

CHAPTER 2

PROPOSED ACTION AND ALTERNATIVES

This chapter describes NIH's proposal to construct an Integrated Research Facility and upgrade existing facilities at the RML campus in Hamilton, Montana. The proposed new structure and infrastructure upgrades are collectively referred to as the Proposed Action. Alternatives to the Proposed Action are also included in this chapter.

Detailed discussions of the following topics are presented in this chapter:

- The Proposed Action; and
- Alternatives to the Proposed Action, including the No Action Alternative and Alternatives Considered but Eliminated from Detailed Study.

2.1 PROPOSED ACTION

NIH proposes to construct an Integrated Research Facility to house Biosafety Level (BSL)-2, BSL-3, and BSL-4 laboratories, animal research facilities, administrative support offices, conference rooms, and break areas at the RML facility in Hamilton, Montana. The Proposed Action would encompass approximately 105,000 square feet of building constructed within the existing 33-acre RML campus in the southwest portion of Hamilton (**Figure 2-1**).

The Integrated Research Facility and research programs would require additions and upgrades to the existing RML campus. Upgrades would include:

- A new chilled water plant and emergency power backup system;
- A new addition to Boiler Building 26 to house a new natural gas-fired boiler; and
- Construction of below-grade systems and utility distribution tunnels to service the Integrated Research Facility.

Research at RML would include pathogenesis, immune response, vaccine, diagnostics, and therapeutics work and would focus on RML's strength in vector-borne pathogen research.

2.1.1 Biosafety Level 4 (BSL-4)

A BSL-4 laboratory would be constructed within the Integrated Research Facility to provide the

highest possible level of protection for scientists and the public and to expand the research capability of RML. The use on a BSL-4 laboratory would be required for research of certain agents and for certain experiments, such as testing of vaccines for emerging and re-emerging infectious microbial agents that are normally ranked at BSL-3 level. Stringent safeguards, including engineering and design features (see **Appendix E**), are required for BSL-3 and BSL-4 laboratory facilities to prevent pathogens from escaping into the environment. In addition, the BSL-4 laboratory would be designed to prevent contact between pathogens and people inside the workspace and provide secure storage for infectious agents.

A BSL-4 laboratory is required for work with agents that pose a high individual risk of aerosol-transmitted infections and life-threatening disease. Agents with a close or identical antigenic relationship to BSL-4 agents would be handled at this level until sufficient data are obtained to confirm continued work at this level, or at a lower level. All laboratory staff would have thorough training in handling hazardous, infectious agents; understanding primary and secondary containment functions of standard and special practices; and understanding containment equipment and laboratory characteristics. All laboratory staff would be supervised by trained and experienced scientists (see **Appendix E**).

Prior to gaining access to the BSL-4 laboratory for the first time, a scientist would submit a copy of an experimental protocol to be reviewed by the Laboratory and Branch Chief. Upon approval, the protocol would then be reviewed by the Institutional Biosafety Committee. Next, the Scientific Director and the Program Review Committee must approve the plan. After all these approvals have been received, individuals seeking access to the BSL-4 laboratory would undergo a security authorization.

A specific facility operations manual would be prepared and adopted. The BSL-4 laboratory would have special engineering and design features to prevent microorganisms from escaping into the environment (**Figure 2-2**).

The primary containment barrier in the laboratory is the biological safety cabinet, designed to provide a clean workspace and filter exhaust air. The second containment barrier is the BSL-4 laboratory itself. The BSL-4 laboratory would be located within the central core of the building, surrounded by a buffer corridor between the laboratory and the exterior. The buffer creates a stable pressure zone to eliminate impacts such as wind and temperature on the exterior of the building, which can affect pressure differentials. The BSL-4 laboratory would be designed and tested to ensure it is airtight.

2.1.2 Integrated Research Facility

The Integrated Research Facility would be a three-storied building, linked to the existing BSL-3 laboratory by two on-grade corridors. The Proposed Action consists of BSL-2, -3, and -4 laboratories and a boiler plant addition. The area of each component is shown below. The total area is approximately 105,000 functional gross square feet (Table 2-1).

Table 2-1. Proposed Action Areas	
Area	Size (feet²)
BSL-4	6,750
BSL-3	2,950
BSL-2	14,650
Common Areas/Office	25,650
Boiler Addition	1,810
Connection to Bldg. 25	2,034
Chiller	2,679
Mechanical	48,609
Total	105,132

2.1.3 General Building Design Components

Water System

The proposed Integrated Research Facility would be connected to the existing water main south of the proposed building. Hook-up would include a backflow prevention device. Water would be supplied by the City of Hamilton.

Sanitary Sewer

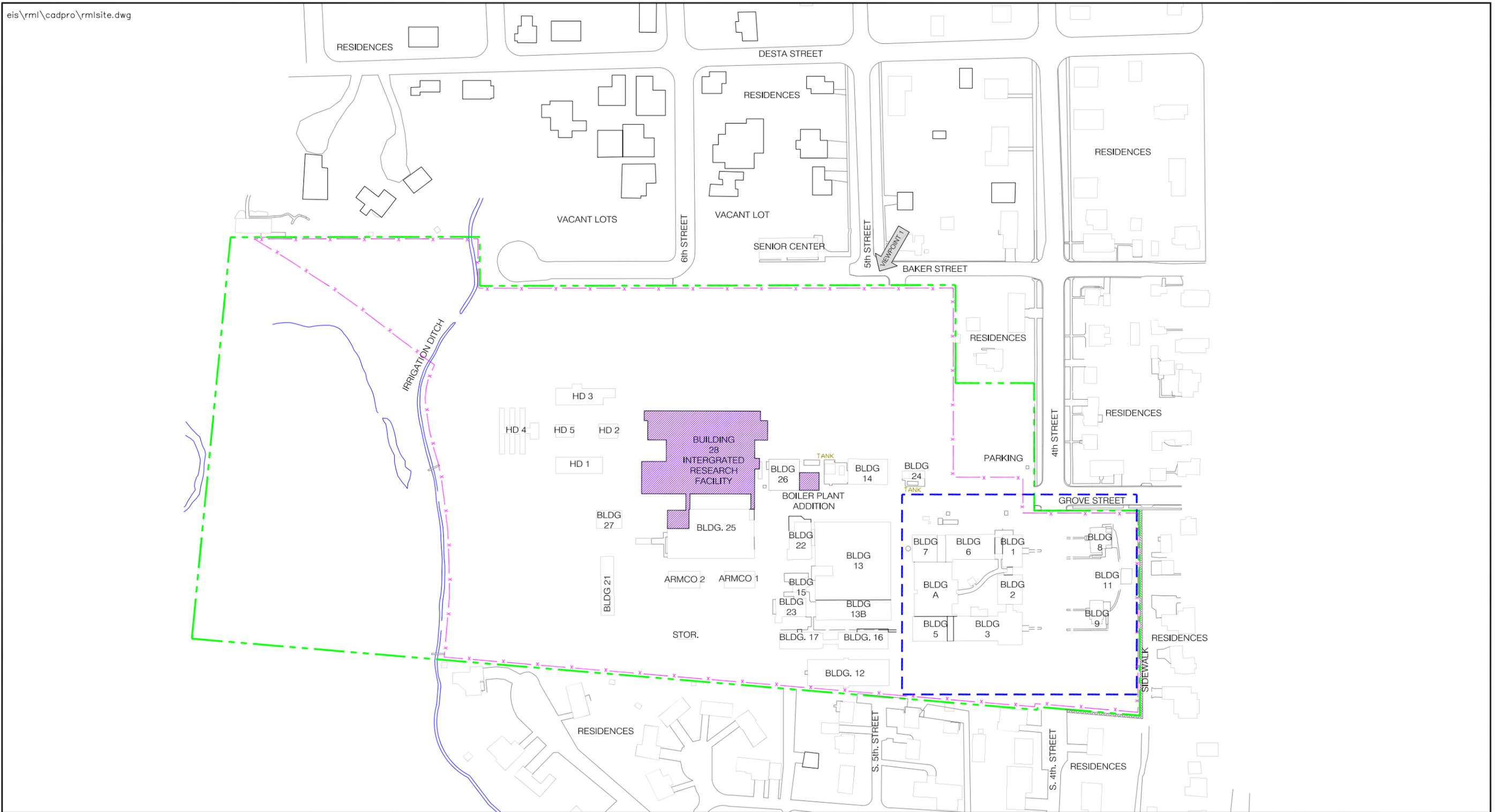
The Integrated Research Facility would connect to the existing City of Hamilton sewer system. All liquid waste from the high containment area would receive additional special treatment and monitoring before entering the sewer system (see Waste Decontamination on page 2-6).

