topography, labor supply, population service areas and the like, which will likewise be this consultant's assignment in related studies of the general marketability of the Bainbridge tract. On balance, at this time, locational factors appear more important for marketability than the presence or absence of a nuclear or fossil fuel plant on the Bainbridge tract.

It should be noted, finally, that the large buffer area required for the plant and the site presently proposed for the plant consumes the central portion of the surplus area of the Bainbridge tract. To some extent, this location limits flexibility in planning the use of the remaining portions of the tract. However, at this point in the study, it cannot be stated that the location unduly constrains the use of the remainder of the tract for multi-use development.

III. POWER PLANT CHARACTERISTICS

This section examines first in III-A and III-B factors affecting, possibly adversely, the marketability and development potential of the Bainbridge site: the site and space requirements of nuclear and fossil fuel plants and nuisance characteristics of electrical generating plants. Sections III-C and III-D describe factors possibly enhancing the development of land adjacent to power plants: the potentially increased revenues coming to the county which could in part or whole be devoted to development activities to enhance complementary relationships between a power plant and other land uses and power plant support for related uses.

III-A. Power Plant Site Plan Requirements

The State of Maryland's Power Plant Siting Program is presently proposing to reserve up to approximately 525 acres of the Bainbridge site for use as a power plant site.

Of this 525 acres, actual power plant space requirements as outlined in the Preliminary Investigations of a Potential Power Plant Site in Cecil County, Maryland range from 178 acres for a 2000 megawatt (MWe) 1/ oil fired plant to 476 acres for a 4000 MWe coal fired plant. The space requirement for both a 2000 MWe and 4000 MWe nuclear fuel plant is 320 acres. 2/ The net difference between the actual plant space requirements and 525 acres proposed by the state for a plant site represents land that would be utilized as a buffer zone in the case of the fossil plant or a safety zone, known as the "exclusion area," in the case of a nuclear plant.

The exclusion area is one of three major site safety concepts utilized by the AEC in evaluating the safety of potential sites for the location of nuclear reactors. These site safety concepts--the "exclusion area," the "low population zone," and the "population center distance," defined in the following paragraphs--do not prohibit development of lands adjacent to nuclear facilities but do constitute a framework defining in part the opportunities and constraints for development of land adjacent to nuclear facilities. 3/

In the exclusion area which immediately surrounds a nuclear reactor, the licensed operator of the reactor facility has exclusive control over all activities. Residential uses, location of gas transmission lines, munitions, explosive chemicals, and toxic gas operations are prohibited in this area. Other activities may be permitted in this area, for instance, open space or recreational uses, provided no public health or safety hazards will result. As a general policy the State's Power Plant Siting Program proposes to maintain the exclusion area as a restricted use buffer zone (with

1/ "MWe" is an abbreviation of megawatt electric. One megawatt equals 1,000 kilowatts. Therefore, 2,000 MWe equals 2,000,000 kilowatts.

2/ Report prepared for the Power Plant Siting Program by Engineering Sciences, Inc. Volume 1 Summary, February, 1974. See Table IV-2, p. IV-6.

3/ See Appendix A, for full AEC definitions of "exclusion area," "low population zone," and "population center distance."

limited recreation only) should a nuclear plant be sited at Bainbridge. Engineering Sciences, Inc., has determined that the exclusion area at Bainbridge should be within a 0.4 mile radius of the reactor.

The low population zone immediately surrounds the exclusion area and should contain no greater population than that which could be properly evacuated or sheltered in the event of a serious accident at the reactor site. There is no exact population density prescribed in AEC guidelines for permissible population densities as it is recognized that transportation, communication facilities, effective advance planning, coordination and cooperation of involved agencies and the concentration or dispersion of transient, worker, and residential population in the area around nuclear facilities will necessitate the review and evaluation of each case on its own merits. However, in past practice, it appears a limit on population density of approximately 400 persons per square mile has generally been considered the upper figure acceptable by AEC. Engineering Sciences, Inc., has defined a low population zone as being within 2 miles of a Bainbridge reactor.

