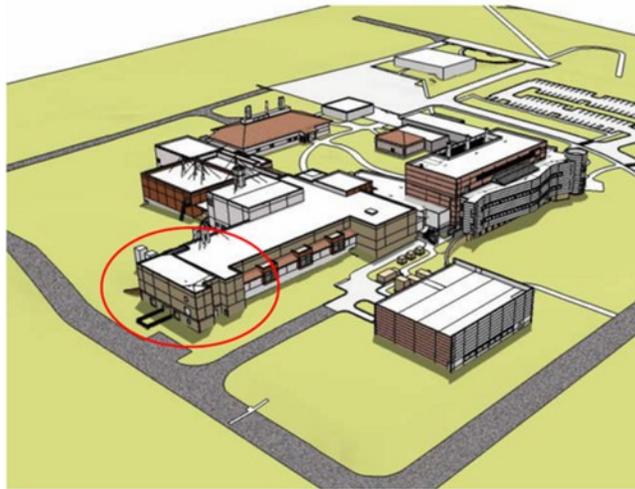


**Final Environmental Assessment Report
for the
Regional Biocontainment Laboratory
Imaging Facility Build-out
at the
Judson M. Harper Research Complex
Foothills Research Campus, Colorado State University
Fort Collins, Colorado**



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EXECUTIVE SUMMARY

The National Institutes of Health (NIH) and National Center for Research Resources (NCRR) propose to partially fund the build-out of the recently constructed Imaging Facility shell (herein referred to as the facility) at the Rocky Mountain Regional Biocontainment Laboratory (RMRBL) at the Colorado State University (CSU) Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado. The purpose of this Environmental Assessment is to enable the NIH to comply with provisions of the National Environmental Policy Act (NEPA) of 1969, the NEPA compliance procedures of the Department of Health and Human Services (HHS) found in the General Administration Manual, Part 30 (Environmental Protection), and implementing regulations promulgated by the Council on Environmental Quality referenced at CFR 1500-1508.

The facility would be an approximately 5,600 gross square feet (gsf) addition to the RMRBL that includes Biosafety Level 3 (BSL-3) laboratories and animal holding rooms plus BSL-2 space for operating sophisticated imaging equipment. The RMRBL was funded through a National Institute of Allergy and Infectious Diseases (NIAID) Grant and local CSU funds and was completed in 2007.

The RMRBL is an addition to the CSU Bioenvironmental Research Building (BRB) where BSL-3 research suites presently exist. The site is north of the BRB and utilizes approximately 9.5 acres including landscape and hardscape. The RMRBL serves as both a regional and national resource for implementing research findings to assist in the war against bioterrorism and emerging and re-emerging infectious diseases. The emphasis of the RMRBL design is on facilities that enhance the development of vaccines, diagnostics, and therapeutics.

The only alternative to the Proposed Action studied in detail in this environmental assessment is the No-Action Alternative. The No-Action Alternative is that the partial funding would not be given and the Imaging Facility build-out would not be completed at the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado.

Two alternatives to the Proposed Build-out were considered, but not analyzed in detail in this Environmental Assessment. These alternatives included:

- **Leasing an existing facility:** The alternative of leasing an existing facility was determined to be unfeasible because this type of highly specialized space is not typically built without a specific user in mind. The lack of sufficient highly specialized containment research space cannot be satisfied by other programmatic means since containment requirements cannot be compromised.
- **Placing the Imaging Facility at an alternative location:** Placing the Imaging Facility at an alternative location was determined to be unfeasible. The present site for the Imaging Facility, adjacent to the RMRBL, was selected based on numerous factors including: 1) proximity to the RMRBL; 2) proximity to Region VIII Regional Center of Biodefense

and Emerging Diseases Research faculty members; 3) existing infrastructure; and 4) similar research activity at adjacent buildings within the research complex. The facility would be within the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex. It is the desire of CSU to locate facilities with similar functions, including the Imaging Facility, within this complex. This location has been reviewed and approved by CSU and the State of Colorado, and is consistent with the long-term Master Plan for the University.

The affected environment was evaluated in terms of 17 categories. A direct impact was predicted for Topography/Soils, Noise, and Transportation (Traffic) during excavation/construction activities. The Imaging Facility build-out includes excavating an approximately one-mile long trench, approximately 40 inches deep, for installing a new electrical distribution duct. Substantial fill would be required to provide positive drainage away from the proposed RMRBL facility, which would alter existing stormwater drainage patterns. Mitigation of this effect would be provided by implementation of a Stormwater Management Plan. Short-term increases in noise levels related to construction activities would occur on the proposed project site. Complying with normal industry standards, all equipment operated on the site during construction would meet applicable standards for sound muffling. Vehicular noise would increase over current levels along the primary transportation route accessing the construction site.

Cumulative impacts were identified for Ecological Resources, Noise, and Transportation. These cumulative impacts are derived from the past, present, and future build-out of the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado, with concomitant additional vehicle activity and increased human activity. Continued development of the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex has changed the character of the site from a native short grass steppe/foothills transitional open space with minimal facilities in the 1960s to an area developed with increasingly larger facilities, including the Centers for Disease Control and Prevention (CDC) buildings and the United States Department of Agriculture (USDA) National Wildlife Research Center. Measures to mitigate impacts to these resources were identified and would be instituted under the Proposed Action.

The potential for impact to “Human Health - Exposure to Hazardous, Toxic, and Infectious Materials and Agents” is considered to be a “minimal risk.” Research at the proposed Imaging Facility would incorporate use of hazardous materials including reactive, flammable, corrosive, and toxic chemicals; infectious and radioactive materials; and recombinant DNA. Laboratory personnel would have potential exposure to airborne pathogens and infectious wastes, as well as the transmission of diseases/viruses from lower animals to humans (Zoonosis) and acquisition of laboratory-associated infections. Laboratories working with infectious agents have not been shown to represent a threat to the community.

There is the possibility of adverse magnetic or radiologic exposure once the imaging equipment is installed and in use. Shielding and appropriate safeguards are subject to regulations and inspections by the Colorado Department of Public Health and Environment (CDPHE), and the University will comply with all applicable standards.

Abnormal events and accident scenarios were addressed, including impacts to facility workers, impacts to non-involved workers (administrative workers on the RMRBL floor that do not work in the BSL-3 areas and maintenance workers that must repair equipment in the Imaging Facility), impacts to the off-site public, laboratory-acquired infections, laboratory release accident scenarios, transportation accidents involving infectious agents, and terrorist threats.

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- D Research Innovation Center Transportation Impact Study
- E Department of the Army Correspondence and Nationwide Permit 12 Information
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LIST OF ACRONYMS

ABSL	Animal Biosafety Level
AMSL	Above mean sea level
APCD	Air Pollution Control Division
BMPs	Best Management Practices
BRB	Bioenvironmental Research Building
BSL	Biosafety Level
CDC	Centers for Disease Control and Prevention
CDOW	Colorado Department of Natural Resources, Division of Wildlife
CDPHE	Colorado Department of Public Health and Environment
CSU	Colorado State University
CWA	Clean Water Act
dB	Decibels
DNL	Day-night average sound level
DOE	United States Department of Energy
EPA	United States Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FY	Fiscal Year
gpm	Gallons per minute
gsf	Gross square foot
HEPA	High efficiency particulate air
HHS	United States Department of Health and Human Services
HUD	United States Department of Housing and Urban Development
HVAC	Heating, ventilation, and air conditioning
kg	Kilograms
LAR	Laboratory Animal Resources
LCUASS	Larimer County Urban Area Street Standards
LMN	Low Density Mixed-Use Neighborhood District
mg/m ³	Milligrams per cubic meter
NAAQS	National Ambient Air Quality Standards
NAL	Noise Assessment Location
NCRR	National Center for Research Resources

LIST OF ACRONYMS (Continued)

NEPA	National Environmental Policy Act
NFRWQPA	North Front Range Water Quality Planning Association
NIAID	National Institute for Allergies and Infectious Diseases
NIH	National Institutes of Health
OAQPS	EPA Office of Air Quality Planning and Standards
PFA	Poudre Fire Authority
ppm	Parts per million
PVHS	Poudre Valley Health Systems
RCRA	Resource Conservation and Recovery Act
Region VIII	Colorado, Wyoming, North Dakota, South Dakota, Montana, Utah
RF	Residential Foothills District
RL	Low Density Residential District
RMRBL	Rocky Mountain Regional Biocontainment Laboratory
RO	Responsible Official
SA	Select Agent
SHPO	State Historic Preservation Officer
SOP	Standard operating procedure
SQG	Small Quantity Generator
SWMP	Stormwater Management Plan
$\mu\text{g}/\text{m}^3$	Micrograms per cubic meter
UGMA	Urban Growth Management Area
USDA	United States Department of Agriculture
USGS	United States Geological Survey

1.0 BACKGROUND

1.1 U.S. Department of Health and Human Services (HHS)

The HHS is the principal agency for protecting the health of all Americans and providing essential human services. HHS administers more grant dollars than all other federal agencies combined, which is reflected in the fiscal year (FY) 2011 budget of approximately \$881 billion. HHS programs are administered by 12 operating divisions, which include the National Institutes of Health (NIH).

1.2 National Institutes of Health (NIH)

The NIH is comprised of 27 Institutes and Centers. The NIH is the steward of medical and behavioral research for the Nation. Its mission is science in pursuit of fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to extend healthy life and reduce the burdens of illness and disability. The goals of the agency are as follows:

1. Foster fundamental creative discoveries, innovative research strategies, and their applications as a basis to advance significantly the Nation's capacity to protect and improve health;
2. Develop, maintain, and renew scientific human and physical resources that would assure the Nation's capability to prevent disease;
3. Expand the knowledge base in medical and associated sciences in order to enhance the Nation's economic well-being and ensure a continued high return on the public investment in research; and
4. Exemplify and promote the highest level of scientific integrity, public accountability, and social responsibility in the conduct of science.

1.3 National Center for Research Resources (NCRR)

Established in 1962, the NCRR provides laboratory scientists and clinical researchers with the tools and training to understand, detect, treat, and prevent a wide range of diseases. The research support provided by NCRR connects researchers, patients, and communities across the nation, enabling scientific discoveries made at the molecular and cellular level to move to animal-based studies, then to patient-oriented clinical research. NCRR programs span a broad range of missions, including establishing clinical research infrastructure, funding career development programs, enhancing the development of programs for underserved states and institutions, stimulating basic research by developing new technologies and methods, providing access to state-of-the-art technologies and instruments, developing new animal models, training veterinarians, expanding, remodeling, and renovating research facilities, and assisting with

public understanding of medical research. Based on this mission, the current proposal to complete the Imaging Facility build-out, as described in the following section, is an ideal fit for the NCCR.

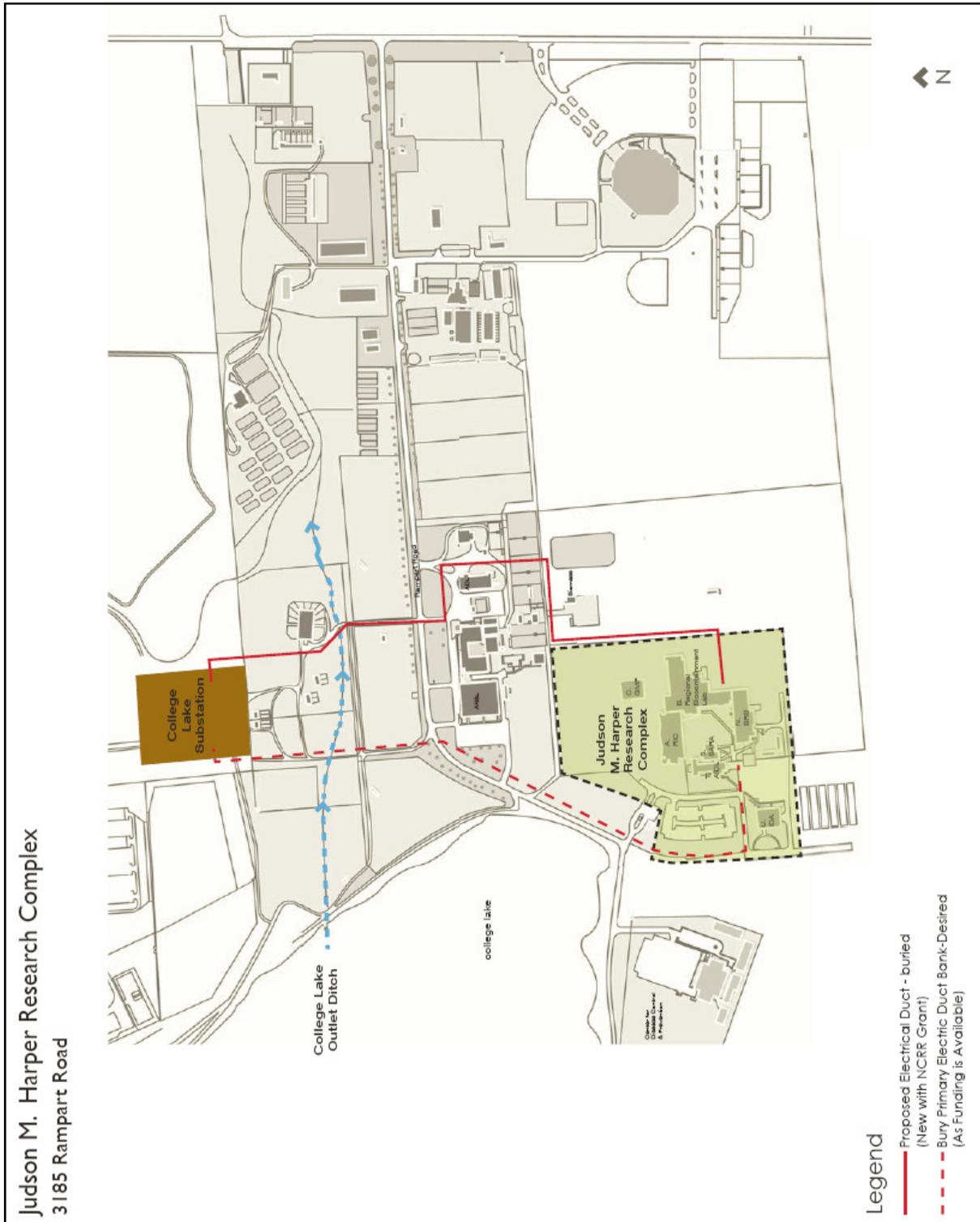
1.4 Colorado State University (CSU)

CSU was founded in 1870 as the Colorado Agricultural College. In 1879, the college received designation as Colorado's land-grant institution. The institution was renamed Colorado State University in 1957. CSU consists of five primary campuses dispersed within and near the city of Fort Collins. The proposed build-out of the recently constructed Imaging Facility shell (herein referred to as the facility) at the Rocky Mountain Regional Biocontainment Laboratory (RMRBL) is located within the Infectious Disease Research Center, situated at the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado.

1.5 Location

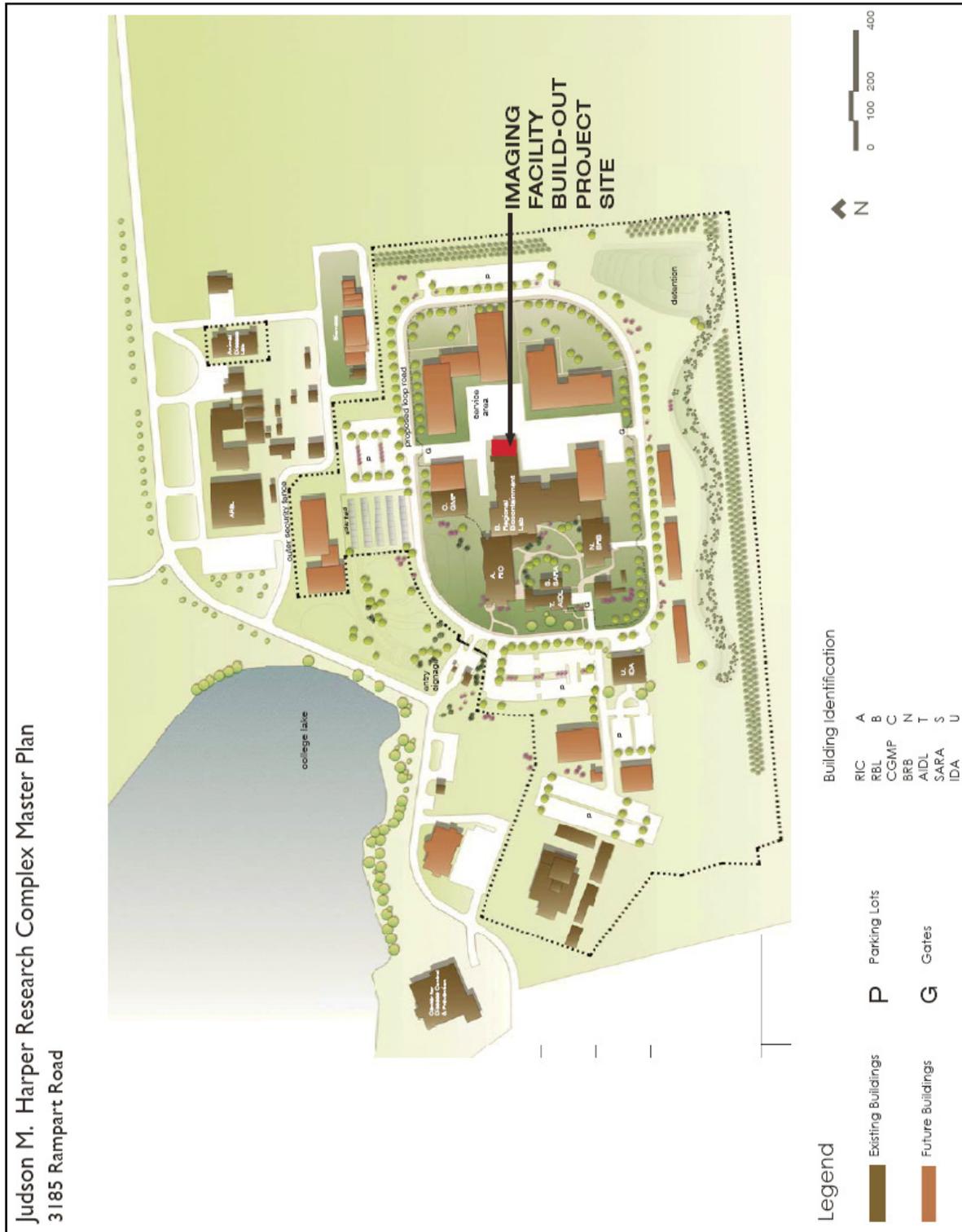
The site for the Rocky Mountain Regional Biocontainment Laboratory Imaging Facility (RMRBL) proposed build-out is within the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado, approximately three miles west of the Main Campus. The Colorado State University Foothills Research Campus, Judson M. Harper Research Complex is outside the City of Fort Collins Urban Growth Management Area (UGMA). The UGMA is the area designated by the City of Fort Collins to control the rate, amount, location, timing, and type of development; its purpose is to control the bounds of urbanization within the city. The UGMA is controlled by the Planning Boards of Fort Collins and Larimer County, collectively. The approximately 1,700-acre Colorado State University Foothills Research Campus is owned by CSU. Public access to the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex is discouraged through use of signage and campus security enforcement. The selected site location provides an opportunity for physical security and perimeter barriers that minimize opportunities for intrusion. The site location is depicted in Figures 1 and 2 on the following pages.

Figure 1 – Judson M. Harper Research Complex Vicinity Map



Source: Colorado State University Facilities Management

Figure 2 – Judson M. Harper Research Complex Master Plan



Source: Colorado State University Facilities Management

1.6 Scope of this Environmental Assessment

The purpose of the assessment is to enable the NIH to comply with the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality regulations implementing NEPA (40 CFR Parts 1500-1508), and the HHS General Administration Manual Part 30, Environmental Protection. The scope of this environmental assessment is limited to the proposed build-out of the existing Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell at the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado. This environmental assessment includes investigation of the excavation of a proposed 40-inch-deep by one-mile-long trench for installation of an electrical duct from a new Xcel Energy substation to the RMRBL Imaging Facility.

1.7 Relationship to Other Project Activities

The Imaging Facility proposed build-out project is part of a multi-phase expansion of life sciences containment and research space at the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado. Current projects include, but are not limited to:

- **Bioenvironmental Research Building (BRB).** This 12,687-gross-square-foot (gsf) building, constructed on the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex and occupied in 2000, contains three Biosafety Level 3 (BSL-3) suites with minimal support space. Present research includes the immunology of *Mycobacterium tuberculosis*, and bulk culture and molecular biology of *Mycobacterium tuberculosis* and its antibiotic-resistant variants.
- **Bioenvironmental Research Building Expansion Project, Phases 2 and 3.** This project has built approximately 3,000 gsf of BSL-2 media preparation and laboratory space (completed in 2006), 3,000 gsf of BSL-3 “Discovery Suite” space (completed in 2006), and 7,000 gsf of BSL-3 space devoted to virology research (completed in 2009).
- **Rocky Mountain Regional Biocontainment Laboratory Imaging Facility (RMRBL).** The Proposed Action for this Environmental Assessment would be for the completion of an existing structure connecting to the RMRBL. It is would be an approximately 5,600-gsf addition to the RMRBL that includes BSL-3 laboratories and animal holding rooms plus BSL-2 space for operating sophisticated imaging equipment. The RMRBL was funded through a National Institute of Allergy and Infectious Diseases (NIAID) Grant and local CSU funds and was completed in 2007. The Proposed Action also includes excavating an approximately one-mile long trench, approximately 40 inches deep, and installation of a new electrical distribution duct. The Shell Structure for the Proposed Action was funded by CSU during the construction of the Research Innovation Center, completed in 2010.

- **Small Animal Research Annex.** A renovation and construction project funded by the University provided a building devoted to BSL-3 animal support. This 5,000 gsf facility contains four animal holding rooms, a necropsy suite, and an aerosol exposure room, all within BSL-3 containment. This project was completed in 2006.

2.0 PURPOSE AND NEED

2.1 Purpose and Need for Agency Action

Colorado State University's and the National Center for Research Resources' ultimate common goal is to provide the best infrastructure to support basic and applied science devoted to the improvement of human health. Achievement of CSU's and NCRR's goals require the construction and certification of biological containment laboratories with facilities and procedures for handling potentially lethal infectious agents, including agents that have the potential to be used in bioterrorism. This research must be conducted in special biosafety laboratories and in accordance with the many laws, regulations, policies, and well-established guidelines that govern research on these microbes and the design, management, and operation of these laboratories. All these provisions aim to protect not only the laboratory workers, but also the surrounding community from accidental exposure to infectious agents. To be the most effective, laboratories and new facilities funded by NCRR must be located where established teams of researchers already work side-by-side on related scientific problems.

The facility would complement and enhance regional and national research activities. More advanced research at nationally acclaimed universities such as CSU is crucial to be able to leverage the increasing risks of the numerous infectious diseases that have emerged and are re-emerging in human populations.

The facility would provide critical research capacity and facilities for RMRBL scientists, investigators from outside the RMRBL, and other qualified investigators from academia, industry, and other organizations in the region. CSU's biosafety lab is prepared and available to assist national, state, and local public health efforts in the event of a bioterrorism or infectious disease emergency.

In addition, the Centers for Disease Control and Prevention (CDC) and United States Department of Agriculture (USDA) have extensive research facilities located on the Colorado State University Foothills Research Campus, and regularly collaborate with CSU faculty to work on agents such as the West Nile virus.