Air Treatment

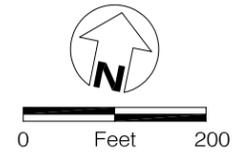
All air supplied to and exhausted from the BSL-4 laboratory would be High Efficiency Particulate Air (HEPA) filtered. Laboratory air passes through a minimum of two HEPA filters, in series, prior to release to the outdoors. All ventilating systems would be redundant, monitored, and maintained to assure appropriate containment (CDC/NIH 1999).

HEPA filters use a combination of methods to remove particles. As air moves across the filter, particles are caught by interception, inertial forces, and diffusion. The 0.3-micron particle size represents the most difficult size to capture for the HEPA filters; particles that are larger and smaller than 0.3 microns are actually captured more efficiently. Most bacterial and fungal particles are larger than 0.3 microns; most viruses are smaller. Therefore, these particles are filtered at a higher efficiency than 99.97 percent. Research has shown that undamaged filters remove 99.97 percent of 0.3 micron particles after more than a decade of continuous use (Edwards 2002).

Exhaust air from the BSL-4 laboratory suit area, decontamination shower, and decontamination airlock would be treated by passage through two HEPA filters in series rated for microbial aerosols before discharge to the outside. The air would be discharged away from occupied spaces and air intakes. HEPA filters would be located as near as practicable to the source in order to minimize the length of potentially contaminated ductwork. Laboratory biological safety cabinets (including air filters) would be certified once a year to ensure proper function. Safety cabinets would be re-certified when moved or relocated to a new area, as this could alter airflow and the functioning of the cabinet. Re-certification includes testing the HEPA filter, gaskets, and other air-handling systems in the cabinet.

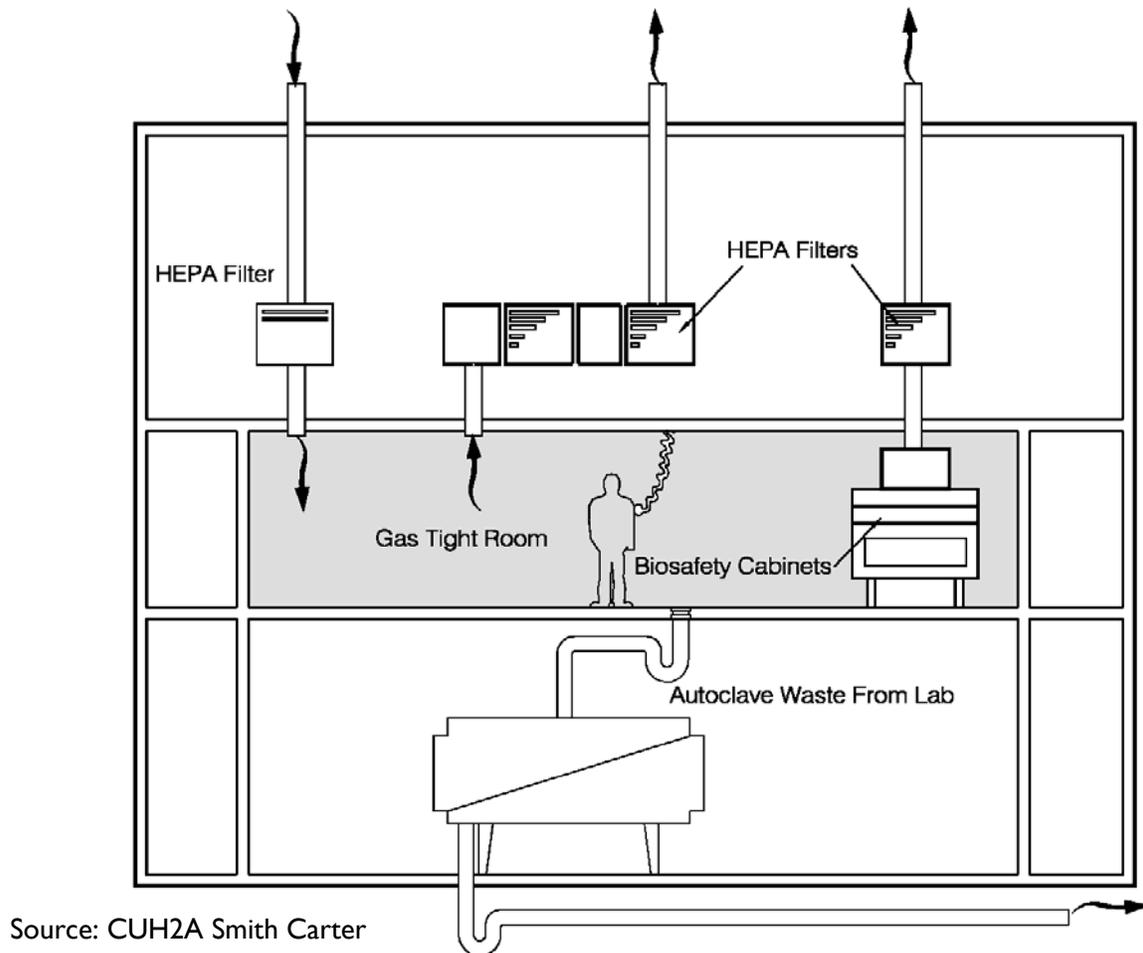


Source: Architects Design Group (2002)



- - - Property Line
- x - Fence
- - - Historic District
- Proposed Action

Site Map
 RML Integrated Research Facility
 Hamilton, Montana
 FIGURE 2-1



Source: CUH2A Smith Carter

Figure 2-2. Containment Design

HEPA filters would be disposed of through decontamination and incineration. HEPA filter housings would be designed to allow for decontamination of the filter before removal for incineration. Alternatively, the filter can be removed in a sealed, gas-tight primary container for decontamination and/or incineration.

Storm Water

Storm water runoff from the RML campus would flow into drywells, which would discharge to groundwater below the site. One drywell would be constructed for each 300 square feet of drainage area. The drywells would be six feet in diameter and eight feet deep. Roof drains would be connected to a drywell.

Fire Protection

Fire protection systems would be installed in the Integrated Research Facility to meet or exceed

requirements of all applicable codes, standards, and guidelines. The fire protection system would be simple to understand and maintain, and able to respond to changes in function or load with only minor modifications. It would perform under varying operating conditions.

Emergency Electrical Power Systems

A 2,000 KW/1563 KVA emergency generator with a 2000-ampere emergency/standby switchboard would be installed on the lowest floor of the Integrated Research Facility. Sufficient fuel storage would be provided to run the emergency generator for 72 hours. Additionally, a second 600 KW standby generator would be installed to support the new chiller plant.

