EA-0921; Environmental Assessment and FONSI Ambulatory Research and Education Center, Oregon Health Sciences University

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1.0 DOCUMENT SUMMARY

The Department of Energy (DOE) proposes to authorize Oregon Health Sciences University to proceed with the detailed design, construction and equipping of the Ambulatory Research and Education Center (AREC) on the campus of Oregon Health Sciences University. House Resolution 102-177 accompanying the FY 1992 Energy and Water Appropriations Act (Public Law 102-104) indicated that $10 million had been included in DOE's fiscal year 1992 appropriation to assist the Oregon Health Sciences University with construction of the Ambulatory Research Education Center. A grant was executed with the University on September 30, 1992. House Resolution 102-866 accompanying the FY 1993 Energy and Water Appropriations Act (PL 102-377) indicated that $10 million had been included in DOE's fiscal year 1993 appropriation for AREC. Thus, total federal funding for AREC is $20 million. AREC would be constructed as the top seven floors above the NeuroSensory Research Center (NRC) and would cost-effectively update OHSU's clinic space for both new and existing programs.

DOE alternatives include no authorization. The University assessed alternative sites on the south campus and off campus, but concluded that constructing AREC above the NRC was the most cost- and time-effective for both staff and patients, and was the only alternative that met OHSU's need to integrate clinical and research activities. Combining the two facilities in one structure also would mean practically no impact on the surrounding environment,

very little pollution other than normal construction impacts, and little or no impact on existing traffic and parking patterns.

Current plans for the AREC involve the use of radionuclides, in the form of small quantities of isotopes that would be used in research and in clinical treatments. Such use and would be covered by extension of existing regulatory licenses already in effect at the University. Radioactive waste resulting from AREC activities would result in no more than a 10% increase in the total OHSU volume. Sanitary waste would continue to be disposed of through existing sewer and refuse systems, which have excess capacity and so are more than adequate to handle the load. Infectious waste, primarily blood components, would continue to be disposed of by a licensed contractor in accordance with both federal and state regulations.

Because of its location above an existing structure, AREC would not require the use of additional land on campus.

2.0 PURPOSE AND NEED

The proposed AREC project, which Congress has indicated that DOE should fund, is needed for three reasons: 1) OHSU's clinic space is outdated and cannot be cost-effectively updated because of the physical limitations of the old structural modules; 2) OHSU is short of space for both existing and new programs; 3) To support research and teaching programs, clinical areas must be integrated with space that supports the research activities, i.e. exam rooms and nurse stations integrated with data collection and analysis functions, metabolic kitchens, and space to care for patients who may need to spend half a day waiting for the next observation. (Ref 1)

Existing outpatient clinical space totals 191,000 square feet, and the University requires approximately 160,000 additional square feet. The Clinical Research Center is currently housed in 7,500 square feet of space, while the projected space needed for research programs would be 14,000 square feet, plus additional space for future expansion (Ref 1).

The proposed AREC would provide 69,200 square feet for clinic related services (clinics, clinic offices, clinic laboratories, a cafeteria and metabolic kitchen), and 20,800 square feet for research space (Ref 1).

3.0 DESCRIPTION OF ALTERNATIVES INCLUDING THE PROPOSED ACTION

3.1 Proposed Action

The Department of Energy (DOE) proposes to authorize Oregon Health Sciences University (OHSU) to proceed with the detailed design, construction and equipping of the Ambulatory Research and Education Center (AREC). House Resolution 102-177 accompanying the FY 1992 Energy and Water Appropriations Act (Public Law 102-104) indicated that $10 million had been included in DOE's fiscal year 1992 appropriation to assist OHSU with construction of AREC. A grant was executed with the University on September 30, 1992. House Resolution 102-866 accompanying the FY 1993 Energy and Water Appropriations Act (PL 102-377) indicated that $10 million had been included in DOE's fiscal year appropriation for AREC. Thus, total federal funding for AREC is $20 million. Grant funds are currently available to the University for the limited purpose of performing preliminary studies, including analysis necessary to conduct this environmental assessment. However, under the terms of the grant, the grantee may not initiate construction or take any other action which would affect the environment or limit alternatives until the DOE

NEPA process has been completed and DOE has determined that such action should proceed.

The AREC would provide ambulatory clinic and research space for use by staff and students for research, teaching and patient care. It would provide day usage only, with no overnight stays.

The proposed AREC site would take advantage of the physical relationship to the basic science research laboratories in the NeuroSensory Research Center (NRC). AREC would be located on the seven upper floors above the NRC facility. The site selection also would take advantage of the adjacent in-patient facilities of University Hospital South, and new out-patient facilities located across the street. (Ref 1)

The NRC has been designed to anticipate the additional loading of a six story steel frame building plus a penthouse and appurtenant structures as currently proposed for the AREC. Foundation and structural design of the NRC has taken into account vertical loads, lateral loads, and seismic stresses that would be induced by the addition of AREC. (Ref 22)

3.2 Project Description

3.2.1 Construction Activities

Construction of AREC could begin as early as the completion of the underlying NRC structural frame, provided all federal, state and city approvals are obtained. The AREC facility would take about 18 months to complete. Normal construction hours would be from 8 a.m. to 5 p.m. Monday through Friday, with occasional skeleton crew work on Saturdays.

Construction contractor, Hoffmann Construction Co., estimates that the number of personnel required during erection of the facility would total 400 people, with no more than 100 engaged at the site on any single day. (Ref 2)

The following types of construction equipment and the approximate time of their use would be as described in the following table:

Number	Type of Equipment	Power Source	Period of Use
1	personnel hoist	electricity	10 months
1	tower crane	electricity	6 months
1	motor grader	diesel fuel	2 weeks
1	paving machine	diesel fuel	2 weeks
1	rubber-tired backhoe	diesel fuel	2 weeks
1	rotary drum roller	diesel fuel	2 weeks
1	200-ton truck crane	diesel fuel	1 week

In addition, 50,000-lb trucks would be required to haul the concrete and other building materials to the site. Over the 18-month construction period 100 to 200 trips may be made by such trucks to the construction site. The site would be fenced with a solid wood barricade on the Sam Jackson Park Road side and a chain-link fence would be placed around the rest of the site. Construction of the AREC would use steel frame assembly methods (including air-impact wrenches and guns) that may be audible during a three- to four-month period.

