

Chapter Two

Introduction and Program Requirements



2 Introduction and Program Requirements

2.1 Introduction

The National Institutes of Health (NIH) is the focal point of the federal government for health research and one of the world's foremost biomedical research institutions. Its mission is to discover new knowledge that will lead to better health for all. To achieve that mission, the NIH invests over \$28 billion annually in medical research for the American people.

More than 80% of NIH's funding is spread across almost 50,000 competitive grants awarded to more than 300,000 researchers at over 3,100 universities, medical schools, and other research institutions in every state of the Union and around the world.

Of its remaining budget, about 10% of NIH's funds support projects conducted by nearly 6,000 scientists in laboratories on the Bethesda campus and at other NIH Intramural facilities including RML. In addition, approximately 1,500 studies are in progress at the NIH Clinical Center at Bethesda. Most of these are Phase I and Phase II clinical trials.

Research is conducted at both the basic and clinical levels, encompassing studies related to the prevention, diagnosis, treatment and cure of diseases that afflict men, women and children around the world. In addition, the basic research supported by NIH provides the foundation for the nation's pharmaceutical and biotechnology industries. As one measure of the agency's excellence in research, at last count, NIH-supported investigators had won over 113 Nobel Prizes (between 1939 and 2004).

2.2 Authorization & Applicability

The Rocky Mountain Laboratories (RML) Master Plan and accompanying Environmental Impact Statement (EIS) have been prepared in accordance with the requirements of the HHS Facilities Program Manual, Section 3-1, Facility Master Planning.

Oudens + Knoop Architects PC, a subcontractor to LSY Architects under a contract with the NIH, prepared the plan in collaboration with NIH's Division of Facilities Planning (DFP)/Office of Research Facilities Development and Operations (ORF)/NIH, and leadership at NIAID and RML.

2.3 Purpose and Scope of the RML Master Plan

There is no official master plan for RML. Nevertheless, the recent construction of the new Integrated Research Facility (IRF), current physical security requirements, growing concerns in the Hamilton area about growth and effects on natural resources, and increased interest within the local community about activities on the RML campus have made clear the need for a coordinated plan for future development of the site.

In order to accomplish the NIH mission, it is imperative that NIH establish and maintain long range facilities plans to address issues such as facility requirements, prudent land use and orderly future development. This need has become even more evident at RML in light of key projects and programs, planned, underway, soon-to-be-completed or recently completed on the RML campus. These include: the IRF, also designated as Building 28; physical security improvements along the campus perimeter, including perimeter site barriers; a Shipping and Receiving Building, also designated as Building 29; a new Visitors' Center, also designated as Building 30; and Building 31, a replacement building for activities now too close to the perimeter to provide adequate protection.

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The objective of this Master Plan is to provide a guide for the reasoned and orderly development of the RML campus, one that values and builds on existing resources, corrects current deficiencies and meets changing needs through new construction or renovation. The plan sets forth implementation priorities and a logical sequencing of planned development.

The Master Plan is not intended to be a specific design and construction program, but rather a framework within which design and construction can occur for actual projects over the next 20 years as the programmatic needs upon which the plan is based arise.

Nor does it attempt to anticipate unpredictable budgets, or congressional and presidential priorities and mandates. The objective has been to base the Master Plan solely on the NIH's best estimate of where the science is going on the premise that the more inclusive the plan, the more receptive it will be to a variety of future development possibilities. The Master Plan does not represent the pre-approval of any individual facilities project nor the particular needs of specific programs to be accommodated on the campus since the financing of such programs must be addressed within the annual Department of Health and Human Services (HHS) budget processes and the HHS Capital Investment Review Board mechanisms.

A coordinated planning effort is underway to better integrate future NIH programs to optimize the use of the Bethesda main campus and to fully exploit the strengths of the other NIH installations such as the National Institute of Allergy and Infectious Disease's RML campus; the National Cancer Institute-Frederick facility at Fort Detrick, MD; and the National Institute of Environmental Health Sciences' facility at Research Triangle Park, North Carolina.

RML's Master Plan covers a 20-year planning period, with 2005 as the baseline condition. Personnel and space estimates are based on phases. The NIH intends to continue to update its master plans, as required, in approximately 5-year intervals.

2.4 Historic Overview and Background

2.4.1 Early Public Health Initiatives

The origins of the NIH, and federal government's involvement in public health issues, can be traced to the mid-nineteenth century in America. Today, NIH, with its main headquarters and Intramural Research facilities located on a 308-acre campus in Bethesda, MD, continues to serve the nation by providing state-of-the-art research and patient care facilities.

Because little was known about medicine or scientific methods in the eighteenth century, the Constitution includes no provisions for federal government involvement in public health. Although government provisions were made for Marines and U.S. Navy officers and seamen in 1798-99, the health issues of the general public were largely ignored. From the time the nation was founded through the early nineteenth century, illness was considered to be primarily an individual concern. When epidemics struck communities, local leaders would often form temporary committees to deal with the crises. By the mid-nineteenth century, as immigrants poured into America, squalid conditions in major cities were thought to be the cause of many diseases and conditions. Squalid conditions encountered by troops and their effects on the soldiers' health during the Civil War also contributed to what was at the time termed "sanitary science."¹

In 1872, various interested parties formed the American Public Health Association. Members hoped to assist the federal government in establishing a national bureau that would promote knowledge of the most recent advances in sanitary science. Other organizations, such as the

¹Victoria A. Harden, *Inventing the NIH: Federal Biomedical Research Policy, 1887-1937*, Baltimore and London: The Johns Hopkins University Press, 1984, pp. 9-10.