Seismic Requirements

The Integrated Research Facility would be designed in accordance with Essential Facility requirements

of the International Building Code developed by the International Code Council with the intention that the facility would remain fully operational after a seismic event of a magnitude prescribed by the code. The facility would be classified as a Seismic Use Group III building in accordance with the International Building Code. The facility would be designed under Seismic Design Category C, which requires structure functionality to survive the event.

Showers

The BSL-4 laboratory would be designed to ensure passage through changing and decontamination areas prior to entering rooms where work would be preformed with BSL-4 agents (suit area). Personnel entering a decontamination area would wear a one-piece positive pressure suit ventilated by a life-support system protected by HEPA filtration. The life support system includes redundant breathing air compressors, alarms, and emergency backup air tanks. Entry to this area would be through an airlock fitted with airtight doors. A chemical shower would be provided to decontaminate the surface of the suit and other personal protective equipment before the worker leaves the area. BSL-4 laboratory workers leaving the laboratory would also take a shower. An automatic emergency power source would be provided at a minimum for the exhaust system, life support systems, alarms, lighting, and entry and exit controls. Air pressure within the suit would be higher than that of any adjacent area. All penetrations into the suit area, chemical showers, and airlocks would be sealed and tested to be gas tight.

Waste Decontamination

Contaminated solid waste which has been exposed to a biohazardous agent or generated in a laboratory, such as animal bedding, would be treated before disposal. All waste from the BSL-4 laboratory would be considered contaminated. Treatment would consist of autoclaving and disposing as general waste; incinerating and disposing as general waste; incinerating and disposing of ash or alkaline hydrolysis; and disposing through sewage systems.

Laboratory liquid waste from the BSL-4 laboratory would be piped to three biowaste cookers (one

cooker would be operating, one filling, and one for redundancy). The liquid waste would be heated under pressure to a temperature above 121°C for a minimum of 60 minutes to ensure sterilization. Biosensors, electronic monitoring, and charting would be used to verify proper operation of waste decontamination systems.

An alkaline hydrolysis process tissue digester would be installed for solid (animal) infectious waste disposal. This system would use alkaline hydrolysis at an elevated temperature to convert proteins, nucleic acids, and lipids of all cells and tissues, as well as infectious microorganisms (including prions), to a sterile aqueous solution of small peptides, amino acids, sugar, and soap suitable for disposal to a sanitary sewer. The tissue digester would consist of an insulated, steam-jacketed, stainless steel vessel. Liquid waste from the tissue digester would be discharged to a stainless steel holding tank. The holding tank would slowly discharge the waste into the sanitary sewer storage tank over a 48-hour period to dilute the waste to acceptable limits for the Hamilton City Sewer Treatment plant (CHDPW 2002).

Effluent from biowaste cookers would be discharged to a 12,000-liter (3,170-gallon) atmospheric tank for blending with other liquid waste from the building. The blending tank acts as a cool-down for biowaste material discharged from the cookers and dilutes the waste from the building to ensure compatibility with the city sewer treatment facility. Duplex grinder submersible pumps would evacuate the tank. A cold-water injection system would be installed for backup in the event that discharge from the blending tank exceeds the maximum 60°C temperature requirement. A test port would be provided downstream to allow users and city representatives to insert a test probe to analyze sewer discharge on a regular basis.

All vent piping from the biowaste system would pass through a double HEPA filter (or other microbial filters) before venting to the atmosphere. HEPA filters would be changed every five years and disposed of after decontamination with chemical disinfectant and incineration.

Biological materials removed from the BSL-4 laboratory in a viable or intact state would be contained in a sealed, primary container. The

primary container would be placed inside a non-breakable, sealed secondary container and removed from the facility through a disinfectant dunk tank, fumigation chamber, autoclave, or an airlock designed for this purpose. No materials, except biological materials that are to remain in a viable or intact state, would be removed from the BSL-4 laboratory unless they have been autoclaved or otherwise decontaminated before leaving the laboratory. Equipment or material that could be damaged by high temperatures or steam may be decontaminated by gaseous or vapor methods in an airlock or chamber designed for this purpose.

The digester system would be physically and biologically tested to verify that design and operation parameters have been met before operation, and annually thereafter. Testing of the system would include introduction of a carcass which has been injected (in multiple locations) with a suspension of benign indicator spores. A minimum six-log reduction (1/1,000,000) of the culture population would constitute acceptable performance of the liquid decontamination system. The control system for the tissue digester generates a batch report to confirm a successful digester run, including the date, time, temperature, pressure, load weight, level, and process time for each cycle. Using this information, the operator can modify the temperature, pressure, and length of cooking time to achieve acceptable decontamination before the system is operational.

Each batch of digestate (remaining solids) is transferred to the digestate holding tank, which is equipped with a discharge pipe that releases the batch into the blending tank. The amount blended into the tank is controlled by allowable limits for discharge to the sanitary sewer. The high biological oxygen demand wastewater generated by the alkaline hydrolysis process requires that no more than three times the volume of the discharge pipe (800 liters) be added to the 12,000-liter blending tank.

Safety

The RML Biosafety Committee, NIH Associate Director for RML, and relevant RML safety and biosafety staff would oversee efforts related to planning and design of the facility including review and approval of proposed protocols and standard operating procedures for the laboratory prior to

use. RML would use the standards and procedures (USDHHS 1999) recommended for all institutions engaged in biological research. A description of standard and special safety practices for working with biological materials is contained in **Appendix E**.

One-piece positive pressure personnel suits ventilated by a life support system would be used for all activities in the suit laboratory (BSL-4). Standard safety practices for access, personnel protection, and disposal of contaminated material are described elsewhere in this chapter. A complete description of standard and special safety practices for a BSL-4 laboratory is contained in **Appendix E**.

Energy Consumption

RML currently spends approximately \$1.4 million annually for electricity and natural gas used at the facility. The electrical power source is Kerr Dam near Polson, Montana. Natural gas is provided by NorthWestern Energy from sources within and out-of-state. Power consumption at the Integrated Research Facility is estimated to increase to an annual cost of \$2.1 million. The additional electrical power and natural gas would be supplied by current sources.

Several energy-saving devices would be incorporated into the proposed facility including, but not limited to, power-saving equipment and lighting and enhanced insulation.

Noise Reduction

The Integrated Research Facility would be designed to not exceed RML's draft noise guideline of 55 dBA at the property boundary during the day and 50 dBA at night (7:00 pm to 7:00 am). Design elements to reduce noise include:

- Selecting fans for exhaust and air handling units that can work adequately at their lowest possible speed to reduce fan noise;
- Installing a silencer or bank of silencers in the air-handling unit, in the exhaust ductwork or stacks, and in the emergency generator;
- Smooth transitions and elbows to limit turbulent airflow;
- Selecting quiet equipment;

- Conducting tests of the emergency generator during normal weekday working hours and not during quiet periods;
- Installing a muffler as part of the generator exhaust system;
- Covering as much of the ceiling and wall surfaces inside the generator room as feasible with absorptive material;
- Limiting the discharge air opening for the emergency generator to as small as feasible;
- Construction of an eight-foot high acoustical concrete masonry screen wall west of the relocated chiller; and
- Using manufacturer-supplied inlet and discharge attenuators on the cooling towers.

To reduce noise from construction, the following measures would be used to mitigate for temporary construction noise:

- Construct temporary barrier walls prior to construction;
- Install high-grade mufflers on the diesel-powered construction equipment and generators;
- Combine noisy operations to occur for short durations during the same time periods; and
- Construction activities would only occur from 7:00 am to 5:00 pm.

Noise monitoring and mitigation would occur as described in the No Action Alternative.