Recognizing the importance of density of population at particular points (municipalities in particular) the AEC has a third site safety concept utilized in the evaluation of proposed nuclear reactor sites, the population center distance, which is the distance from the reactor to the nearest boundary of a municipality with more than 25,000 population. Engineering Sciences, Inc., has determined that this boundary should be located about 2.7 miles from the reactor and that there is no population center of the magnitude of 25,000 within this radius.

A relative indicator of the danger of radiation accidents at nuclear facilities is found in AEC requirements for evacuation plans for areas extending from the exclusion zone to a distance of up to four miles from the reactor. These areas must generally be evacuated in case of an accident within a 2 hour period in the exclusion area to within 30 days at the most distant point to avoid harmful doses of radiation.

Discussion with AEC personnel indicates that the agency is moving towards adoption of a new standard to be utilized in evaluating proposed nuclear plant sites. This standard would complement or perhaps replace "low population zone" and "population center" concepts. Essentially, the AEC would view favorably sites for which population densities at defined radii from a reactor do not exceed 500 persons per square mile (including permanent residents and an equivalent working population) at the time of initial plant operation and are projected not to exceed 1,000 persons per square mile over the assumed 40 year life of the nuclear power plant. 1/

Engineering Sciences, Inc., has estimated that the 1970 population density was 1,760 persons per square mile within one mile of a potential Bainbridge reactor and 645 persons within two miles. With the closing of the Naval Base (representing a loss of some 4,750 persons), the firm has projected population densities by 1980 of 302 persons per square mile (or 950 people) within a one mile radius of the reactor and 414 persons per square mile (or 5,200 people) within two miles. 2/ These estimates do not take into account any significant reuse of the site. It can be seen that a tripling of the 950 persons projected within one mile (essentially on the Bainbridge tract) could yield densities approaching the AEC limit of 1,000 persons per square mile. Therefore, although more thorough investigation is required both of Engineering Sciences' estimates and AEC flexibility in density limits, these standards could potentially be a significant constraint on the volume and intensity of redevelopment at Bainbridge.

1/ Interview conducted with Mr. A. P. Kennecke and Mr. William F. Nischan, Site Safety Group, U.S. Atomic Energy Commission, May 2, 1974.

2/ Engineering Sciences, Inc., Preliminary Investigations of a Potential Power Plant Site in Cecil County, Maryland, February, 1974, p. IV-4.

III-B Aesthetic and Environmental Features of Power Plants

Certain aesthetic and/or environmental characteristics of power plants may be perceived as disadvantages by developers of adjacent land. In the instance of a coal fired fossil fuel plant, the nuisance or environmental factors that may be negative influences for certain kinds of adjacent uses begin with the arrival of coal, most likely by railroad car. The noise of train traffic, dirt and dust, associated with unloading and storage create significant visual impairments as would the area, up to 200 acres, required for coal storage. Water runoff from the 200 acre coal storage area might create significant drainage, visual, or erosion impacts. If it is built like most fossil fuel plants, the generating facility occupying from 20 to 40 acres would not be an aesthetically pleasing structure and would be in marked contrast to the rural Cecil County setting. A coal fired fossil fuel plant requires from 13 to 51 acres for storage of waste materials (ash and limestone slurry) on a temporary basis. The quantity of solid waste produced in a coal fired boiler is extensive. For instance, a 1000 MWe plant would produce 586,100 tons annually of wet coal ash. The movement of these materials to permanent disposal sites will create additional dust, dirt, and noise in rail or other transit process.

A fossil fired plant may produce particulate, sulfur dioxide and nitrogen oxide stack emissions. These emissions constitute potential odor, visual, and health impairments for the site and immediate area. It is assumed that compliance with relevant state and Federal air pollution control regulations will minimize these emissions.

Gas and oil fired plants will not require as much fuel storage space as a coal fired plant. A nuclear plant will not produce the same particulate and gaseous emissions as a fossil fuel plant. However, the possibility does exist that radioactive wastes, for instance tritium, may accidently be released as a waste emission into the air.

The nuclear plant itself, occupying from 100 to 200 acres, may be viewed by some as an aesthetic impairment, constituting a stark contrast to the rural Cecil County setting.