3.2.2 Operations Activities

The AREC would be located on the OHSU campus and would house ambulatory clinic and research space for use by staff and students for research, teaching and patient care. Patient activities would involve routine care typical of medical office/clinics. In addition, research activities would focus on trial studies required to test new drugs or products, and other research projects requiring a clinical setting. Thus, the building would house activities which bridge the gap between laboratory discoveries and clinical applications. (See Figure 1 and Figure 2 for the proposed site and surrounding area. *figures not available at this time*)

The proposed site for the AREC was selected to take advantage of the physical relationship to the basic science research laboratories in the NeuroSensory Research Center (NRC). AREC would be located above the NRC, and would be adjacent to the in-patient facilities of University Hospital South, and other new out-patient facilities that are across the street. The AREC and NRC projects were conceived separately, and their fundings were applied for and justified separately. The NRC project was originally designed to have a seven-story addition, although, at first, the program that would occupy that space was not identified. Under the current proposed action, the AREC would occupy the seven floors above the NRC. (Ref 1)

A total of 143,000 gross square feet would comprise the AREC building. Included would be six floors for programs and one shelled floor and a mechanical penthouse (see table below for distribution of space).

Proposed AREC Programs and Distribution of Square Footage

Proposed AREC Program	Gross Square Feet
Clinics (including patient waiting area)	50,200
Research Space (data collection & analysis/dry labs)	20,800
Clinic Office	7000
Clinical Laboratories (including lab-support)	6000
Cafe	4000
Metabolic Kitchen	2000
Miscellaneous Support Areas	53,000

3.3 No Action Alternative

Under the no action alternative, funding through DOE would not occur leaving OHSU without funding to design, construct and equip the AREC. Without funding, existing activities would have to continue in inadequate space, and some new programs that are planned to supplement the research and clinical activities could not be accomplished.

3.4 Site Alternatives

OHSU staff considered alternative locations for the AREC on both the south campus and off campus. These options were rejected because they did not meet a major purpose of the project ¾ integrated clinical and research activities. They were therefore not reasonable due to the estimated time clinicians and faculty would have to spend traveling between faculty offices, clinics, laboratories and the hospital. There would also be an increase in trips generated by use of shuttles and other vehicles.

4.0 AFFECTED ENVIRONMENT

The environment is a fully developed urban area near Portland's central business district. The proposed site is surrounded by facilities involved in University-related medical teaching, patient care and research activities. Parking facilities occupy most of the land not currently occupied by such facilities. No landscaping, such as lawns, trees and shrubs would be displaced by the proposed facility. (Ref 1)

5.0 ENVIRONMENTAL IMPACTS

5.1 Construction

5.1.1 Sensitive Resources

5.1.1.1 Historic/Archeological Resources

No impacts to archaeological, cultural, or historical resources would result from the proposed action. (Ref 1, 3, 19)

5.1.1.2 Federal/State-Listed or Proposed Protected Species or Critical Habitats

Because no grading or soil disturbance would be required during construction of the AREC, no disturbance to wildlife or wildlife habitats would occur. There are no populations of state or federally listed or proposed sensitive, candidate, threatened, or endangered species within the area that would be affected by construction activities. (Ref 1, 4, 17, 18)

5.1.1.3 Flood Plains/Wetlands

The project is located on top of Marquam Hill and the site is approximately 50 miles from the Pacific Coast Flood Plain. In addition, the AREC building would be constructed on top of the NRC structure, which is not located in a floodplain or wetland area. (Ref 5, 16)

5.1.1.4 National Forest, Parks, Trails, etc.

There are no national parks, refuges, wild and scenic rivers, wilderness, or forest lands in the vicinity of the OHSU campus, nor anywhere near the proposed site. Thus, the proposed project would not disrupt, interfere, or impact any component of the federal resource land systems. (Ref 6)

5.1.1.5 Prime Farmland

The proposed facility is located within the City of Portland and within the Portland Metropolitan area Urban Growth Boundary (UGB). Because the proposed project and all the area surrounding it is within the Portland Metropolitan Area UGB, it is considered urban land and not appropriate for farm use. (Ref 7)

5.1.1.6 Special Sources of Water

The site is not a special source of water. The proposed project would not have any impact on ground water in the area. The AREC building would be constructed on top of the existing NRC building and would not be an obstruction to groundwater flows. Furthermore, all storm water from the site would flow into an existing trunk sewer and would not recharge groundwater in the area. (Ref 1)

5.1.2 Erosion/Runoff

There would be no erosion associated with storm water runoff from the AREC; the water would be conveyed by the existing drainage system of the NRC building. Because the impervious area of the site would not increase as a result of the proposed project, storm water runoff from the site would remain the same. (Ref 1)

5.1.3 Spoils/Disposal

5.1.3.1 Asbestos

There would be no asbestos associated with this project, for it involves only new construction and no demolition of existing structures. (Ref 1)

5.1.3.2 Excavation Waste/Disturbance of Contaminated Soil

There would be no necessity to excavate footings for the AREC, as it would be constructed above the existing NRC facility. Because no excavation is involved, there would be no disturbance of soil.