2.1.4 Operations

2.1.4.1 Commissioning Plan¹

Commissioning the BSL-4 laboratory would consist of systematically subjecting the facility to various operating and failure modes to ensure the laboratory systems function properly. The process would document that specified structural components, systems and/or system components have been installed, inspected, functionally tested, and verified to meet specific requirements. The

¹ Information from the 95% complete CUH2A Smith Carter Pre-Final Review Project Manual dated August 7, 2003.

respective system's design criteria and design function establish these requirements.

Commissioning

Commissioning is a systematic process of ensuring that all building systems perform interactively according to the design intent and operational needs. The commissioning process shall encompass and coordinate the traditionally separate functions of system documentation, equipment start-up, control system calibration, testing and balancing, performance testing, and training.

Commissioning during the construction phase is intended to achieve the following:

- Verify applicable equipment and systems are installed according to the manufacturer's recommendations and industry standards, and they receive adequate operational checkout;
- Verify and document proper performance as well as failure modes of critical equipment and systems;
- Verify that operation and maintenance documentation is complete; and
- Verify that RML's operating personnel are adequately trained.

System Testing

System tests are to ensure that equipment and systems have been properly installed and meet applicable operational design specification. In general, each system would be operated through all modes of operation (seasonal, occupied, unoccupied, warm-up, cool-down, part- and full-load and redundant, fail safe) where there is a specified system response. Verifying each sequence of operation is required. Proper responses to modes and conditions such as power failure, fire alarm conditions, biohazard, and specific system failures. System tests include:

- Pressure test of special rooms;
- Breathing air system (including suits);
- Liquid decontamination system;
- Chemical shower system;
- Chilled water system;

- Emergency generator system; and
- Security system (proximity card, operational software, door zones' access, interlock groups, closed-circuit TV cameras, and recording).

Integrated System Testing

Integrated system tests are used to demonstrate that each system is operating in concert with other systems according to the specified design. Proper responses to modes and conditions such as power failure, fire alarm conditions, biohazard, and specific system failures would also be tested. Goals of the integrated system tests are:

- Verifying that the facility has met construction design criteria;
- Providing the operation and maintenance staff with meaningful, hands-on demonstration of the facility's operation;
- Documenting the failure condition and response of the facility; and
- Identifying any trends in baseline data.

Functional Operation System Test

The functional operation system test provides a 30-day period for the facility to adjust to normal operational patterns. The test monitors the facility and lab functions, the life safety elements of the system operations (specifically as they relate to the interlocks of the various systems), fire alarms, and security and air systems. Training RML and local emergency personnel for high containment systems would be held during this period.

The functional operation system test would begin after the BSL-3 and BSL-4 laboratories and systems are complete with no deficiencies. Some minor adjustments may be made to optimize some system operations.

The testing would ensure fail-safe operation of the building to demonstrate that the building, occupants, and general public remain safe and biological hazards remain contained. Additional testing would be conducted to verify or recommission areas of specific concern or failure during the test. This would be the final acceptance test for the facility. Goals of the functional operating system test are:

- Demonstrate that each system is operating in concert with other systems;
- Verify the facility has met construction design;
- Provide operations and maintenance staff and local emergency personnel with in-depth training on various systems;
- Bring the entire facility from a state of substantial completion to full dynamic operation;
- Document failure conditions and response of the facility;
- Adjust systems for optimal performance as systems settle into a routine operating pattern; and
- Document variables to obtain facility operational and utility baseline data.

Animal Care and Use

Some of the biodefense and human disease research conducted in the proposed Integrated Research Facility would use animal models. The NIAID DIR would oversee all research activities involving the use of laboratory animals. These research activities would conform to the:

- Counter-Bioterrorism Research Agenda of NIAID for CDC Category A Agents;
- NIAID Biodefense Research Agenda for Category B and C Priority Pathogens; and
- NIAID Strategic Plan for Biodefense Research.

The Comparative Medicine Branch would administer the NIAID, DIR Animal Care and Use Program of the Integrated Research Facility. The number of laboratory animals required would depend on research requirements.

The Integrated Research Facility would use existing NIH and RML committee structures to oversee the animal facilities and programs at the Integrated Research Facility including research involving animals, research protocol reviews, documentation of training reviews, and semi-annual facility inspections. All research involving animals at RML will be conducted in full compliance with applicable regulations, including the Animal Welfare Act 7USC 2131 *et seq.*, The United States Department of Agriculture regulations implementing the Animal Welfare Act, 9 CFR Part 1, 2, and 3, the Public

Health Service Policy on Humane Care and Use of Laboratory Animals, and NIH Policy Manual Chapter 3040-2, Animal Care and Use in the Intramural Program (2002). Research protocols involving animals will be reviewed by the RML Animal Care and Use Committee.

RML has been inspected and fully accredited by the Association for Assessment and Accreditation of Laboratory Animal Care International (AAALAC International) since the 1970s. These inspections are done every three years by experts in animal care and use. Animal facilities are designed to provide suitable, secure, and consistent environmental conditions for research animals.

The Chief, RMVB, would provide support, research, and consultation in laboratory animal medicine; attending veterinary care; comprehensive animal husbandry; training in laboratory animal medicine, science, and animal care and use procedures; and review of research protocols for proper and lawful animal use. The Chief, RMVB, would conduct safety reviews, risk assessments, and semi-annual inspections of animal facilities. NIAID DIR would develop standard operating procedures that specify administrative guidelines; feed, bedding, and water; animal procurement and care; facility and equipment operations; waste disposal, sanitation, and sterilization procedures in accordance with NIH policies.

The Chief, RMVB, would report to the Director of the Division of Intramural Research (DDIR), NIAID. The DDIR would be responsible for implementing and administering animal use policies and would serve as a liaison between the Chief, RMVB, scientists, and NIH officials (e.g., Deputy Director for Intramural Research, Director of the Office of Animal Care and Use). The DDIR is also responsible for ensuring participation in the Animal Exposure Surveillance Program (AESP) by researchers that would work with animals. The AESP is a mandatory surveillance program managed by the Occupational Medical Service of NIH, and individuals that elect out of the program would be denied permission to participate in animal studies (NIH Policy Manual 3040-2, 28 March 2002).

Research involving rodents and lagomorphs would be performed in the biocontainment suites of the Integrated Research Facility. The procedure for removal of rodents and lagomorphs (e.g., rabbits)

from the biocontainment suites would involve euthanizing animals and then autoclaving the carcasses. Animals would be held in species-specific animal housing within biocontainment animal rooms. All studies involving etiologic agents would be conducted at levels appropriate to the study (BSL-2, -3, or -4).

Non-human primates (NHPs) would also be used as animal models in the Integrated Research Facility. NHPs would be housed in the Integrated Research Facility in accordance with federal, state, and local guidelines and regulations. Personal protective equipment used in NHP housing areas would follow guidelines outlined in the NIH Policy Manual 3044-2, Protection of NIH Personnel Who Work with Non-human Primates (9 February 1993), and the Biosafety in Microbiological and Biomedical Laboratories (4th edition 1999).

NHPs within Animal Biosafety Level - 2 (ABSL-2) suites containing only non-transmissible, non-latent infectious agents may be removed from the suite provided they are healthy and demonstrably immune to all agents in use. NHPs previously infected with transmissible or possibly latent agents would only be removed to other biocontainment suites with an equal or higher level of biocontainment. Removal to other biocontainment suites would be coordinated with the Chief, RMVB, and only done if the principal investigator and DDIR are informed and concur with the movement. NHPs would be transported between suites in sealed, leak-proof containers that have been disinfected. The containers would be sterilized after use. NHPs in suites where transmissible possible latent agents are used would be treated as potentially infected with these agents (Elkins 2003).

Neighborhood Meetings

Meetings with community representatives would be held regularly before, during, and after construction to maintain dialogue about RML's operations. Additional means of communication (mailing lists, e-mail lists) would be established with neighbors and people in the Community Liaison Group.