Both nuclear and fossil fuel plants may have cooling tower structures, occupying from 20 to 100 acres, and rising from 90 to 500 feet in height. In addition, coal fired plants may have waste emission stacks rising as high as 1,000 feet. At a coal fired fossil fuel plant, the waste emission stack will have to exceed in height the cooling tower in order to minimize the potential for mixing of the "plumes," or emissions from cooling and waste stacks, which could result in "acid rain out," the combining of sulfur dioxide and waste steam emissions. These plumes, rising as high as 1,000 feet over and above the stack or tower will constitute significant visual impacts. Particulate and gaseous emissions from the stacks and blowdown, or steam condensation, from the cooling towers may constitute significant detriments to potential users of adjacent lands. On occasion, cooling tower blowdown, when correlated in time with appropriate meteorological conditions, may lead to fogging and/or icing which may pose a safety and visual problem for development and transportation in the site area. Stacks and cooling towers associated with either fossil or nuclear fueled plants will be sources of glare in the immediate vicinity.

Primarily visual and aesthetic features associated with storage, railroad operations, plant designs, plumes, cooling towers and stacks will be permanent features of a power plant site. Other environmental features, such as "acid rain out," noxious concentrations of sulfur dioxide, and particulate matter fallout from emission stacks have a calculated frequency of occurrence. Engineering Sciences, Inc., for instance has determined that there is little chance of "acid rain out" occuring at the site. In a similar vein, Engineering Sciences, Inc., concludes that air quality impacts of fossil fuel plant emissions at the site will fall substantially within the permissible limits of state and

Federal air quality standards. The impact of pollutants on the immediate site and surrounding vicinity will be dependent on stack height and existing ambient air quality and meteorological conditions. These aesthetic nuisance and/or environmental pollution factors may be perceived as disadvantages by developers of adjacent land.

III-C Impact on Local Tax Revenue

This section analyzes the potential range of property taxes that Cecil County might receive from a power plant. The taxes paid by a utility could be used by the county, among other objectives, to encourage multi-use development of the Bainbridge or other sites. Investment of utility property tax revenues on the Bainbridge site could, potentially, attract additional revenue generating land users to the site and/or adjacent lands.

This preliminary analysis of revenue to be generated by power plants is based on 1974 dollar cost estimates of construction of nuclear and fossil fuel plants. These construction cost estimates vary considerably as factors of inflation, additional design and construction requirements of the AEC and the Environmental Protection Agency, labor costs and productivity all combine to affect initial cost estimates for power plants.

Discussion with personnel in the Maryland Department of Assessments and Taxation indicates that one basis for determining assessable value of utility improvements is to utilize construction cost rather than market value. 1/

To determine the construction cost of fossil and nuclear plants, recent experience in the region and nationally was reviewed. The following general figures are utilized as a basis for arriving at construction costs: (1) fossil fuel plants, $325-$400 per kilowatt, 2/ and (2) nuclear plants,

1/ Interview with Richard Doolittle, Assessor of Utilities, Maryland Department of Assessments and Taxation, May 10, 1974.

2/ 1,000 kilowatts equal 1 megawatt.

$550 to $700 per kilowatt. These general figures are as of Spring, 1974 and are increasing significantly as time passes.

Table 1 indicates the construction costs, assessable value (utilizing the 60 per cent construction cost basis suggested by the State Utility Property Assessor), and revenue yield utilizing the fiscal year 1974 Cecil County tax rate of $2.50 per $100 assessed value. This rate does not include the $0.21 property tax levied by the State of Maryland.

In summary, the real property tax yield to the county, in constant 1974 dollars, based on construction costs, may range from $9.8 million for a 2000 MWe fossil fuel plant to $42.0 million for a 4000 MWe nuclear fuel plant. The County will realize revenue increments as portions of the power plant become operational over the construction period. The total estimated revenues in the table will not be realized until the entire improvement is made.

In addition to real property taxes, the County is also likely to receive revenues from certain fees and charges such as building permits, and tax revenue from the county income tax surcharge on employees working at the plant and residing in Cecil County.

III-D Power Plant Support for Related Uses

There are a number of characteristics of power plants which suggest that it might well be advantageous for compatible uses to be located adjacent to the utilities. These characteristics might provide benefits for the compatible uses, which would enhance the development potential of the Bainbridge site. Some of these characteristics involve by-products of power plant generation processes and are being tested experimentally. The latter would require analysis to determine economic feasibility and a close matching of utility and adjacent land use requirements.