5.1.4 Demolition/Construction Waste Disposal

A private contractor would supply a 30-cubic-yard drop box for waste materials generated by the project during construction. Disposal of the waste material would then be conducted by the Metropolitan Service District. It is estimated that approximately 1,000 cubic yards of waste material would be generated, or about one drop box per week. The amount of material is well within the capacity of the Metropolitan Service District. (Ref 1)

5.1.5 Air Quality Impacts (Dust, Equipment Emissions)

During the construction phase, construction equipment and trucks would emit air pollutants that would contribute to existing air pollution conditions in the area. The contractor would be required to use equipment that complies with the Air Pollution Emissions Standards for such equipment as mandated by the Oregon Department of Environmental Quality (DEQ); therefore, no violations of the state or federal air quality standards by the University or the contractor would be expected. (Ref 1)

While the project is in a non-attainment zone for carbon monoxide and ozone (see section 5.2.7.2), no private emitter such as the University or the contractor would be responsible for the regulatory implications of non-attainment. Nor would "non-attainment" with the standards necessarily imply "non-compliance" with the Clean Air Act. Non-compliance would be associated with failure of the responsible regional air quality management officials to implement certain air quality control programs in the event of non-attainment. In any event, construction of the proposed project, of itself, would not result in a violation of the Clean Air Act.

5.1.6 Noise

The following buildings, shown on Figure 2, would likely experience some noise disturbance during construction:

- 13 University Hospital South
- 23 Parking Structure 1
- 45 Biomedical Communication Information Center
- 2 Student Activities Building and Pool
- 29 Parking Structure 2

Noise disturbance is regulated by the City of Portland Noise Ordinance which limits noise from construction equipment to 85 decibels (dBA) at 50 feet between 6 PM and 7 AM weekdays and between 7 AM Saturday through Monday and all day on legal holidays. Given that there would be no foundation work, sources of construction noise would be limited to equipment such as concrete mixers, cranes, pumps, generators, compressors, vibrators and saws, none of which are likely to exceed the ordinance. "During construction, no piece of equipment is expected to be operated in such a way that will not comply with the Portland Noise Ordinance." (Ref 23)

5.1.7 Transportation, Traffic, Parking, Relocation, etc.

Construction workers would park off-site and be shuttled to the project by bus. Construction equipment and trucks delivering supplies to the site would be oriented to the paved staging area adjacent to the site. It is estimated that a maximum of 20 truck loads per day would be generated by the construction activities during the first few months of work. Temporary disruptions of traffic along Sam Jackson Park Road could occur due to equipment maneuvering at the site or when vehicles delivering materials back in and out of the loading facility. It is concluded that construction-related traffic would have minimal impact on the area traffic circulation system. (Ref 1)

5.2 Operations

5.2.1 Domestic Waste (Trash)

OHSU currently generates approximately 68,000 cubic yards of non-hazardous solid waste per year. Based on a net

increase in square footage of approximately 6.1% over the existing square footage at OHSU (2.34 million), an additional 4,148 cubic yards of non-hazardous solid waste would be generated annually by the proposed AREC. (Ref 1, 12)

Metropolitan Service District (Metro) manages non-hazardous solid waste disposal in the Portland area, and currently has excess landfill capacity for non-hazardous solid waste. Therefore, it is expected that the AREC would not have a substantial effect on Portland's non-hazardous solid waste landfill capacity. (Ref 13)

5.2.2 Sanitary Waste (Lavatory Waste)

OHSU operates and maintains sewers that serve individual campus facilities. The sewer system flows into trunk lines that are owned by the city of Portland and operated by the City's Bureau of Environmental Services (BES). The BES lines then convey the sanitary waste to BES-operated sewage-treatment facilities. Based on the current number of beds (350) and employees, students and volunteers (14,320) on the OHSU campus, the total volume of waste water currently generated at OHSU is estimated to be 212,000 gallons per day. Because the proposed AREC project would not result in an increase in staff or out-patients of more than 10 people, no substantial increase in waste water generation is expected.

Sanitary waste from the AREC building would flow into a new 10-inch campus sewer located below the north end of the NRC structure. This sewer flows into the Wood Gulch combined trunk sewer, which is owned by the city of Portland. Capped stubs were provided on the new campus line to facilitate connection of future AREC facilities. (Ref 1)

Some radioactive materials would be discharged to the sanitary sewer in accordance with 10 CFR 60 and the University's Radioactive Materials License. For the campus the limiting discharge is 5 Ci per year for H-3, 1 Ci of C-14, and 1 Ci for all others. The campus is in compliance with these limits (Ref 1, 9). While precise discharge estimates are not available, the proposed AREC would not appear to affect the University's ability to maintain compliance with these limits. With the exception of P-32 (see Section 5.2.5), even if the entire radionuclide possession were released to the sewer, the allowable limit would not be exceeded. Only a small (unknown) percentage of P-32, well under the 1 Ci limit, would reach the sewer. These license conditions are enforced by the state. (Ref 9)

5.2.3 Hazardous Waste (Laboratory Chemical Waste

OHSU is currently a small-quantity generator of hazardous waste as defined by 40 CFR 262.41 and the state's OAR 240-102-042. OHSU has a contract for the disposal of its regulated hazardous waste with Rollins Environmental. The increase in the amount of hazardous waste generated due to the operation of the research and out-patient activities at the combined NRC/AREC would be less than 10% of current generation for the total University and would not be expected to alter OHSU's small-quantity generator status. (Ref 8)

Of the following hazardous wastes which are generated by the University, some would likely be generated by the proposed facility:

- Hazard Typical Chemicals
- Flammability methanol, toluene
- Oxidizers zinc dust, calcium carbide
- Corrosivity sulfuric acid, sodium hydroxide
- Reactivity picric acid (dry), lead azide
- Toxicity phenol, nicotine, thiophenol, tetraethyl lead, osmium tetroxide
- Carcinogens benzidine, formaldehyde

AREC wastes would be managed in accordance with the OHSU Hazardous Waste Management Plan (Ref 24) which is designed to comply with applicable Federal and state regulations.