BSL-4 Laboratory Access

Only people completing the security clearance and approval process would be allowed to enter the

BSL-4 area. Safety precautions at the access point for the BSL-4 laboratory would include:

- Only persons whose presence in the respective laboratory is required for program or support purposes would be authorized to enter;
- Access would be limited by secure, self-closing, lockable doors managed by the facility manager or biosafety control officer;
- Biometric devices and touch pads would be used to screen anyone entering the laboratory;
- Upon entry, everyone would be advised of the potential biohazards and given instructions on safeguards;
- Date and time of entry and exit would be logged for everyone accessing the BSL-4;
- Complete laboratory clothing (undergarments, pants, shirt, shoes, gloves, etc.) would be used by all personnel entering the laboratory;
- A complete clothing change and decontamination shower would be required of personnel leaving the laboratory; and
- Supplies and materials used in the laboratory would be brought through a double-door autoclave, fumigation chamber, or airlock, which would be decontaminated between uses.

Personnel Protection

Personnel protection measures used by laboratory workers would include:

- Laboratory personnel would receive available immunizations for agents handled or potentially present in the laboratory;
- The current serologic surveillance program would be continued whereby baseline serum samples for all laboratory and other at-risk personnel would be collected and stored;
- Laboratory and support personnel would receive appropriate training concerning potential hazards associated with the work;
- Laboratory equipment would be decontaminated daily and after each procedure;
- Equipment would be decontaminated before repair or maintenance is performed; and

- Daily inspections of all containment parameters (e.g., directional airflow) and life support systems would be completed before laboratory work is initiated.

Disposal of Contaminated Material

Except where noted above, disposal of contaminated materials generated by the Integrated Research Facility would be the same as described under the No Action Alternative.

Disposal of Non-Contaminated Material

Except where noted above, disposal of non-contaminated materials generated by the proposed Integrated Research Facility would be the same as described under the No Action Alternative.

Security

Planning and implementation of the NIH police force would continue as described under the No Action Alternative. Under the proposed action, police would be located throughout the RML campus and within the Integrated Research Facility. Additional police officers may be hired depending on current security policies and procedures. All construction contractors would be subject to background checks prior to commencing work.

Security described under the No Action Alternative would apply to the Proposed Action.

Emergency Plan

The current Emergency Plan would be updated and address issues associated with the building prior to its operation. See Section 2.2.1 under the No Action Alternative for a description of the current plan.

2.1.5 Pollution Prevention

Spill Prevention

Spill prevention associated with the Integrated Research Facility would be the same as described under the No Action Alternative. In addition, fuel storage and dispensing during construction would occur in a designated staging area at the construction site. The construction contractor would limit equipment and materials storage to the staging area and be responsible for securing access and hazardous material containment and cleanup.

The contractor would also be responsible for all other materials and chemicals used in the maintenance of equipment and machinery during construction. All spills, except as noted below, will be reported immediately to the state's Disaster and Emergency Services Division (DES) 24-hour phone number (406) 841-3911. If no one can be reached at that number, the spill may be reported to the Montana Department of Environmental Quality (MDEQ) duty officer at (406) 431-0014.

The following types of spills are not required to be reported, provided, the spilled material does not enter or threaten to enter state water, and that it is immediately contained, removed, and properly treated or disposed of in accordance with state regulations:

- 10 barrels (420 gallons) or less of crude oil, produced water, injection water, or combination thereof; or
- 25 gallons or less of refined crude oil products, including but not limited to gasoline, diesel fuel, aviation fuel, asphalt, road oil, kerosene, fuel oil, and derivatives of mineral, animal, or vegetable oils.

Through use of a designated staging area for construction equipment and materials, accidental spills would be limited to a specific area. Storm water and runoff management controls would be implemented and include mitigations such as a silt fence on the west side of the site. Site personnel would be able to respond rapidly and appropriately to spills and minimize their extent and magnitude.

Hazardous Materials

Hazardous waste generated at the Integrated Research Facility would be managed as described in the No Action Alternative. Hazardous waste generated during and after construction of the Integrated Research Facility would be less than 220 pounds of hazardous waste generated within any calendar month. No more than 2,200 pounds of hazardous waste would be accumulated at any one time, and no more than 2.2 pounds of acute hazardous waste or 220 pounds of soil contaminated from an acute hazardous waste spill would be generated or accumulated at any one time, on the entire RML campus. Use of hazardous materials and generation of hazardous waste may

be expected to increase slightly with the addition of the Integrated Research Facility, but not commensurate with the 30 percent increase in the number of employees at RML.

Radioactive Materials

Radioactive materials used at the Integrated Research Facility would continue to be managed and disposed of as described in the No Action Alternative.

Generation of low-level radioactive waste is anticipated to increase about 30 percent with construction of the Integrated Research Facility. However, alternative technologies that do not require use of radioisotopes have become available for labeling of proteins such as chemical luminescence and immunofluorescence. These technologies may be expected to reduce any potential increase in radioisotope usage at RML. Use of sulfur-35 is likely to increase because, according to RML personnel, it is the best way to label proteins within cells. RML has sufficient capacity in its decay-in-storage program to manage projected increases.

2.2 PROJECT ALTERNATIVE

The only alternative to the Proposed Action discussed in detail is the No Action Alternative.

2.2.1 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. Existing operations at RML, including pollution prevention discussed under the Proposed Action, would be maintained and operated at current levels, and construction of a new Integrated Research Facility would not occur. The NIAID mission and its resources have been expanded to include development of diagnostics, therapeutic, and vaccines, which RML's current facilities cannot fully accommodate. It is likely that in the long term, current staffing levels and the operating budget at RML would be redirected to support this new mission.

Because of the need for the BSL-4 laboratory to be constructed at an intramural facility and within the limits of the budget, the No Action Alternative addresses all alternatives suggesting construction of the facility at another location. Selection of the No

Action Alternative would not preclude construction of the facility at another location. Consideration of constructing the BSL-4 laboratory at another location would require congressional action (authorization of additional funding) and another NEPA analysis on a site specific proposal, including scoping and other public comment opportunities. See Section 2.2.2 - Alternatives Considered But Eliminated from Detailed Study.

2.2.1.1 Operations

Noise Reduction

Periodic noise measurements will be taken by an independent professional acoustic contractor to evaluate compliance with voluntary guidelines. In the event that noise levels exceed the guidelines, NIAID would review possible alternatives to resolve the issues.

Disposal of Contaminated Material

Clothing used in the laboratory is autoclaved before laundering. Containers of used needles, sharp instruments, and broken glass are decontaminated before disposal in accordance with federal, state, and local regulations.

All prion contaminated animals and animal bedding/waste are disposed of via the approved method of on-site incineration. Ash from the incinerator is transported to a landfill. RML has been conducting TSE research for over 40 years employing these disposal methods.

Disposal of Non-Contaminated Material

Waste that has not come in contact with a biohazardous, radioactive, or chemical material is considered noncontaminated and is disposed of as general waste.

Security

Traditional laboratory biosafety guidelines emphasize good work practices, appropriate containment equipment, well-designed facilities, and administrative controls to minimize risks of accidental infection or injury for workers and to prevent contamination of the environment outside the laboratory.

Security at RML is governed by GSA Security guidelines and by statutes and regulations

governing possession, use, and transfer of certain biological toxins and agents (select agents). Governing rules and guidelines include Section 817 of the USA PATRIOT Act; Section 351A of the Public Health Service Act (as amended by Section 201 of the Public Health Security and Bioterrorism Preparedness and Response Act and amended by Section 302(9) of the Homeland Security Act); and USDHHS regulations at 42 CFR Parts 72 and 73. Management periodically reviews safety policies and procedures for consistency with these regulations, other facilitywide policies, and adequacy to meet current conditions. Supervisors ensure that all workers and visitors understand security requirements and are trained and equipped to follow procedures. Safety policies and procedures are reviewed on an ongoing basis and whenever an incident occurs or a new threat is identified. Guidelines implemented for security include preventing unauthorized entry to laboratory areas and removal of dangerous biological agents from the laboratory.