TABLE 1

POTENTIAL CECIL COUNTY TAX YIELDS FROM A POWER PLANT
(In millions of constant 1974 dollars)

Type of Plant	Construction Cost[b/]	Assessed Value[c/]	Tax Yield to County[d/]
2000 MWe[a/] fossil	$ 650 - $ 800	$ 390 - $ 480	$ 9.8 - $12.0
4000 MWe fossil	$1,300 - $1,600	$ 780 - $ 960	$19.5 - $24.0
2000 MWe nuclear	$1,100 - $1,400	$ 660 - $ 840	$16.5 - $21.0
4000 MWe nuclear	$2,200 - $2,800	$1,320 - $1,680	$33.0 - $42.0

a/ One MWe, or megawatt electric, equals 1,000 kilowatts.
b/ Construction costs are based on Spring, 1974 estimates derived from interviews with power plant project engineers.
c/ Assessed value of utility plants is calculated as 60 per cent of the construction cost of the project.
d/ Based on 1974 tax rate of $2.50.

Source: Estimated by Morton Hoffman and Company, Inc.

1. Waste Heat

Approximately 60 per cent of the heat produced in generating electricity both in fossil and nuclear plants is dissipated in waste form into the air and water. Waste heat may be utilized where economically feasible for a number of purposes. It is used in power plants in Amsterdam and Paris to heat residential properties. In this country, a Nashville power plant (proposed) will heat the state government complex. Waste heat produced at a Midland, Michigan nuclear plant will be utilized in industrial processing at an adjacent Dow Chemical plant. Waste heat has been utilized in mariculture experiments at plant sites of the Southern California Edison Company and Connecticut Yankee Atomic Power. Waste heat has potential application for residential, institutional, commercial/office, agricultural, and industrial purposes. In general, waste heat from power plants is low grade heat and must be utilized within one mile of plant site in order to minimize technical and economic feasibility problems.

2. Access to High Voltage Electricity

The availability of increased quantities of electricity at the Bainbridge site might attract large electric users: aluminum, steel, petrochemical, and paper processors to the power plant site, or to the power service area. However, the availability of power in the service area, rather than proximity to the power plant site, is the more important locational consideration. The consultant has not, to date, been able to identify any instances where direct access to high voltage electricity influenced industries to locate adjacent to power plants.

3. Railroad Facilities Improvement

The improvement of railroad lines to transport coal or oil to power plants may serve to attract industrial users to locations in the vicinity of power plants. Railroad service improvement to a power plant in Anne Arundel County, Maryland, did, for example, lead to the

subsequent development of industrially zoned land contiguous to and owned by the Baltimore and Ohio Railroad.

4. Radioactive Materials Handling

The capability exists at a nuclear plant, providing the reactor operator wishes to develop its marketability, to provide services to industries and research agencies needing radioactive materials. For instance, a pharmaceuticals processor may need, or a cancer research institute may require, radioactive materials so treated at a nuclear facility. To date, no instances of such commercial operations associated with nuclear power plants have been identified.

5. Sulfuric Acid

Pilot programs have been run by a consortium of power companies to demonstrate the technical feasibility of utilizing sulfur dioxide scrubbers and related technology to extract this emission from the stack waste of fossil fuel plants, dry it, and market it commercially as, among other uses, an input for fertilizer production. Though technically feasible, demonstration plants have not successfully operated to date. Fertilizer manufacturers have a demonstrated interest in tapping this sulfuric acid source.

6. Fly Ash

Fly Ash, generated as a waste in coal fired plants, is potentially useful in the production of cinder blocks for the building construction materials industry. Research is underway to resolve technical problems with carbon content of fly ash to make it a reliable component of cinder blocks.

7. Buffer and Safety Zones

Nuclear and fossil fuel plants require safety or buffer zones. Often utility companies purchase land in excess of needs for exclusion areas around nuclear plants or buffer zones around fossil fuel plants. The existence of these land areas creates the possibility for compatible and complementary open space and limited access or open

recreational areas in the vicinity of both nuclear and fossil fuel plants.