American Medical Association, were also promoting a similar idea, citing the need for a central agency that could coordinate public health programs and provide funding and broad dissemination of knowledge.²

2.4.2 Establishment of the National Institutes of Health

Following the devastating yellow fever epidemic in the Mississippi Valley in 1878, Congress established a National Board of Health, which was the first government institution to award grants for medical research. However, the Board was short-lived, lasting only until 1883, when its appropriation expired. After a lapse of several years, the Marine Hospital Service (later renamed the Public Health and Marine Hospital Service) established the Hygienic Laboratory in 1887 in Staten Island, New York, with the express purpose of studying bacteriological disorders such as cholera. While the focus of the initial research was on disorders affecting seamen, the Laboratory assumed a large responsibility in 1890 for common ailments among the immigrant population.³

After four years, in 1891, the Hygienic Laboratory needed additional space for research and moved to Washington, D.C., in offices across from the U.S. Capitol. However, in 1895, once again more space was needed and the Laboratory moved to the Old Naval Observatory at 25th and E Streets, NW, a five-acre parcel near the National Mall that provided space to keep research animals. During this time, the Laboratory work focused on infectious diseases because of their powerful threat to public health.

In 1912, the governing agency of the Hygienic Laboratory, the Public Health and Marine Hospital Service, was renamed the Public Health Service, indicating that the primary concern of the agency was the public's health and well-being. Throughout World War I, research concentrated on the needs of military troops, but the public benefit of the research was also a goal.

Realizing the importance of the work of the Hygienic Laboratory, Congress passed the Ransdell Act in 1930 which designated the Laboratory as the National Institute of Health (NIH). Authorized to construct research facilities and create a system of research fellowships, the program at the NIH expanded rapidly, and space for conducting experiments as well as additional facilities to house experimental animals were needed.

2.4.3 NIH Moves to Bethesda

The philanthropy of Luke and Helen Woodward Wilson, who made a series of land donations to the federal government between 1935 and 1948, proved the catalyst for the NIH's move to Bethesda, MD, and its subsequent development into one of the world's leading biomedical research institutes.

During the Depression, in the mid-1930s, the Wilsons expressed an interest in donating a portion of their estate to the federal government, if a worthy use could be found. The Wilsons were directed to the National Institute of Health, which was then searching for a farm site on which to raise animals for research purposes. Initially, the new campus at Bethesda was meant to be simply one animal unit building, leaving the main research functions in Washington, D.C.⁴

2.4.4 Research and Growth at NIH

During World War II, research at the NIH focused on the war effort, much as it had during World War I. Much of the new medical research and information disseminated during this period was

²Ibid., p. 11.

³Ibid., pp. 12-13.

⁴Dorothy Pugh, "The National Institutes of Health," excerpted from *The Montgomery County Story*, 1987, p. 3.

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connected with NIH, which was given bureau status within the Public Health Service in 1943. Although NIH was still responsible for much of the research relating to infectious diseases, its scope was enlarged to include fundamental medical research into cancers, heart conditions, stroke, and mental illness.⁹ To reflect the diversity of NIH research, it was renamed the National Institutes (plural) of Health in 1948.¹⁰

2.4.5 The National Institute of Allergy and Infectious Diseases (NIAID)

As described in Chapter 1, the National Institute of Allergy and Infectious Diseases (NIAID) traces its origins to a small laboratory established in 1887 at the Marine Hospital in Staten Island, N.Y. The laboratory was set up to address cholera and other infectious diseases carried by new U.S. immigrants who arrived during the 1880s.

Dr. Joseph Kinyoun's small Staten Island laboratory, which was known as the Laboratory of Hygiene at the time, was renamed the Hygienic Laboratory in 1891 and moved to Washington, D.C., where Congress authorized it to investigate "infectious and contagious diseases and matters pertaining to the public health." As previously noted, the Hygienic Laboratory became the National Institute of Health in 1930 and relocated to Bethesda, MD, in 1938.

The Rocky Mountain Laboratory was established in 1902. The Laboratory became part of NIH's Division of Infectious Diseases in 1937. In mid-1948, the Biologics Control Laboratory and the Division of Infectious Diseases, joined with NIH's Division of Tropical Diseases to create two of the four units of the new National Microbiological Institute.

Dr. Victor Haas was the Institute's first Director. In 1955, Congress changed the Institute's name to the National Institute of Allergy and Infectious Diseases to reflect the inclusion of allergy and immunologic research.

2.4.6 The Rocky Mountain Laboratories (RML)

About the time the Hygienic Laboratory was created, other doctors far from the mid-west were struggling against a little understood disease. As the population expanded westward, many early settlers in the Montana foothills of the rugged Bitterroot Range of the Rocky Mountains were plagued with a disease known as "black measles," or "spotted fever," now known as Rocky Mountain Spotted Fever. In 1902, the U.S. Public Health Service sent out a research team to find the cause. Tents, cabins, and an old schoolhouse were used for housing the nascent lab, the predecessor to RML, where researchers determined that the disease was transmitted by ticks, identified the cause as what is now called *Rickettsia rickettsii*, and formulated a vaccine against the agent. In gratitude, the State of Montana in 1928 built a new facility for RML in Hamilton, MT, which the Public Health Service then purchased in 1931. RML remains an active NIH/NIAID facility. It is one of the NIH facilities that conduct biodefense research.

⁹J.E. Rall, "Epilogue," in *NIH: An Account of Research in Its Laboratories*, London: Academic Press, 1984, p. 537.