An NIH police force has been established at RML. A full-time captain has been hired and is currently on site, and a sergeant was hired in January 2004. RML will eventually have six full-time federal police officers. The NIH police force will assist the current security guards in screening workers and visitors, conducting background checks, preparing and monitoring identification cards, security planning, and security implementation.

Access Control

Access into RML is controlled through the following measures:

- Background and security checks are conducted on new employees by the Office of Personnel Management for any security or laboratory assignment;
- Workers and visitors would display visible identification badges with a photograph and expiration date;
- A proximity reader system is used for clearance into restricted areas;
- Laboratories and animal care areas are separated from public areas;
- Laboratory and animal care areas are locked at all times;

- Entry and exit from laboratory and animal care areas is recorded;
- Only authorized personnel are allowed in laboratories and animal care areas;
- Freezers, refrigerators, cabinets, and other containers are locked where biological agents, hazardous chemicals, or radioactive materials are stored in unattended storage areas;
- Security cameras are located throughout the facility, on the perimeter, and in select buildings, including areas where biological agents are stored; and
- Visitors are cleared at the main entrance and escorted into the RML campus accompanied by an RML employee at all times. RML facilities are designed for high security maintained around-the-clock. Security guards and NIH police officers will be on campus at all times. Security of the interior is based on layers, where separate security zones in combination with access control devices, biometrics, and touch pads are required for access.

As a condition of their contract with RML, all contract security guards must successfully complete training which includes:

- Approximately 32 hours of basic curriculum training. This is the core security training where guards are instructed in handling emergencies, security patrol methods, firearms safety/handling, vehicle inspection techniques, security patrol methods, and search and seizure;
- Orientation training. The training focuses on post familiarization, the facility emergency plan, personnel identification, entry/exit control procedures, explosive detection machine operation, and the guard duty book logging; and
- Supervisory training. This training covers topics such as issuing verbal and written orders, record keeping, and managerial public relations.

Security personnel must complete refresher course training quarterly on the aforementioned topics. In addition, all security personnel must maintain a current certification related to first aid, cardiopulmonary resuscitation, and OSHA Standard 29 CFR 1910.1030, Occupational Exposure to Blood-borne Pathogens.

NIH police officers will be present at RML along with contracted security guards. All officers will be graduates of the Federal Law Enforcement Training Center's Mixed Basic Police Officer Training Program or of a Police Academy which meets the federal program criteria. NIH police officers at RML must also complete 40 hours of annual in-service training, a semi-annual training related to firearms, security, and supervision.

Laboratory Deliveries

All packages will be screened at the perimeter (using K-9 units, chemical sniffers, or X-ray) before entering the RML campus, and packages containing specimens, bacterial or virus isolates, or toxins will be opened only in a safety cabinet or other appropriate containment device.

Material Removal from Laboratory Areas

Biological materials/toxins for shipment will be packaged and labeled in accordance with all applicable federal, state, and local regulations (see **Appendix C**, (Transportation and Transfer of Agents). Traditional laboratory biosafety guidelines emphasize good work practices; appropriate containment equipment; well-designed facilities; administrative controls to minimize risks of accidental infection or injury for workers; and administrative controls to prevent contamination of the environment outside the laboratory.

2.2.1.2 Pollution Prevention

Spill Prevention

RML has a Spill Prevention Control and Countermeasure (SPCC) plan that complies with Clean Water Act rules. The SPCC plan covers petroleum fuel stored in eight aboveground storage tanks at RML. EPA currently requires the plan to be reviewed every five years. The plan contains standard operating procedures for responding to spills of oil and hazardous substances and describes actions required for spill reporting, containment, and cleanup. The plan is reviewed and modified as necessary. RML has standard operating procedures in place and trained personnel to respond to spills. Eleven RML employees are trained as hazardous materials specialists and are part of RML's HAZMAT team. Members of the HAZMAT team are trained in

toxicology, decontamination, spill containment, chemical characteristics, communication, and first aid. Specialists are accessible 24 hours per day, seven days per week for any spill incident that may occur at RML. Security staff is also trained to monitor the site for potential areas of concern, including accidental spills.

Response actions for fuel spills focus on protecting public health, safety, and the environment. Trained site personnel contain spills through use of berms and absorbent materials. The nature, extent, and magnitude of the spill is defined under the direction of the Montana Department of Environmental Quality (MDEQ).

RML has designated several storage areas with secondary containment to prevent releases to soil and water. Should a spill occur, HAZMAT personnel mobilize equipment to control the hazard and implement cleanup. Spill response supplies available at RML include absorbers, neutralizers, and sewer drain caps.

Hazardous Materials

RML is licensed by the U.S. Environmental Protection Agency as a small-quantity generator of hazardous chemicals and materials. Hazardous chemical wastes are accumulated on site in accordance with RCRA Subtitle C. The RML facility is registered with MDEQ under USEPA Hazardous Waste Management Identification Number # MT3750802875. Transportation and final disposition of stored hazardous waste is conducted by a licensed hazardous waste management contractor approximately once a year. The hazardous chemical storage area is located west of the main campus laboratory complex in a specially designed structure with secondary containment, spill alarms, and automatic fire suppression systems. The chemical waste storage structure is equipped with fire suppression systems, ventilation, and Class I Division 2 explosion-rated wiring.

RML is currently stressing waste minimization practices. Hazardous waste manifests show a declining trend in the disposal of hazardous waste from RML over the last few years. Waste minimization practices include ordering necessary laboratory chemicals in smaller quantities. Currently RML produces less than the 220 pounds

of hazardous waste per month allowed for conditionally exempt, small-quantity hazardous waste generators.

Most hazardous materials used at RML are used in laboratory experiments. Most of the hazardous waste generated at RML can be grouped into categories based on their physical and chemical properties: toxic, flammable, or corrosive. Flammable compounds used in the greatest quantities at RML include acetone, acetonitrile, formamide, toluene, triethyl amine, and xylene. Corrosive compounds used in the greatest quantities by RML include acetic acid, formic acid, hydrochloric acid, potassium hydroxide, and sulfuric acid. Toxic compounds used in the greatest quantities at RML include formaldehyde, chloroform, phenols, and propylene glycol ether mixed with parafinic solvents.

RML periodically contracts with licensed hazardous waste transporters such as Safety-Kleen, Inc. or Burlington Environmental to haul wastes to licensed hazardous waste disposal facilities such as Safety-Kleen's facility in Argonite, Utah, or N.S.S.I. Recovery Services' facility in Houston, Texas.

A solid and hazardous waste specialist from the MDEQ inspected RML for its compliance with hazardous waste rules and regulations. A February 20, 2003, letter from MDEQ to Ms. Dianne Huhtanen at RML noted that no violations of applicable hazardous waste regulations were observed during the inspection.

Radioactive Materials

RML operates under a U.S. Nuclear Regulatory Commission (NRC) Materials License number 25-01203-01 which authorizes receipt, possession, location, and conditions for using radioactive materials. The RML Radiation Safety Committee and the radiation safety officer are responsible for supervision and regulatory compliance.

The CFR Part 20 specifies licensee requirements for radiation protection programs, including dose limits, storage, and control of licensed material, waste disposal, and record keeping. NRC conducted a safety and compliance inspection on May 8, 2002. The report stated that, based on inspection findings, no violations were identified.