Federal agencies have expressed concern that there are not enough locations in the United States to research agents of infectious disease. This lack of research facilities poses a significant risk because few existing laboratories possess the physical facilities to adequately perform this type of research safely. The lack of adequate facilities limits the capability of the United States to pursue research in this vital area, even though the need is urgent. Institutions that have the appropriate physical containment for work with hazardous infectious agents are valuable centers for national research programs.

CSU is one such center because of its record of excellence in infectious diseases. Undoubtedly, having additional biosafety facilities available would provide CSU scientists an unparalleled opportunity to address areas of national need. Thus, CSU's ability would be greatly enhanced to

contribute to the overall NCCR mission to improve facilities for basic and applied research involving emerging infectious diseases and biodefense countermeasure research.

2.2 Public Involvement

CSU has a continued commitment to keeping the public involved with the project and developments at the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado. Public meetings, newspaper and magazine articles, and Internet information comprise these efforts; examples include the following:

- October 2, 2007: Ribbon Cutting Ceremony for the RMRBL
- December 2007: The RMRBL was available for open house tours. Tours were given by faculty, staff, and students. Over 200 people participated in the tours, including the director of the Larimer County Health and Environment Department, visitors from the Weld County Health Department, and residents of Fort Collins and surrounding areas.
- December 17, 2008: Groundbreaking ceremony for the Research Innovation Center
- May 11, 2010: Ribbon Cutting Ceremony for the Research Innovation Center

Dignitaries attending each of these events included the Governor of Colorado, the incumbent Representative for the 4th Congressional District, the President of Colorado State University, and other prominent political, business, municipal, and university personnel.

Between these events, CSU provided tours to interested parties, particularly those individuals and companies interested in renting space in the business incubator laboratories of the Research Innovation Center. In August 2010, a group from the Denver Museum of Nature and Science toured the facility and engaged in a hands-on training session in the mock BSL-3 laboratory in the Research Innovation Center. Additionally, these events generated articles in the local and regional newspapers and service spots on local radio and television stations, including the following:

- University Breaks Ground on Research Innovation Center, Biotech Business Incubator on Foothills Campus, December 10, 2008, Today@Colorado State
- National Center for Research Resources Funds Build-Out of IDRC Imaging Suite, May 2010, E-Insight
- Research Building Opens on Foothills Campus, May 11, 2010, Today@Colorado State
- NIH Recovery Act Awards to Construct or Improve Biomedical Research Facilities, Strategic Partnerships, Inc.

This project was provided further public recognition in March, 2010 when Xcel Energy, the local electrical utility provider, awarded the Research Innovation Center an Energy Efficiency Expo Award.

3.0 PROPOSED ACTION AND ALTERNATIVES

The Proposed Action is: The National Institutes of Health proposes to partially fund the build-out of the recently constructed Imaging Facility shell at the Rocky Mountain Regional Biocontainment Laboratory within the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado. The Proposed Action also includes excavating an approximately one-mile long trench, approximately 40 inches deep, and installation of a new electrical distribution duct.

3.1 Facility Site and Construction

The site for the proposed 5,600 gsf facility is within the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado, which is approximately three miles west of the Main Campus and outside the City of Fort Collins UGMA. The proposed facility site is within the existing RMRBL and adjacent to the Arthropod-borne and Infectious Diseases Laboratory, the Infectious Disease Annex, and the CDC building. Locating the facility in this area provides an opportunity for additional physical security and perimeter barriers, thus minimizing the opportunities for intrusion.

The build-out would be designed in accordance with the most recent International Building Code, the NIH Standards for Design and Construction, and the CSU Standards for Design and Construction.

3.2 Facility Description and Operations

The new Imaging Facility build-out would consist of BSL-3 containment rooms designed to support state-of-the-art live animal imaging equipment, such as magnetic resonance imaging and computed tomography, plus BSL-2 rooms adjacent to the imaging rooms for equipment-specific consoles. The facility would accommodate microbiology, immunology, and pathology programs conducting infectious disease and toxicology research, and also provide capacity for drug and vaccine studies on BSL-2 and BSL-3 pathogens.

Research at the proposed Imaging Facility would focus upon zoonotic agents, especially arthropod vector-borne and rodent-borne pathogens. Zoonotic diseases are communicable from animals to humans under natural conditions. The facility would provide RMRBL researchers with a highly desirable and timely screening mechanism for candidate vaccines and therapeutics in the RMRBL Animal Model Core Facility and would expedite discovery and translation of research discoveries into products using the Proteomics/Genomics and Manufacturing Core Facilities. These critical Cores are based upon the experience, technologies, and facilities already developed at CSU for tuberculosis research. The Region VIII RMRBL is a regional and a national resource for implementing research findings to assist in the country's defense against bioterrorism and emerging and re-emerging infectious diseases. The emphasis of the RMRBL design is on facilities that enhance the development of vaccines, diagnostics, and therapeutics, and the facility would complement this design strategy seamlessly. Opportunities for scientific

collaboration include projects with CDC, research on zoonotic diseases involving scientific partnership with Colorado Division of Wildlife (DOW), the National Center for Wildlife Diseases, and regional public health agencies.

Existing utilities at the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex are of sufficient capacity to accommodate the proposed Imaging Facility, with the exception of the electrical power delivered to the site. Due to the critical operations that would be conducted in the proposed Imaging Facility, an underground electrical utility feed is part of this project. The Imaging Facility build-out includes excavating an approximately one-mile-long trench, approximately 40 inches deep, for installing this new electrical distribution duct. This underground electrical utility feed will provide reliable, secure, and redundant electrical power to the entire RMRBL.

3.3 Alternative 1 – Leasing an Existing Facility

The alternative of leasing an existing facility was determined to be unfeasible because this type of highly specialized space is not typically built without a specific user in mind. The lack of sufficient highly specialized containment research space, complete with imaging capabilities, cannot be satisfied by other programmatic means since containment requirements cannot be compromised.

3.4 Alternative 2 – Placing the RMRBL Imaging Facility at an Alternative Location

Placing the Imaging Facility at an alternative location was determined to be unfeasible.

The present site for the Imaging Facility within the RMRBL was selected based on numerous factors including: 1) proximity to the RMRBL; 2) proximity to Region VIII Regional Center of Biodefense and Emerging Diseases Research faculty members; 3) existing infrastructure; 4) similar research activity at adjacent buildings within the research complex; and 5) the inherent difficulty and risk of release of infectious agents for transport of live infected animals to an alternative location. The facility would be within the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex. It is the desire of CSU to locate facilities with similar functions, including the Imaging Facility, within this complex. This location has been reviewed and approved by CSU and the State of Colorado.

3.5 No-Action Alternative

The only alternative to the Proposed Action studied in detail in this environmental assessment is the No-Action Alternative. The No-Action Alternative is: no NIH funding and the Imaging Facility build-out would not be completed at the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado.

If the Imaging Facility project does not proceed, critical pre-clinical imaging of animals infected with BSL-3 pathogens and critical knowledge about the progression diseases due to air-borne

pathogens would be unavailable, and progress on the development of countermeasures, such as vaccines and new drugs, to combat potential biological weapons would be severely constrained. The impact of accepting the No-Action Alternative is to prevent NCR's mission of advancement in research capabilities in areas deemed critical for public health by the federal government.

If the Imaging Facility project does not proceed, the overhead lines providing high voltage electrical power to the Infectious Disease Research Center within the Judson M. Harper Research Complex would continue to be an unreliable, frequently interrupted, and unsecure power source. Providing an underground electrical power feed to the Center is deemed a high priority by the University.

4.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This section describes the baseline conditions of the developed and natural environment potentially affected by the proposed build-out of the recently constructed Imaging Facility shell (herein referred to as the facility) at the RMRBL. The Imaging Facility build-out includes excavating an approximately one-mile-long trench, approximately 40 inches deep, for installing a new electrical distribution duct.

4.1 Topography, Geology, and Soils

The facility site is located on the Colorado Piedmont at the base of the Front Range of the Southern Rocky Mountains. The Piedmont separates the Rocky Mountains to the west from the High Plains to the east and was formed during the Late Tertiary and Early Quaternary periods. In Fort Collins, it is underlain by gently downwarped sedimentary rocks of the Denver Basin. Site elevation is approximately 5,160 feet above mean sea level (AMSL), and onsite topography is relatively flat. Surface gradient is generally east/northeasterly.

The USDA report, Soil Survey of Larimer County Area, Colorado, maps the facility site as Kim Loam (1 to 3 percent slopes) and Santanta Loam (1 to 3 percent slopes). Excerpts from the Survey's description of the Kim Series include the following:

The Kim series consists of deep, well-drained soils that formed in mixed alluvium. Sandstone bedrock is below a depth of 40 inches in some profiles. Permeability is moderate, and available water capacity is high. A water table is within the root zone for part of the growing season in a few areas. Runoff is slow. The hazard of water erosion is slight, and the hazard of wind erosion is moderate.

Excerpts from the survey's description of the Santanta Series include the following:

The Santanta series consists of deep, well-drained soils that formed in mixed alluvial and wind-deposited material. Permeability is moderate, and available water capacity is high. Runoff is slight, and the hazard of erosion is slight to moderate.

Excerpts from the Soil Survey of Larimer County Area, Colorado, including a soils map and descriptions of the previously referenced soils, are provided in Appendix A.

Terracon Consultants, Inc., a consulting firm of engineers and scientists providing geotechnical, environmental, construction materials, and related services, completed a geotechnical investigation of onsite soils. A copy of their April 12, 2004 report is available at CSU Facilities Management. The report states the following:

The subsurface soils at the site consisted of approximately 6-inches of silty topsoil and/or 3-1/2 to 8-inches of asphalt paving and/or aggregate base course.

Underlying the asphalt/base course, and encountered at the surface of Test Boring No. 15, was sandy lean clay and/or clayey sand fill material. Underlying the topsoil and/or fill material was native sandy lean clay extending to the bedrock below. Siltstone/claystone bedrock was encountered at approximate depths of 12 to 13-1/2 feet below existing site grades and extended to the depths explored, approximately 24 to 29-feet. Groundwater was not encountered during initial drilling operations.

4.2 Climate and Meteorology

Key climatic characteristics are summarized below:

Dry winters with an occasional wind-blown snow. Some very cold temperatures alternating with some surprisingly warm days. Windy springs with highly changeable weather, an occasional blizzard, large temperature changes and an occasional gentle soaking rain or wet snow to help nurture the grasslands. Low-humidity summers with hot days and comfortable nights -- The threat of big thunderstorms is always there, and the Plains see some of the most ferocious hail storms of the entire continent. Pleasant falls -- often dry. Overall -- semi-arid with precip gradually increasing as you go eastward into Kansas and Nebraska -- dry winters, wetter springs and summer, highly changeable weather, often windy, and some occasional monstrous thunderstorms with damaging hail. Source: The Plains of Colorado, A Highlight of Key Characteristics, Nolan J. Doesken, Colorado Climate Center.

Weather in Fort Collins is typical of the Front Range/steppe environment of Colorado with extremes of heat and cold in the summer and winter, respectively.

A climate summary of the Fort Collins area (January 1, 1893 through December 31, 2009) was obtained online from the Western Regional Climate Center. This database included the following data:

Average Maximum Temperature: 62.2 degrees Fahrenheit
Average Minimum Temperature: 34.0 degrees Fahrenheit
Average Total Precipitation: 15.10 inches
Average Total Snowfall: 47.3 inches

Western Regional Climate Center 1971-2000 data show the warmest month on average in Fort Collins is July (Average Max. temperature 85.1 degrees F), and the coolest month on average is January (Average Min. temperature 15.7 degrees F). The wettest month on average is May (2.71 inches) and the driest month is January (0.44 inches).

4.3 Water Resources

4.3.1 Surface Water Resources

CSU has a Municipal Separate Storm Sewer System Permit (Permit Number COR-070002). Contractors working at CSU are required to practice erosion control at construction sites, and are required to use Best Management Practices (BMPs) for stormwater pollution prevention. BMPs must be in general conformance with the Urban Storm Drainage Criteria Manual, Volume 3: Best Management Practices, latest edition, provided by the Urban Drainage and Flood Control District in Denver, Colorado. All projects disturbing one acre or more are required to have a Stormwater Management Plan (SWMP) and permit coverage under Colorado Department of Public Health and Environment's (CDPHE) Colorado Discharge Permit System, General Permit No. COR-030000, "Stormwater Discharges Associated with Construction Activity". When the site is stabilized, permit coverage can be terminated through CDPHE.

All CSU construction projects are consistent with the North Front Range Water Quality Planning Association's (NFRWQPA) Areawide Water Quality Management Plan for Larimer and Weld Counties (Region 2).

Disposal to the sanitary sewer is regulated by discharge limits set by the United States Environmental Protection Agency (EPA) and enforced by the City of Fort Collins.

No surface water bodies are located on the proposed project site. Horsetooth Reservoir is the main surface water in the vicinity; it is located approximately 0.8 miles west and upgradient of the RMRBL site at an elevation approximately 250 feet above the 5,160-foot AMSL elevation of the proposed site. The southern boundary of College Lake is located approximately 0.1 miles northwest of the facility and at a slightly lower elevation than the facility. However, topographic gradient at the facility site is easterly or cross gradient to College Lake (refer to Figure 1).

4.3.2 Groundwater Resources

In general, shallow groundwater in the area is first detected in the eolian sands and alluvial cover overlying the Pierre Shale or within fairly transmissive but discontinuous sand lenses within the bedrock. There is little to no water in the upper shale and sandy shale members of the Pierre Shale. However, if transmissive sandstone lenses are present, well production may be as high as 50 gallons per minute (gpm). Total yield is dependent upon the size of the sand lens and recharge sources.

The water table in the Fort Collins area generally ranges from approximately 2 to 20 feet below ground surface depending on surface topography, location of surface water bodies, and manmade alterations to the landscape. The quality of groundwater is usually hard and high in sulfate content whether it is found in eolian sand, alluvium, sand lenses within the bedrock,

or paleochannel fill. The Terracon April 12, 2004 geotechnical investigation explored to depths of approximately 24- to 29-feet below ground surface; groundwater was not encountered during initial drilling operations.

Based on topography and location of hydrologic influences, groundwater beneath the site likely flows southeasterly; groundwater flow direction in the area is generally toward the Cache la Poudre River with a southeastern regional flow toward the South Platte River basin. Flow directions may vary seasonally with influences from irrigation, water storage in local reservoirs, and transport of irrigation water by ditches to nearby cities and towns (Colorado Geological Survey Special Publication 4, Geology of Groundwater Resources in Colorado, 1974 and United States Geological Survey [USGS] 7.5-Minute Series Topographic Quadrangle Map, Fort Collins, Colorado).

4.3.3 Floodplains

Executive Order 11988, “Floodplain Management,” requires federal agencies to determine whether a proposed action would occur within a floodplain. The determination of whether a proposed action occurs within a floodplain typically involves consultation of appropriate Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), which contain enough general information to determine the relationship of the project area to nearby floodplains. FIRMs list the location of the facility on the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex as “Zone X - Unshaded,” an area described as no flooding or minimal flooding; it is not located within a 100- or 500-year floodplain (FEMA Floodplain Panel 080101-0960F, as referenced by Mr. Ed Woodward, Senior Engineering Technician of the Larimer County Engineering Department, Floodplain Administration).

Horsetooth Reservoir is located due west and upgradient of the facility (USGS 7.5-Minute Series Topographic Quadrangle Map, Horsetooth Reservoir, Colorado). Soldier Canyon Dam, on the east side near the north end of Horsetooth Reservoir, lies approximately 1.2 miles northwest of the proposed site. All the Horsetooth dams were upgraded under United States Bureau of Reclamation guidance during a four-year project completed within the past ten years to prevent seepage that was occurring beneath several of the dams.

4.3.4 Wetlands

Section 404 of the Clean Water Act (CWA) established a Federal Program that regulates the discharge of dredged and fill material into waters of the United States, including wetlands. Executive Order 11990, “Protection of Wetlands,” directs Federal agencies to avoid destruction or modification of wetlands whenever there is a practicable alternative. Executive Order 11990 instructs agencies to avoid undertaking or aiding new construction in wetlands unless the head of the agency finds there is no practicable alternative to construction in the wetland and the proposed construction incorporates all possible measures to limit harm to the wetland.

A reconnaissance was performed of the facility site on April 12, 2010 by Mr. Terry McKee of the Department of the Army, Corps of Engineers and Mr. Robert Blinderman of Stewart Environmental Consultants, LLC. The site reconnaissance at the Imaging Facility shell identified no evidence of wetlands, such as the presence of wetland vegetation, saturated soil, or shallow water covering the ground surface. The site area is best characterized as upland meadow and disturbed upland meadow.

4.3.5 Navigable Waterways and Coastal Zones

The facility is not located near, or affected by, a navigable waterway or a coastal zone.

4.4 Air Quality

4.4.1 Regulatory Background

The Clean Air Act, as amended, requires EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The Clean Air Act established two types of national air quality standards. *Primary standards* set limits to protect public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly. *Secondary standards* set limits to protect public welfare, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

4.4.2 Regulatory Standards

The EPA Office of Air Quality Planning and Standards (OAQPS) has set NAAQS for six principal pollutants, which are called “criteria” pollutants. Standards for the relevant pollutants are listed in Table 1, below. Units of measure for the standards are parts per million (ppm) and parts per billion (ppb) by volume, milligrams per cubic meter of air (mg/m^3), and micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$).

The City of Fort Collins monitors pollutants including carbon monoxide, ozone, PM_{10} , and $\text{PM}_{2.5}$. Table 1 provides average ambient air concentrations for those pollutants.

Table 1 – National Ambient Air Quality Standards and Fort Collins Levels

Pollutant	Primary Standards		Secondary Standards		Fort Collins Ambient Air Concentrations
	Level	Averaging Time	Level	Averaging Time	
Carbon Monoxide	9 ppm (10 mg/m ³)	8-hour ⁽¹⁾	None		2.55 ppm 2005-2008 avg.
	35 ppm (40 mg/m ³)	1-hour ⁽¹⁾			--
Lead	0.15 µg/m ³ ⁽²⁾	Rolling 3-Month Average	Same as Primary		--
	1.5 µg/m ³	Quarterly Average	Same as Primary		--
Nitrogen Dioxide	53 ppb ⁽³⁾	Annual (Arithmetic Average)	Same as Primary		--
	100 ppb	1-hour ⁽⁴⁾	None		--
Particulate Matter (PM ₁₀)	150 µg/m ³	24-hour ⁽⁵⁾	Same as Primary		73.5µg/m ³ 2005-2008 avg.
Particulate Matter (PM _{2.5})	15.0 µg/m ³	Annual ⁽⁶⁾ (Arithmetic Average)	Same as Primary		8.18µg/m ³ 2000-2002 avg.
	35 µg/m ³	24-hour ⁽⁷⁾	Same as Primary		27.167µg/m ³ 2006-2008 avg.
Ozone	0.075 ppm (2008 std)	8-hour ⁽⁸⁾	Same as Primary		0.074 ppm 2008-2010 avg.
	0.08 ppm (1997 std)	8-hour ⁽⁹⁾	Same as Primary		--
	0.12 ppm	1-hour ⁽¹⁰⁾	Same as Primary		--
Sulfur Dioxide	0.03 ppm	Annual (Arithmetic Average)	0.5 ppm	3-hour ⁽¹⁾	--
	0.14 ppm	24-hour ⁽¹⁾	0.5 ppm	3-hour ⁽¹⁾	--
	75 ppb ⁽¹¹⁾	1-hour	None		--

Sources: EPA Office of Air Quality Planning and Standards and City of Fort Collins, Department of Natural Resources, Air Quality Division

⁽¹⁾ Not to be exceeded more than once per year.

⁽²⁾ Final rule signed October 15, 2008.

⁽³⁾ The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard

- (4) To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).
- (5) Not to be exceeded more than once per year on average over 3 years.
- (6) To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.
- (7) To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (effective December 17, 2006).
- (8) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)
- (9) (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
(c) EPA is in the process of reconsidering these standards (set in March 2008).
- (10) (a) EPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").
(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1 .
- (11) (a) Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

4.4.3 State, County, and City Information

The Colorado Air Quality Control Commission is the state authority responsible for developing and adopting regulatory programs to protect and improve air quality in Colorado. The Colorado Air Pollution Control Division (APCD) is the lead agency for implementing the state's air quality management program; however, many local agencies have contracts with CDPHE to perform specific air quality activities in their area. The Larimer County Department of Health and Environment has such an agreement.

The Air Quality Program for the Larimer County Department of Health and Environment includes ambient air quality monitoring, source inspection, enforcement actions, and planning. Staff work as agents for the APCD and cooperate with the North Front Range Transportation and Air Quality Planning Council. A county air quality control review is conducted for all new land development.

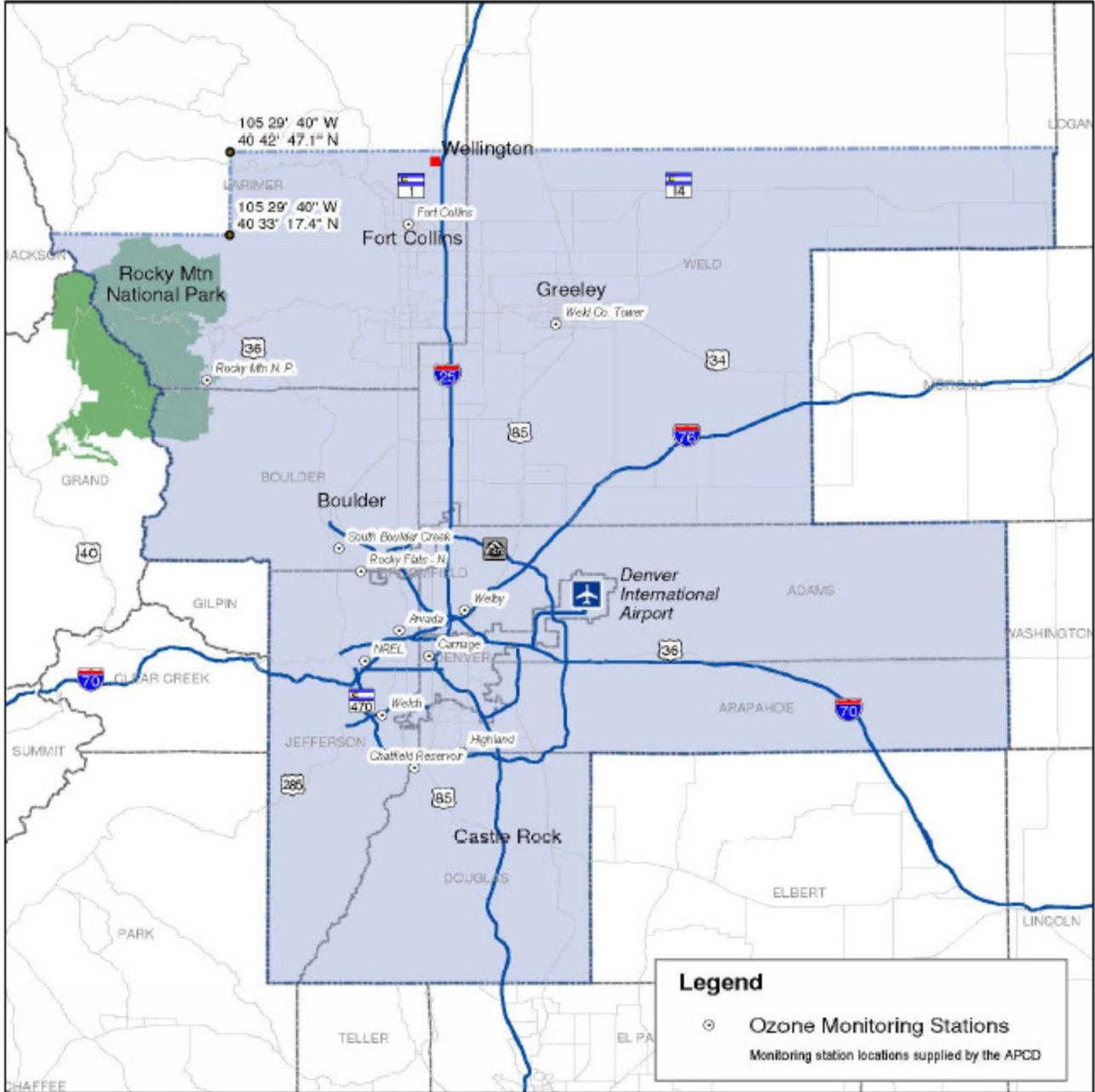
The Fort Collins area, including the proposed project site, is within the North Front Range Region, as established by the Colorado Air Quality Control Commission. The Denver-metropolitan and North Front Range areas were designated a "nonattainment" area for the federal ozone standard on November 20, 2007, when a deferral by the EPA expired. Figure 3, on the following page, provides a map of the nonattainment area. The following information comes from the APCD.