¹⁰*National Institutes of Health 1995 Master Plan*, Chapter 2, Page 6.

2.5 The NIH Organization

The NIH is one of eight health agencies in the U.S. Public Health Service (USPHS) which, in turn, is a component of the U.S. Department of Health and Human Services (HHS).

The Office of the Director

The NIH Director provides overall leadership of NIH activities in both scientific and administrative matters. Although each Institute within the NIH has a separate mission, the NIH Director plays an active role in shaping the agency's research agenda and outlook. With a unique and critical perspective on the mission of the entire NIH, the Director is responsible for providing leadership to the Institutes in determining needs and identifying opportunities, especially in areas concerning trans-NIH initiatives and those affecting multiple Institutes. Within the Office of the Director, scientific research generally falls into one of two categories: the Extramural Research Program which financially supports researchers and organizations outside the NIH through grants, contracts or cooperative agreements; and the Intramural Research Program which oversees research, training and technology transfer performed within NIH's own laboratories and clinics. The following is a list of the Office of the Director components with certain components of more relevance to the RML Master Plan shown in greater detail:

ADMINISTRATION AND SERVICES

Executive Office

Serves in both a staff and operational capacity for all administrative support activities for the Office of the Director, excluding the Office of Research Services.

The Office of Equal Opportunity and Diversity Management

Advises the NIH Director and staff on matters related to equal employment opportunity programs and policies of the NIH.

NIH Ethics Office

Deals with standards of ethical conduct for federal employees. The NIH Ethics Program includes the central NIH Ethics Office and the individual ethics programs in each of the ICs.

The Office of Management

Advises the NIH Director and staff on all phases of NIH-wide administration and management.

- **Office of Research Facilities Development and Operations (ORF)**
Supports NIH priorities by providing safe, secure, sound, healthy, and attractive facilities and space
 - **Division of Facilities Planning (DFP)**
DFP coordinates and manages all site and facility planning activities related to NIH owned and leased locations. Some of DFP services are: setting the NIH definitions of space; assigning building space to ICs on the Bethesda and Poolesville campuses; preparing the NIH five-year strategic facilities plan; conducting the annual NIH census and maintaining the NIH real property inventory which serves as the official NIH data for HHS reporting purposes, rent collection, and IC space planning activities; master planning NIH's campuses; assembling information on and providing controlled access to NIH floor plans, room data, and related reports; and providing assistance to ICs in requesting space.

- **Division of Environmental Protection (DEP)**

DEP works to protect and enhance the NIH environment. In addition to an Office of the Director, DEP includes three divisions: the Environmental Compliance Branch, which serves as the focal point for regulatory inspections and required environmental permits and plans; the Environmental Quality Branch, which is responsible for the supervision, management, and conduct of the environmental quality program at NIH, and the preparation of environmental documents such as environmental impact statements; and the Waste Resource and Recovery Branch, which is responsible for the supervision, management, and conduct of the waste management program at NIH.

- **Office of Research Services (ORS)**

Provides laboratory safety, radiation safety and occupational medical services, police, fire protection, and emergency planning services, veterinary resources, library services, events management assistance, travel and transportation support, services for foreign scientists, and programs to enrich and enhance the NIH worksite.

PROGRAM COORDINATION

The 27 NIH ICs, all of which either conduct or support scientific research, are managed and coordinated by the Office of the Director, NIH. They are as follows:

INSTITUTES

National Cancer Institute

National Eye Institute

National Heart, Lung, and Blood Institute

National Human Genome Research Institute

National Institute on Aging

National Institute on Alcohol Abuse and Alcoholism

National Institute of Allergy and Infectious Diseases

National Institute of Arthritis and Musculoskeletal and Skin Diseases

National Institute of Biomedical Imaging and Bioengineering

National Institute of Child Health and Human Development

National Institute on Deafness and Other Communication Disorders

National Institute of Dental and Craniofacial Research

National Institute of Diabetes and Digestive and Kidney Diseases

National Institute on Drug Abuse

National Institute of Environmental Health Sciences

National Institute of General Medical Sciences

National Institute of Mental Health

National Institute of Neurological Disorders and Stroke

National Institute of Nursing Research

National Library of Medicine

CENTERS

Center for Information Technology

Center for Scientific Review

John E. Fogarty International Center

National Center for Complementary and Alternative Medicine

National Center for Minority Health and Health Disparities

National Center for Research Resources

Warren Grant Magnuson Clinical Center

2.6 The Master Plan Goals and Objectives

The NIH, with the NIAID and RML, seeks to accomplish its mission by:

- Fostering fundamental discoveries, innovative research, and their applications in order to advance the Nation's capacity to protect and improve health;
- Developing, maintaining, and renewing the human and physical resources that are vital to ensure the Nation's capability to prevent disease, improve health, and enhance quality of life;
- Expanding the knowledge base in biomedical and associated sciences in order to enhance America's economic well-being and ensure a continued high return on the public investment in research; and
- Exemplifying and promoting the highest level of scientific integrity, public accountability, and social responsibility in the conduct of science.

The Master Plan supports these mission implementation strategies by providing a framework for future development based on the following planning goals and objectives:

GOAL 1

An attractive campus whose setting and composition promote collegial interaction and opportunities for informal collaboration and conversation

- Develop a comprehensive program and Master Plan that supports the long term goals and missions of NIAID, RML, and the NIH as a whole.
- Stimulate interaction and communications among scientists and staff to enhance quality of research and opportunities for interdisciplinary collaboration through adjacency of uses and creation of formal and informal meeting and gathering spaces on campus.
- Create a flexible development plan that will allow for changing program needs in the future.