The wastes listed above are shipped off campus to licensed disposal facilities (Rollins Environmental Services for incineration) in the following forms (1992 quantities):

- Off-spec and waste lab chemicals 7,536 pounds
- Waste xylene and alcohol 900 pounds
- Solvents 1,800 pounds

The additional increment of the AREC waste would not affect the University's ability to maintain compliance with hazardous waste regulations nor alter its small generator status. (Ref 1)

5.2.4 Biological/Medical Waste

The University currently ships approximately 163,000 cubic yards of infectious waste per year. This waste is removed under contract by Stericycle. The waste is brought to a central campus location by the custodial staff and is stored in contractor-supplied tubs until it is picked up for removal.

It is estimated that the AREC would generate 10 to 12 Stericycle tubs of infectious waste per day. Each tub contains 48 gallons or 6.4 cubic feet of material for a total of 64 to 77 cubic feet of waste per day, or an increase of 1 to 2% over current OHSU generation. The waste would consist mostly of blood products from the phlebotomy lab and blood banks. The rest of the material would come from examining rooms and a small amount from the pharmacy, intravenous treatment material and sharps containers.

The Stericycle tubs would be picked up under contract by Ryder Dedicated Logistics, a dedicated hauler for Stericycle. They would be delivered to the Morton Treatment Plant in Morton, Washington. At this plant, the waste would be shredded and rendered non-recognizable. It would then be treated with low-frequency radio waves in a process called electrothermal deactivation. This process would render the waste non-infectious. (Ref 1)

5.2.5 Radioactive and Mixed Hazardous/Radioactive Waste

It is estimated that the AREC would involve predominantly clinical research activities that would not involve radionuclides. However, it is possible that some activity involving radionuclides could occur within the 2,000 square foot laboratories on floors 10 through 14 of the AREC.

For disposal of waste, long-lived isotopes from University operations are now shipped to the facility in Hanford, Washington on a quarterly basis to avoid accumulation. Wastes from the use of short-lived isotopes are stored in a specially designed room in the research laboratory area to decay at least 10 half-lives, or until the material can be disposed as non-radioactive material. Future potential waste from the AREC would be managed in the same manner. Information is not currently available as to the quantity of such future waste, but any additional AREC waste would be of smaller magnitude than that generated in current University operations. Based on current compliance and procedures, the handling of radioactive materials appears to have no adverse effects, and any additional waste resulting from AREC operations would not affect the University's compliance with the Oregon Radioactive Materials Licensing Division. (Ref 1, 9, 10)

The University's possession in comparison to license limits and AREC expected limits are (Ref 29):

Isotope	Estimated Possession	Estimated University	Estimated AREC	Halflife

	Limit	Possession	Possession	
H-3	20	1.81	0.17	12.3 yr
C-14	10	0.50	0.00132	5730 yr
I-125	3	0.76	0.250	60.2 da
I-131	1	NA	0	8.1 da
P-32	6	2.05	3.73	14.3 da
P-33	3	NA	0	24.4 da
S-35	3	1.31	0.66	87.9 da
Ni-63	0.015	NA	0	9.2 yr
Cs-137	4.165	NA	0	9.7 da

The University's radioactive and mixed waste would not exceed these annual possession limits, and would be reduced by decay, and by that fraction which is discharged to the sanitary sewer (see section 5.2.2) and that which is emitted to the air (see section 5.2.7.1). The above can be considered maximum radioactive waste quantities. Radioactive materials management is audited and inspected by the state in accordance with Nuclear Regulatory Commission regulations. (Ref 9) The AREC would not require an amendment to the existing license. (Ref 1)

The expected AREC possession of isotopes (shown in Section 5.2.7.1) is a small portion of the University's permitted possession limits shown above. Only a small portion of the AREC isotope quantities might be discharged to the sanitary sewer as a result of research and clinical work. The current waste stream volume generated by OHSU that is discharged to the sanitary sewer is 212,000 gallons per day (section 5.2.2). This volume of waste liquid provides a substantial dilution factor for the very small quantities of isotope effluent material that might be placed into the sanitary sewer waste stream. These small quantities will not result in the University's exceeding its discharge limits and are not expected to create any adverse environmental effects with respect to waste streams or waste treatment.

5.2.6 Radiation Exposures

The Radiation Safety Office (RSO) operates a badging program to ensure that exposure of personnel working with radioisotopes does not exceed the exposure limit of 5 rem (5000 mrem) per year, per 10 CFR Part 20. Results of the badging program for the one year period July 1992 to July 1993 (Ref 27) show the following exposure levels:

Level (mrem)	Persons Exposed
100-150	24
151-200	13
201-300	15
301-400	9
401-500	1
501-1000	1
1001-2000	1
2001-4999	0

5000	1
Over 5000	0

In only one case has a person been exposed to the regulatory limit. Exposures at the proposed AREC would likely result in doses considerably less than those reported for the University as a whole, since, in most cases, the quantities of isotopes expected to be used are a small fraction of the University's possession limit. These isotopes that would be used in the AREC are medical isotopes and not radiological materials such as sealed sources etc. They do not provide the same type of dose and exposure concerns as do other radiological materials and are not expected to create any adverse environmental effects or excess health effects to either AREC workers or to the public. The isotopes are used as tracers in clinical tests and their use is governed by standard medical procedures and precautions. Their use at the proposed AREC would be like their use in any hospital and they are not expected to create any adverse impacts to workers or the public.

5.2.7 Air Emission

5.2.7.1 Radiation

The Oregon Radioactive Materials Licensing Division confirms that OHSU recently completed a comprehensive NESHAPS evaluation survey that showed all existing facilities on the campus met the necessary standards. It is estimated that any AREC activity involving radioactive materials would not affect the the University's ability to maintain compliance and would not result in significant doses to unrestricted areas. (Ref 9)

Compliance with the National Emission Standards for Radioactive Emissions from Facilities Licensed by the Nuclear Regulatory Commission (40 CFR 61 Subpart i) may be demonstrated "through the use of either the EPA computer code COMPLY or appendix E." The following table compares University possession limits per its NRC license with possession limits per Appendix E of the regulation 40 CFR 61 Subpart i.