The nonattainment designation is the result of a violation of the federal 8-hour ozone standard. The standard is based on a 3-year average of monitoring data. Air quality monitoring data for the 2005-2007 averaging period confirmed a violation of the 8-hour health-based standard for a monitoring station in the North Front Range, but not for Fort Collins. Data from the 2005-2007 period show that Fort Collins did not exceed the standard.

The above data from 2008-2010 show that the current 3-year average for Fort Collins also did not exceed the standard.

The APCD, along with the Regional Air Quality Council and the North Front Range Metropolitan Planning Organization, created an attainment plan to reduce ozone levels in the nonattainment area. The plan, which calls for reduction of ozone levels below the original levels set by the EPA, was approved by the Colorado Air Quality Control Commission in December 2008, and submitted to the EPA by the Colorado governor in 2009.

Figure 3 – Colorado Front Range Ozone Nonattainment Area



Sources: APCD, Denver Regional Council of Governments Metro Vision Resource Center

4.4.4 Greenhouse Gases

The EPA gives a general overview of greenhouse gases, inventories, and emission trends on its climate change website:

Greenhouse Gas Overview: *Gases that trap heat in the atmosphere are often called greenhouse gases. . . . Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and human activities. Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are:*

Carbon Dioxide (CO₂): *Carbon dioxide enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and also as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is also removed from the atmosphere (or “sequestered”) when it is absorbed by plants as part of the biological carbon cycle.*

Methane (CH₄): *Methane is emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.*

Nitrous Oxide (N₂O): *Nitrous oxide is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.*

Fluorinated Gases: *Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases (“High GWP gases”).*

Greenhouse Gas Inventories

A greenhouse gas inventory is an accounting of the amount of greenhouse gases emitted to or removed from the atmosphere over a specific period of time (e.g., one year). A greenhouse gas inventory also provides information on the activities that cause emissions and removals, as well as background on the methods used to make the calculations. Policy makers use greenhouse gas inventories to track emission trends, develop strategies and policies and

assess progress. Scientists use greenhouse gas inventories as inputs to atmospheric and economic models.

To track the national trend in emissions and removals since 1990, EPA develops the official U.S. greenhouse gas inventory each year. The national greenhouse gas inventory is submitted to the United Nations in accordance with the Framework Convention on Climate Change.

. . . Emission Trends & Projections

Estimates of future emissions and removals depend in part on assumptions about changes in underlying human activities. For example, the demand for fossil fuels such as gasoline and coal is expected to increase greatly with the predicted growth of the U.S. and global economies.

The Fifth U.S. Climate Action Report concluded, in assessing current trends, that greenhouse gas emissions increased by 17 percent from 1990-2007. Over that same time period, the U.S. GDP increased by 65 percent and population increased by 21 percent. The dominant factor affecting U.S. emissions trends is CO₂ emissions from fossil fuel combustion, which increased by 21.8 percent over the 17-year period, while methane and nitrous oxide emissions decreased by 5 percent and 1 percent, respectively. The declines in methane emissions are mostly due to increased collection and combustion of landfill gas, as well as improvements in technology and management practices at natural gas plants. The decline in nitrous oxide emissions is largely due to the installation of newer N₂O control technologies in motor vehicles throughout the past decade. Fluorinated substances (HFCs, PFCs, and SF₆) accounted for 2 percent of total U.S. GHG emissions in 2007. The increasing use of these compounds since 1995 as substitutes for ozone depleting substances has been largely responsible for their upward emissions trends. (Fifth U.S. Climate Action Report, 2010).

Many, but not all, human sources of greenhouse gas emissions are expected to rise in the future. This growth may be reduced by ongoing efforts to increase the use of newer, cleaner technologies and other measures. Additionally, our everyday choices about such things as commuting, housing, electricity use and recycling can influence the amount of greenhouse gases being emitted.

The presently existing RMRBL Imaging Facility consists of a shell with no interior finish and contains no equipment. Greenhouse gases are not emitted from the RMRBL Imaging Facility shell.

4.5 Ecological Resources

There are no designated city, county, federal parks or open spaces on or adjacent to the proposed site location. No federal agency surveys for threatened/endangered species or critical habitats were identified. Threatened/endangered species of fish, amphibians, birds, and mammals known to exist in Larimer County, Colorado were identified using the Colorado Department of Natural Resources, Division of Wildlife's (CDOW) website and the Colorado Natural Heritage Program's Conservation Status Handbook: Colorado's Animals, Plants, and Plant Communities of Special Concern. Reconnaissances by the CDOW and Stewart Environmental's biologist identified that the proposed facility site is a disturbed area with invasive species of weeds and non-native grasses. No potentially suitable habitat for any of the federally listed threatened/endangered species cited in the above references were identified.

The CDOW performed a reconnaissance of the proposed RMRBL site on June 29, 2004. The Division provided a July 7, 2004 letter of concurrence that there are no wetlands or ecologically sensitive areas on or near the proposed site, and there are no endangered, threatened, or rare plant or animal species so designated by the United States Fish and Wildlife Service or the State of Colorado occurring on or using the site. This letter is provided in Appendix B.

Two listed (Colorado and federal) animal species, black-footed ferrets and bald eagles, could potentially utilize the site. Prairie dog towns are the habitat for black-footed ferrets; prairie dogs exist near but not at the site. Since the critical habitat is not present, ferrets are not suspected to exist at the site. Additionally, the last confirmed sighting of a black-footed ferret in Colorado was in 1943. Over-wintering bald eagles may feed at College Lake northwest of the site; however, there are no known nesting or permanent residents of bald eagles at the site.

On April 12, 2010, Stewart Environmental's biologist performed a site reconnaissance of the existing RMRBL Imaging Facility shell. Stewart Environmental observed no field evidence indicating a change in Ecological Resources from 2004 other than the now existing presence of the RMRBL and the RMRBL Imaging Facility shell. Additionally, the bald eagle has been delisted as an endangered species by the United States Fish and Wildlife Service since 2004.

The CDOW provided a June 15, 2010 letter regarding the proposed RMRBL Imaging Facility build-out. Their letter, provided in Appendix B, states that the CDOW "has no comments or concerns for this proposal."

4.6 Historic, Cultural, and Archeological Resources

4.6.1 Historic Resources

The State Historic Preservation Officer (SHPO) was consulted regarding historic resources. The SHPO reported that if the facility site is presently disturbed and there are no buildings in the site vicinity over 50 years old, then a “no effect condition” exists. The facility site fulfills those criteria. The National Register of Historic Places and Colorado Historical Society, Office of Archeology and Historic Preservation records were reviewed online on April 21, 2010 to determine the facility’s status. The facility site is not listed in the records for Larimer County, Colorado.

4.6.2 Cultural and Archeological Resources

In 1907, CSU (then Colorado A & M) obtained the land on which the existing Colorado State University Foothills Research Campus, Judson M. Harper Research Complex is presently located. Since the 1960s, CSU has constructed numerous onsite buildings including the BRB constructed in 2000, Discovery Suite in 2004, RMRBL completed in 2007, BRB Expansion in 2008, RMRBL Imaging Facility core addition in 2010, and Research Innovation Center in 2010.

Additional disturbances at the facility site and adjacent areas include excavation activities associated with installation of subsurface utilities and historic dog run construction. Dog runs were demolished in order to construct the RMRBL. No cultural/archaeological resources have been identified during the 40-plus years of subsurface disturbances. Reconnaissances indicated that the facility site has been previously disturbed by activities associated with utility installations, fences, existing buildings, etc. No evidence of cultural and archeological resources was observed.

An archeological investigation was conducted in September 2003 at the CDC Replacement Building located approximately one-quarter mile from the facility. No archeological, cultural, or paleontological resources were identified during the investigation (Centers for Disease Control and Prevention, National Center for Infectious Disease/Division of Vector-Borne Infectious Diseases, Proposed Construction of Replacement Laboratory Final Environmental Assessment, prepared by Dynamic Corporation, March 2004).

4.7 Socioeconomics

The socioeconomic characteristics for the proposed project involved exploration of features that describe the conditions of the surrounding campus and community. The geographic areas examined and compared for this report were the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado, and adjacent urban residential areas, as well as the City of Fort Collins. Data were extrapolated from the United States Census Bureau, United States Bureau of Labor Statistics, City of Fort Collins maps, the

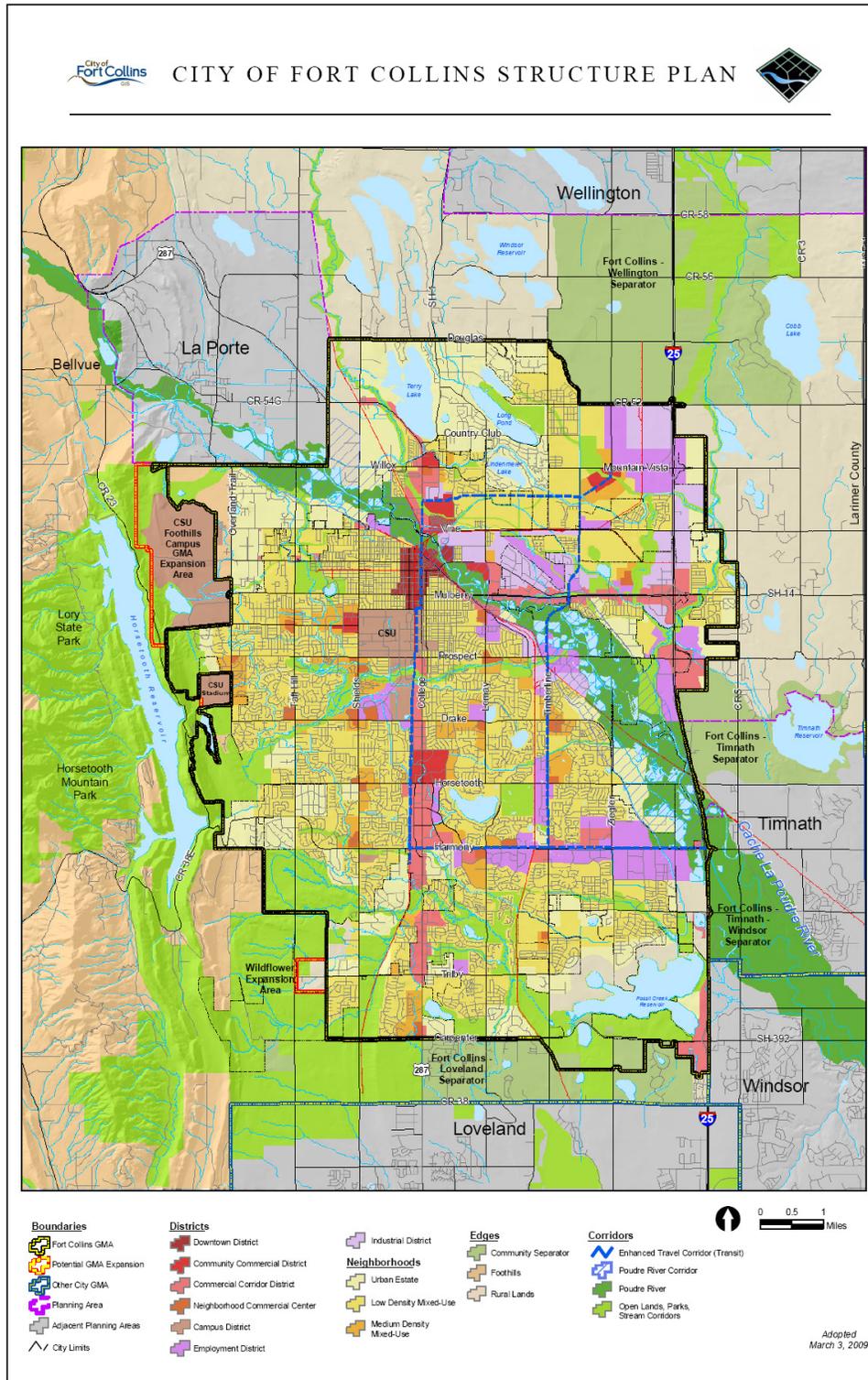
City of Fort Collins report, Trends 2006, and other sources as cited. Features in the analysis include principal data such as demographics, population, education, employment, income, property values, and housing information.

4.7.1 Surrounding Areas

The proposed Imaging Facility build-out site is within the existing Imaging Facility core addition to the Rocky Mountain Regional Biocontainment Laboratory on the approximately 1,700-acre Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado. This location is outside of, but adjacent to, the Fort Collins city limits in unincorporated Larimer County. However, the campus plays an integral part in the community's profile and economic stability. Population density of the campus is extremely sparse. The U.S. Census Tract 23 shows the campus has a density of 72 persons per square mile. This tract includes some of the rural foothills area, Lory State Park, and Horsetooth Reservoir to the west, as well as low-density residential areas within and outside of the Fort Collins city limits to the north and south of the campus. The U.S. Census data for the year 2000 describes this tract as 39 square miles with a total population of 2,811.

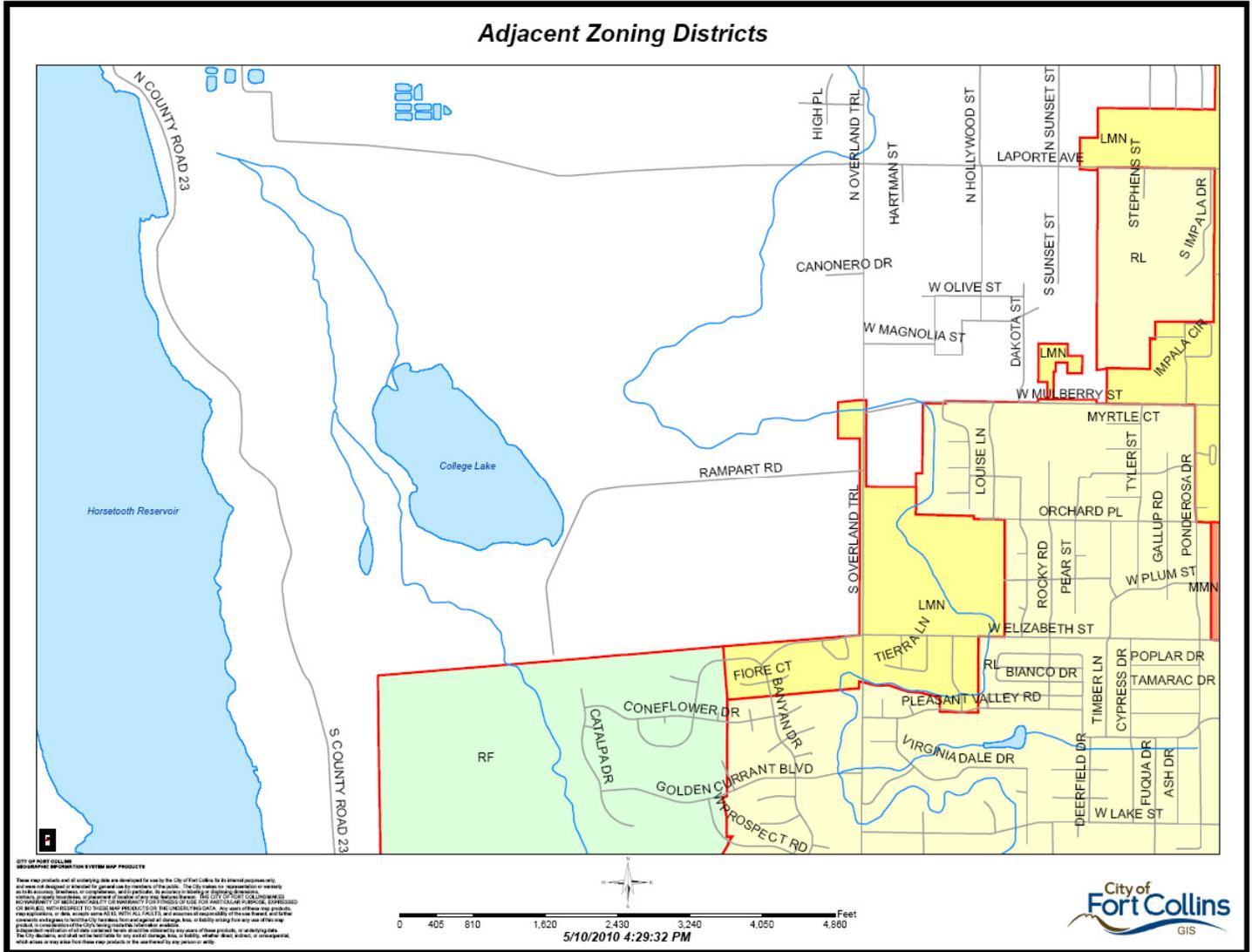
As indicated on Figures 4, 5, and 6 from the City of Fort Collins and the U.S. Census Bureau, residential areas adjoin the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex.

Figure 4 – Map of City of Fort Collins Growth Management Area with Zoning Districts



Source: City of Fort Collins, Department of Planning, Development, & Transportation

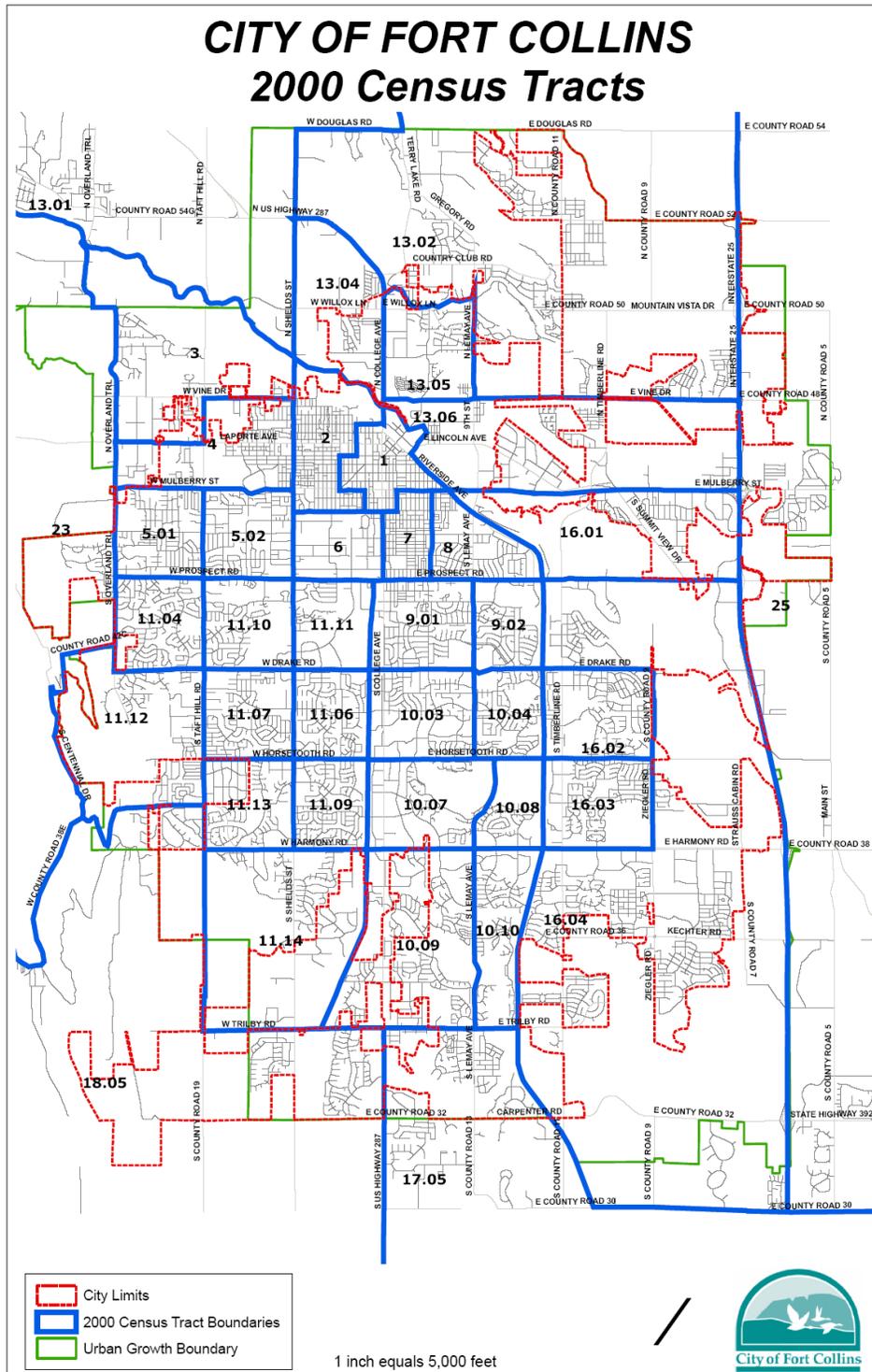
Figure 5 – Fort Collins Zoning Districts Adjacent to Proposed Rocky Mountain Regional Biocontainment Laboratory Project Site



Source: City of Fort Collins, GIS Department, Online Map Application

C	Commercial	MMN	Medium Density Mixed-Use Neighborhood
CC	Community Commercial	NC	Neighborhood Commercial
CCN	Community Commercial – North College	NCB	Neighborhood Conservation Buffer
CCR	Community Commercial – Poudre River	NCL	Neighborhood Conservation Low Density
CL	Limited Commercial	NCM	Neighborhood Conservation Medium Density
CN	Commercial – North College	POL	Public Open Lands
CSU	Colorado State University	RC	River Conservation
D	Downtown District	RDR	River Downtown Redevelopment
E	Employment	RF	Residential Foothills
HC	Harmony Corridor	RL	Low Density Residential
HMN	High Density Mixed-Use Neighborhood	T	Transition District
I	Industrial	UE	Urban Estate
LMN	Low Density Mixed-Use Neighborhood		

Figure 6 – U.S. Census Tracts Adjacent to Proposed Rocky Mountain Regional Biocontainment Laboratory Project Site



Source: City of Fort Collins, GIS Department

A residential area developed and annexed into the city in the late 1990s is located adjacent to the southern boundary of the campus. This single-family neighborhood, at its closest distance, is approximately 400 to 500 feet from the planned site and lies within the City of Fort Collins UGMA. It is zoned as Residential Foothills (RF), Low Density Mixed-Use Neighborhood (LMN), and Low Density Residential (RL). This neighborhood is part of the U.S. Census Tract 23, as is the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex.

Another residential neighborhood, adjacent to the east side of Overland Trail, parallels the eastern boundary of the campus. The closest residents are located approximately one-half mile from the planned construction site. This area is also within the City of Fort Collins UGMA and zoned as RL and LMN. The properties immediately next to the campus primarily consist of single-family and small acreage residences; the area also contains multi-family housing. According to the U.S. Census Bureau's 2000 data (the most recent data that is broken down into tracts), this area lies in Tract 5.01 and covers 1 square mile with a total population of 5,854, many of whom are college students.