GOAL 2

A flexible framework for development of the campus, one that can adapt to the potential needs of current and future RML and NIAID programs over time

- Establish a comprehensive and coordinated approach to physical development and orderly growth of NIH facilities.
- Develop building sites, open space, and circulation systems that will ensure appropriate campus facility utilization, functional land use and efficient accommodation of future program requirements.
- Enhance campus function, efficiency and character through better definition of land use and functional relationships.
- Identify patterns of existing development and factors which potentially limit future development.
- Define an achievable development strategy.

GOAL 3

A campus that affords a secure, supportive, and convenient work environment for RML personnel, with amenities that enhance the quality of life for staff

The majority of people on the RML campus fall into the following categories: scientists and professional/administrative staff, visitors and other non-RML users.

- Facilitate the security, safety and well-being of those who work, or visit RML by constructing site perimeter barriers, effectively screening for contraband and mitigating vulnerabilities through campus and building design.
- Enhance the quality of the research and work environment and overall campus quality.
 - Preserve the integrity and build upon the desirable qualities of the RML campus.
 - Provide guidelines for use of native landscapes and improving the quality of landscaping.
 - Provide accessibility to campus facilities for persons with disabilities.
 - Improve and enhance the pedestrian environment and linkages, and create a pedestrian scale within the larger site.
 - Preserve and enhance structures with established historic and cultural value.
 - Develop a recognizable landscape system that enhances the quality and character of the campus.
 - Increase the ease of orientation and direction-finding around the campus.
 - Improve pedestrian and bicycle movement on campus.
 - Define and communicate building character and scale to achieve a perceivable and attractive identity.
 - Provide for the convenience and safety of employees and the neighborhood through sensitively designed site lighting and security measures.

GOAL 4

Enhanced appearance of the RML campus to complement the surrounding residential community

- Conserve and enhance the campus perimeter zones, especially bordering residential areas.
- Coordinate with and respond to various regulatory and review agencies that have responsibility for or interest in activities on the campus.
- Engage the RML, local agencies, and the community in an active dialogue concerning Master Plan premises and concepts.
- Establish the scale and height of future RML facilities to limit adverse impact on adjoining neighborhoods or cultural resources.

- Minimize future construction near adjacent residential neighborhoods.
- Protect adjoining neighborhoods from excessive impacts of RML traffic, parking, noise, and lighting.
- Endeavor to ensure that the RML and its activities do not contribute to security or safety issues in adjoining neighborhoods.
- Incorporate native landscape techniques.

GOAL 5

Protected and enhanced natural, historic, and scenic resources at RML

- Identify and build upon the unique environmental qualities of the campus and enhance existing and native landscaping and vegetation.
- Enhance campus design to encourage greater RML employee use of bicycles and walking as alternate commuting modes.
- Improve bicycle circulation on the campus.
- Promote efficient use of all natural resources.
- Improve management of storm water runoff and lessen water quantity impacts and water quality impacts with the objective of raising conditions above the minimal state requirements, where possible.
- Reduce noise in adjacent off-site residential areas caused by campus sources including but not limited to mechanical equipment, vehicular traffic, and construction activities.
- Improve facilities for storage and handling of hazardous materials.
- Encourage sustainable and environmentally-sound development that is sensitive to surrounding neighborhoods and adjacent natural areas.

GOAL 6

Enhanced communication about NIH goals and policies.

- Encourage active dialogue among NIH management, the scientific community and the NIH staff, to foster a better understanding of the ramifications of proposed development policies and plans.
- Encourage continuing active dialogue among NIH and the surrounding community as well as local, state, and federal agencies to resolve campus land use and development issues that affect the community and region.

2.7 Planning Methodology/Format

The RML Master Plan consists of six chapters. Chapter 1 is the Executive Summary. Chapters 2, 3 and 4 provide background on NIH, NIAID, and RML, the goals for the Master Plan, staff population and space projections, and descriptions of regional and local campus conditions. Chapter 5 describes the Master Development Plan and implementation phasing. Chapter 6 provides Master Plan Development Guidelines.

Chapter 1 - Executive Summary

Chapter 2 - Introduction and Program Requirements

This Chapter provides background and organizational information, defines the approach to the Master Plan, establishes the planning premises and identifies programmatic requirements in terms of personnel and physical facilities. It discusses the relationships between the RML Master Plan and other long range NIH planning activities. It also places the Master Plan in the context of the federal government-wide focus on enhancing physical security at its facilities.

Chapter 3 - The Community Context of the Hamilton Campus

This chapter provides an overview of the regional setting, places the RML campus in the context of existing and future land use patterns. It discusses the context of Hamilton, the Bitterroot Valley, and Ravalli County. The context reflects the latest NIH statistics and, where available, data from the 2000 Census and other official sources. Important aspects of the utility services, population and economy, cultural assets, and other research facilities are identified.

Chapter 4 - Baseline Conditions on the RML Campus

Field survey information from 2005 forms the baseline on which the campus has been evaluated. The baseline resource analysis determines the major development features on the RML campus. The chapter also identifies natural and man-made elements which affect potential uses, such as physical features of the site, climate, environmental features, existing land use, utilities, historic/archaeological features, amenities and visual quality, and site constraints and opportunities.

Chapter 5 - The Master Plan for the RML Site

The fifth chapter outlines the Master Development Plan, including the specific proposals planned for the campus over the next twenty years, concepts and standards for future development, the distribution of land uses, the location of new buildings, the relationships between utilities and new development, provisions for open space, new circulation and parking plans and implementation priorities and strategies.