Isotope	Possession Limit per License (Curies)	AREC Expected Possession	Possession Limit per 40 CFR 61 Appendix E, Table 1 (Liquid form) (Curies)
H-3	20	0.17	15,000
C-14	10	0.00132	290
I-125	3	0.250	6.2
P-32	6	3.73	17
S-35	3	0.66	75
Ca-45	0.500	0.004	58
Zn-65	0.500	0.00035*	0.44

* This is also the maximum total amount actually possessed by the University.

As indicated in section 5.2.5 the AREC would not cause the University to exceed the possession limits per its current

license. Accordingly, the AREC would not cause the University to be out of compliance with the regulation on radioactive air emissions.

5.2.7.2 Criteria Pollutants

The proposed AREC would not have a boiler plant. Criteria emissions associated with the University's energy usage would be from electricity generation and oil and gas burned on campus. In 1992, OHSU used approximately 56,500 MWh of electricity. It is assumed that the AREC would increase electricity usage by about 5% or about 2,800 MWh. Based on emission factors for electricity generation, estimated emissions for the entire University campus and the proposed AREC are shown in the table below. (Ref 1)

Emissions from Electricity Usage

Pollutant	Emissions Factors (lb/MWh)	Campus (lb.year)	AREC (lb/year)
CO	0.2	11,300	560
NOx	1.15	65,000	3,200
ROC	0.01	565	28
PM10	0.04	2,260	112
SOx	0.12	6,780	336

The University used 108,772 gallons of #6 oil and 281,605,935 cubic feet of natural gas in 1992. Based on U. S. EPA and Oregon DEQ emission factors for oil and natural gas boilers, estimated emissions for the entire campus and the proposed AREC are shown in the following tables.

Emissions from Oil Usage

Pollutant	Emission Factors (lb/1000 gallons)	Campus (lb/year)	AREC (lb/year)
TSP	20.5	2,230	56
PM10	16.1	2,056	51
SO2	274.75	29,885	747
NOx	555,982	150	
CO	5	544	14
VOC	0.76	83	2

Emissions from Natural Gas Usage

Pollutant	Emission Factors (lb/million cubic feet)	Campus (lb/year)	AREC (lb/year)
TSP	2.5	704	18
PM10	2.5	704	18
SO2	3.8	732	18
NOx	140	39,425	986
CO	35	9,856	246
VOC	2.8	788	20

Portland, which includes the project area, is in a non-attainment area for emissions of carbon monoxide and ozone, and in some areas total suspended particulates (TSP); OHSU is not in the TSP non-attainment area. Any emissions of carbon monoxide or ozone precursors (nitrogen oxides and hydrocarbons) emitted at the AREC would be limited to the amounts allowed by the University's air contaminant discharge permit (modified to include the AREC). (Ref 1)

While the project is in a non-attainment zone for carbon monoxide and ozone, no private emitter such as the University would be responsible for the regulatory implications for non-attainment. Nor does the term "non-attainment" with the standard necessarily imply "non-compliance" with the Clean Air Act. Non-compliance would be associated with failure of the responsible regional air quality management officials to implement certain air quality control programs in the event of non-attainment. In any event, operation of the proposed project, of itself, would not threaten violation of the Clean Air Act.

5.2.7.3 Toxic Compounds Released to the Air

There is a potential for air toxics such as Chloroform, Ethanol, Isopropanol, Xylene, and Formaldehyde that would be released in small amounts through the AREC ventilation hoods. Anticipated annual usage and resultant emission rates are shown in the table below.

Air Toxic Emissions

Substance	Annual Release (Grams)	Estimated AREC Emission Rate Grams/Second
Chloroform	3,000	0.0001
Ethanol	500	0.00002
Isopropanol	400	0.00001
Xylene	100	0.000003
Formaldehyde	20	0.0000006

Public exposure levels would be several orders of magnitude less than emission rates needed to exceed a threshold limit value (TLV). For instance, Xylene emissions required to exceed the TLV would be 15,961 grams per second. (Ref 14, 15)

Releases would not actually be continuous over the year, but occur as a series of discrete events. The typical release pattern would be 3 to 4 times per week, with each release lasting from 15 to 30 minutes. The variance from steady state releases would not alter the finding that resultant TLV exposures would typically be orders of magnitude less than the recommended standard per Ref 15.

5.2.7.4 Hazardous Air Pollutants (NESHAPS)

None of the toxic compounds reported in the previous section have emission standards specified in the NESHAPS regulations.

5.2.7.5 PCBs and Other Pollutants

The University maintains its own transformers. Two transformers containing polychlorinated biphenyl (PCB) oil were removed in 1989 and there is no PCB-containing electrical equipment left on the campus. (Ref 1)

5.2.8 Noise

Traffic: No increase in employee traffic is expected. Similarly, out-patient traffic for the University as a whole will remain nearly the same, although some of the traffic may shift from existing buildings to the project building. Since the existing primary parking areas are already near to the project location, no local increase in traffic noise is expected. Existing traffic access routes are also expected to be retained. The emergency unit section of the project is expected to increase traffic on Sam Jackson Park Road by approximately 10 vehicles per hour average or a maximum of 20 vehicles per hour. Compared to the current 600-800 vehicles per hour on this road, this represents a maximum increase of 3%.