4.7.2 Surrounding Communities

The City of Fort Collins has experienced steady growth since 2000. According to the U.S. Census Bureau, the city's population was 118,652 in 2000 and was estimated at 136,509 in 2008, a 15 percent increase in eight years. Progressive and well-managed growth should help the area remain stable in the future. Fort Collins is the fifth largest city in Colorado, larger than the Front Range metropolitan areas of Boulder, Pueblo, Westminster, and Arvada. Only Denver, Colorado Springs, Aurora and Lakewood surpass Fort Collins in population (U.S. Census Bureau, 2008). Covering more than 50 square miles, the city continues to develop and aggressively compete with the other major cities in Colorado. This steady growth rate indicates the current economic well-being of this community and the Rocky Mountain Front Range.

Fort Collins' opportunities for growth have been seasoned with many major employers providing services and products in research, education, technology, agriculture, industry, health, retail, and government. CSU, with approximately 7,000 employees and more than 25,000 students, contributes to this community's stability. CSU employs more people than any other organization in Fort Collins. Other major employers ranging from over 3,000 down to 650 employees include Hewlett-Packard, Poudre Valley Health System, Poudre School District, Agilent Technologies, City of Fort Collins, Larimer County, Wal-Mart Super Center, Advanced Energy, Anheuser-Busch, Woodward Governor, King Soopers, Albertson's, Target Supercenter, Lowes, Home Depot, and New Belgium Brewing Company. Many other employers in this area have successful businesses that have contributed to the economy.

4.7.3 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations [59 Fed. Reg. 7629 (1994)] requires that "each

Federal agency achieve environmental justice as part of their mission by addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.”

In order to determine whether minority or low-income households would experience a disproportionately high level or adverse level of impact with the proposed Imaging Facility build-out project in comparison with other segments of the population, 2000 U.S. Census Tract (2-mile radius) and City of Fort Collins’ Trends data were examined. The closest metropolis to the proposed project is Fort Collins, Colorado. The proposed site lies just beyond the western boundary of the City of Fort Collins; hence, the Fort Collins data were used.

According to the census data, out of a total population of 2,811 within Census Tract 23 where the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado lies, 94.6 percent of the residents are Caucasian and 5.4 percent are of minority populations. In the neighborhood to the east of the proposed project that lies in Census Tract 5.01, out of its total 5,854 population, the Caucasian race makes up 92.4 percent and the minority is 7.6 percent. This percentage is higher than the city’s estimated Caucasian population of 89.6 percent and lower than its 10.4 percent minority population.

Income and education levels of residents living within tracts 23 and 5.01 are at or above that of the whole Fort Collins community. The percentages of families below poverty level in these tracts are 1.5 and 4.1 percent, respectively, less than the city’s 5.5 percent. Therefore, low-income populations surrounding the proposed project are fewer than the entire City of Fort Collins. One factor that contributes to lowering income levels in tracts 23 and 5.01 is the higher enrollment of 18- to 24-year-old residents in college (tract 23 at 35 percent and tract 5.01 at 82.5 percent of the population). This high current educational involvement actually affects the percent of *persons* below poverty level by increasing it to 24.3 percent in tract 5.01. Tract 23, at 6.9 percent, is lower than Fort Collins’ 14 percent of *people* below the poverty level.

Residents’ educational levels are high in the areas surrounding Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado and the planned project site. People 25 years old and above who have earned a Bachelor’s Degree or higher comprise 44.8 and 38.5 percent (tracts 23 and 5.01, respectively), similar to the city’s 48.4 percent.

4.7.4 Employment

Fort Collins has a well-educated labor force. Excellent opportunities for continuing education and training prevail with both Front Range Community College and CSU located in the same city. This facilitates meeting the skill levels required for present and future economic needs of the community. Fort Collins’ unemployment rate in 2000 was 3.2 percent with a labor

force of 69,280. It rose to 4.5 percent by 2006 with an increased labor force of 81,566. Unemployment in early 2010 is 7.2 percent, lower than Colorado's 7.9 percent and the United States average of 9.9 percent (United States Bureau of Labor Statistics). In 2000, the two key residential areas surrounding the site fared better than the overall city's 3.2 percent, with unemployment percentages at 2.1 and 4.8 in tracts 23 and 5.01, respectively. Data for later years were not available for these geographic segments.

According to the 2000 Census, median household incomes across the two tracts indicate the highest was in tract 23 at \$50,590 and the lowest was in tract 5.01 at \$35,699, due to its large college student population. The city itself averaged between the two tracts at \$44,459. Per capita income for tract 23, tract 5.01, and the City of Fort Collins was \$32,135, \$16,136, and \$22,133, respectively.

4.7.5 Taxes and Community Services

The City of Fort Collins' sales and use tax rate has held constant at 3.0 percent since 1993. Currently, the combined tax rate for the city, county and state is 6.7 percent. CSU is a tax-exempt institution.

Quality of life has been integral to making this community successful. Many factors lend themselves to making this city a vibrant place to live. It offers many cultural and recreational programs, parks and natural areas, opportunities for community involvement, and a lower cost of living index (91.) than the Boulder (121) and Denver (101.7) areas (city-data.com).

4.7.6 Property Values

According to the City of Fort Collins' report Trends 2006, assessed real property values in 2002 for residential properties in the city were nearly \$650 million. The corresponding assessed percentage rate was 9.15 and includes farm and ranch residences. Total property values that also include commercial, industrial, agricultural, and vacant properties in the city total more than \$1 billion.

Residential real estate activity in Fort Collins reveals the median value of a home in 2000 was \$169,600. Census Tract 23 home values were higher at \$184,000; tract 5.01 was lower with \$144,600. Likely, this was due to older or smaller rental housing that is primarily occupied by the high population of college students (82.5 percent of age 18- to 24-year-olds). The median value of a home in 2008 was \$244,700 (city-data.com).

Existing and recently constructed facilities at the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex have not deterred residential construction adjacent to the campus, as evidenced by recent upscale residential development adjacent to the southern boundary of the Campus.

Table 2 – Socioeconomic Characteristics

Socioeconomic Characteristics	Census Tract 23	Census Tract 5.01	Fort Collins
Population			
Total Population (U.S. Census 2000)	2,811	5,854	118,652
Estimated Total Population 2008	n/a	n/a	136,509
Race			
Caucasian	94.6%	92.4%	89.6%
Hispanic or Latino	4.3%	9.0%	8.8%
Median Age	34.9	24.4	28.2
Employment/Income (2000)			
Civilian Labor Force	1,886	3,551	69,280
Unemployment Rate	2.1%	4.8%	3.2%
Per Capita Income	\$32,135	\$16,136	\$22,133
Median Household Income	\$50,590	\$35,699	\$44,459
% Persons Below Poverty	6.9%	24.3%	14.0%
% Families Below Poverty	1.5%	4.1%	5.5%
Education (Percent)			
Age 25+			
High School Graduate or higher	96.4%	94.7%	94.0%
Bachelor's Degree or higher	44.8%	38.5%	48.4%
Age 18-24			
Enrolled in College or Graduate School	35.9%	82.5%	n/a
Housing			
Total Housing Units	1,256	2,353	47,755
Owner-Occupied Units	836	1,213	26,175
Median Value of Housing Units	\$184,000	\$144,600	\$169,600
Median Rent	\$646	\$627	\$643

Sources: U.S. Census 2000; City of Fort Collins Trends 2006

4.8 Human Health

4.8.1 Physical Injuries During Construction

Site-specific safety and health plans are prepared for all CSU construction projects. The plans identify health and safety issues and provide recommendations or requirements to protect workers against injuries during construction. Included are requirements and recommendations addressing issues such as personal protective equipment, health and safety monitoring and training, emergency response actions, identification of emergency responders, and locations of emergency medical agencies.

4.8.2 Physical Injuries During Operations

The BSL-3 laboratories at the RMRBL, where the Imaging Facility shell is located, are designed to minimize the probability of accidents through design considerations and by the provision of special facilities. Major extractions are performed in vented hoods, and only small amounts of solvents are present in most laboratories. Similarly, reactive chemicals are used only in designated areas. Infectious agents or recombinant DNA are used or prepared only in biosafety cabinets by trained personnel; waste is decontaminated by autoclaving or chemical treatment. Radioisotope use requires approval by the Radiation Safety Committee through the CSU Environmental Health Services. In the event of an accident, personnel would utilize available showers (or eyewash devices) and call 911 for fire, rescue, hazardous materials handling (HazMat) team, or medical help. Standard evacuation and containment procedures would be followed.

An overview of *key conceptual* requirements of the building is provided in the Regional Biocontainment Laboratory Program Plan prepared by FWA Architects and CSU in 2003. A copy of this document is on file at CSU Facilities Management.

4.8.3 Exposure to Hazardous, Toxic, and Infectious Materials and Agents

Research at the RMRBL incorporates use of hazardous materials including reactive, flammable, corrosive, and toxic chemicals; infectious and radioactive materials; and recombinant DNA. All research projects at CSU involving non-exempt recombinant DNA or infectious agents require approval by the Institutional Biosafety Committee. Use of hazardous chemicals and radioisotopes are monitored by the CSU Environmental Health Services.

The Imaging Facility at the RMRBL is designed to be a pre-clinical, research resource. Funding in place at this time is sufficient to prepare the physical space for eventual equipment placement, and the plans for equipment have remained un-changed during several examinations of scope and application. The first item of equipment to be purchased will be a magnetic resonance imaging (MRI) device, followed by a micro-single photon emission computed tomography (SPECT) device or a micro-positron emission tomography - computed tomography (PET-CT) device. Each of these units will occupy separate rooms in the Imaging Facility, complete with appropriate preparatory rooms, fume hoods, biological safety cabinets, and animal holding rooms, all under BSL-3 isolation conditions. The Infectious Disease Research Center is devoted to work on a number of infectious microbes, all of which are designated as agents which should be contained at BSL-3 and/or Animal Biosafety Level 3 (ABSL-3). Several of the infectious microbes are classified as Select Agents (SAs), indicating that they have been identified as potential biological weapons. In addition, the Center is a regional and national resource for investigations involving emerging infectious diseases, which are agents that appear as a consequence of natural biological events, particularly involving diseases transmitted from animals to humans.

For research involving the MRI, the most likely imaging agents that will be used are gadolinium-based contrast agents including nanoparticles (there are more than a dozen choices but all of them have gadolinium), iron oxide contrast agents including nanoparticles, and potentially other newly developing contrast agents. For research involving micro-SPECT, the most likely agents are numerous tagged radiopharmaceuticals available on the market, including molecules tagged to radioactive forms of technetium, iodine (such as 123 and 125), thallium, gallium, indium, and many others. For research involving micro-PET-CT, again there are numerous radiopharmaceuticals available, including molecules tagged to radioactive forms of copper, fluorine, and others. For each of those modalities, CT scanning would include the use of iodine-based contrast agents tagged to different agents depending upon the study requested.

All of the studies require examination and imaging of small rodents under anesthesia, indicating that small quantities of pharmacological agents be maintained. The veterinary animal care technologists can provide a general list of current anesthetic agents for laboratory animals, all of which will be used in small quantities. The exact drug(s) that will be used for particular projects will vary depending upon the species and the exact imaging examination that is being requested, and will be determined by combined discussion of the radiology and animal care team at that time.

RMRBL construction is based on guidelines within Biosafety in Microbiological and Biomedical Laboratories (CDC/NIH Publication, HHS 93-83950, Fifth Edition, 2007). RMRBL operation is based on guidelines within Design Requirements Manual for Biomedical Laboratories and Animal Research Facilities (NIH Publication, 2008). Laboratory facilities operate under negative pressure conditions to prevent emissions from individual laboratories into corridors or adjacent rooms. The laboratories utilize primary containment and multiple secondary barriers to prevent infectious agents from escaping into the environment. Such design features include specialized ventilation systems to ensure directional airflow, air treatment systems such as high efficiency particulate air (HEPA) filters to decontaminate or remove agents from exhaust air, controlled access zones, airlocks at laboratory entrances, or modules to isolate the laboratory.

Safety and health programs, policies, and procedures that presently protect workers and the public are described below. Copies of standard operating procedures (SOPs) for the RMRBL are stored at that facility and are available for public review through Environmental Health Services and the University Biosafety Officer.

- CSU has an active SA Program. It was first registered in March 1999 and re-registered under the Interim Final Rule 42 CFR Part 73 (published December 2002) in March 2003. CSU received an Entity Application Number May 15, 2003. This number allowed CSU to continue active SA research and to transfer SA if necessary. On October 15, 2004, CSU received their Registration Certificate, which was renewed September 24, 2007, with an expiration date of September 17, 2010. The Responsible Official (RO) for Colorado State University is Robert Ellis. Claudia Gentry-Weeks is the Alternate RO. All

persons with access to any SAs have current security risk assessments (FD-961 and fingerprints) and individual identification numbers. CDC inspected CSU's SA laboratories and program in September 2003, June 2007, and June 2010, and found them to be in compliance at each inspection. All agents are secured as required by the SA regulations. Access is limited to those registered and approved individuals by use of electronic card keys and additional locks on doors and equipment. The investigators conduct inventory, with periodic audits by the RO. CDC requires approval of all transfers of agents prior to their transfer (the form used previously was Form EA-101 and currently is Animal and Plant Health Inspection Service /CDC Form 2-Report of Transfer of Select Agents and Toxins).

- Environmental Health Services has the responsibility for all non-law enforcement campus emergencies. There is a trained Emergency Responder on call at all times. Minimum training includes the 24-hour Emergency Responder course plus further training in areas of expertise. The current policy is that emergency personnel (fire, police, ambulance, etc.) do not enter the RMRBL without accompaniment by an Emergency Responder. Six of the Emergency Responders have trained with Poudre Fire Authority (PFA), the management entity for the local fire district. The training was to ensure that Environmental Health Services Emergency Responders were ready and equipped, including bunker gear, to enter the RMRBL with fire personnel in case of a fire in the building laboratories. The partnered entry is to ensure that fire personnel are not unduly exposed to infectious agents, and to ensure that RMRBL personnel are not unduly placed at risk by the fire. PFA and RMRBL Emergency Responders have received and responded to fire alarms and this partnered procedure has worked very well. In addition, there is always a responder on call, 24 hours a day, 7 days a week, for the RMRBL BSL-3 building. There are currently four individuals who share the responder duty for RMRBL; each individual has an alarm pager that is connected to the CSU alarm system, so that those individuals receive all alarms for the RMRBL. The current responders for the RMRBL are: Jerry Tews, RMRBL Operations Manager; Tom Keene, RMRBL Operations Assistant; Gabriel Garcia, Safety Officer; and James Bush, Building Manager.
- If a release occurs, exposed and/or potentially exposed employees and emergency personnel are decontaminated and/or transported per agreements with Poudre Valley Health Systems (PVHS) and the ambulance system that serves PVHS. The exact procedures depend on the agent, the incident, and the severity of the emergency. Drills, both tabletop and real time, are conducted annually, as required by SA rules. Initial drills include tabletop exercises, followed by evaluations of the overall procedure. The tabletop drills intersperse with actual exercises with all emergency personnel involved.

4.9 Waste Management

4.9.1 Hazardous Waste Management

The Resource Conservation and Recovery Act (RCRA) directs the EPA to promulgate regulations to protect human health and the environment from the improper management of hazardous waste. The program was implemented by the CDPHE in July 1985. The procedure for identifying and categorizing hazardous wastes is described in 40 CFR 261. CSU has been assigned a RCRA Generator of Hazardous Waste EPA Identification Number (CO7090011529) for the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex. The permit identifies the campus as a Small Quantity Generator (SQG) of Hazardous Waste.

A SQG of Hazardous Waste is described as a facility that generates more than 100 and less than 1,000 kilograms (kg), or between 220 and 2,200 pounds (about 25 to under 300 gallons), of hazardous waste and no more than 1 kg of acutely hazardous waste in any month. A SQG must comply with the 1986 rules for managing hazardous waste, including the accumulation, treatment, storage, and disposal requirements.

CSU has established procedures for compliance with applicable laws and regulations for collecting, storing, processing, and disposing of sanitary liquid wastes, solid wastes, and hazardous wastes. Researchers generating hazardous wastes are required to be trained in hazardous waste generation; CSU's Environmental Health Services department provides the training online and maintains records of trained individuals. All necessary permits are maintained by CSU and waste transport off site is overseen by CSU Environmental Health Services.

CSU established a Hazardous Materials Management Policy, which was approved by the State Board of Agriculture, CSU's governing body, on June 15, 1993. The policy's goal is stated as:

The Colorado State University System (CSUS) is committed to safe and environmentally responsible hazardous materials management. The CSU "Hazardous Materials Management Policy" is designed to protect the safety and health of students, employees, visitors, staff and the community; protect the environment; minimize or prevent generation of hazardous wastes; comply with federal, state and local regulations; minimize liability and reduce waste disposal costs.

4.9.2 Sanitary Wastewater

Sanitary wastewater piping from the BSL-3 laboratories of the RMRBL discharge directly to the building sewer main through the same drain stack the common building system uses. Vents from sanitary sewer lines are equipped with HEPA filtration to prevent release of airborne BSL-3 agents.

According to CSU SOPs, BSL-3 laboratory sinks are used for hand washing only; infectious waste is not released into the sanitary sewer. Prior to discard, SOPs require infectious waste to be rendered non-infectious by autoclaving, chemical treatment, or other approved means. Decontaminated biological materials then enter the CSU Biological Waste Disposal Program, not the sanitary sewer.

4.9.3 Solid Waste

Non-contaminated solid waste from the RMRBL facility is disposed as municipal trash through the CSU Solid Waste management system. CSU has their own waste management system including waste disposal trucks that transport solid waste to the Larimer County Landfill, a permitted Subtitle D facility (a solid waste land disposal facility that is not permitted for hazardous waste).

4.9.4 Chemical Waste

Chemical use is limited within the BSL-3 laboratories of the RMRBL facility. CSU Department of Environmental Health Services manages the capture and proper disposal of chemical waste from the RMRBL facility through a licensed transporter.

4.9.5 Biological Waste

Biohazardous waste at the RMRBL is autoclaved and/or chemically decontaminated prior to removal from the facility. Decontaminated biological materials then enter the CSU Biological Waste Disposal Program.

4.9.6 Radiological Waste

The United States Nuclear Regulatory Commission and the State of Colorado license radioactive wastes. CSU has an approved program under these guidelines. CSU policies mandate that radioisotope use requires approval by the Radiation Safety Committee. The CSU Department of Environmental Health Services, under the supervision of the CSU Radiation Safety Officer, administrates all radiological material and waste.

4.10 Noise

Noise is an undesirable sound that interferes with hearing, speech, and communication. Some noise is intense enough to damage hearing or physical structures. Given certain intensities, frequencies, amplitudes, and durations, noise can change the behavior of humans and other animals. Noise is typically derived from human activities, although some natural sounds that are very loud may be considered noise. The frequency sensitivity of the human ear is used to describe sound measures and is measured in decibels (dBs).

Noise is currently generated at the RMRBL from sources including building heating, ventilation, and air conditioning (HVAC) units. HVAC systems provide a permanent and sustained noise source.

In 2005, a noise assessment to provide baseline data for the then-proposed RMRBL construction was completed. A report of the assessment is provided in Appendix C. Baseline information from the investigation includes the following:

The area was surveyed to determine baseline noise levels associated with existing building operations in anticipation of the construction of additional structures on the site. The protocol used for this assessment is an adaptation of the United States Department of Housing and Urban Development (HUD) Noise Guidebook and Noise Assessment Guidelines dated 1991.

The proposed RMRBL site was bordered on the north by various CSU buildings and on the south by a residential subdivision. There were no airport-related 65-dB contours within 5 miles of the Property. There were no railroads or rapid transit lines within 3,000 feet of the Property.

Day-night average sound levels (DNLs) were calculated for four Noise Assessment Locations (NALs) on the Property to evaluate noise exposure levels from existing building operations. NAL 1 was immediately adjacent to the south fence surrounding Building 3205 as near as possible to a bank of refrigeration units, which comprise the principal sound source in the area. NAL 2 was located 65 meters to the south of Building 3205 in an open field. NAL 3 was located at the southernmost border of CSU property. NAL 4 was located at the northernmost edge of the residential development on Catalpa Place.

HUD considers a DNL of 65 dB or less to be Acceptable, a DNL of greater than 65 dB but less than or equal to 75 dB to be Normally Unacceptable, and a DNL of greater than 75 dB to be Unacceptable. Six-day averages (dB) for the four locations (NAL 1 through NAL 4) were: 63.1, 50.5, 46.7, and 46.6 dB, respectively. Therefore, the current DNLs measured at all four NALs were within the range considered Acceptable.

Concurrent with the 2007 RMRBL construction completion, CSU, as a “good-neighbor” effort, installed sound attenuation walls, a 20,000-cubic-yard berm, and landscape plantings to minimize impact on the neighborhood. This effort exceeded HUD standards.

4.11 Aesthetics

The site for the proposed Imaging Facility build-out is in the heart of the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado. The presently existing Imaging Facility shell adjoins the RMRBL building. This location is remote from the CSU Main Campus and in close proximity to the existing CSU BSL-3 facilities and the CDC building on the southwestern part of the campus.

The entire Colorado State University Foothills Research Campus, Judson M. Harper Research Complex lies on the periphery of the Fort Collins UGMA boundary. Closest to the proposed building are rapidly developing residential areas on the east and south boundaries of the campus. Rural, open foothills land borders it to the west. Because of this urban-to-rural interface, the proposed structure's visual appeal would be of particular interest. Visual compatibility with the adjoining RMRBL and buildings in the immediate vicinity on the campus site would be considered for land use purposes. Aesthetics would be enhanced with landscaping.

Land use guidelines for the CSU Master Plan call for continued clustering of like facilities that share similar disciplines with a concentration of related physical needs and specialized support systems.

4.12 Transportation

Baseline traffic information was identified in a study titled Research Innovation Center, Transportation Impact Study, Larimer County, Colorado, dated April 2008. A copy of the report is provided in Appendix D. Report conclusions include the following:

- *The development of Research Innovation Center is feasible from a traffic engineering standpoint. At full development, Research Innovation Center will generate approximately 520 daily trip ends, 81 morning peak hour trip ends, and 74 afternoon peak hour trip ends.*
- *Currently, the Overland/Rampart intersection operates acceptably with current control and geometry.*
- *According to the Larimer County Urban Area Street Standards (LCUASS) a northbound left turn lane is required at the Overland/Rampart intersection.*
- *According to the Larimer County Urban Area Street Standards (LCUASS) a southbound right turn lane is required in the short range future at the Overland/Rampart intersection.*
- *In the short range (2013) future, signals will not likely be warranted at the Overland/Rampart intersection.*
- *In the Short range (2013) background traffic future, the Overland/Rampart intersection will operate acceptably.*
- *In the short range (2013) future, given full development of Research Innovation Center and an increase in background traffic, the Overland/Rampart intersection will operate acceptably. The required short range (2013) geometry is shown in Figure 8.*

- *It is recommended that sidewalks not be built along this property frontage until/unless sidewalks are built along the frontage of adjacent properties. Bicyclists can operate on the bike lanes on Overland Trail and share the road with vehicles on Rampart Road. This area is not and will not likely be served by transit in the short range future.*

In 2009, the left and right turn lanes mentioned above were added in accordance with the transportation study.

4.13 Utilities and Services

4.13.1 Electricity

City of Fort Collins electric utilities presently serve the existing RMRBL and attached Imaging Facility shell; service is via overhead lines.

4.13.2 Natural Gas

A 3-inch Xcel Energy gas line is located at Rampart Road; natural gas is provided to the RMRBL from this line.