While primary emphasis in the plan is placed on clarifying long-range development patterns, short- and mid-range opportunities are also identified. Sufficient refinement is provided to determine the character and significance of these projects.

Chapter 6 – Development Guidelines

This chapter provides long-range guidelines for the development of building and site projects set forth in the Master Plan.

2.8 Summary of Program Findings

2.8.1 Introduction

As part of this Master Plan, functional and personnel needs over the next 20 years were projected by RML staff during initial programming interviews and in subsequent discussions. Space needs for buildings not yet in the programming or planning stages were estimated, for master planning purposes, based on these personnel projections. Actual allocations of space to scientific staff will be made by NIAID as the needs of specific research programs and the facilities needed to accommodate them are determined.

While this Master Plan is based on relatively specific estimates for growth and change in campus population and facilities over the next 20 years, based on the scientific programs and missions of the NIAID/RML, potential campus development is subject to available funds and priorities set by HHS and future congressional and presidential policy decisions, as well as federal budgetary constraints. Also, changes in national health policy are expected to occur over the next decade as

they did over the previous one, and NIH's mission could be significantly affected as a result. The Master Plan provides guidance on how change and development would take place on the RML's campus, when and if it occurs over the next 20 years and beyond.

2.8.2 Mission

Institutes generally can be categorized by the orientation of their funding of biomedical research:

- by disease; for example, the National Cancer Institute (NCI); NIAID; or the National Institute of Neurological Disorders and Stroke (NINDS). In recent years, NIH has developed "Centers" for research on a disease or disorder where multiple ICs participate, such as the Porter Neuroscience Research Center and the Dale and Betty Bumpers Vaccine Research Center, both of which are located on the Bethesda campus.
- by body organ or system; for example, the National Heart, Lung and Blood Institute (NHLBI); the National Eye Institute (NEI); or the National Institute of Dental and Craniofacial Research (NIDCR).
- by population group; for example, the National Institute on Aging (NIA); the National Institute of Child Health and Human Development (NICHD); or the National Institute on Drug Abuse (NIDA).
- by research discipline; for example, the National Institute of General Medical Sciences (NIGMS); the National Human Genome Research Institute (NHGRI); or the National Institute of Nursing Research (NINR).

Centers provide services to the Institutes. Although there are no Centers on the RML campus, the researchers at RML may draw from the resources of one or more Centers in Bethesda. For example, the Warren Grant Magnuson Clinical Center (CC) and the Mark O. Hatfield Clinical Research Center (CRC) provide the environment for clinical researchers in the Intramural Research Programs of most Institutes to translate laboratory research into applications that benefit patients. The National Center for Research Resources (NCRR) has the responsibility to develop critical research technologies and provide cost-effective, multidisciplinary resources to biomedical investigators across the spectrum of research activities supported by the NIH.

The Office of the Director of the NIH, as noted previously, provides general management and policy direction for the NIH as well as specific services such as research support, personnel, physical security, fire and life safety, procurement, planning, design, construction, maintenance and operations.

2.8.3 Organization and Programs

The most significant organizational feature of most Institutes - for purposes of master planning - is their division into Intramural and Extramural Research functions. Centers may be similarly divided or may have organized their services to the Institutes to correspond to Extramural/Intramural functions.

2.8.4 Locations and Proximities

In addition to the NIH main campus and leased facilities in Bethesda, MD and NIAID's long standing presence in Hamilton, MT, other NIH facilities include:

- The National Institute on Aging (NIA) at the Gerontology Research Center (GRC), and the National Institute on Drug Abuse (NIDA) and NIA in the recently completed Biomedical Research Center on Johns Hopkins Bayview campus in Baltimore, MD;
- NCI-Frederick and NIAID, which occupies a portion of the Ft Detrick campus, both of which are in Frederick, MD;

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- Animal breeding and various Institute Intramural Research programs at the NIH Animal Center in Poolesville, MD; and
- NIEHS' campus at Research Triangle Park, North Carolina.

2.8.5 Training

Training biomedical research personnel is a major part of the NIH mission, and training programs exist in most ICs within both Intramural and Extramural programs. On the Bethesda campus extensive seminars, lectures, and conference programs conducted within all ICs generate a need for conference space. RML also conducts on-site scientific and other training programs, generally in the large conference room in the Quad. RML is also able to participate in on-line conferences broadcast from Bethesda and other NIH locations, and RML personnel oftentimes travel to Bethesda, when appropriate, for training and conferences.

2.8.6 Animals in Research

Animal use in research by the Intramural programs is extensive at the NIH which has one of the largest veterinary resource programs for research anywhere. For Intramural Research, animals are scattered among buildings on the RML campus, but are primarily in Building 13, Building 25, adjacent to the new IRF, and in the IRF itself, once operational.

To one degree or another, most Institutes, including NIAID, procure, house, breed and manage some inventory of their own animals, while other animals are under the management of the ORS, Division of Veterinary Resources (DVR). Animals at RML are under the management of the Rocky Mountain Veterinary Branch (RMVB). All NIH animal facilities are accredited by the American Association for Accreditation of Laboratory Animal Care (AAALAC). In terms of trends, fewer large animals are being used in biomedical research in most programs, and scientists strongly prefer having the smaller research animals near the laboratory, whenever possible.

2.8.7 Growth

The primary growth at the RML campus is expected to be in Intramural Research personnel, beginning with the completion of the IRF. Total 2005 campus population is 336, inclusive of anticipated total IRF staffing. The total estimated population at the end of the 20-year planning period is projected to be 427.