8. Solid Waste

One characteristic of a fossil fuel power plant is that it can utilize certain proportions of combustible solid waste and operate at a satisfactory level of efficiency. Existing fossil plants in St. Louis, Chicago, Amsterdam and Paris, and proposed plants in Dickerson (Montgomery County, Maryland) and Nashville among others utilize combustible solid waste from municipal solid waste systems as complements to fossil fuel.

9. Waste Water

Fossil and nuclear fuel plants could use waste water from sewage treatment plants in the cooling of boilers or reactors. In turn, heated water from a power plant could be fed into the sewage treatment process to speed up certain treatment processes. This possibility is taken into account in the plans for the proposed Dickerson site in Maryland.

IV. ATTITUDINAL FACTORS AFFECTING DEVELOPMENT OF LAND ADJACENT TO POWER PLANT SITES

Potential site users, and knowledgeable brokers, and practitioners in the development field were asked to express their opinions about advantages, disadvantages, and possible developer attitudes in regard to locating in the vicinity of either a nuclear or fossil fuel plant. In each case the dimensions of the site, its location and the safety and nuisance implications of being located adjacent to an electrical generating plant were discussed. Power plant site planners (utility companies and the Atomic Energy Commission) were interviewed to determine the impacts on adjacent land use development of power plant siting. Findings on attitudes of possible users and investors toward development problems and potentials are reflected in the following paragraphs on recreational, commercial/office, residential/institutional, and industrial uses.

Interviews revealed no perceptions of negative attitudes regarding recreation development adjacent to power plants. Indeed, positive evidence was cited of complementary recreational use. Utilities have used adjacent property as recreation centers for employees. Tourist centers for public relations purposes, such as that at Calvert Cliffs and Peach Bottom, have attracted hundreds of thousands of visitors since their opening in 1969 and 1966, respectively. Instances of successful planning of adjacent land uses for the preservation of or expansion of recreational areas, not direcly in the exclusion area of a nuclear plant or operating grounds of a fossil fuel plant may be found, for example, near nuclear facilities at Plymouth, Massachusetts and New London County, Connecticut, and at fossil fuel plants in the Dallas-Ft. Worth and Houston, Texas area. Plans for the Dickerson site in Montgomery County, Maryland, call for multiple use and planned development of an environmental education park to include research, visitors, and educational facilities.

Interviews with developers and brokers of office and commercial facilities yielded the conclusion that there were no major attractions to a fossil or nuclear fuel plant unless there were related development potentials. On the other hand, these respondents did not preclude this possibility. In general, the opinion was that factors more important than closeness to a power plant for determining the desirability of office or commercial developments were topography, availability of transportation, centrality of location, and other marketing factors.

The conclusion of interviews with developers and builders familiar with residential development patterns was a qualified interest in sites located adjacent to a nuclear or fossil fuel power plant. However, developers anticipated increased difficulty in marketing such a site. It was felt that it may be necessary to carry out more extensive and innovative marketing programs in order to overcome public suspicion of and reservations about the dangers of nuclear plants and environmental nuisance characteristics of a fossil fuel plant. The relative benefits

to be derived from expenditures required on such an expanded promotional campaign would have to be weighed by the individual residential developer in terms of the costs of selection of alternative available sites in Cecil County or the surrounding area. Reservation was also expressed about what complementary and simultaneous development activities would be taking place in Cecil County and the surrounding region to attract prospective residents to this site or any site in the county.

It should be noted that significant institutional developments in the environs of nuclear plants exist in Humboldt County, California, and Windham County, Vermont.

Industrial developers reflect in interviews a growing sophistication in their attitudes towards the safety hazards affecting plant operations and personnel in the vicinity of nuclear reactors. Industrial developers do not perceive any problems in locating in areas adjacent to fossil fuel plants. More important locational factors are the relationship of alternative industrial sites to transportation routes, market areas, and labor force.

The kinds of industry most likely to be attracted to the vicinity of an electrical generating plant, particularly fossil fuel plants, are heavy industries such as steel, aluminum, petrochemicals, paper or plastics. Some of these heavy industries may be likely to have their own nuisance or environmental impact qualities that will require effective monitoring and control by state and local regulatory agencies.