4.13.3 Supply Water

Potable water is supplied to the Judson M. Harper Research Complex by the City of Fort Collins through CSU's water distribution system. The City of Fort Collins is a wholesale water supplier providing treated surface and groundwater to CSU's distribution system, which is classified as a "Consecutive System". A Fort Collins – Loveland Water District water main traverses the campus in the vicinity of the RMRBL, but does not supply water to CSU.

4.13.4 Sanitary Sewer

A 10-inch sewer line serves the RMRBL; wastewater is treated at the City of Fort Collins wastewater treatment plant.

4.13.5 Storm Sewer

The area immediately outside the RMRBL building is served by 6-inch diameter to 30-inch diameter below-grade storm sewers that convey runoff to onsite detention ponds.

4.13.6 Telecommunications

Telecommunications and fiber optics are provided to the Foothills Campus from a CSU owned and operated duct bank.

4.13.7 Emergency Response Services

Emergency response is presently provided to the Foothills Campus by a concerted effort of CSU Police, Infectious Disease Research Center Emergency Response Team, CSU Environmental Health Services, PFA, and PFA HazMat Team.

4.14 Land Use

The RMRBL Imaging Facility shell is on the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado and is owned by the Board of Governors of the CSU System. No additional property acquisition is necessary or contemplated for the proposed build-out of the Imaging Facility. The facility is located entirely outside the city limits and the UGMA of Fort Collins and, therefore, is not subject to Fort Collins City Planning Department requirements. The State of Colorado owns the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex, which lies within Larimer County and is zoned FA-1, Farming. The Imaging Facility shell was planned in accordance with the Larimer County Location and Extent Review Process; the Imaging Facility is compatible with the Larimer County Master Plan. Surrounding land use consists of CSU research facilities, CDC facilities, and United States Fish and Wildlife research facilities.

5.0 ENVIRONMENTAL CONSEQUENCES

5.1 Topography, Geology, and Soils

Proposed Action

There are no anticipated direct, indirect, or cumulative impacts predicted to Topography, Geology, and Soils associated with build-out of the interior of the existing Imaging Facility shell.

Installation of the 40-inch-deep by one-mile-long trench for the electrical duct would produce a temporary direct impact to soils during construction activities. Substantial fill would be required to provide positive drainage away from the proposed RMRBL facility, which would alter existing stormwater drainage patterns. Mitigation of this effect would be provided by implementation of BMPs for erosion control. The impact of the Proposed Action to soils would not be significant.

No-Action Alternative

The existing RMRBL Imaging Facility shell is not presently impacting Topography, Geology, and Soils; therefore, there are no anticipated direct, indirect, or cumulative impacts predicted to these resources from the No-Action Alternative.

5.2 Climate and Meteorology

Proposed Action

There are no anticipated direct, indirect, or cumulative impacts predicted to Climate and Meteorology resources from the Proposed Action.

No-Action Alternative

The existing RMRBL Imaging Facility shell is not presently impacting Climate and Meteorology; therefore, there are no anticipated direct, indirect, or cumulative impacts predicted to these resources from the No-Action Alternative.

5.3 Water Resources

5.3.1 Surface Water Resources

5.3.1.1 Construction

Proposed Action

There are no anticipated direct, indirect, or cumulative impacts predicted to Surface Water Resources associated with build-out/construction of the interior of the existing Imaging Facility shell.

Installation of the 40-inch-deep by one-mile-long trench for the electrical duct may produce a temporary direct impact to Surface Water Resources during construction activities. Mitigation of any impacts to Surface Water Resources during construction would be provided by implementation of a SWMP. Therefore, the impact of the Proposed Action to Surface Water Resources would be limited to the period of construction and would not be significant.

No-Action Alternative

The existing RMRBL Imaging Facility shell is not presently impacting Surface Water Resources; therefore, there are no anticipated direct, indirect, or cumulative impacts predicted to these resources from the No-Action Alternative.

5.3.1.2 Operations

Proposed Action

Under the Proposed Action, there are no direct, indirect, or cumulative impacts anticipated to Surface Water Resources from operational activities associated with the Imaging Facility.

No-Action Alternative

The existing RMRBL Imaging Facility shell is not presently impacting Surface Water Resources; therefore, there are no anticipated direct, indirect, or cumulative impacts predicted to these resources from the No-Action Alternative.

5.3.2 Groundwater Resources

5.3.2.1 Construction

Proposed Action

Under the Proposed Action, there are no direct, indirect, or cumulative impacts anticipated to Groundwater Resources from construction activities associated with build-out of the interior of the existing Imaging Facility shell. It is anticipated that groundwater would not be encountered during excavation activities associated with installation of the buried electrical duct; dewatering would not be required.

No-Action Alternative

The existing Imaging Facility shell is not presently impacting this resource; therefore, there are no anticipated direct, indirect, or cumulative impacts predicted to Groundwater Resources from the No-Action Alternative.

5.3.2.2 Operations

Proposed Action

Under the Proposed Action, there are no direct, indirect, or cumulative impacts anticipated to Groundwater Resources from operational activities. There would be neither drinking water nor disposal wells associated with the Imaging Facility.

No-Action Alternative

The existing Imaging Facility shell is not presently impacting this resource; therefore, there are no anticipated direct, indirect, or cumulative impacts predicted to Groundwater Resources from the No-Action Alternative.

5.3.3 Flood Plains

Proposed Action

Under the Proposed Action, there are no direct, indirect, or cumulative impacts anticipated to Flood Plains. The proposed existing Imaging Facility shell is not located within a 100- or 500-year flood plain zone; therefore, there would be no impact to this resource.

No-Action Alternative

The existing Imaging Facility shell is not presently impacting this resource; therefore, there are no anticipated direct, indirect, or cumulative impacts predicted to Flood Plains from the No-Action Alternative.

5.3.4 Wetlands

Proposed Action

The Department of the Army Corps of Engineers and Stewart Environmental Consultants, LLC identified no wetlands at the existing Imaging Facility shell.

The proposed buried electrical duct providing electrical power from the Xcel Energy substation to the Imaging Facility will cross the College Lake outlet ditch; this ditch eventually discharges to the Cache La Poudre River and is therefore considered waters of the United States. The Proposed Action is to excavate across the ditch and bury the electrical distribution duct, which will be a concrete-encased PVC EB conduit beneath the outlet channel.

Since the Proposed Action would potentially impact waters of the United States, the Department of the Army Corps of Engineers was contacted regarding the action. A reconnaissance was performed at the proposed crossing site on November 4, 2010 by Mr. Terry McKee of the Corps of Engineers, Colorado State University personnel and Stewart Environmental personnel. The purpose of Mr. McKee's reconnaissance was to evaluate the feasibility of open-cut crossing the College Lake outlet ditch to install the proposed electrical lines from the substation to the Rocky Mountain Regional Biocontainment Laboratory.

During the reconnaissance, Mr. McKee stated that the Proposed Action would have such a minimal impact to the environment that he would issue a letter authorizing the work to proceed under a Department of the Army Nationwide 12 Permit. Correspondence with Mr. McKee and Nationwide Permit 12 information are provided in Appendix E.

Colorado State University will comply with all conditions of the Permit. Because the disturbance will be minimal, The Corps of Engineers requires no environmental studies prior to the work.

Under the Proposed Action, there are no direct, indirect, or cumulative impacts anticipated to Wetlands.

No-Action Alternative

The existing Imaging Facility shell is not presently impacting this resource; therefore, there are no anticipated direct, indirect, or cumulative impacts predicted to Wetlands from the No-Action Alternative.

5.3.5 Navigable Waterways and Coastal Zones

Proposed Action

Under the Proposed Action, there are no direct, indirect, or cumulative impacts anticipated to Navigable Waterways and Coastal Zones. The existing Imaging Facility shell is not located near or affected by a navigable waterway or a coastal zone. The College Lake outlet ditch that the electrical duct would cross is not a navigable waterway.

No-Action Alternative

The existing Imaging Facility shell is not presently impacting this resource; therefore, there are no anticipated direct, indirect, or cumulative impacts predicted to Navigable Waterways and Coastal Zones from the No-Action Alternative.

5.4 Air Quality

Proposed Action

Operation of the Rocky Mountain Regional Biocontainment Laboratory Imaging Facility under the Proposed Action would not produce direct, indirect, or cumulative impacts to local or regional air quality, including emissions of greenhouse gases.

Operation of the Rocky Mountain Regional Biocontainment Laboratory Imaging Facility under the Proposed Action would conform to all applicable local, state, and federal air quality regulations and standards, including, but not limited to those regulating odor; dust fumes; gases, which are noxious, toxic, or corrosive; and suspended solid or liquid particles. Imaging equipment to be installed in the proposed RMRBL Imaging Facility does not emit greenhouse gases.

CSU's Foothills Campus is not subject to EPA mandatory greenhouse gas (GHG) reporting requirements under Section 114 of the Clean Air Act Amendments. The Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell will use steam and hot water supplied by existing natural gas and biomass-fueled boilers located on Foothills Campus. The greenhouse gas reporting applicability determination was conducted using the boilers' input capacity, and the Rocky Mountain Regional Biocontainment Laboratory Imaging Facility will use existing boilers, and therefore does not change the boilers' input capacity or greenhouse gas emissions estimates. Further, the boilers' air emission permits are based on input capacity and

will not be affected by the Rocky Mountain Regional Biocontainment Laboratory Imaging Facility.

Although the Fort Collins area, including the proposed project site, is within a designated "nonattainment" area for the federal ozone standard, data from the past two 3-year averages for Fort Collins did not exceed the standard. Colorado regulatory agencies have developed a plan for reducing ozone levels in the nonattainment area.

The RMRBL Imaging Facility would be equipped with dedicated redundant HVAC systems and HEPA filtration of exhaust ventilation to maintain containment and prevent release of biological agents used within the proposed facility. According to the United States Department of Energy (DOE) Standard Specification for HEPA Filters used by DOE Contractors, HEPA filters are 99.97 percent efficient at trapping particles greater than 0.3 microns in diameter. A monitoring/maintenance program for filter changing would be instituted, and would be consistent with policies and procedures in place within the Infectious Disease Research Center that have been approved for work with SAs and other BSL-3 biological agents.

The supply air ventilation system would be equipped with backdraft prevention through the use of isolation dampers. HEPA filtration is provided on the supply air as well. BSL-2 biological agents are not airborne hazards and pose negligible risk of impacting air quality. During construction, standard practices and BMPs would be used to control and minimize onsite dust and emissions.

Air quality investigations to define design criteria for the existing RMRBL were performed by CPP Wind Engineering Consultants of Fort Collins, Colorado. Wind tunnel model studies for the RMRBL project were performed in 2005. The investigations consisted of exhaust re-entrainment studies to determine the impact of stack emissions on air quality at the air handler intakes.

Conclusions/recommendations of the investigation report identified potential impacts from the height and placement of intake and emission stacks to avoid uptake of RMRBL exhaust emissions, and ground level particulate matter, and provide security against access to air intakes. Recommendations from this report were incorporated into the design and construction of the RMRBL.

No-Action Alternative

The existing RMRBL Imaging Facility shell is not presently impacting air quality; greenhouse gases are not presently emitted from the facility shell. Therefore, there are no anticipated direct, indirect, or cumulative impacts predicted to this resource from the No-Action Alternative.

5.5 Ecological Resources

Proposed Action

Threatened/endangered species or critical habitats were not identified at the proposed site; therefore, such resources would not be impacted under the Proposed Action.

The Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell is presently in place; build-out of the shell under the Proposed Action may have a minor cumulative impact on Ecological Resources due to increased human activity at the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex. Since no threatened/endangered species or critical habitats were identified at the proposed site, this is not considered a significant impact.

No-Action Alternative

The existing RMRBL Imaging Facility shell is not presently impacting Ecological Resources; therefore, there are no anticipated direct, indirect, or cumulative impacts predicted to this resource from the No-Action Alternative.

5.6 Historic, Cultural, and Archeological Resources

Proposed Action

Research identified no historic, cultural, and/or archeological resources at the proposed facility; therefore, there are no anticipated direct, indirect, or cumulative impacts predicted to these resources from the Proposed Action.

5.6.1 Historic Resources

No historic buildings would be affected by this project. The Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell is presently in place; therefore, build-out of the shell under the Proposed Action would not impact historical resources.

5.6.2 Cultural and Archeological Resources

No evidence of cultural resources or archeological materials was identified at the site or adjoining properties during numerous excavations since the 1960s for utilities and/or construction activities. An archeological investigation conducted in September 2003 at the CDC Replacement Building located approximately one-quarter mile from the proposed Rocky Mountain Regional Biocontainment Laboratory identified no cultural or archeological resources.

The Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell is presently in place; therefore, build-out of the shell under the Proposed Action would not impact cultural or archeological resources.

According to the July 19, 2011 letter from the State Historic Preservation Office (SHPO) to the NIH, “[W]e believe that a finding of no historic properties affected [36 CFR 800.4(d)(1)] would be appropriate for the proposed undertaking described in your June 14, 2011 correspondence.” This letter is provided in Appendix F.

No-Action Alternative

The facility site would remain as-is. There would be no anticipated direct, indirect, or cumulative impacts predicted to Historic, Cultural, or Archeological resources from the No-Action Alternative.

5.7 Socioeconomics

Proposed Action

Under the Proposed Action, a positive impact would be realized to Socioeconomic resources that include the Surrounding Areas, Surrounding Communities, and Employment. No direct, indirect, or cumulative impacts are anticipated to Socioeconomic resources that include Environmental Justice, Taxes and Community Services, and Property Values.

5.7.1 Surrounding Areas

The socioeconomic characteristics of the surrounding areas are provided in Section 4.7.1 of this report. Under the proposed action, a positive impact to the surrounding areas is anticipated due to increased employment opportunities and occupational privilege taxes.

5.7.2 Surrounding Communities

The socioeconomic characteristics of the surrounding communities are provided in Section 4.7.2 of this report. Under the proposed action, a positive impact to the surrounding communities is anticipated due to increased employment opportunities and occupational privilege taxes.

5.7.3 Environmental Justice

There are no expected impacts to low-income or minority populations with the Proposed Action. The proposed Imaging Facility build-out would be located within the existing Imaging Facility core addition to the Rocky Mountain Regional Biocontainment Laboratory, which is entirely on the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado. As referenced in Section 4.7.3, the residential

areas around the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex (Census Tracts 23 and 5.01) have education and income levels at or above the Fort Collins average. Minority and low-income population levels identified were low compared to the overall city's levels. No segments of this population's services, residential areas, or businesses would be isolated, relocated, or disrupted as a result of the Proposed Action.

5.7.4 Employment

The Proposed Action will increase employment opportunities for the Colorado State University workforce and residents of the Fort Collins community. The Imaging Facility build-out would be located within the existing Imaging Facility core addition to the Rocky Mountain Regional Biocontainment Laboratory within the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex. At full operation, the Imaging Facility would require approximately 10 employees. The positions would vary widely and would include, but are not limited to, investigators, researchers, technical and administrative support staff, animal handling, operations and maintenance, and custodial staff.

5.7.5 Taxes and Community Services

Colorado State University is a tax-exempt institution, but an increase in tax revenue to the City of Fort Collins would be realized from the occupational privilege tax of each new employee of the proposed Imaging Facility build-out.

It is not expected that the proposed Imaging Facility build-out will require additional community services (fire, emergency management services, Hazmat, etc.). Colorado State University currently operates other BSL-3 facilities on campus and maintains internal response teams to respond in the event of emergency. Colorado State University has already engaged local emergency management to ensure adequate response for the Rocky Mountain Regional Biocontainment Laboratory. In addition, the Rocky Mountain Regional Biocontainment Laboratory will be available and equipped to assist national, state, and local public health efforts in the event of a bioterrorism or infectious disease emergency.

5.7.6 Property Values

The Proposed Action's facilities will be located at the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex on the Foothills Campus. This campus is not designated as a residential area. Existing and recently constructed facilities at the campus have not deterred residential construction adjacent to the campus, as evidenced by recent upscale residential development adjacent to the southern boundary of the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex. Such construction indicates that the existence and continued development of the campus has not

had a negative impact on property values. Thus, the Imaging Facility build-out would have no unique impact to the values of surrounding property.

No-Action Alternative

A negative impact to Socioeconomic resources is anticipated under the No-Action Alternative. Surrounding Areas, Surrounding Communities, and Employment would be negatively impacted because employment opportunities and occupational privilege taxes would not be realized. No direct, indirect, or cumulative impacts are anticipated to Socioeconomic resources including Environmental Justice, Taxes and Community Services, and Property Values.

5.8 Human Health

Proposed Action

The potential for impact to Human Health from the Proposed Action is considered “minimal risk.”

5.8.1 Physical Injuries During Construction

Human health effects during build-out of the existing Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell would be the same as for any large construction project at Colorado State University, as referenced in section 4.8.1. The effects would be localized and affect only site workers or visitors to the site. There would be no public human health effects. A site-specific safety and health plan would be prepared for the Proposed Action. Routine construction activities have the potential for exposing workers or site visitors to a number of common hazards including electrical, fire, and physical hazards.

5.8.2 Physical Injuries During Operations

As a biocontainment facility, the proposed Rocky Mountain Regional Biocontainment Laboratory Imaging Facility build-out would be designed with extreme care to protect experiments and researchers, as well as the public and the environment. The expansion of the existing facility would maintain the building layout concepts established for the successful operation of a BSL-3 facility. This flexible design concept continues to allow adaptation to future needs and requirements while maintaining the highest safety standards.

The BSL-3 Imaging Facility build-out would be equipped with sophisticated engineering controls to protect human health and the safety of the personnel working within the biocontainment areas, as well as outside the containment areas and outside the building. In addition, personnel working within the BSL-3 facilities will adhere to SOPs developed to protect human health and safety. The CSU Environmental Health Services works closely with the CSU Biosafety Committee, CSU Laboratory Animal Resources (LAR), and research

personnel to ensure that the appropriate safety programs are in compliance with applicable regulations and have the desired protective effects.

5.8.3 Exposure to Hazardous, Toxic, and Infectious Materials and Agents

Under the Proposed Action, Rocky Mountain Regional Biocontainment Laboratory Imaging Facility personnel would work with hazardous, toxic, and/or infectious materials and agents. Rocky Mountain Regional Biocontainment Laboratory Imaging Facility personnel would receive appropriate training on Colorado State University guidelines and programs to minimize the impact of these workplace hazards. Colorado State University also has an occupational health program, which has been extended to Rocky Mountain Regional Biocontainment Laboratory personnel for their wellness and protection. SOPs currently in force at the existing Infectious Disease Research Center would be implemented at the proposed Rocky Mountain Regional Biocontainment Laboratory Imaging Facility. Copies of these SOPs would be stored at the Rocky Mountain Regional Biocontainment Laboratory and would be available for public review through Environmental Health Services and the University Biosafety Officer.

There is the possibility of adverse magnetic or radiologic exposure once the imaging equipment is installed and in use. Shielding and appropriate safeguards are subject to regulations and inspections by the CDPHE, and the University will comply with all applicable standards.

CSU Environmental Health Services has developed multiple programs to provide guidance to CSU employees to effectively establish and maintain a safe and healthful work environment and to ensure compliance with applicable regulations. The safety and health program policies and procedures that would protect workers and the public were previously described in Section 4.8.3, including a CDC-registered SA Program; trained Environmental Health Services Emergency Responders on call 24/7, who are partnered with fire, police, and ambulance emergency responders; and agreements with PVHS and the ambulance system that serves PVHS regarding decontamination and/or transportation of potentially exposed personnel. Additional safeguards include:

- Evaluation of lab practice and procedure for the potential to result in personnel exposure or environmental contamination, as well as design and implementation of SOPs and programs to eliminate exposure or contamination.
- The CSU Environmental Health Services works closely with the CSU Biosafety Committee, CSU LAR, and research personnel to ensure that the appropriate safety programs are in compliance with applicable regulations and have the desired protective effects.

- The United States Nuclear Regulatory Commission and the State of Colorado license radioactive wastes. CSU has an approved program under these guidelines. CSU policies mandate that radioisotope use requires approval by the Radiation Safety Committee. The CSU Environmental Health Services, under the supervision of the CSU Radiation Safety Officer, administrates all radiological material and waste.

5.8.4 Analysis of Abnormal Events and Accident Scenarios

Two documents prepared for NIH include Vulnerability and Threat Risk Assessment for the Regional Biocontainment Laboratory, Colorado State University Foothills Research Campus and Emergency Response Plan for the Regional Biocontainment Laboratory, Colorado State University Foothills Research Campus. These documents are confidential and not available for public review. The documents address the following:

- impacts to facility workers
- impacts to non-involved workers (administrative workers on the Imaging Facility shell build-out floor who do not work in the RMRBL BSL-3 areas and maintenance workers who must repair equipment in the RMRBL facility)
- impacts to the offsite public
- laboratory-acquired infections
- laboratory release accident scenarios
- transportation accidents involving infectious agents
- terrorist threats

No-Action Alternative

There are no anticipated direct, indirect, or cumulative impacts predicted to Human Health resources from the No-Action Alternative, as there would be no potential for construction hazards, physical injuries, or exposure to hazardous, toxic, and infectious materials and agents.

5.9 Waste Management

Proposed Action

Under the Proposed Action, waste management at the proposed facility would be conducted as presently performed at the existing Rocky Mountain Regional Biocontainment Laboratory, as referenced in Section 4.9 of this report. Although some increases in wastes would occur, no direct, indirect, or cumulative impacts to Waste Management are anticipated under the Proposed Action.

5.9.1 Hazardous Waste Management

CSU has established procedures for compliance with applicable laws and regulations for collecting, storing, processing, and disposing of sanitary liquid wastes, solid wastes, and hazardous wastes. All necessary permits are maintained by Colorado State University and waste transport off site is overseen by Colorado State University. Under the Proposed Action, the Rocky Mountain Regional Biocontainment Laboratory Imaging Facility would operate under the existing Colorado State University Foothills Research Campus, Judson M. Harper Research Complex RCRA SQG Hazardous Waste Permit. Based on historic quantities of hazardous waste generated at the existing Rocky Mountain Regional Biocontainment Laboratory, it is anticipated that the proposed Rocky Mountain Regional Biocontainment Laboratory Imaging Facility would not generate sufficient hazardous waste to require reclassification to a Large Quantity Generator of Hazardous Waste. CSU would need to reclassify their waste stream to ensure they listed all new potential wastes. Like the existing Rocky Mountain Regional Biocontainment Laboratory, the proposed Imaging Facility would generate hazardous solid waste, biohazardous, and radiologic waste in the laboratory research program.

5.9.2 Sanitary Wastewater

As described in Section 4.9.2, the existing Rocky Mountain Regional Biocontainment Laboratory facility is connected to the City of Fort Collins wastewater system. Under the Proposed Action, the Rocky Mountain Regional Biocontainment Laboratory Imaging Facility would tie into this same system. Sanitary sewers are capable of accommodating sewer flows generated from the proposed Rocky Mountain Regional Biocontainment Laboratory Imaging Facility. Disposal to the sanitary sewer is regulated by discharge limits set by the U.S. Environmental Protection Agency and enforced by the City of Fort Collins.

According to CSU SOPs, RMRBL BSL-3 laboratory sinks would be used for hand washing only; infectious waste would not be released into the sanitary sewer. Prior to discard, SOPs would require infectious waste to be rendered non-infectious by autoclaving, chemical treatment, or other approved means. Decontaminated biological materials would then enter the CSU Biological Waste Disposal Program, not the sanitary sewer.

5.9.3 Solid Waste

Under the Proposed Action, non-contaminated solid waste from the proposed Rocky Mountain Regional Biocontainment Laboratory would be disposed as municipal trash.