Future areas of research are difficult to predict; research is either investigator-initiated or congressionally-mandated in response to public concerns. The IRF reflects the current emphasis on research in the area of biodefense. The NIAID conducts and supports much of the research aimed at developing new and improved medical tools against potential bioterrorism agents. Since 2001, NIAID has greatly accelerated its biodefense research program, launching several new initiatives to catalyze development of vaccines, therapies, and diagnostic tests.

In terms of growth, a certain amount is driven by the public, the Congress, and the White House. Since all Institutes receive their own appropriations, congressional priorities are, of course, reflected.

2.8.8 Long Range Plans

NIAID, like other ICs, has formal long range strategic plans in place or under development, and these can be viewed on the NIAID website at the following address: <http://www3.niaid.nih.gov/>

2.8.9 Technology

Biomedical research is technology intensive, and, in addition to complex scientific and medical technologies, all components of the NIH use computers extensively. The Center for Information Technology (CIT) not only provides one of the computer mainframes central to the NIH, it also assists many ICs, including NIAID and RML, in computer use, training, adaptation of off-the-shelf software and development of new applications. It also provides computer services to 30 other federal agencies. The degree to which information technology has become a central part of

research at the NIH is seen by the wide range of services provided by CIT to the research community:

- Applications Support
- Application Hosting
- Computing Services
- Desktop User Services
- Networking and Telecommunications
- Research and Scientific Support
- Web Resources

Videoconferencing technology has evolved to a standards-based architecture whose potential is being exploited throughout NIH to improve processes, to save time and money, to attract higher level review participation, and to increase the exchange of information. Videoconferencing has removed some of the inconvenience for NIH employees in locations remote from the Bethesda campus, such as RML. Current applications include grants reviews, Executive Officer meetings, staff meetings, town meetings and special events originating from NIH auditoriums. In-progress and planned applications include Telemedicine videoconferencing between the Clinical Center and research institutions for NIH medical trials and Center for Scientific Review grant reviews that currently require 450 two-day meetings of 15 participants each, plus travel time.

2.8.10 Campus Quality

As part of the interview process for the Master Plan, RML personnel were asked to address quality of life issues on the campus, such as the size, adequacy and location of buildings; and facilities for recreation, fitness, child care, and dining. Responses to the survey showed mostly favorable responses to the quality and suitability of existing buildings. Responses regarding campus amenities were mixed, and are outlined in detail in Chapter 4, Section 4.5.4.

NIH has developed guidelines for providing employee amenities and services.

2.8.11 Parking and Transportation

Since there is no public transportation available in the city or county other than modest taxicab service, most RML employees drive to work, though some do walk from nearby neighborhoods, and others bicycle. Bicycle racks are provided in several locations on the campus. While there are a limited number of designated carpool or vanpool parking spaces, there is adequate space for additional spaces, if needed. Carpool spaces are provided in premium locations as an incentive to their use.

2.9 Summary of Site Data

The following information summarizes data gathered during the RML master planning effort. All areas and parking indicated as “proposed” represent what would be needed to accommodate the population based on the IC’s projection of research demand.

TABLE 2.9: SUMMARY OF SITE DATA

Site Areas

	Baseline (2005)	Proposed
Site Size :	33+ acres	36+ acres
Developed Area :	± 9 acres (27.2%)	± 17.5 acres (48.6%)
Open Area :	± 24 acres (72.8%)	± 18.5 acres (51.4%)

Population

Baseline (2005) campus population :	336
Projected Phase 1 campus population:*	400
Projected Phase 2 campus population:*	414
Projected Phase 3 campus population*	422
Projected Phase 4 campus population:*	427

* IC projections - See Section 2.8

Building Areas

Baseline (2005) Occupied Building Area:	309,223 gsf
Minus Proposed Demolition Building Area by the end of the Final Phase:	(42,938 gsf)
Plus Proposed New Construction Building Area by the end of the Final Phase:	179,428 gsf
Equals Proposed Total Occupied Building Area by the end of the Final Phase:	445,713 gsf

Parking Spaces

	Baseline (2005) Staff Parking	Baseline (2005) Visitor Parking	Proposed Staff Parking	Proposed Visitor Parking
Total	174	24	427	34

2.10 Planning Premises

2.10.1 Population Growth

As of the baseline year of 2005, the RML campus population was 336 including 96 staff in the new IRF. Total projected population is anticipated to be 427 in 20 years. The primary growth at the campus is expected to be in Intramural Research personnel.

2.10.2 Building and Land Use

- Although not specifically identified in the program areas, employee service facilities, such as facilities for fitness and recreation, may be increased to meet NIH guidelines and distributed in convenient locations on the campus to provide for employee needs wherever it is possible to include amenities in new construction budgets. Amenities are listed in the program and are based on the approved *Guidelines for Amenities and Services within NIH Facilities, December 2004*.
- In accordance with Executive Order 13423, “Strengthening Federal Environmental, Energy, and Transportation Management”, RML/NIH initiated a program to incorporate sustainable features in new campus development. HHS implemented this Executive Order and NIH is charged with compliance at its facilities.

2.10.3 Open Space

- A continuous open space system would continue to be developed, as much as possible, to enhance the sense of unity, order and scale on the campus. A western river-oriented park area would be created for informal as well as organized outdoor activities, although some of the zone would be inside the perimeter fence.
- Landscaped elements of special value would be preserved and additional landscaping, signage, and street furniture would be developed to enhance the working environment. New landscaping should be developed based on native species that do not require continual watering.
- Historic properties and environmental resources would be respected.