V. CONCLUSIONS

On the basis of this preliminary investigation, there appear to be no obstacles relating to development of the land adjacent to the proposed power plant site in Bainbridge for most development purposes, recreation/open space, industrial, residential, office, commercial, or institutional with certain specific exceptions. Good planning would dictate that institutional uses, intensive care hospitals for

instance, where there is a high concentration of individuals with respiratory ailments, should be avoided if the site is utilized for a fossil fuel plant. In the case of nuclear plants, dairy farming, explosive manufacturing and gas processing must be excluded from consideration. In the case of all other uses, the constraints are local preferences, attitudes of users, and safety regulations of state and Federal agencies.

Insofar as this preliminary investigation has been able to yield results on the potential of land development adjacent to power plants they are that, in general, industrial, recreational, residential, and commercial developers express a qualified interest in being on the same site as a power plant. But the factors finally influencing development of the Bainbridge site will be general marketing factors such as topography, the quality of transportation and utility systems, characteristics of the nearby labor force, adequacy of housing, sufficiency of recreation, cultural, educational and other community institutions and the relationship of Bainbridge to growth and market areas in the immediate vicinity and northeastern megalopolis. This was frequently reflected in comments by those interviewed.

No respondent discounted entirely the possibility of occupying land adjacent to a fossil fuel plant. The general indication is that land users are becoming more sophisticated about the realities of nuclear plant safety and are accepting it as a reasonable risk. This sentiment was particularly strong as regards industrial users, who, it was generally felt, did not exclude proximity to a generating station in their search for suitable industrial sites where land could be assembled, ready access to transportation to and from markets achieved, and access to materials and labor force could be assured.

It should be re-emphasized that there appears to be very limited experience in planned multiple-use development around power plants in this nation. Therefore, any expressions here should be understood as preliminary assessments of possible development, not the reaction of experienced developers to a related set of past development activities.

It is likely that a Bainbridge program of multi-use development would have to involve a pioneering marketing strategy to utilize to the fullest extent, industrial and other real estate broker contacts, and expanded staff capacity of the Cecil County Economic Development Commission, and appropriate support by various state agencies and programs.

At this preliminary stage of investigation, it appears that the location of a power plant at the Bainbridge site would not be a magnet to attract development to the site or immediate vicinity. On the other hand, the location of a power plant would not seem to pose insurmountable obstacles to development planning.

Another possible consideration would be the result of not locating a power plant at Bainbridge. In terms of marketability, the power plant may occupy about 525 acres of land on the site. The Bainbridge site may be divided by the location of the power plant site and the land available for other development alternatives may be reduced. Without the power plant site at Bainbridge, with its proposed central location, more land may be available for development and fewer constraints such as AEC regulatory approval, safety standards, and environmental pollution and nuisance factors, for development planning would exist. However, should the decision be made to not locate a power plant at Bainbridge, the County would forego a potentially large source of revenue. Furthermore, it does not appear that marketability of the site would be enhanced if no power plant were constructed.

APPENDIX A

AEC REACTOR SITE CRITERIA RULES AND REGULATIONS TITLE 10 CODE OF FEDERAL REGULATIONS PART 100 (10 CFR 100)

EXCLUSION AREA

"As used in this part: (a) "Exclusions area" means that area surrounding the reactor, in which the reactor licensee has the authority to determine all activities including exclusion or removal of personnel and property from the area. This area may be traversed by a highway, railroad, or waterway, provided these are not so close to the facility as to interfere with normal operations of the facility and provided appropriate and effective arrangements are made to control traffic on the highway, railroad, or waterway, in case of emergency, to protect the public health and safety. Residence within the exclusion area shall normally be prohibited. In any event, residents shall be subject to ready removal in case of necessity. Activities unrelated to operation of the reactor may be permitted in an exclusion area under appropriate limitations, provided that no significant hazards to the public health and safety will result.

LOW POPULATION ZONE

"(b) "Low population zone" means the area immediately surrounding the exclusion area which contains residents, the total number and density of which are such that there is a reasonable probability that appropriate protective measures could be taken in their behalf in the event of a serious accident. These guides do not specify a permissible population density or total population within this zone because the situation may vary from case to case. Whether a specific number of people can, for example,

APPENDIX A
(continued)

be evacuated from a specific area, or instructed to take shelter, on a timely basis will depend on many factors such as location, number and size of highways, scope and extent of advance planning, and actual distribution of residents within the area.