Mechanical Equipment: The building will make use of University pipe systems for air conditioning coolant. No cooling towers or air-cooled condensing units would be used. Other potential mechanical noise sources would be the intake and exhaust air fans. These fans will radiate noise from their locations at the mechanical penthouse planned for the top level of the facility. Using procedures recommended by the American Society of Heating, Ventilation and Air Conditioning Engineers (ASHRAE), fan output sound power levels were calculated. The noise level expected to be experienced at these fan locations was estimated at 40-45 dBA. This level is well within the Portland Noise Code and should not increase existing levels from University sources such that the total would exceed the code criteria. (Ref 1, 11 - Appendix C)

5.2.9 Socioeconomic Impacts

The AREC is intended to relieve overcrowding in other campus facilities and to provide additional research and laboratory space to faculty, students and staff, as well as additional space for patient services and waiting areas. Any increase in the number of employees students or out-patients would be minimal. Approximately 390 employees would

be shifted from other campus facilities to the AREC upon its completion. This shift in campus population is planned to minimize disruption to those concerned. (Ref 1)

5.2.10 Accident Analysis

Accidents at clinical facilities and research laboratories can occur as indicated by the following typical circumstances:

- Rupture or breakage of container with hazardous material or waste (with hazards as indicated in section 5.2.3)
- Spill of hazardous material or waste involving solid, liquid, and gaseous releases (with hazards as indicated in section 5.2.3)
- Accidental exposure to excess levels of radiation
- Explosions
- Fires
- Personal injury from equipment handling such as needles and glass
- Personal injury from falls
- Accidental ingestion of hazardous material or waste

The consequences of such accidents may range from the inconsequential to the severe, involving injury, death, and environmental damage.

Rigorous studies to characterize the risk of accidents and potential consequence (involving detailed analysis of each at-risk component such as tanks and cylinders, and each operation) are carried out by the Department of Energy in the form of Safety Analysis Reports (SARs) for certain DOE facilities. However this degree of safety study is neither required for or conventionally performed at clinical or research facilities at universities or hospitals. However, the university does maintain a record of reportable accidents. It also maintains a safety program to prevent accidents, and to take appropriate responsive action when an accident occurs (Ref 26). Moreover, the University is subject to inspection by the local fire department and to provisions such as built-in fire protection equipment such as automatic fire sprinklers and alarms (Ref 20).

AREC would be operated in a manner similar to the current out-patient facilities, and no reactive or explosive materials would be involved. In 1991 and 1992, University employees made the following Worker's Compensation claims involving hazardous materials and waste operations: 1992: one "medical" and three "lost time" injuries; 1991: 13 "medical" and five "lost time" injuries. The medical cases involved injuries that did not require that the workers be sent home, therefore no job time was lost; the lost time incidents were injuries that medical personnel deemed sufficiently serious to require time off the job. With state-of-the-art equipment in the new facility, it is expected that accident rates at AREC would be lower than those at the University in recent years. (Ref 1)

5.2.11 Other Direct, Indirect, Cumulative, or Long-Term Impacts

5.2.11.1 Health Effects

Health care workers and researchers at the Institute would be exposed to various chemotherapeutic drugs, laboratory solvents, and low level radiation from equipment such as x-ray machines and from radionuclides used in clinical and research applications. The University is regulated by State and Federal laws and regulations for controlling exposures which would have health effects. The OHSU RSO is responsible for enuring compliance with OSHA regulations through guidelines and training programs including a number of specific license conditions (Ref 25). Radiation monitoring is reported in section 5.2.6.

Deleterious health effects to workers at the AREC are not expected, since the radiological exposure is monitored (See Section 5.2.6) by a badging program. Also, laboratory ventilation systems would maintain exposure to toxic substances below levels that would produce adverse health effects. (Ref 15) Handling of the materials would be governed by standard procedures designed to protect workers, as well as patients.

5.2.11.2 Management of Radioactive Materials

Aspects of management of radioactive materials associated with waste, emissions, and sewer discharge are discussed elsewhere in this report. Overall management of the materials including storage and handling is subject to inspection and audit by the State of Oregon. The State has recently certified that the University is in compliance with applicable Federal and state regulations (Ref 9). The proposed AREC would be subject to the same inspection and audit program, and would similarly be expected to be in compliance.

5.2.11.3 Aesthetic

The building was designed with the assistance of perspective studies to provide an aesthetically pleasing addition to the campus, and to the skyline as seen from Terwilliger Parkway. (Ref 1)

5.2.11.4 Land Use

The project would complement the predominantly institutional land uses of adjacent areas and be in compliance with the University's "Framework Master Plan" developed at the direction of the City of Portland's Land Use Hearing Officer. That plan was adopted by the City in 1984 and has since been updated, most recently in 1991. The 1991 amendment was reviewed for compliance with the City's Comprehensive Plan, Zoning Code, Terwilliger Parkway Corridor Plan and the Marquam Hill Policy Plan by the Planning Bureau and the Homestead Neighborhood Association. It was adopted by the city in 1991. (Ref 1)

5.2.11.5 Power Supply

The AREC would be served by the Portland General Electric Company which has ample capacity to supply the project (Ref 21).

5.2.11.6 Cumulative Impacts

Cumulative impacts have been considered in the context of each environmental impact discussed in this document, as well as in relation to the impact of the project as a whole. There is no evidence that any of these impacts would be adverse singly or cumulatively. Addition of the proposed AREC to the NRC would result in a consolidation of current research and clinical programs from several campus locations. This consolidation would not result in any cumulative adverse impacts. The NRC was reviewed under NEPA in 1990 (Ref. 29) and no adverse impacts were expected. The addition of the proposed AREC to the NRC and to the University in general is not expected to create any cumulative adverse impacts to people or the environment. The expected possession and use of radiological isotopes at the proposed AREC would be a very small portion of the total at the University and would not result in the University exceeding any of its possession limits. Waste products from construction and operation, and from maintenance

activities, would add to waste accumulation. However, the additional waste volumes would not affect the University's status as a small generator; see Section 5.2.3.

5.3 Compliance with Regulations

The following permits and approvals would be obtained prior to construction or operation of the proposed action.