2.10.4 Architectural Principles

- Future development would reflect historic patterns and priorities. Architectural policies and criteria will be developed and used to ensure respect for the built environment in terms of materials, style, massing, scale and color.
- Development would simplify and clearly reflect overall patterns; creating a sense of order, quality and unity throughout the campus.

2.10.5 Transportation / Circulation

- A well-defined campus loop road with secondary drives for service accessibility would be established to increase efficiency and protect both open space and pedestrian corridors.
- The primary campus visitors’ entry point would continue to be on 4th Street near Grove Street, directly into the Visitors’ Center.

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- Some existing employee parking adjacent to major campus buildings would remain. The balance of existing and new parking needs would be met in a single consolidated lot in the north portion of the campus
- Visitors' parking would remain at the visitors' center on the east side of the campus. Additional visitor parking would be available at a proposed Interpretive Center within the expanded campus boundaries.
- Traffic impacts of future campus development would be mitigated on the surrounding roadways serving the campus to the maximum extent possible.
- The pedestrian character of the campus, which is already conducive for pedestrian and bicycle use, would be promoted and emphasized to employees.
- With some exceptions, commercial and other service vehicles are and would continue to be restricted to the service entrance at the north end of the site, and all deliveries would continue to be made at Building 29 (the Shipping and Receiving Building) where screening of all deliveries is performed. On-site service vehicles would use the campus circulation system to access delivery and service areas.

2.10.6 Infrastructure

- Certain deficiencies in RML infrastructure are being corrected to maintain the quality of research conducted at the campus. This includes utility generation and distribution systems, in addition to programmatic functional requirements. Impacts of utility upgrades, such as noise, will be mitigated.
- Utility and services would be developed in accordance with the RML Master Utilities Plan, currently being developed.
- Future office, laboratory, and animal buildings would be designed with maximum flexibility/adaptability to facilitate change as science dictates.

2.10.7 Animal Programs

- The Master Plan program includes additional animal holding facilities which anticipate occupancy of the IRF as well as other research needs. It is anticipated that a study being made of campus-wide animal holding and research requirements will further refine these requirements.

2.10.8 Management

- The NIH plans to ensure continued senior management awareness and involvement in the implementation of the Master Plan
- The NIH Office of the Director has established the Office of Community Liaison to work with community members to address continuing or new community concerns related to NIH campus activities. The Office of Community Liaison supports the Community Liaison Group (CLG) at RML.

2.11 Program Premises

2.11.1 Personnel Growth Estimates

Current personnel reports and personnel projections for the next 20 years, provided by RML staff and NIAID management as described in Section 2.8, are summarized in Table 2.9. This format provides the personnel basis for computing building area requirements.

2.11.2 Space Programs

- Current net and gross areas and estimated net and gross area requirements are summarized in Table 2.9. Existing net building areas are from the NIAID ARCHIBUS Database adjusted to reflect "use" rather than "ownership". The NIAID ARCHIBUS Database does not include

building gross areas. Gross building areas are from the NIH Real Property Database, which NIH adjusts quarterly and reports to HHS.

- In accordance with the *NIH Design Policy and Guidelines* (DPG) for master planning, **Laboratory and Laboratory Support** spaces are allocated at 180 and 90 net square feet per researcher, respectively, with a grossing factor of 1.8 to determine gross area. Actual space allocations would be made by NIAID as the needs of specific research programs are determined.
- **BSL3 Laboratory** spaces are programmed based on needs described in the interviews with research staff. These are shared by researchers and considered to be shared support rather than assigned space.
- **Office** space per tenant is allocated, in accordance with direction given by the Steering Committee, at 100 net square feet for laboratory chiefs, principal investigators and administrative staff and 60 net square feet per person for post-doctoral fellows.
- **Conference/Library, Storage and Staff Break and Locker** spaces are programmed in accordance with *NIH Lab Administrative Space Recommendations, dated June 1991*.
- **Director's Reserve** is programmed as laboratory space assigned from time to time, at the discretion of the Director, DIR, NIAID for temporary research accommodation pending provision of permanently assigned space.
- **RMVB and Administrative Services** are programmed based on staff interviews and responses to program questionnaires.
- **Amenities** are programmed by type and square footage based on the approved *Guidelines for Amenities and Services within NIH Facilities, December 2004*.
- **Support Space** is programmed based on staff interviews and responses to program questionnaires. Also included in this category are security-related support facilities such as the Visitors' Center and the Shipping and Receiving Building which complete the perimeter security system. Associated guard houses at the various gates are not tabulated in the areas.

2.12 Security Considerations

2.12.1 Background

The RML campus is a federal installation, and potentially vulnerable to various kinds of threats. The campus, though it has long had a perimeter fence, has maintained an open, academic-like character in deference to the spirit of intellectual interaction, and access to the public with which the NIAID does business. Several buildings are frequented by visiting scientists, scholars, and an array of trades people, messengers, contractors and others throughout the business day. The campus is also the site for meetings of researchers, academicians and others. The addition of conference facilities would increase the number of visitors to the site.

Following the April 1995 bombing of the Alfred P. Murrah Federal Office Building in Oklahoma City, the Department of Justice was tasked with developing a "Vulnerability Assessment of Federal Facilities" which was released in June 1995. Immediately thereafter, former President Clinton in a Presidential Directive, ordered all agencies to begin a security upgrade process, and in October of the same year, by Executive Order 12977, established the Interagency Security Committee to develop and ensure compliance with government-wide physical security criteria.