5.9.4 Chemical Waste

Under the Proposed Action, chemical use would be limited within the proposed Rocky Mountain Regional Biocontainment Laboratory Imaging Facility. The Colorado State University Department of Environmental Health Services would manage the capture and

proper disposal of chemical waste from the facility through a licensed transporter and dispose of the waste at a permitted disposal facility.

5.9.5 Biological Waste

Under the proposed action, the Colorado State University Department of Environmental Health Services would manage the proper disposal of all biological waste from the proposed facility. Contaminated laboratory material generated within the Rocky Mountain Regional Biocontainment Laboratory Imaging Facility would be decontaminated prior to leaving the Facility. Contaminated material would be treated via chemical disinfection and/or autoclave sterilization. Decontaminated biological materials would then enter the CSU Biological Waste Disposal Program.

5.9.6 Radiological Waste

The United States Nuclear Regulatory Commission and the State of Colorado license radioactive wastes. CSU has an approved program under these guidelines. CSU policies mandate that radioisotope use requires approval by the Radiation Safety Committee. The CSU Department of Environmental Health Services, under the supervision of the CSU Radiation Safety Officer, administrates all radiological material and waste.

Under the Proposed Action, Colorado State University would handle Radiological Waste as described above.

No-Action Alternative

Under the No-Action Alternative, no increases in wastes would occur. There are no anticipated direct, indirect, or cumulative impacts predicted to Waste Management resources from the No-Action Alternative.

5.10 Noise

Proposed Action

Under the Proposed Action, the Imaging Facility build-out would be completed within the existing Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell; therefore, construction noise would be limited to the immediate area.

Onsite and offsite construction activity, including installation of the underground electrical duct, is expected to be temporary and would not contribute to the overall, long-term noise generated from the site. Construction hours and noise levels would comply with CSU and regulatory agency policies. Non-construction traffic speeds are slow (15 to 20 miles per hour) in the area and, thus, contribute little to noise levels that could impact the residential area approximately one-quarter mile south/southeast of the proposed facility.

Build-out of the existing Rocky Mountain Regional Biocontainment Laboratory Imaging Facility would include placement of the HVAC equipment such that there is no direct line for sound to travel in the direction of residential areas. All HVAC systems would comply with applicable state, local, and Colorado State University noise codes. Landscaping at the existing Rocky Mountain Regional Biocontainment Laboratory includes plantings of trees and shrubs. A landscaped soil berm for noise mitigation was constructed in 2007 and enhanced in 2009.

The Proposed Action would likely have a cumulative impact on noise as additional HVAC equipment is placed on line. It is not anticipated that the addition of HVAC systems associated with the proposed building project would increase noise to unacceptable levels (>65 dB).

No-Action Alternative

Under the No-Action Alternative, there would be no construction activities generating noise. Therefore, there are no anticipated direct, indirect, or cumulative impacts attributed to noise from the No-Action Alternative.

5.11 Aesthetics

Proposed Action

The Proposed Action would have a positive impact on aesthetics.

The Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell is compatible with the existing Rocky Mountain Regional Biocontainment Laboratory, whose exterior architectural elements were carefully planned to mitigate visual disturbance for the neighboring residents and the natural space around the site. The application of earthtone-colored stucco to the walls, as well as flat concrete roof tiles of a shake shingle design, accentuate the spirit of the natural surroundings. Landscaping with native vegetation around the outside vicinity of the building replicates the existing natural terrain of the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex, which is predominantly dry land, high plains desert. The exterior design of the Rocky Mountain Regional Biocontainment Laboratory facility complements the building layout concepts established in the adjacent existing BRB and brings compatibility with other nearby structures in this research-oriented enclave.

The proposed build-out of the Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell would not impact the visual quality of the existing Rocky Mountain Regional Biocontainment Laboratory.

No-Action Alternative

A negative impact is predicted to this resource from the No-Action Alternative. The existing Imaging Facility shell is presently unfinished and is aesthetically unpleasing.

5.12 Transportation

Proposed Action

A short-term increase in vehicle traffic would occur during the project's 6-month construction period. Such construction-generated traffic is presently occurring during existing construction of the Research Innovation Center; this impact does not appear significant.

Operation of the Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell build-out under the Proposed Action would have a minimum cumulative impact on transportation due to additional vehicle activity caused by increased personnel at this facility.

The conclusions of the traffic impact study referenced in Section 4.12 indicate no significant short-range (up to the year 2013) impacts to transportation from the Proposed Action.

No-Action Alternative

Under the No-Action Alternative, there would be no increases in traffic due to construction activities or increased employees at the proposed RMRBL Imaging Facility shell build-out. Therefore, there are no anticipated direct, indirect, or cumulative impacts predicted to this resource from the No-Action Alternative.

5.13 Utilities and Services

Proposed Action

Due to the critical operations that would be conducted in the proposed Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell build-out, redundant utility systems would be provided to the facility. The Proposed Action will directly impact utility service by enhancing the capacity, quality, reliability, and security of the primary power for the Rocky Mountain Regional Biocontainment Laboratory and the proposed Imaging Facility shell build-out.

5.13.1 Electricity

Redundant electrical services would be provided to the proposed Rocky Mountain Regional Biocontainment Laboratory Imaging Facility. The existing overhead main electrical feed from Xcel Energy is minimally adequate to provide quality power for the proposed Rocky Mountain Regional Biocontainment Laboratory Imaging Facility. Xcel Energy will construct a new electric substation to provide adequate capacity and quality primary electrical power that will have the capacity to serve the existing Rocky Mountain Regional Biocontainment Laboratory and the proposed Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell build-out. An existing outdoor diesel engine generator at the RMRBL would be utilized to provide 100 percent standby power to the building during utility power failure.

5.13.2 Natural Gas

Existing Rocky Mountain Regional Biocontainment Laboratory boiler capacity is sufficient to serve the proposed Imaging Facility shell build-out.

5.13.3 Supply Water

Redundant potable water pipes would serve the existing Rocky Mountain Regional Biocontainment Laboratory and would serve the proposed Imaging Facility shell build-out. The BSL-3 laboratories of the Imaging Facility would also be equipped with backflow prevention on the supply water system to prevent accidental release of biological agents from the BSL-3 labs through the water system (and subsequent spread to non-containment areas).

5.13.4 Municipal Sewer

The presently existing 10-inch municipal sewer line would provide sewer service to the proposed Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell build-out and wastewater would be treated by the City of Fort Collins.

5.13.5 Storm Sewer

The area immediately outside the Rocky Mountain Regional Biocontainment Laboratory building is served by 6-inch diameter to 30-inch diameter below-grade storm sewers that convey runoff to onsite detention ponds. Stormwater from the Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell build-out will be detained and released from the site at historic flow rates.

5.13.6 Telecommunications

Telecommunications and fiber optics are provided to the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex from a Colorado State University owned and operated duct bank. Existing Rocky Mountain Regional Biocontainment Laboratory services would be extended to the proposed Rocky Mountain Regional Biocontainment Laboratory Imaging Facility shell build-out.

5.13.7 Emergency Response Services

Emergency response would be provided by a concerted effort of Colorado State University Police, Colorado State University Emergency Response Team, and Poudre Fire Authority HazMat Team. A Vulnerability Assessment prepared in accordance with U.S. Environmental Protection Agency guidelines for prevention and management of bioterrorism acts was prepared for the existing RMRBL. An Emergency Response Plan was developed based on

the findings of the assessment. The existing plan would serve the proposed Imaging Facility shell build-out.

No-Action Alternative

There are no anticipated direct, indirect, or cumulative impacts predicted to the Utilities and Services resources from the No-Action Alternative.

5.14 Land Use

Proposed Action

There are no anticipated direct, indirect, or cumulative effects from the Proposed Action.

It is Colorado State University's intention to continue to locate research and BSL-3 activities at the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex. As this project would predominantly support such functions, the proposed build-out of the existing Imaging Facility shell is consistent with Colorado State University's land use guidelines and key to its success.

The site proposed for this project is on the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado and is owned by the Board of Governors. No additional property acquisition is necessary or contemplated for this project. The Proposed Action is consistent with the CSU Master Plan: Foundation for a New Century. The Master Plan was approved by the then State Board of Agriculture in August 1996 and by the Colorado Commission on Higher Education in September 1997, then updated in 2004, and is presently being amended for 2010. The master planning process included development of planning criteria including assumptions, goals, objectives, and guiding principles to assist with land use decisions for all of Colorado State University's campuses.

No-Action Alternative

There are no anticipated direct, indirect, or cumulative impacts predicted to this resource from the No-Action Alternative.

6.0 CUMULATIVE EFFECTS

The CEQ regulations implementing NEPA define cumulative impacts to the environment as those effects resulting from the impact of implementation of either The Proposed Action or the No Action Alternative when combined with past, present, and future actions (40 CFR Part 1508.7). Thus, cumulative impacts are the sum of all direct and indirect impacts, both adverse and positive, that result from the incremental impacts due to implementation of either the Proposed Action or the No Action Alternative when added to other past, present, and reasonably foreseeable future actions regardless of source. Cumulative impacts may be accrued over time and/or in conjunction with impacts from other activities in the area (40 CFR Part 1508.25).

The National Institutes of Health proposes to partially fund the build-out of the recently constructed Imaging Facility shell at the Rocky Mountain Regional Biocontainment Laboratory within the Colorado State University Foothills Research Campus, Judson M. Harper Research Complex in Fort Collins, Colorado. The facility would provide critical research capacity and facilities for RMRBL scientists, investigators from outside the RMRBL, and other qualified investigators from academia, industry, and other organizations in the region. CSU's biosafety lab is prepared and available to assist national, state, and local public health efforts in the event of a bioterrorism or infectious disease emergency.

Activities (e.g., construction and operation) significantly larger in scope than the Proposed Action have occurred at the Colorado State University Foothills Research Campus since the 1960s without evidence of adverse cumulative impacts to the environment. Potential cumulative impacts resulting from implementation of the Proposed Action would be insignificant to minor for all resource areas assessed and mitigated through the implementation of the various measures that have been identified in this document.

7.0 PREPARERS

Stewart Environmental Consultants, LLC prepared this document in cooperation with CSU as well as members of the design team for the project, on behalf of NIH. The following Stewart Environmental staff members were responsible for the preparation of the Final Environmental Assessment Report:

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8.0 CONSULTATION LETTERS AND CORRESPONDENCE

Colorado Division of Wildlife, July 7, 2004 (Appendix B)

Colorado Division of Wildlife, June 15, 2010 (Appendix B)

Department of the Army, Corps of Engineers, November 5, 2010 (Appendix E)

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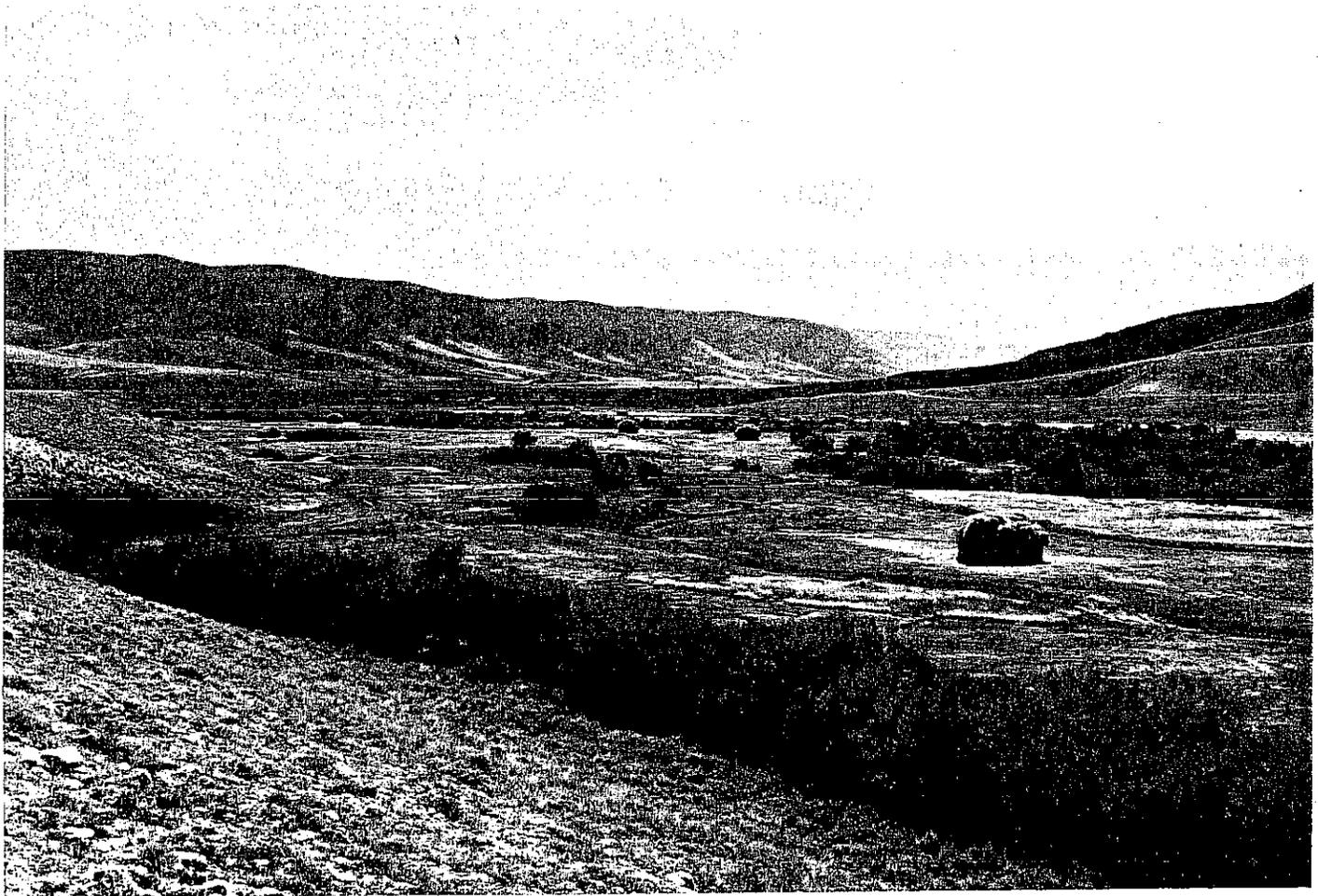
Smith, Ralph, PhD. Associate Director. Infectious Disease Research Center, Colorado State University. Personal communications. April through August 2010.

Appendix A

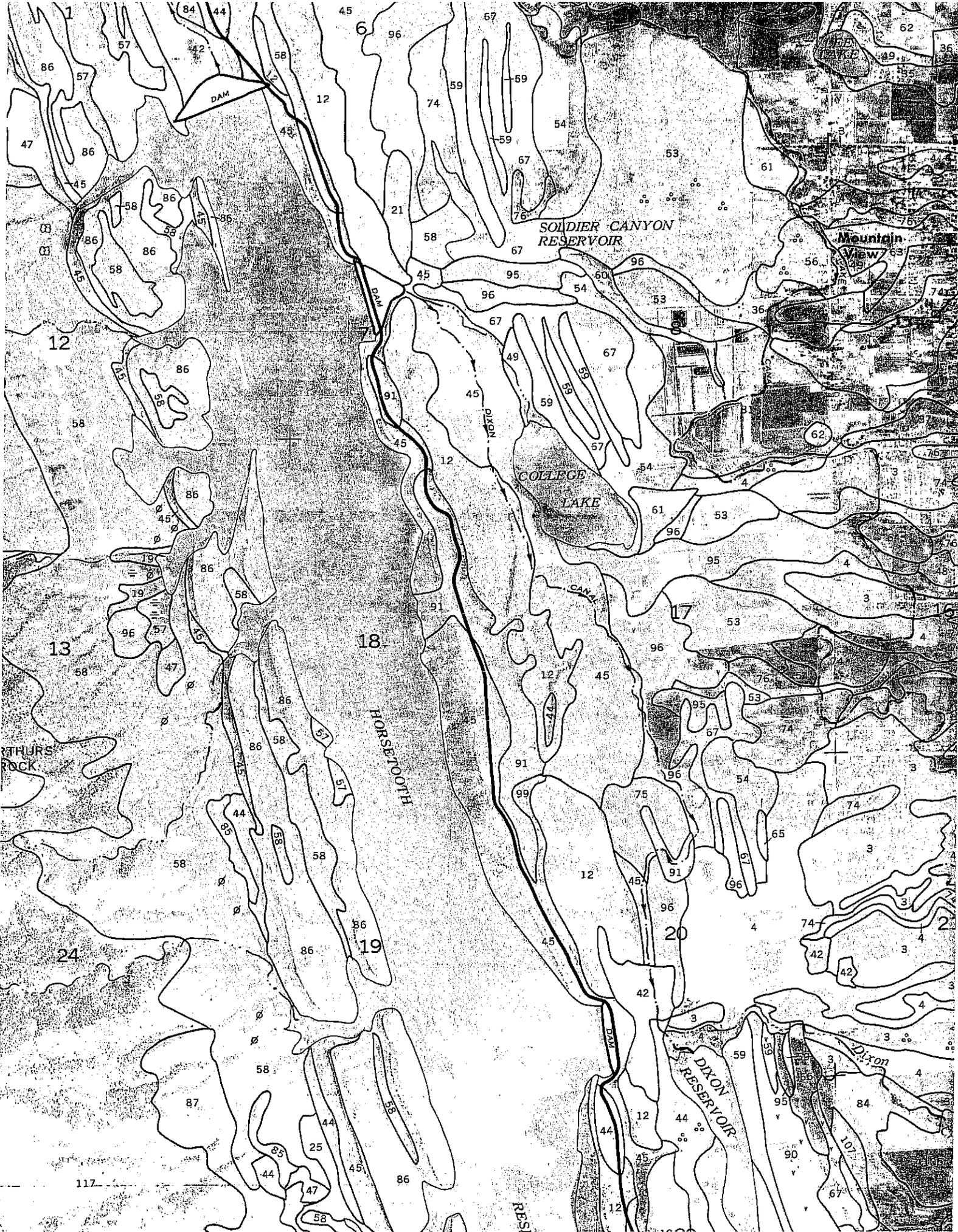
*Excerpts from Soil Survey of Larimer
County Area, Colorado*

SOIL SURVEY OF

Larimer County Area, Colorado



United States Department of Agriculture
Soil Conservation Service and
Forest Service
in cooperation with
Colorado Agricultural Experiment Station



A Cca horizon is absent in some profiles. The A and B horizons range from neutral to moderately alkaline.

51—Kildor clay loam, 0 to 6 percent slopes. This nearly level to strongly sloping soil is on uplands. This soil has the profile described as representative of the series.

Included with this soil in mapping are small areas of soils that have a surface layer of clay and small areas of soils in which gravel and cobbles are on the surface. Also included are a few small areas of soils in which shale is at a depth of less than 20 inches and at a depth of 40 to 60 inches and small areas of soils that are more sloping.

Runoff is medium, and the hazard of water erosion is moderate.

If irrigated, this soil is suited to pasture or hay. Under dryland management it is suited to pasture. It is also suited to native grasses. Capability units VIc-1, irrigated, and VIe-5, dryland; Mountain Shale range site; not assigned to a windbreak suitability group.

52—Kildor-Shale outcrop complex, 5 to 30 percent slopes. This complex consists of moderately sloping to steep soils on uplands. It is about 45 percent Kildor clay loam and about 35 percent Shale outcrop. Kildor clay loam is smoother and less sloping, and Shale outcrop is steeper. The Kildor soil has a profile similar to the one described as representative of the Kildor series, but the combined thickness of the surface layer and subsoil is about 20 inches.

Included with this soil in mapping are about 20 percent areas of soils that are similar to Kildor soil but in which shale is below a depth of 40 inches and areas of shallow soils in which shale is at a depth of less than 20 inches.

Runoff is rapid, and the hazard of erosion is severe.

These soils are suited to pasture and native grasses. Capability unit VIIe-1, dryland; Kildor soil in Mountain Shale range site and Shale outcrop not assigned to a range site; not assigned to a windbreak suitability group.

Kim Series

The Kim series consists of deep, well drained soils that formed in mixed alluvium. These soils are on fans and benches. Elevation ranges from 4,800 to 5,600 feet. Slopes are 0 to 15 percent. The native vegetation is mainly blue grama, western wheatgrass, and some forbs. Mean annual precipitation ranges from 13 to 15 inches, mean annual air temperature ranges from 48° to 50° F, and the frost-free season ranges from 135 to 150 days.

In a representative profile the surface layer is light yellowish brown loam about 7 inches thick. The underlying material is pale yellow and light yellowish brown loam about 53 inches thick.

Permeability is moderate, and the available water capacity is high. Reaction is mildly alkaline above a depth of 7 inches and moderately alkaline below that depth.

These soils are used mainly for irrigated and dry-farmed crops and for pasture and native grasses.

Representative profile of Kim loam, 5 to 9 percent slopes, in a cultivated area, about 100 feet west and

40 feet north of the southeast corner of the NE $\frac{1}{4}$ sec. 36, T. 8 N., R. 69 W.:

Ap—0 to 7 inches; light yellowish brown (2.5Y 6/3) loam, olive brown (2.5Y 4/3) moist; moderate fine and very fine granular structure; soft, very friable; calcareous; mildly alkaline; clear smooth boundary.

C1—7 to 13 inches; pale yellow (2.5Y 7/3) loam, olive brown (2.5Y 4/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; hard, friable; calcareous; moderately alkaline; gradual smooth boundary.

C2—13 to 40 inches; pale yellow (2.5Y 7/3) loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, very friable; calcareous; moderately alkaline; clear smooth boundary.

C3—40 to 60 inches; light yellowish brown (2.5Y 6/3) loam, olive brown (2.5Y 4/3) moist; massive; slightly hard, very friable; calcareous; moderately alkaline.

The A horizon is fine sandy loam, loam, or light clay loam 5 to 12 inches thick. The C horizon is loam or light clay loam. It is calcareous but lacks a zone of lime accumulation in most profiles. Sandstone bedrock is below a depth of 40 inches in some profiles.

53—Kim loam, 1 to 3 percent slopes. This nearly level soil is on uplands and fans. This soil has a profile similar to the one described as representative of the series, but the surface layer is about 12 inches thick.

Included with this soil in mapping are a few small areas of soils that are more sloping or less sloping, a few small areas of soils that have a surface layer of clay loam, and a few small areas of soils that have gravel on the surface. Also included are a few small areas of Fort Collins and Stoneham soils. A water table is within the root zone for part of the growing season in a few areas.

Runoff is slow. The hazard of water erosion is slight, and the hazard of wind erosion is moderate.

If irrigated, this soil is suited to corn, sugar beets, beans, wheat, barley, and alfalfa. Under dryland management it is suited to pasture or native grasses and, to a lesser extent, wheat and barley. Capability units IIe-1, irrigated, and IVe-3, dryland; Loamy Plains range site; windbreak suitability group 1.

54—Kim loam, 3 to 5 percent slopes. This gently sloping soil is on uplands and fans. This soil has a profile similar to the one described as representative of the series, but the surface layer is about 10 inches thick.

Included with this soil in mapping are small areas of soils that are more sloping or less sloping and small areas of soils that have a surface layer of clay loam. A water table is within the root zone during the growing season in a few small areas. Also included are a few small areas of Fort Collins, Stoneham, and Thedaland soils.

Runoff is medium, and the hazard of erosion is moderate.

If irrigated, this soil is suited to barley, alfalfa, and wheat and, to a lesser extent, corn and beans. Under

to a lesser extent, wheat, barley, beans, and corn. Under dryland management it is suited to pasture and native grasses and, to a lesser extent, wheat and barley. Capability units IIIe-1, irrigated, and IVe-3, dryland; Clayey Plains range site; windbreak suitability group 3.