RML's NRC license specifies amounts of various radioactive isotopes that may be in possession at any one time. Researchers must submit protocols for use of radioactive materials to the Radiation Safety Committee for approval. The protocol must specify names of users, isotopes, activity to be ordered, safety precautions, types of waste generated, procedures for handling waste, and actual scientific procedures performed. All scientific staff using isotopes are trained on topics including properties of ionizing radiation, safety procedures, proper handling techniques, NRC regulations, RML requirements, appropriate survey procedures, security, and record keeping.

The RML radiation safety officer tracks every isotope from the time of ordering until final disposition. Inventories of isotopes on hand are updated every month. In addition, RML has instituted a decay-in-storage program for radioactive waste of isotopes having less than a 120-day half-life. Each radioactive storage bag for solid waste or container for liquid waste must identify the specific isotope, date of storage, generator name, and activity. Waste disposal inventories that account for radioactive decay are updated monthly to show actual activity on hand for each waste unit.

The RML radiation safety policy emphasizes waste minimization. Final disposition of waste is conducted by the radiation safety officer or a designee. Extremely low levels of radioactive solid waste are incinerated. The EPA compliance code applied to RML incineration of radioactive waste has resulted in an exempt designation. Ash from the radioactive waste incinerator has been collected for storage, and disposal will occur according to NRC regulations. On one occasion a licensed broker has transported uranium and thorium waste compounds to the US Ecology Site for low-level radioactive waste in Washington. RML maintains a current site use permit at the Richland, Washington site to provide options for disposal of long half-life radioactive waste.

The NRC license for RML includes possession and use of a JL Shepherd Mark I, Model 30 irradiator containing a sealed source of cesium. This equipment is used to irradiate tissue culture cells or other biological specimens. Safety precautions

include training, room monitor, monthly safety and interlock checks, and semi-annual leak tests.

Emergency Plan

Emergency plans for RML are periodically updated. Principal elements of the current plan include:

- evacuation;
- room clear;
- shelter in place;
- lockdown;
- dangerous person on site;
- suicide threat or attempt;
- death, serious injury or medical condition on site;
- fire or explosion;
- hazardous material spill;
- bomb or suspicious device;
- bomb threat; earthquake;
- civil disturbance;
- severe weather conditions;
- electrical outage;
- blood borne pathogen exposure;
- medical assessment procedure;
- emergency communications for use in extreme emergencies;
- radiation spill on body;
- chemical spill on body;
- biological spill;
- suspicious packages or mail;
- emergency evacuation of animal facility; and
- elevator failure.

Emergency plan revisions will involve the facility administration; Laboratory and Branch Chief; principal investigators; laboratory workers, and facility and NIH safety and security personnel. Local police, fire, and other emergency responders will be informed of the types of biological materials used in the laboratory and consulted in developing the revised emergency response plan.

NIH works closely with other government agencies to monitor intelligence regarding terrorist activities. The NIH also maintains an alert system that is based on the perceived threat to NIH's facilities. All NIH facilities, regardless of location, employ these security standards.

NIH has developed a comprehensive security plan that includes biological security. While exact details of the security plan are security-sensitive, NIH will use the most stringent security standards relating to physical security, background checks, intelligence gathering, and coordination with local, state and federal law enforcement agencies. Standard operating procedures will be developed in partnership with the RML, infectious disease specialist Dr. George Risi, the Ravalli County health officer, and local emergency response coordinator (as required by the Ravalli County Disaster and Emergency Operations Guideline).

The plan will be expanded to address facility-specific protocols for transporting injured or potentially infected personnel to emergency care facilities outside of the RML. Dr. Risi and NIH staff will review current agreements with emergency providers from other government and civilian laboratory facilities. A memorandum of understanding is planned with local emergency services and hospitals. The memorandum will outline RML's expectations in regard to the transportation, acceptance, admittance, and short- and long-term care of patients under various injury scenarios, including patients believed to be exposed to agents.

Incident Reporting and Protocols

The revised Emergency Response Plan will include provisions for notifying the Laboratory and Branch Chief, workers, safety personnel and other appropriate personnel, and the public in the event of an incident having the potential to impact the public. Policies and procedures will be in place for reporting and investigating incidents or potential incidents (e.g., undocumented visitors, infectious diseases, missing chemicals, unusual or threatening phone calls).

In the event of an incident, public communication will be facilitated by the Ravalli County public information officer in conjunction with the RML public affairs office, and in accordance with the

Ravalli County Disaster and Emergency Operations Guide. The Health Department maintains a public health emergency communication system called the Ravalli County Health Alert Network (RCHAN) to inform the public of infectious diseases or environmental hazards. Targeted community contacts are informed by telephone, fax, and email. The public information officer at the county will communicate information and instructions through news releases to the media as needed.

2.2.2 Alternatives Considered But Eliminated From Detailed Study

This section describes alternatives to the Proposed Action that were eliminated from further review. These alternatives were identified during the public scoping process or by RML during review and analysis of the Proposed Action. These alternatives were considered technically infeasible, provided no environmental advantage over the Proposed Action or No Action, or would not meet the purpose and need.

2.2.2.1 Build the Integrated Research Facility in Bethesda, Maryland

Some comments suggested that the Integrated Research Facility should be built at the NIH campus in Bethesda, Maryland.

Rationale for Dismissing

Construction of the Integrated Research Facility at the Bethesda, Maryland campus would not meet the purpose "to provide a highly contained and secure intramural laboratory at RML dedicated to studying the basic biology of agents of emerging and re-emerging diseases, some of which have potential as bioterrorism agents.... in conjunction with "federal funding parameters associated with NIAID's intramural laboratory program." Bethesda, Maryland and Rockville, Maryland, are the only other intramural research facilities NIAID operates. A BSL-4 laboratory for NIH use has been constructed at the Bethesda site.

Locating the proposed Integrated Research Facility at either the NIH Bethesda or Rockville campuses is not prudent or practicable.

Based on the NIH Bethesda Master Plan, there are currently no available spaces on either campus capable of accommodating the Proposed Action.

All unoccupied sites have been developed or are otherwise allocated. Other areas of the campus approved for laboratory activities presently contain laboratory or service and support uses, which provide critical support space for other aspects of the NIH mission. These facilities cannot be relocated until suitable replacement space can be provided, a process estimated to require more than a decade to complete. Developing the Proposed Action within the footprints of these structures is not realistic.

Issues addressed through this alternative are also addressed through the No Action Alternative.

2.2.2.2 Relocate Rocky Mountain Laboratories to a Less Populated Area

Several commenters suggested that NIH/NIAID relocate RML to another, less populated site. The commenters noted that relocation of RML would avoid potential impacts posed by biological and infectious agents studied at RML.

This alternative would eliminate some of the consequences of the Proposed Action (such as additional traffic, construction noise, and increased water consumption associated with the Integrated Research Facility), and the effects would be the same as the No Action Alternative described in Chapter 4.

Rationale for Dismissing

To relocate RML to a less populated area would require NIH to obtain land; plan, design, construct, and commission new facilities that meet programmatic needs, requisite codes, and requirements; and obtain needed local, state, and federal permits. A new facility would require adequate and reliable utility and infrastructure services (water, sewer, power, roads) and access to reliable transportation and shipping services. Relocation of existing government staff and family members, secure adequately trained contract and repair services, recruitment of new staff to a more remote area, and provisions for schools for family members would be required. Relocation would necessitate decommissioning and closure of the present RML facility. Relocation would take approximately 15 years and cost nearly \$1 billion.