POPULATION CENTER DISTANCE

"(c) "Population center distance" means the distance from the reactor to the nearest boundary of a densely populated center containing more than about 25,000 residents."

APPENDIX B

INTERVIEWEES
BAINBRIDGE POWER PLANT SITE IMPLICATIONS STUDY
(April 23 -May 14, 1974)

John Baldwin, Senior Planner
Howard, Needles, Tammen and Bergendoff

Dennis Beran, Assistant Engineer
Dickerson Project
Potomac Electric Power Company

Frank Binswanger, Jr., Partner
Binswanger Enterprises (Leading Philadelphia industrial developer and broker)

Robert Boley, Executive Director
Society of Industrial Realtors

Melvin Bosley, President
Ward and Bosley (leading Harford County homebuilder)

Col. Lawrence Bowlby, Director
Planning, Calvert County, Maryland

Mr. Robert Bryson, Vice President and General Manager
Conowingo Power Company

Charles A. Casey, General Manager
Commercial Operations
Philadelphia Electric Company

Jerry S. Church, Director
Commercial & Office Development Council
Urban Land Institute

Ben Costin, Planner
Wilmington Metropolitan Area Planning Coordinating Council

Frank A. Cullen, Supervisor
Transmission Planning
Baltimore Gas and Electric Company

Richard Doolittle, Assessor of Utilities
Maryland Department of Assessments and Taxation

John Dorsey, Chief Engineer
Maryland Public Service Commission

Dr. William Eaton
Consultant on Energy

John Garrett, Special Assistant to the Director
Federal Power Commission

James Goodwin, Executive Director
Southern Interstate Nuclear Board,

Paul Greiner
Electric Energy Association,
Edison Electric Institute

Brian Grimes, Accident Analysis Section
United States Atomic Energy Commission

Damon W. Harrison, Commissioner
Kentucky Department of Commerce

Jack Hawthorne, Executive Vice President
National Association of State Development Agencies

Harry F. Hinkle, Area Development Department
Conowingo Power Company

Fred Hittman, President
Hittman Corporation

James Hooper, Commercial Attaché
The British Embassy

Fred Jeffers, Electrical Engineer
Baltimore Gas and Electric Company

Donald Jett, President
Jett Development Corporation (leading Harford County homebuilder)

A. P. Kennecke, Technical Coordinator
Site Safety Group
Directorate of Licensing,
United States Atomic Energy Commission

Richard H. Kent, Manager of Electrical Engineering
Electrical Engineering Department
Baltimore Gas and Electric Company

Charles H. Kohler, Jr., Engineer
Maryland Public Service Commission

John Larson, Vice President
Allegheny Power Company

Art Loeben, Director
Planning Commission, Montgomery County, Pennsylvania

Michael Lofton, Assistant Director
Division of Business and Industrial Development
Maryland Department of Economic and Community Development

Dr. Steve Long, Radiation Specialist
Power Plant Siting Program
Maryland Department of Natural Resources

James A. McComas, Jr., Director of Business and
Industrial Development
Maryland Department of Economic and Community Development

Ross J. McKeever, Assistant Director
Urban Land Institute

Bernard Manekin, President (Industrial and office
Manekin Corporation, Baltimore broker and developer)

William F. Nischan, Site Analyst
Site Safety Group
Directorate of Licensing
United States Atomic Energy Commisssion

Edward O'Donnell, Director
Wilmington Metropolitan Area Planning Coordinating Council

Mr. James Parker, Director of Finance
Calvert County, Maryland

William Pate, Assistant Secretary
Maryland Department of Economic and Community Development

Kenneth Perkins, Power Plant Siting Program
Maryland Department of Natural Resources

John Roper, Director Economic Development
Montgomery County, Maryland

Jerry Scoville, Manager
Nuclear Safety and Environmental Affairs Department
Potomac Electric Power Company

Coleman Smith, Occupational and Radiological Health Office
Oklahoma Health Department

David Sobers, Director
Office of Environmental Planning
Montgomery County, Maryland

Robert M. Sparks, Director
Office of Program Analysis
Maryland Department of Economic and Community Development