90—Renohill clay loam, 3 to 9 percent slopes. This gently sloping to strongly sloping soil is on uplands. This soil has the profile described as representative of the series.

Included with this soil in mapping are some small areas of soils that are more sloping or less sloping and some small areas of soils that have a gravelly surface layer. Also included are small areas of Ulm, Heldt, Midway, and Thedalund soils.

Runoff is rapid, and the hazard of water erosion is severe.

If irrigated, this soil is suited to pasture and, to a lesser extent, wheat, barley, and alfalfa. Under dryland management it is suited to pasture and native grasses. Capability units IVe-1, irrigated, and VIe-1, dryland; Clayey Plains range site; windbreak suitability group 3.

91—Renohill-Midway clay loams, 3 to 15 percent slopes. This complex consists of gently sloping to moderately steep soils on uplands and ridges. It is about 55 percent Renohill clay loam and about 30 percent Midway clay loam. Renohill clay loam is smoother near the base of the slope, and Midway clay loam is steeper near ridgetops.

Included with these soils in mapping are about 15 percent areas of Ulm and Heldt soils, Shale outcrop, and gravel knobs.

Runoff is rapid, and the hazard of water erosion is severe.

These soils are suited to pasture or native grasses. Capability unit VIe-1, dryland; Renohill soil in Clayey Plains range site and Midway soil in Shaly Plains range site; both soils in windbreak suitability group 3.

Riverwash

92—Riverwash. This unit is highly variable, mixed, water-washed sand and gravel deposits, commonly next to stream channels. These areas are flooded each year, generally in spring or summer. In some places willow trees protect the soil against erosion along the streambanks. Forage production is little and there is little value for grazing. These areas provide some shelter and habitat for wildlife. Capability unit VIIIw-1, dryland; not assigned to a range site or windbreak suitability group.

Rock Outcrop

93—Rock outcrop. This mapping unit is bare or nearly bare rock. Included in mapping are areas of shallow and very shallow soils, mainly around the edges of the mapped areas.

Runoff is rapid. The hazard of water erosion is severe on the included soils and in adjacent areas that receive runoff.

This unit is used mainly for wildlife habitat and esthetic purposes. Capability unit VIIIs-1, dryland;

not assigned to a range site or windbreak suitability group.

Satanta Series

The Satanta series consists of deep, well drained soils that formed in mixed alluvial and wind-deposited material. These soils are on uplands and high terraces. Elevation ranges from 4,800 to 5,600 feet. Slopes are 0 to 9 percent. The native vegetation is mainly blue grama, buffalograss, western wheatgrass, and cactus. Mean annual precipitation ranges from 13 to 15 inches, mean annual air temperature ranges from 48° to 50° F, and the frost-free season ranges from 135 to 150 days.

In a representative profile the surface layer is dark grayish brown loam about 7 inches thick. The subsoil is brown clay loam and pale brown loam about 16 inches thick. The underlying material is very pale brown loam about 21 inches thick over very pale brown fine sandy loam.

Permeability is moderate, and the available water capacity is high. Reaction is mildly alkaline above a depth of 18 inches and moderately alkaline below that depth.

These soils are used mainly for irrigated and dry-farmed crops and for pasture.

Representative profile of Satanta loam, 1 to 3 percent slopes, in cropland, about 50 feet west and 50 feet north of the southeast corner of sec. 4, T. 5 N., R. 69 W.:

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable; mildly alkaline; clear smooth boundary.

B1—7 to 12 inches; brown (10YR 5/3) heavy loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable; mildly alkaline; clear smooth boundary.

B2t—12 to 18 inches; brown (10YR 5/3) clay loam, brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, firm; thin patchy clay films on peds; mildly alkaline; clear smooth boundary.

B3ca—18 to 23 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; soft, friable; fine thin patchy clay films; effervescent; visible secondary calcium carbonate as soft masses and spots; moderately alkaline; clear smooth boundary.

Clca—23 to 44 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; soft, very friable; violently effervescent; visible secondary calcium carbonate as spots and seams; moderately alkaline; gradual smooth boundary.

C2ca—44 to 60 inches; very pale brown (10YR 7/3) fine sandy loam, brown (10YR 5/3) moist; massive; soft, very friable; violently effervescent; visible secondary calcium carbonate as seams and streaks; moderately alkaline.

The A horizon is loam or light clay loam 4 to 11 inches thick. The B horizon is loam or light clay loam. Thickness of the mollic epipedon ranges from 7 to 18 inches. Reaction ranges from neutral to moderately alkaline. Depth to calcareous material ranges from 15 to 20 inches.

94—**Satanta loam, 0 to 1 percent slopes.** This level soil is on terraces and uplands. This soil has a profile similar to the one described as representative of the series, but the combined thickness of the surface layer and subsoil is about 24 inches.

Included with this soil in mapping are a few areas of soils that are more sloping. Also included are small areas of Fort Collins and Nunn soils.

Runoff is slow, and the hazard of erosion is slight.

If irrigated, this soil is well suited to corn, sugar beets, beans, alfalfa, barley, and wheat. Under dryland management it is suited to wheat and barley. It is also well suited to pasture or native grasses. Capability units I, irrigated, and IIIc-1, dryland; Loamy Foothill range site; windbreak suitability group 1.

95—**Satanta loam, 1 to 3 percent slopes.** This nearly level soil is on terraces and uplands. This soil has the profile described as representative of the series.

Included with this soil in mapping are a few small areas of soils that are more sloping or less sloping. Also included are a few small areas of Fort Collins, Nunn, and Altvan soils.

Runoff is slight, and the hazard of erosion is slight to moderate.

If irrigated, this soil is suited to corn, sugar beets, beans, alfalfa, barley, and wheat. Under dryland management it is suited to wheat and barley. It is also well suited to pasture and native grasses. Capability units IIe-1, irrigated, and IIIe-6, dryland; Loamy Foothill range site; windbreak suitability group 1.

96—**Satanta loam, 3 to 5 percent slopes.** This gently sloping soil is on terraces and uplands. This soil has a profile similar to the one described as representative of the series, but the combined thickness of the surface layer and subsoil is about 18 inches.

Included with this soil in mapping are some small areas of soils that are more sloping or less sloping. Also included are small areas of Fort Collins, Nunn, and Altvan soils.

Runoff is medium, and the hazard of erosion is moderate.

If irrigated, this soil is suited to barley, wheat, and alfalfa and, to a lesser extent, corn, sugar beets, and beans. Under dryland management it is suited to wheat and barley. It is also well suited to pasture and native grasses. Capability units IIIe-2, irrigated, and IIIe-7, dryland; Loamy Foothill range site; windbreak suitability group 1.

97—**Satanta loam, gullied, 3 to 9 percent slopes.** This gently sloping to strongly sloping soil is on uplands and side slopes. It receives runoff from adjacent, higher-lying, shallow soils. This soil has a profile

similar to the one described as representative of the series, but the combined thickness of the surface layer and subsoil is about 15 inches.

Included with this soil in mapping are a few areas of soils that have gravel on the surface. Also included are a few small areas of Carnero and Kim soils, many gullies as much as 15 feet wide and 10 to 12 feet deep, and many smaller gullies between.

Runoff is medium to rapid, and the hazard of erosion is severe.

This soil is best suited to pasture and native grasses. If runoff from adjacent areas can be diverted, wheat and barley can be grown. Capability unit IVe-4, dryland; Loamy Foothill range site; not assigned to a windbreak suitability group.

Satanta Variant

This variant consists of deep, somewhat poorly drained soils that formed in alluvium. These soils are on terraces and are underlain by material high in content of calcium sulfate at a depth of 20 to 40 inches. Elevation ranges from 4,800 to 5,600 feet. Slopes are 0 to 3 percent. The native vegetation is saltgrass, bluegrass, sedges, and other water-tolerant grasses. Mean annual precipitation ranges from 13 to 15 inches, mean annual air temperature ranges from 48° to 50° F, and the frost-free season ranges from 135 to 150 days.

In a representative profile the surface layer is dark grayish brown clay loam about 9 inches thick. The subsoil is grayish brown, light brownish gray, and light gray clay loam about 17 inches thick. The underlying material is white loam about 9 inches thick and light gray sandy loam about 25 inches thick.

Permeability is moderate, and the available water capacity is high. Reaction is moderately alkaline.

These soils are used for irrigated and dryfarmed crops and for pasture.

Representative profile of Satanta Variant clay loam, 0 to 3 percent slopes, in irrigated cropland, 1,000 feet east and 1,150 feet south of the northwest corner of sec. 1, T. 6 N., R. 68 W.:

Ap—0 to 9 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, friable; calcareous; moderately alkaline; clear smooth boundary.

B1—9 to 14 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; moderate fine subangular blocky structure; hard, friable; thin patchy clay films on peds; calcareous; moderately alkaline; clear smooth boundary.

B2t—14 to 22 inches; light brownish gray (10YR 6/2) clay loam, dark grayish brown (10YR 4/2) moist; moderate medium prismatic structure parting to moderate fine and medium angular and subangular blocky; hard, friable; thin patchy clay films on peds; calcareous; moderately alkaline; clear smooth boundary.

B3cs—22 to 26 inches; light gray (10YR 7/2)

Appendix B

*Colorado Department of Natural Resources,
Division of Wildlife Letters*

STATE OF COLORADO

Bill Owens, Governor
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WILDLIFE

AN EQUAL OPPORTUNITY EMPLOYER

Bruce McCloskey, Director
6060 Broadway
Denver, Colorado 80216
Telephone: (303) 297-1192



*For Wildlife-
For People*

July 7, 2004

Mr. Robert Blinderman
Stewart Environmental Consultants, Inc.
3801 Automation Way, Suite 200
Fort Collins, CO 80252

Subject: Proposed CSU Regional Biocontainment Laboratory (RBL)
Job No.: 117-101

Dear Mr. Blinderman:

The following constitute the comments of the Colorado Division of Wildlife. Mike Sherman (Habitat Biologist) has reviewed the written material you sent him regarding the proposed laboratories facility and conducted a field visit to the site with you on June 29, 2004.

- The proposed project will have no negative impacts on wildlife or wildlife habitat.
- The proposed RBL does not appear to be located within or near a wetland, however, the U.S. Army Corps of Engineers should be consulted on this issue as they are the regulatory agency that has responsibility in identifying jurisdictional wetlands and mitigating potential impacts.

The site consists of an upland meadow habitat vegetated by grasses and includes a disturbed area containing invasive vegetative species. We concur with your conclusion that the proposed RBL will not negatively impact ecologically sensitive areas on or near the proposed site and there appear to be no endangered, threatened, or rare plant or animal species so designated by the U.S. Fish and Wildlife Service, or the State of Colorado occurring on or using the site.

The Colorado Division of Wildlife appreciates this opportunity to comment on this project proposal. If you have any question, please contact Mike Sherman at (970)416-3335. Thank you.

Scott Hoover, NE Regional Manager

cc: Dave Clarkson, Area Wildlife Manager
Andre Duvall, District Wildlife Manager
Rick Moss, NE Senior Habitat Biologist
Mike Sherman, Area Habitat Biologist

DEPARTMENT OF NATURAL RESOURCES, Russell George, Executive Director
WILDLIFE COMMISSION, Philip James, Chair • Jeffrey Crawford, Vice-Chair • Brad Phelps, Secretary
Members, Bernard Black • Tom Burke • Rick Enstrom • Claire O' Neal • Robert Shoemaker • Ken Torres
Ex Officio Members, Russell George and Don Ament

STATE OF COLORADO

Bill Ritter, Jr., Governor
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WILDLIFE

AN EQUAL OPPORTUNITY EMPLOYER

Thomas E. Remington, Director
6060 Broadway
Denver, Colorado 80216
Telephone: (303) 297-1192
wildlife.state.co.us



*For Wildlife-
For People*

June 15, 2010

Robert J. Blinderman
Senior Environmental Scientist
Stewart Environmental Consultants, LLC
3801 Automation Way, Suite 200
Fort Collins, Colorado 80525

Dear Mr. Blinderman,

Case #: 117.101(5)

I received and reviewed the proposal for the NEPA evaluation. In this letter you will find the Division of Wildlife comments concerning the proposal.

In the development proposal, it appears that no significant new land use practices are going to be done. Therefore, the Division of Wildlife has no comments or concerns for this proposal.

On behalf of the Division of Wildlife I would like to thank you for the opportunity to review and comment on this proposal. If you or the applicant have any questions, please feel free to call Chad Morgan at 970-692-1733.

Sincerely,

A handwritten signature in cursive script that reads "Mark Leslie".

Mark Leslie
Area Wildlife Manager

Cc: S. Yamashita, K. Green, C. Morgan, S. Billings
file

Appendix C

Baseline Noise Assessment

**COLORADO STATE UNIVERSITY
PROPOSED BUILDING CONSTRUCTION PROJECT
FOOTHILLS CAMPUS**

BASELINE NOISE ASSESSMENT

Prepared for:

**Colorado State University
Fort Collins, Colorado**

Prepared by:

**Aspen Environmental Services
F. Russell Pickering, M.S.
P.O. Box 7871
Loveland, CO 80537**

March 2005

EXECUTIVE SUMMARY

Aspen Environmental Services (Aspen) has performed a Baseline Noise Assessment of the area located to the south of Building 3205, Foothills Campus, Colorado State University, Fort Collins, Larimer County, Colorado (the Property). The area was surveyed to determine baseline noise levels associated with existing building operations in anticipation of the construction of additional structures on the site. The protocol used for this assessment is an adaptation of the Department of Housing and Urban Development (HUD) Noise Guidebook and Noise Assessment Guidelines dated 1991.

The Property was bordered on the north by various Colorado State University (CSU) buildings and on the south by a residential subdivision. There were no airport-related 65 dB contours within 5 miles of the Property. There were no railroads or rapid transit lines within 3,000 feet of the Property.

Day-night average sound levels (DNL) were calculated for four Noise Assessment Locations (NALs) on the Property to evaluate noise exposure levels from existing building operations. NAL 1 was immediately adjacent to the south fence surrounding Building 3205 as near as possible to a bank of refrigeration units which comprise the principal sound source in the area. NAL 2 was located 65 meters to the south of Building 3205 in an open field. NAL 3 was located at the southernmost border of CSU property. NAL 4 was located at the northernmost edge of the residential development on Catalpa Place.

Conclusions

HUD considers a DNL of 65 dB or less to be Acceptable, a DNL of greater than 65 dB but less than or equal to 75 dB to be Normally Unacceptable, and a DNL of greater than 75 dB to be Unacceptable. The current DNLs at all four NALs are within the range considered Acceptable. The potential exists for additional buildings to contribute noise in excess of the Acceptable range at or near the source of noise; however, it is unlikely that the current proposed construction will result in exceedances of Acceptable noise levels.

Recommendations

Based on the conclusions of this assessment, Aspen recommends the following:

- Where possible, install refrigeration units on the north side of buildings within noise attenuating fenced enclosures to minimize potential noise impacts to residential areas.

1.0 INTRODUCTION

Aspen Environmental Services (Aspen) was retained by Colorado State University (CSU) to conduct a Baseline Noise Assessment of the area located to the south of Building 3205, Foothills Campus, Colorado State University, Fort Collins, Larimer County, Colorado (the Property). The protocol used for this assessment is an adaptation of the HUD Noise Guidebook and Noise Assessment Guidelines dated 1991.

On June 25, 2004, F. Russell Pickering, M.S., a representative of Aspen, conducted a visual site inspection to assess building operation related noise sources at the Property. Aspen's investigation included the collection of noise level data at four locations on the Property and a review of local regulatory records regarding traffic levels on Overland Trails Road, the nearest major traffic corridor, and maps of the City of Fort Collins, the CSU Foothills Campus, and USGS quadrangles.

The purpose of this Baseline Noise Assessment is to evaluate building operation related noise exposure levels in connection with the existing structures on the Property and compare them with noise exposure standards. Aspen understands that CSU will use the information gathered in this study in an overall Environmental Assessment of the proposed building construction project.

There exists the potential for conditions to be present on the Property that were not reasonably identifiable by the methods used in this assessment. While Aspen is confident that the information from outside sources is reliable, Aspen makes no warranty as to its accuracy or completeness. This baseline noise assessment is not meant to be all inclusive or comprehensive, but is intended to provide CSU with useful data in evaluating the noise impacts associated with the proposed action and its alternatives.

2.0 SITE DESCRIPTION

The Property is located in the SE 1/4 of the NW 1/4 of Section 17, Township 7 North, Range 69 West of the 6th Principal Meridian. The UTM coordinates of the Property are WGS84, Zone 13T, 0487830E, 4491435N (Appendix A). The Property is currently owned by CSU.

The Property is located approximately 1000 meters west of Overland Trail Road, Fort Collins, Larimer County, Colorado. The Property was developed for CSU research facilities and has been developed incrementally with buildings being added as needed over time. The southernmost portion of the Property currently has three buildings with associated parking areas and low speed access roadways.

The Property slopes from west to east approximately 3 to 5 degrees. Asphalt paved access drives are located throughout the Property and approach the southernmost buildings from the north. Parking areas are located adjacent to each building. The area located to the south of Building 3205, the principle assessment area for this study, is comprised of an open field leading to a chain link fence along the southern boundary of the Property. A recently developed subdivision is located approximately 250 meters south of Building 3205.

3.0 METHODS

F. Russell Pickering, M.S. initially inspected the Property on June 25, 2004. Areas surveyed for principle noise generators included the outside of buildings in the southernmost portion of the Property and the open field leading south to the adjacent residential development. No building interiors were accessed or inspected.

Sound measurements were taken on six days and nights through July, 2004. Day-night average sound levels (DNL) were calculated for four Noise Assessment Locations (NALs) on the Property to evaluate noise exposure levels from existing building operations. NAL 1 was immediately adjacent to the south fence surrounding Building 3205 as near as possible to a bank of refrigeration units which comprise the principal permanent sound source in the area. NAL 2 was located 65 meters to the south of Building 3205 in an open field. NAL 3 was located at the chain link fence at the southern border of CSU property. NAL 4 was located at the northern edge of the residential development on Catalpa Place. NAL locations are presented in Appendix B.

Sound levels were measured using an Extech Model 407735 sound meter (adjustable settings set to: Lo, Max, A). Average wind speed, relative humidity, atmospheric pressure and temperature data were collected.

The Traffic Operations Office of the City of Fort Collins was contacted by telephone regarding vehicle traffic on Overland Trail, the nearest major roadway to the Property. The most recent vehicular traffic volumes for Overland Trail north of Elizabeth Street and south of Laporte Road were collected and reported for December 2, 2003.

Maps of the City of Fort Collins, the CSU Foothills Campus, and USGS quadrangles were reviewed to determine distances to major roadways, railroads, mass transit systems, and airports.

4.0 RESULTS

The nearest commercial airport to the Property is the Loveland-Fort Collins Municipal Airport located approximately 12 miles to the southeast at 4900 Earhart Road, Loveland, Colorado 80538. Air traffic from this airport does not significantly impact the Property due to its geographic distance and the generally north-south runway configuration. A small airfield, Christman Landing Field, is shown on the USGS quadrangle map to be located approximately two miles north of the Foothills Campus.

Traffic associated with Overland Trail Road was reported in December 2003. Traffic counts north of Elizabeth Street indicated a total of 12,100 vehicles per day. Counts conducted south of Laporte Avenue indicated a total of 11,400 vehicles per day using that portion of Overland Trail Road. Overland Trail Road is located approximately 1,000 meters to the east of the surveyed area making noise from traffic along this roadway an insignificant contributor to the overall noise picture at the project site.

Average sound measurements by measurement day and NAL are presented in Table 4.1. Average wind speed at the site for measurement days was 4.3 miles per hour, generally from the north, northeast. Daytime temperatures averaged 81.2 °F; nighttime temperatures averaged 74.7 °F at the times readings were taken. Pressure averaged 844.2 inches Hg. Relative humidity averaged 29.2% during the day and 43.1% at night.

Table 4.1. Average Day/Night Sound Levels (DNLs).

Noise Assessment Location (NAL)	Distance from Residential Area (m)	Average DNL						Average
		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	
1	250	64.3	65.6	62.2	63.2	61.4	61.8	63.1
2	185	50.7	49.4	48.9	51.4	50.8	51.5	50.5
3	125	47.2	48.1	47.1	45.8	46.1	46.0	46.7
4	0	51.6	46.9	47.4	44.2	44.6	45.1	46.6

5.0 CONCLUSIONS AND RECOMMENDATIONS

A DNL of 65 dB or less is considered Acceptable by HUD, a DNL of greater than 65 dB but less than or equal to 75 dB is considered Normally Unacceptable, and a DNL of greater than 75 dB is considered Unacceptable.

The current DNLs at all four NALs at the CSU Foothills Campus site are within the range considered Acceptable.

Based on the conclusions of this assessment, Aspen recommends the following:

- Where possible, install refrigeration units on the north side of buildings within noise attenuating fenced enclosures to minimize potential cumulative noise impacts to residential areas.

APPENDIX A: PROJECT LOCATION

APPENDIX B: NOISE ASSESSMENT LOCATIONS

Appendix D

*Research Innovation Center Transportation
Impact Study*

**RESEARCH INNOVATION CENTER
TRANSPORTATION IMPACT STUDY**

LARIMER COUNTY, COLORADO

APRIL 2008

Prepared for:

**Colorado State University
Facilities Management
Fort Collins, CO 80523-6030**

Prepared by:

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B	Recent and Daily Peak Hour Traffic
C	Existing Peak Hour Operation/Level of Service Descriptions/Fort Collins Motor Vehicle LOS Standards
D	Signal Warrant Analysis
E	Short Range Background Peak Hour Operation
F	Short Range Total Peak Hour Operation
G	Pedestrian Influence Area

I. INTRODUCTION

This intermediate transportation impact study addresses the capacity, geometric, and control requirements at and near the proposed Research Innovation Center. The Research Innovation Center site is located west of Overland Trail and south of Rampart Road on the CSU Foothills Campus in Larimer County, Colorado.

During the course of the analysis, numerous contacts were made with the project developer (CSU Facilities Management) and the Larimer County Engineering Staff. The Transportation Impact Study Base Assumptions form is provided in Appendix A. This intermediate transportation impact study generally conforms to the format set forth in the Fort Collins transportation impact study guidelines as contained in the "Larimer County Urban Area Street Standards" (LCUASS). The study involved the following steps:

- Collect physical, traffic, and development data;
- Perform trip generation, trip distribution, and trip assignment;
- Determine peak hour traffic volumes;
- Conduct capacity and operational level of service analyses on key intersections;
- Analyze signal warrants;
- Conduct level of service evaluation of pedestrian, bicycle, and transit modes of transportation.

II. EXISTING CONDITIONS

The location of the Research Innovation Center site is shown in Figure 1. It is important that a thorough understanding of the existing conditions be presented. Access to the site will be made via the Overland/Rampart intersection.

Land Use

Land uses in the area are residential, open space, institutional (CSU), and research & development. There are residential uses to the south and east. On the west side of the site is the Center for Disease Control building and beyond that is open space near Horsetooth Reservoir. To the north of the site is CSU Foothills Campus which has classroom, office, and research & development buildings. The center of Fort Collins lies to the east of the Research Innovation Center site. The Regional Biocontainment Laboratory building is adjacent to the site.

Streets

The primary streets/roads near the Research Innovation Center site are Overland Trail and Rampart Road. Overland Trail is east of the Research Innovation Center site. Overland Trail is classified as a four-lane arterial in the Fort Collins Master Plan. Currently, Overland Trail has a two-lane cross-section with six-foot bike lanes with no curb and gutter near Rampart Road. At the Overland/Rampart intersection, Overland Trail has all movements combined into a single lane. The Overland/Rampart intersection has stop sign control on Rampart Road. The posted speed on this section of Overland Trail is 40 mph.