The cost of building the proposed facility at a different location was determined by considering

the total costs for not only the facility, but also for the structure needed to support the facility that currently exists at the RML. These costs included the following:

- Site location and site purchase (\$9.84M);
- Site development/ utility infrastructure (\$297.13M);
- Research facilities including the proposed BL-4 facility and the adjacent existing BL3 that will support the BL-4 (\$167.7M);
- Research support facilities that currently exist at the RML and will be used to support the BL-4 (\$47.86M);
- Emergency response service (\$20.75M); and
- Additional staffing that will be available at the RML available to support the BL-4 (\$2.5M) and other additional costs including transportation and contracted services (\$11.35M).

The total cost of these services is approximated at a total of \$920.18M. The length of time to provide a facility at the alternate location would be 15 years. Cost and time ultimately make the alternative unreasonable.

The highly trained and specialized staff at RML would not likely transfer en-masse, increasing the time needed to attain current levels of research performed at RML.

This alternative does not meet the purpose and need “to provide a highly contained and secure intramural laboratory at RML dedicated to studying the basic biology of agents of emerging and re-emerging diseases, some of which have potential as bioterrorism agents...” in conjunction with “federal funding parameters associated with NIAID’s intramural laboratory program.” Congress has authorized expenditure of \$66.5 million for construction of an Integrated Research Facility through NIH’s Intramural Laboratory Program. Construction of the facility at an alternate site would require new funding to provide infrastructure and research laboratory support currently in place at RML.

This alternative is also outside the scope of the Project (see Decision to Be Made on page I-7).

This alternative is represented by the No Action Alternative (which includes not building the

Integrated Research Facility at RML). An alternative such as this could be considered in a future NEPA analysis, regardless of which alternative is selected under this project.

2.2.2.3 Construct Integrated Research Facility at Alternate Location

Other commenters suggested that the proposed Integrated Research Facility containing the BSL-4 laboratory be constructed at a more remote site away from Hamilton, at a military base, or somewhere with an existing infrastructure. These commenters suggested the relocation of the BSL-4 laboratory would avoid potential impacts posed by biological and infectious agents studied at RML, or that these other areas might be more easily protected from terrorist attack. This suggestion was also made in several comments on the DEIS and SDEIS.

This alternative would also eliminate some of the consequences of the Proposed Action, and the effects in Hamilton and Ravalli County would be the same as the No Action Alternative described in Chapter 4.

Rationale for Dismissing

A key component of the studies in the proposed Integrated Research Facility involves integration of current RML scientists with those working in the new facility. Locating the BSL-4 laboratory at a separate location from the existing RML campus would eliminate the connected research on projects that use BSL-2 and BSL-3 facilities, making research inefficient and impractical.

This alternative also fails to meet the purpose “to provide a highly contained and secure intramural laboratory at RML dedicated to studying the basic biology of agents of emerging and re-emerging diseases, some of which have potential as bioterrorism agents. ... “in conjunction with “federal funding parameters associated with NIAID’s intramural laboratory program.” A site other than at NIH would have to either be purchased or go through the lengthy federal and state permitting processes. Utilities, roads, and other infrastructure or services would be necessary to support the facility.

Issues addressed through this alternative are also addressed through the No Action Alternative. An

alternative to locate an Integrated Research Facility at an alternative location could be considered in a future NEPA analysis, regardless of which alternative is selected under this project.

2.2.2.4 Construction and Administration of Integrated Research Facility Be Conducted By Another Agency, or at Another NIH Location

Commenters suggested that the Integrated Research Facility should be authorized and operated by another agency, not NIH, or that it should be constructed as part of a different facility operated by NIH. Some of the alternative locations mentioned were NIH at Bethesda, Maryland, or Ft. Detrick, Maryland.

Rationale for Dismissing

NIH has no authority to direct other agencies to construct an Integrated Research Facility. Legislation approved by Congress and the President is needed to construct a research laboratory building. Actions by other agencies related to BSL-4 laboratory construction are outside the scope of this EIS.

Construction and administration of the proposed Integrated Research Facility at RML in Hamilton by another agency, private group(s), or at different NIH facility would not meet the purpose “to provide a highly contained and secure intramural laboratory at RML dedicated to studying the basic biology of agents of emerging and re-emerging diseases, some of which have potential as bioterrorism agents...” in conjunction with “federal funding parameters associated with NIAID’s intramural laboratory program.” Bethesda, Maryland, already has a BSL-4 laboratory. Fort Detrick, Maryland, is operated by the U.S. Army. NIH has just completed an EIS on a BSL-4 facility at Fort Detrick planned for NIAID.

Issues addressed through this alternative are also addressed through the No Action Alternative.

2.3 AGENCY’S PREFERRED ALTERNATIVE

After reviewing the potential effects of the alternatives (**Table 2-2**) along with the purpose and need for the Project, NIH has identified the Proposed Action as the preferred alternative.

2.4 SUMMARY COMPARISON OF ALTERNATIVES

Table 2-2. Comparison of Alternatives		
Purpose and Need	Proposed Action	No Action
Provide a highly contained and secure intramural laboratory at RML dedicated to studying the basic biology of agents of emerging and re-emerging diseases, some of which have potential as bioterrorism agents.	The Proposed Action meets the purpose of the Project.	No action does not fulfill the purpose of the Project.
Issue	Proposed Action	No Action
Housing	The adjacent neighborhood could encounter direct negative impacts during construction of the Integrated Research Facility from noise and dust for two years. New housing units would be needed within commuting distance.	Additional annoyances of the construction phase would be eliminated. Housing starts would continue at about the same pace, although houses may remain on the market longer with fewer qualified buyers.
Education	School capacity is adequate for new growth, especially since school-aged populations are decreasing, but operating and maintenance costs would continue to increase.	No change in school enrollment.
Community Safety	No increased risk to the community.	Negligible risk to the community.
Transportation	RML traffic expected to increase total traffic by 16% during peak hours by 2006; residential traffic would make the increase a total of approximately 20%.	Residential traffic is expected to increase approximately 4% by 2006.
Economic Resources Income	100 new employees with total annual payroll estimated at \$6.6 million. RML would contribute a total of \$17 million in payroll annually.	No new employees, total annual payroll would remain at \$10.4 million.
Government and Public Finance	Public finance revenues would increase as a result of increased income tax on the Integrated Research Facility-related construction and operations payrolls, as well as the incomes of spouses and older children of RML employees, increased vehicles being licensed, and property tax revenues based on the additional new homes and increased property assessments.	No increase in tax revenues from the Integrated Research Facility.

Table 2-2. Comparison of Alternatives		
Issue	Proposed Action	No Action
Noise	Noise from the Integrated Research Facility would be in the 35-50 dBA range at the property lines when all equipment is operating. Construction activities associated with the Proposed Action would generate intermittent short-term noise impacts. Overall noise level would remain at the current 44-58 dBA until reasonably foreseeable improvements are made to reduce them to 55 dBA at the property lines, which is the draft noise guideline for RML.	Existing noise would range from the current 44 to 58 dBA with the steam vents and incinerator operating and 43 to 61 dBA with the emergency generator operating, until reasonably foreseeable improvements are made to reduce them to 55 dBA at the property lines, which is the draft noise guideline for RML.
Visual Quality	A general improvement of the appearance of the site, due to the Proposed Action and cumulative effects.	No effect due to no action. Cumulative effects are a general improvement of the appearance of the site.
Historical Resources	No adverse effect.	No adverse effect.
Air Quality	Construction activities associated with the Proposed Action would generate short-term air impacts. Operation of the Integrated Research Facility increases the activity level at the laboratories and related emissions from the facility. Applicable air quality standards would be met.	Emissions from RML would remain at current levels. Applicable air quality standards would be met.
Water	Water consumption at RML would increase by up to 35 percent. Wastewater discharge at RML would increase by about 30 percent. Both water supply and wastewater treatment in Hamilton can adequately handle this increase.	No increase in water or wastewater.