Vernon Strickland, Public Information Officer
Baltimore Gas and Electric Company

Robert Tate, President
Tate Engineering Industries, Baltimore

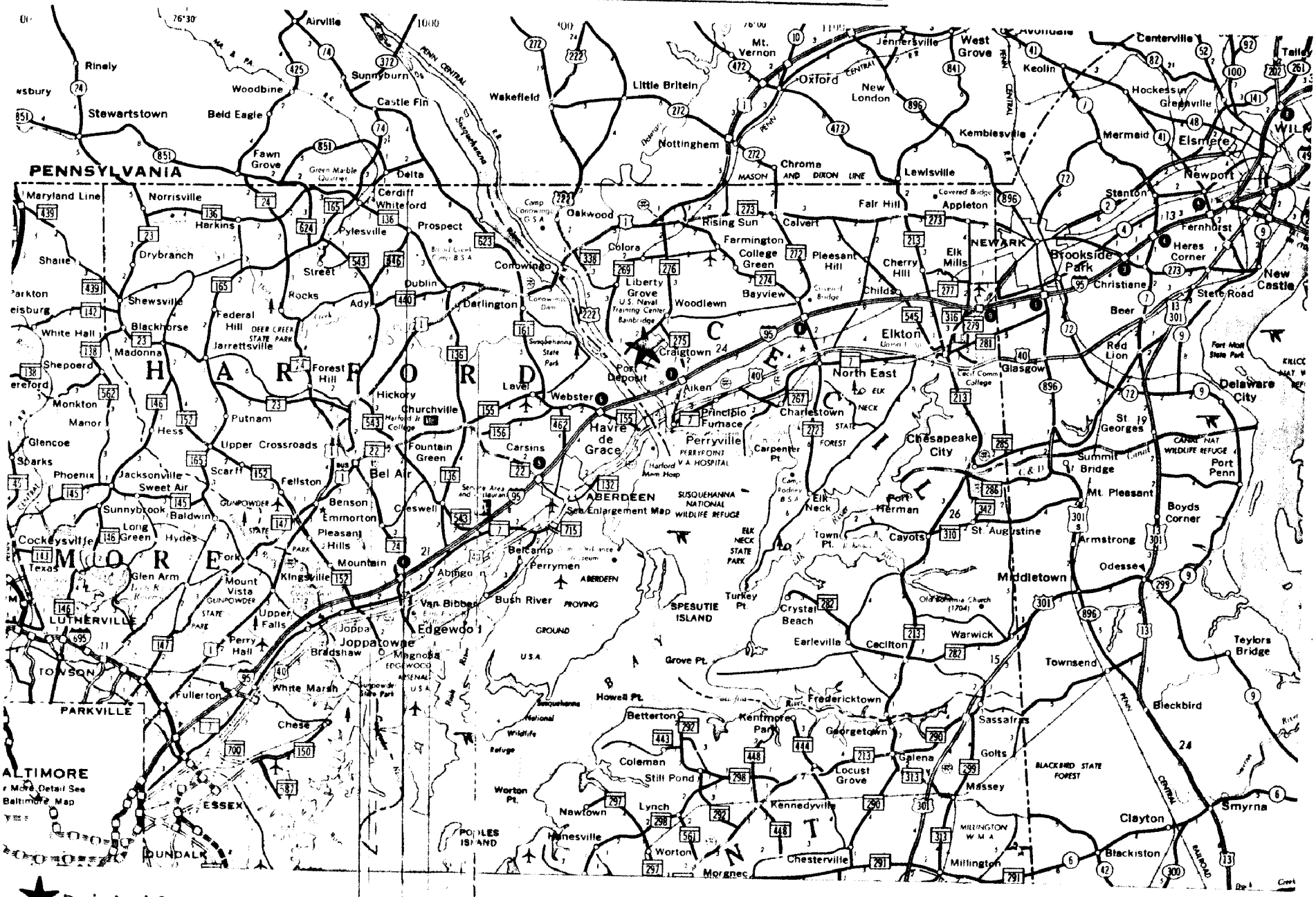
William Taylor, Area Development Director
Philadelphia Electric Company

James Thompson, Executive Vice President
Muscogee, Oklahoma Chamber of Commerce

Jack Vanderryn, Applied Technology Section
United States Atomic Energy Commission

MAP 1

BAINBRIDGE AND NORTHEASTERN MARYLAND



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