- Agency Permit/Approval
- City of Portland Conditional Use Approval
- Building Permits
- Occupancy Permit
- Oregon State Health Division Radioactive Materials Licenses
- (an extension of existing licenses)

6.0 RELATIONSHIP OF THE PROPOSED ACTION TO OTHER ACTIONS AND ACTIONS BEING CONSIDERED UNDER OTHER NEPA REVIEWS

The proposed action is structurally related to the Neurosensory Research Center (NRC), since the AREC would be built above the NRC, and become a part of the same building. The NRC has been previously considered under a separate NEPA review.

7.0 RELATIONSHIP OF THE PROPOSED ACTION TO ANY OTHER APPLICABLE FEDERAL, STATE, REGIONAL OR LOCAL LAND USE PLANS AND POLICIES LIKELY TO BE AFFECTED

The proposed action is part of a master plan implementation for the development of the OHSU campus, and is consistent with applicable local zoning and land use requirements.

8.0 PERSONS AND AGENCIES CONSULTED

Agency or Company/Department	Originator	Date
U. S. Army Corps of Engineers	J. Goudzwaard	4/30/93
U. S. Fish & Wildlife Service	R. Peterson	4/22/93
U. S. Department of Energy	C. Frazier	10/5/90

Oregon Division of State Lands	K. Bierly	4/13/93
Oregon Natural Heritage Program	S. Vrilakas	4/14/93
Oregon Department of Fish and Wildlife	J. Pesek	4/12/93
State Historical Preservation Office	J. Hamrick	4/20/93
Oregon Department of Human Resources	M. Dibblee	6/30/93
City of Portland Bureau of Planning	T. Brooks	4/23/93
City of Portland Fire Prevention Division	L. Davis	4/19/93
OHSU/Physical Plant Department	K. Croft	4/7/93
OHSU/Design & Construction Services	A. Koach	4/13/93
Zimmer-Gunsul-Frasca Partnership	J. Blumthal	4/9/93
Manfull-Curtis, Inc.	R. Peterson	4/12/93
KPFF Consulting Engineers	B. Moyes, P.E.	4/12/93
KPFF Consulting Engineers	M. Henry, P.E.	4/19/93
ServiceMaster Energy Management	J. Grable, P.E.	4/5/93
Portland General Electric Co.	D. Gauger	4/15/92

9.0 REFERENCES

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1. Environmental Report, AREC, prepared by David Evans and Associates, Inc., for Oregon Health Sciences University, July 1993.
2. Hoffman Construction Co., William Forsythe, April 9, 1993.
3. State Historic Preservation Office, James M. Hamrick, Deputy, State Historic Preservation Office, April 20, 1993.
4. Department of Fish and Wildlife, Joe Pesek, Regional Non-Game Biologist, April 2, 1993.
5. Division of State Lands, Kenneth Bierly, Wetlands Program Manager, April 13, 1993.
6. City of Portland, Sewell, personal communication, 1993.
7. Oregon Revised Statute ORS 215.203 (2) (a), definition of farm land.
8. OHSU, Department of University Safety Services, Jim Joyce, Safety Officer. Memo, April 13, 1993.
9. Oregon Department of Human Resources, Martha G. Dibbles, Manager, Radioactive Materials Licensing, Radiation Control Section, June 30, 1993.
10. Radioactive Materials License, Oregon State Health Division, Amendment No. 41, Page 5 of 6.
11. Daly, Standlee and Associates, Inc., Impact Noise Study, Russell N. Altermatt, P.E., April 20 1993.
12. OHSU, Physical Plant Department, Kathy Croft, Custodial Services Manager, April 7, 1993.
13. Metropolitan Service District, Peterson, Personal Communication, April 14, 1993.
14. Air Pollution Hazard Analyses for the Louisiana State University Institute for Micromanufacturing, Geraughty & Miller, Inc., December 15, 1992.
15. American Council of Government Industrial Hygienists, Threshold Limit Values for Chemical Substances and Physical Agents, 1990.
16. Department of the Army, Portland District Corps of Engineers, Jim Goudzwaard, Resource Protection and Fish and Wildlife Section, April 30, 1993.
17. U.S. Department of the Interior, Fish and Wildlife Service, Russell D. Peterson, Field Supervisor, April 22, 1993.
18. Oregon Natural Heritage Program, Sue Vrilakas, Botanist/Data Manager, April 14, 1993.
19. City of Portland, Bureau of Planning, Tim Brooks, April 23, 1993.

20. City of Portland, Fire Prevention Division, Lynn C. Davis, Fire Marshall, April 19, 1993.
21. Portland General Electric Company, Daniel B. Gauger, Service Design Consultant, April 16, 1993.
22. KPFF Consulting Engineers, Brad Moyes, PE, Principal, April 12, 1993.
23. Daly-Standlee & Associates, OHSU AREC Noise Study, April 20, 1993.
24. Oregon Health Science University, Hazardous Waste Management Plan, April 13, 1993.
25. Radioactive Materials License Number ORE-0013-4, Oregon Health Science University, Expires May 31, 1997.
26. University Hospital and Clinics Safety Manual, October 15, 1991.
27. Data provided by Tony Koach, OHSU, December 13, 1993.
28. Zimmer-Gunsul-Frasca Partnership, Architecture, Planning and Interior Design, Letter of April 9, 1993 describing aesthetic considerations in building design, John P. Blumthal, Associate partner.
29. Correspondence from L.F. Wynans, OHSU Radiation Officer, December 21, 1993.

APPENDIX I

SUPPORTING DOCUMENTATION

State Historic Preservation Office, James M. Hamrick, Deputy State Historic Preservation Officer, April 20, 1993.

Department of Fish and Wildlife, Joe Pesek, Regional Non-Game Biologist, April 12, 1993.

Division of State Lands, Kenneth Bierly, Wetlands Program Manager, April 13, 1993.

Oregon Department of Human Resources, Martha G. Dibblee, Manager, Radioactive Materials Licensing, Radiation Control Section, June 30, 1993.