NIH developed its Security Assessment in response to the Presidential Directive in August 1995, but the absence of significant new physical security funding delayed action by nearly all federal agencies. In summer 2001, the HHS Office of the Inspector General reviewed the RML campus physical security and made recommendations for physical and operational security improvements which have largely been implemented. These include:

- Improved perimeter security by: installing a more secure perimeter fence with a limited number of controlled entry and exit points;
- Constructing a visitors center and parking facility;

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- Installing additional surveillance and new barriers;
- Improved staffing of security;
- Constructing a centralized shipping, receiving and storage facility;
- Improved interior building security; and
- Improved security planning.

2.12.2 Specific Measures

- A perimeter fence surrounding the entire campus with vehicular and pedestrian gates has been completed.
- Gates provide access for employees and visitors on foot or bicycle at the east side of the campus entering from 4th Street. Employees and their vehicles are screened in various modes depending on the Alert Level issued by the Department of Homeland Security (DHS). Generally, visitors, including most vendors, arriving at this location park in the special visitors' lot, and proceed to the interior of the campus after screening in the Visitors Center, and walk or are driven to their destinations. Visitors' vehicles are proposed to remain in the parking lot outside the perimeter fence.
- Protective barriers of various kinds against vehicle ramming have been provided at entrances and other areas of potential vulnerability.
- A centralized shipping, receiving and storage facility with screening capabilities has been completed in the northeast corner of the property with a separate gate and sally-port arrangement to control access by commercial vehicles. Generally, commercial deliveries are off-loaded at the Shipping and Receiving Building, screened, and delivered by government-owned vehicles to the interior of the campus.

2.12.3 Security Management

- Improved security planning, staffing and operations have been enhanced by the creation of a Division of Security and Emergency Response (SER) under the Office of Research Services (ORS) in the NIH Office of the Director.
- All NIH physical security programs are addressed through and by organizational entities in the SER service cluster. The Associate Director for Research Services is the Security Officer for NIH, who is advised by a Security Operations Advisory Committee.
- The SER combines emergency management, security planning and management, police, fire fighting and prevention, and crime prevention activities within a single, full-service organization which ensures that all emergency incidents are coordinated and controlled through and by a single entity, sharing available resources to provide optimal services to the NIH nationwide.
- The NIH Division of Police is a highly trained full service federal police agency with exclusive jurisdiction on the RML enclave. The Division of Physical Security Management, composed of specially trained Security Specialists, performs security reviews of all NIH buildings and facilities nationwide on a continuing basis. All security measures, including locking hardware, electronic access systems, and other physical plant protection devices as well as operational procedures, are reviewed continuously to identify security vulnerabilities. Improvements are made as necessary to ensure that protective measures in place are consistent with any identifiable risks to persons or property.
- The access to certain areas within buildings, such as those containing hazardous materials or processes, animals and sensitive research, and to building entrances after hours, is controlled by centrally-monitored systems.
- Crimes of violence have been extremely rare on NIH campuses, and the probability of violent threats, when discussed, is typically from external causes.
- NIH's SER regularly performs security surveys of its buildings, and maintains liaison with other law enforcement agencies in Hamilton, Ravalli County, the State of Montana and federal agencies within the state for mutual assistance, when needed.
- The SER service cluster also provides: (1) coordination of all emergency response services for fires, rescues and medical emergencies, and hazardous materials incidents,

with local emergency response agencies, especially the City of Hamilton volunteer fire department, and adjacent communities as appropriate. (2) fire protection and prevention activities including fire protection engineering services and, (3) emergency preparedness direction and coordination for the NIH.

- The NIH Division of the Fire Marshal acts as the “Authority Having Jurisdiction” in all matters affecting fire and life safety at the RML.

2.13 Relationship to the Environmental Impact Statement

The National Environmental Policy Act (NEPA) of 1969, as amended, 42 U.S.C. §§ 4321 *et seq.*, commits federal agencies to “...utilize a systematic, interdisciplinary approach which will ensure the integrated use of natural and social sciences in planning and decision-making that may have an impact on the human environment.” Prior to undertaking major actions, federal agencies must identify alternatives and significant environmental issues, include economic and social impacts in the environmental analysis, and involve the public in the review of the environmental document.

The Master Plan EIS has been prepared in accordance with these directives and is a companion document to the Master Plan. As part of the Master Plan NEPA process, a Scoping Meeting was held on March 23, 2006 with jurisdictional review agencies, the general public and RML employees. As required by NEPA, a public hearing is planned to present the Draft Master Plan and environmental document, and invite comments and questions on the impacts of the plan.

2.14 Relationship to the Site Utilization Study and Campus Development Guidelines

A Site Utilization Study conducted by Architects Design Group (ADG) of Kalispell, MT was completed in 2002. This Master Plan has updated programmatic and other background material included in the study as appropriate, and has developed alternative planning approaches. The site utility information in the Site Utilization Study supplements the information contained in Chapter 4 of this Master Plan.

In June, 1995, NIH prepared RML Campus Development Guidelines in conjunction with RTKL Associates, Inc., an architectural design and planning firm. The Guidelines are general standards, which when applied to new development projects, create an organized and unified RML campus environment. The fundamental elements of the campus are described including the overall campus layout, distinctive neighborhoods within the campus, and recommended landscape and architectural treatments. The Development Guidelines are intended to promote a general level of conformance to physical planning standards and recommendations.

This Master Plan has built upon these previous studies, updated the programmatic bases, and integrated planning with current physical security requirements.