Department of the Army, Portland District Corps of Engineers, Jim Goudzwaard, Resource Protection and Fish and Wildlife Section, April 30, 1993.

U.S. Department of the Interior, Fish and Wildlife Service, Russell D. Peterson, Field Supervisor, April 22, 1993.

Oregon Natural Heritage Program, Sue Vrilakas, Botanist/Data Manager, April 14, 1993.

City of Portland, Bureau of Planning, Tim Brooks, April 23, 1993.

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KPFF Consulting Engineers, Brad Moyes, PE, Principal, April 12, 1993.

U.S. Department of Energy

Finding of No Significant Impact

Ambulatory Research and Education Center (AREC)

AGENCY: U.S. Department of Energy

ACTION: Finding of No Significant Impact (FONSI)

SUMMARY: The Department of Energy (DOE) has prepared an Environmental Assessment (EA) DOE/EA-, evaluating the construction and equipping of the Ambulatory Research Center (AREC), which would be located on the top seven floors above the existing NeuroSensory Research Center (NRC) on the campus of the Oregon Health Sciences University at Portland, Oregon.

The objective of the proposed project is to combine activities scattered across the campus into a central facility that would be both cost- and time-effective in reducing the time clinicians and faculty would have to spend traveling between facility offices, clinics, laboratories, and the hospital. There would also be a reduction in trips generated by use of shuttles and other vehicles.

Based on the analysis in the EA, the DOE has determined that the proposed action does not constitute a major federal action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969 (NEPA). Therefore, the preparation of an Environmental Impact Statement is not required.

DESCRIPTION OF THE PROPOSED ACTION:

The Department of Energy proposes to Authorize OHSU to proceed with the detailed design, construction and equipping of the AREC. House Resolution 102-177 accompanying the FY 1992 Energy and Water Appropriations Act (Public Law 102-104) indicated that $10 million had been included in DOE's fiscal year 1992 appropriation to assist the OHSU with construction of the AREC. A grant was executed with the University on September 30, 1992. House Resolution 102-866 accompanying the FY 1993 Energy and Water Appropriations Act (PL 102-377) indicated that $10 million had been included in DOE's fiscal year 1993 appropriation for AREC. Thus, total federal funding for AREC is $20 million. A total of 143,000 gross square feet would comprise the AREC facility, including six floors for programs, one shelled floor, and a mechanical penthouse. Currently OHSU is lacking in space that integrates clinical areas with support areas for research activities such as examination rooms and nurse stations, data collection and analysis functions, metabolic kitchens and space to care for patients who may need to spend half a day waiting for the next observation.

ALTERNATIVES:

The DOE considered the no-action alternative. The University considered other sites and locations on its campus for the proposed facility in the early planning for the project, but found none that were reasonable alternatives. Only locating the structure on top of an existing facility allowed for integration of research and clinical activities at OHSU. In addition, because no ground had to be broken, the impact to the environment was minimal.

ENVIRONMENTAL IMPACTS:

The EA analyzes the impacts of constructing, equipping and operating the AREC. Areas of potential impact evaluated in the EA included those associated with both the construction and operation of the facility.

Construction impacts evaluated included the effects on sensitive resources (historical/archeological, protected species/critical habitats, wetlands/floodplains, national forests/parks/trails, prime farmland and special sources of water), erosion, waste disposal, air quality, noise, traffic and parking.

Operations impacts evaluated included the effects of waste generation (domestic, sanitary, hazardous,

medical/biological, radioactive and mixed wastes), radiation exposures, air emissions (radioactive, criteria, and air toxics), noise, socioeconomic impacts, risk of accidents, and other direct, indirect and cumulative long term impacts.

No significant environmental impacts associated with the proposed construction or operations are anticipated. This finding of no significant impact for the proposed action is based on the following factors which are supported by information and analysis in the EA.

Impacts of Construction/Installation

None of the categories of sensitive resources cited above would be affected by the project as they do not occur on or near the site. Routine construction waste would be managed according to appropriate state and local regulations. Air quality impacts would be associated with delivery trucks and on-site construction machinery, and would be low level and transient. Noise levels would be those conventionally associated with standard daytime construction and are not likely to disturb residences, workers or outdoor recreation. Traffic impact would not significantly affect local circulation or parking.

Impacts of Operations

Waste Generation: Domestic and sanitary wastes would meet local requirements and can be readily accommodated by existing municipal services. Hazardous wastes would total less than 10% of current generation University-wide and is not expected to alter OHSU's small-quantity generator status. Most of these wastes would be associated with blood work performed at AREC. These would be managed in accordance with the University's existing hazardous waste management program under a current interim RCRA permit.

Radiation Exposure: Potential radiation exposures may be associated with the use of short-lived radioisotopes in medical studies, and would be handled under the supervision of the University's Radiation Safety Program pursuant to applicable Federal and state regulatory licenses. Exposures of personnel and the public would be within safe limits.

Air Quality: The project would not cause significant changes to the University's current programs of compliance with federal and state regulations covering radioactive, criteria, and toxic emissions.

Other Effects: Noise generated indoors or outdoors would be insignificant. Socioeconomic impacts would be small in the scale of overall university economic activity. Accident risk would be very small as evidenced by a low rate of minor incidents involving worker injury at the University over the past two years. Overall, the incremental impacts of the project are small in relation to the ongoing impact of the University, and do not constitute significant cumulative impacts.

DETERMINATION:

Based on the analysis in the EA, the DOE has determined that the proposed Ambulatory Research and Education Center (AREC) at OHSU does not constitute a major Federal Action significantly affecting the quality of the human environment within the meaning of the National Environmental Policy Act of 1969. Therefore, an Environmental Impact Statement on the Proposed Action is not required.

PUBLIC AVAILABILITY: Copies of this EA (DOE/EA-) are available from:

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