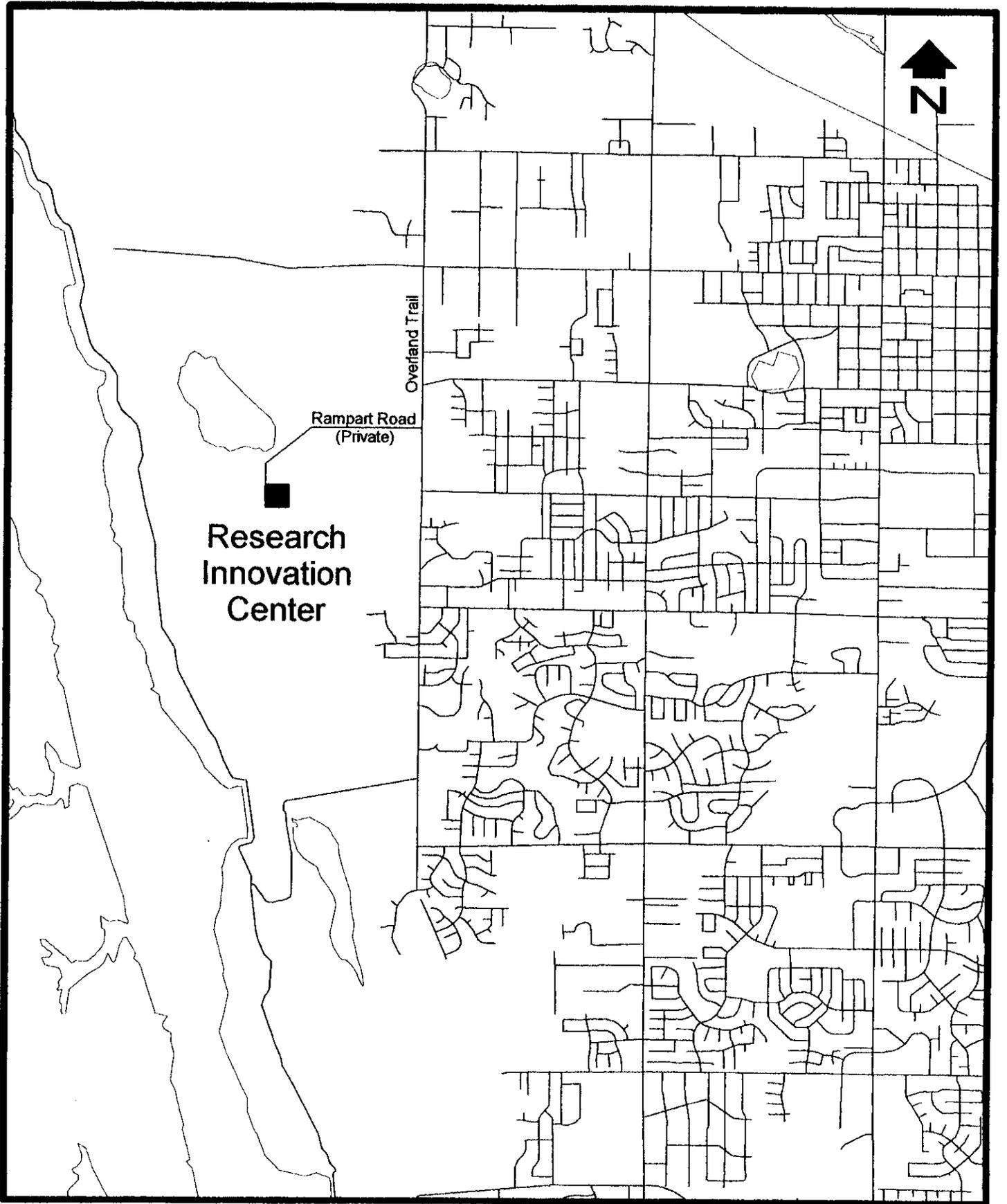
Rampart Road is a private road with a two 12 foot lanes with minimal shoulders and no curb and gutter. Rampart Road only has a west leg at the Overland/Rampart intersection. At the Overland/Rampart intersection, Rampart Road has all movements combined into a single lane.

Existing Traffic

Recent peak hour traffic volumes at the Overland/Rampart intersection are shown in Figure 2. Traffic counts at the Overland/Rampart intersection were obtained in February 2008. Raw count data is provided in Appendix B.

Existing Operation

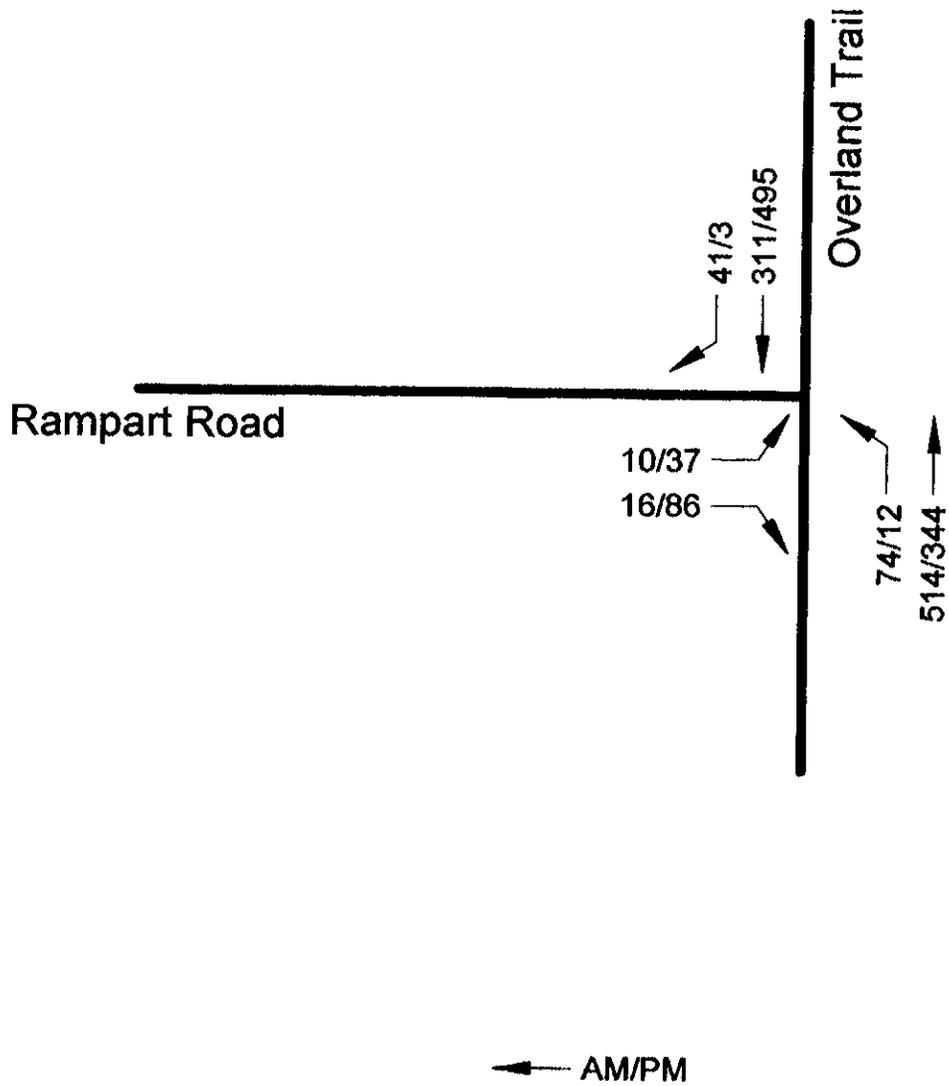
The Overland/Rampart intersection was evaluated using techniques provided in the 2000 Highway Capacity Manual. Using the peak hour traffic shown in Figure 2, the peak hour operation is shown in Table 1.



SCALE: 1"=3000'

SITE LOCATION

Figure 1



RECENT PEAK HOUR TRAFFIC

Figure 2

Calculation forms are provided in Appendix C. A description of level of service for unsignalized intersections from the 2000 Highway Capacity Manual and a table showing the Fort Collins Motor Vehicle LOS Standards (Intersections) are also provided in Appendix C. The Overland/Rampart intersection operates acceptably during both the morning and afternoon peak hours. Acceptable operation at unsignalized intersections is considered to be at level of service E for any approach leg for an arterial/collector or an arterial/local intersection in the area.

TABLE 1 Current Peak Hour Operation			
Intersection	Movement	Level of Service	
		AM	PM
Overland/Rampart (stop sign)	EB LT/RT	C	C
	NB LT/T	A	A

Pedestrian Facilities

Sidewalks generally do not exist in the CSU Foothills Campus and along this segment of Overland Trail. No pedestrian destinations are within 1320 site the site. Security prevents access from Catalpa Drive. No pedestrians were observed on Rampart Road during traffic counting.

Bicycle Facilities

There are bicycle lanes along Overland Trail in this area. Rampart Road has no bike lanes and it is assumed that bicyclists share the road with vehicles on Rampart Road. The types of bicyclists who are using Rampart Road are generally comfortable sharing the road with motor vehicles.

Transit Facilities

Transfort currently operates two bus routes in the vicinity of the Foothills Campus. Routes 2 and 3 operate along Overland trail between Elizabeth Street and Prospect Road, providing connections to the CSU Transit Center on Main Campus and to the Downtown Fort Collins Transit Center. None of the existing transit routes are within 1320 feet of the site or within 1320 feet of the Overland/Rampart intersection. Limited ridership demand in the past has precluded Transfort from extending transit service into the Foothills Campus.

III. PROPOSED DEVELOPMENT

The Research Innovation Center is a proposed 60,000 square foot addition of the existing Bioenvironmental Hazards Research building. Figure 3 shows a site plan of the Research Innovation Center. The short range analysis (Year 2013) includes development of the Research Innovation Center and the CMMAP Building on Laporte Avenue and an appropriate increase in background traffic. Since this is an intermediate level transportation impact study, a long range analysis is not required.

Trip Generation

Trip generation is important in considering the impact of a development such as this upon the existing and proposed street system. Trip generation information contained in Trip Generation, 7th Edition, ITE was used to estimate trips that would be generated by the proposed/expected uses at this site. A trip is defined as a one way vehicle movement from origin to destination. The Regional Transportation Plan for the North Front Range Area has goals aimed at reducing single-occupant vehicles. However, for a conservative analysis, no trip reductions were assumed as part of this traffic study. Research & Development (Code 760) was used for the Research Innovation Center. Table 2 shows the expected trip generation on a daily and peak hour basis.

Code	Use	Size	AWDTE		AM Peak Hour				PM Peak Hour			
			Rate	Trips	Rate	In	Rate	Out	Rate	In	Rate	Out
760	Research & Development	60 KSF	8.11	486	1.03	62	0.21	13	0.16	10	0.92	55
760	Research & Development	200 Employ	2.77	554	0.37	74	0.06	12	0.04	8	0.37	74
Average				520		68		13		9		65

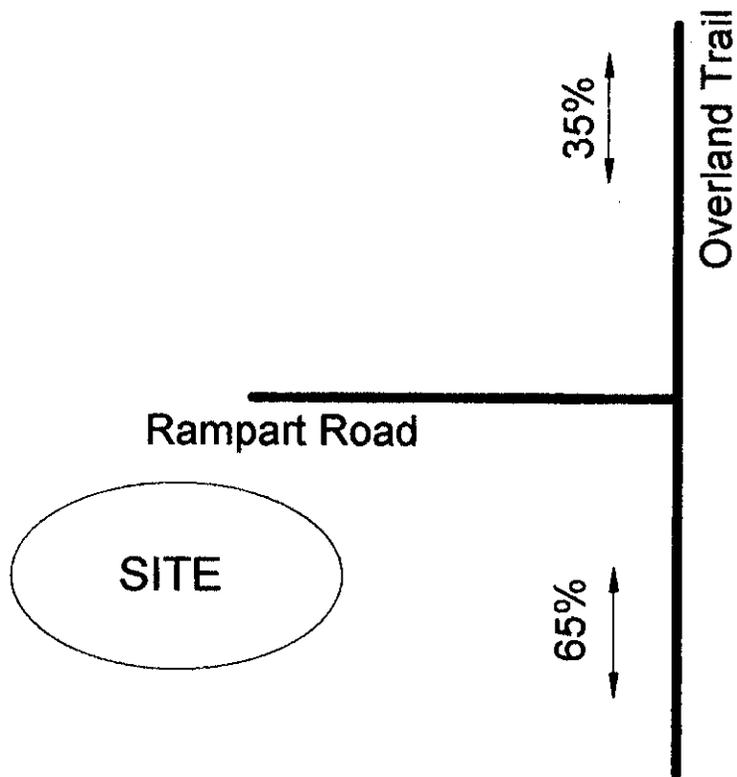
Trip Distribution

Directional distribution of the generated trips was determined for Research Innovation Center based upon the distribution of the existing and future trip productions for this type of land uses and recent traffic counts. Figure 4 shows the trip distributions used for the short range (2013) analysis future.



SITE PLAN

Figure 3



← AM/PM

TRIP DISTRIBUTION

Figure 4

Background Traffic Projections

Figure 5 shows the short range (2013) background traffic projections. Background traffic projections for the short range future horizon were obtained by reviewing the NFR RTP growth factors. Based upon this source, it was determined that volumes on Overland Trail will increase at rate of 2.3 percent per year. The CMMAP/CIRA/NWRC buildings were included in the background traffic for Overland Trail. It is assumed that the CMMAP/CIRA/NWRC buildings will be completed around the same time as the Research Innovation Center.

Trip Assignment

Trip assignment is how the generated and distributed trips are expected to be loaded on the street system. The assigned trips are the resultant of the trip distribution process. Figure 6 shows the site generated peak hour traffic assignment. Figure 7 shows the total (site plus background) short range (2013) peak hour traffic at the Overland/Rampart intersection.

Signal Warrants

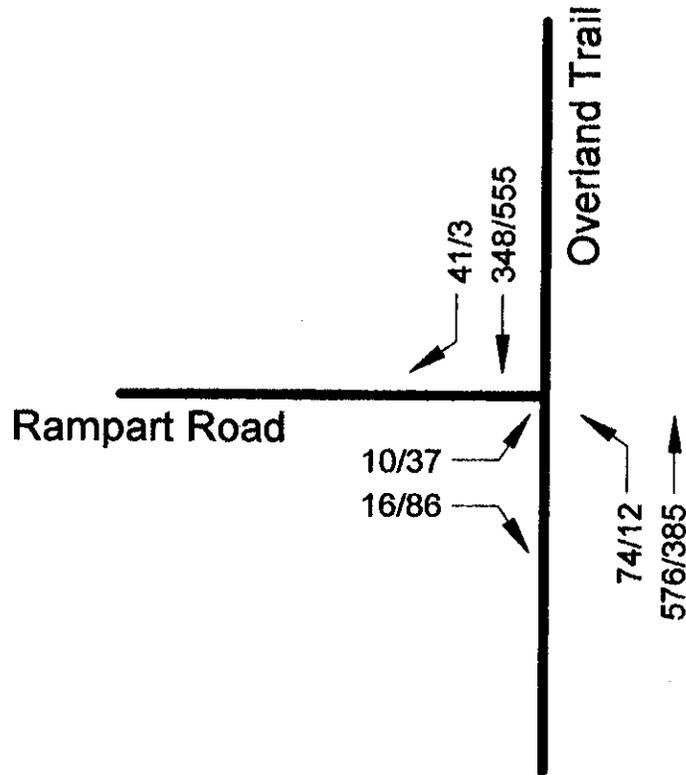
As a matter of policy, traffic signals are not installed at any location unless warrants are met according to the Manual on Uniform Traffic Control Devices. Based upon the short range (2013) peak hour traffic forecasts, signal warrants will not likely be met at the Overland/Rampart intersection. The peak hour signal warrant analysis is provided in Appendix D.

Operation Analysis and Geometry

Capacity analyses were performed at the Overland/Rampart intersection. The operations analyses were conducted for the short range analysis future, reflecting a year 2013 condition.

Using the traffic volumes shown in Figure 5, the Overland/Rampart intersection operates in the short range (2013) background traffic future as indicated in Table 3. Calculation forms for these analyses are provided in Appendix E. The Overland/Rampart intersection will operate acceptably.

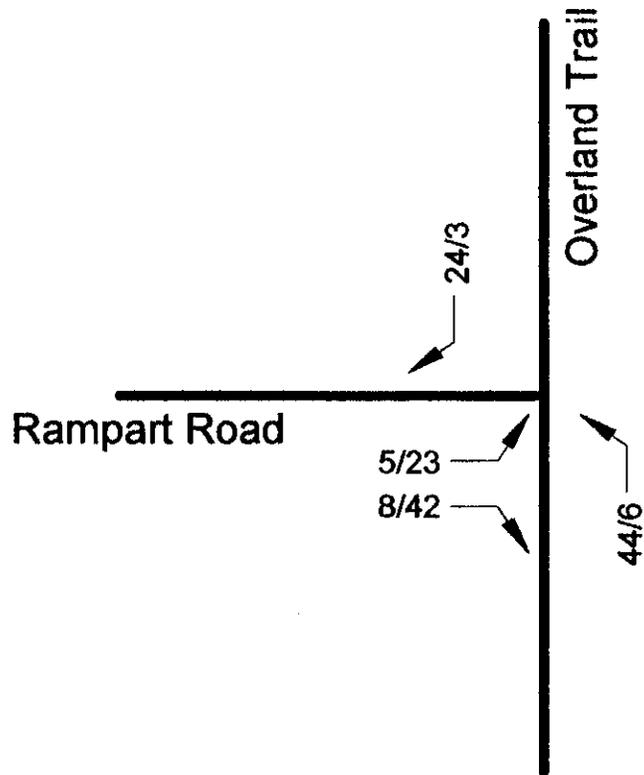
Using the traffic volumes shown in Figure 7, the Overland/Rampart intersection operates in the short range (2013) total traffic future as indicated in Table 4. Calculation forms for these analyses are provided in Appendix F. The Overland/Rampart intersection will operate acceptably.



← AM/PM

SHORT RANGE (2013) BACKGROUND PEAK HOUR TRAFFIC

Figure 5

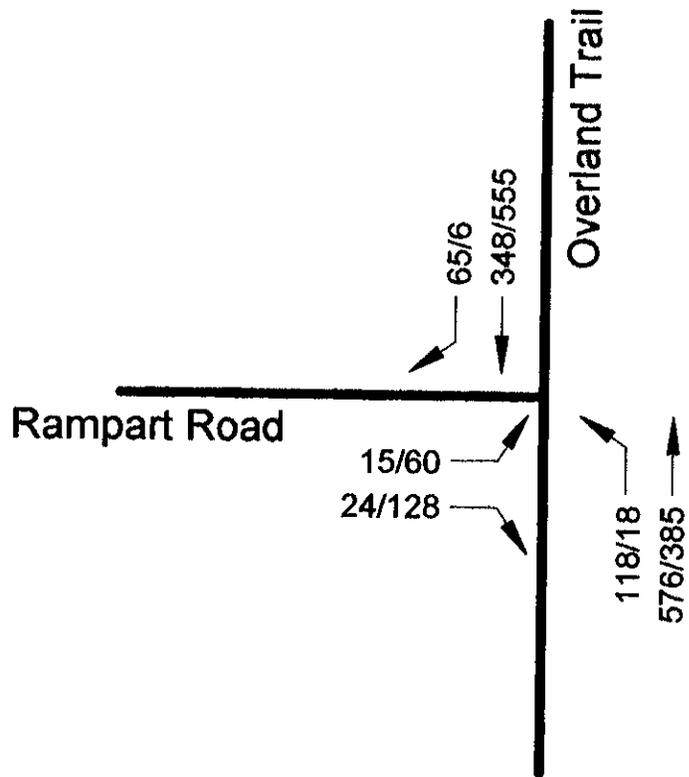


← AM/PM

SITE GENERATED
PEAK HOUR TRAFFIC

Figure 6





← AM/PM

SHORT RANGE (2013) TOTAL PEAK HOUR TRAFFIC

Figure 7

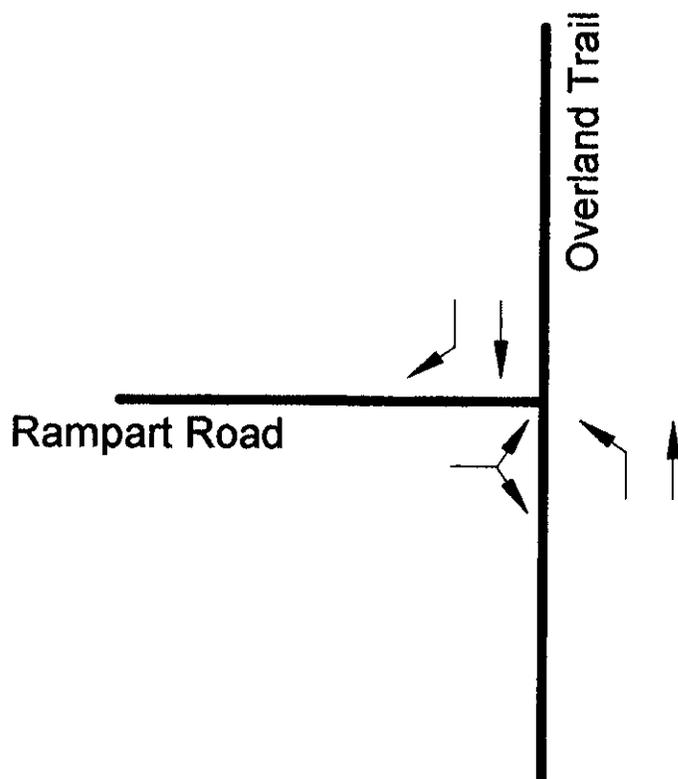
TABLE 3 Short Range (2013) Background Peak Hour Operation			
Intersection	Movement	Level of Service	
		AM	PM
Overland/Rampart (stop sign)	EB LT/RT	C	C
	NB LT/T	A	A

TABLE 4 Short Range (2013) Total Peak Hour Operation			
Intersection	Movement	Level of Service	
		AM	PM
Overland/Rampart (stop sign)	EB LT/RT	C	D
	NB LT	A	A

The short range (2013) geometry is shown in Figure 8, which reflects the warranted geometry at the Overland/Rampart intersection. According to the Larimer County Urban Area Street Standards (LCUASS), the northbound left turn is required at the Overland/Rampart intersection, since Overland Trail is classified as an arterial street. Left-turn lanes are required on all arterial streets. According to Figure 8-2 in LCUASS, the northbound left-turn lane should be 535 feet long, comprised of the following elements: storage - 100 feet and deceleration - 435 feet including a bay taper of 200 feet. A southbound right-turn deceleration lane of 435 feet including a bay taper of 200 feet is also required according to the LCUASS using only the morning peak hour traffic volumes. Both of these auxiliary lanes will be required with the short range background peak hour traffic.

Pedestrian Level of Service

Appendix G shows a map of the area that is within 1320 feet of the Research Innovation Center site. Sidewalks generally do not exist within the CSU Foothills Campus and along Overland Trail. The only potential pedestrian destinations within 1320 feet were the CDC facility, other portions of the CSU Foothills Campus, and residential uses south of the site (i.e. Catalpa Drive). It is not known whether there is a trip affinity between the Research Innovation Center and the CDC facility or other portions of the CSU Foothills Campus. This area is considered to be private land, and as such, Larimer County or the City of Fort Collins cannot mandate the installation of sidewalks. CSU should be the body that decides where sidewalks should be built on the



Foothills Campus. There may be security reasons why sidewalks should not be built between the various facilities on this campus. The residential area to the south (Catalpa Drive) will not have pedestrian connections to this site due to security restrictions. Therefore, it is recommended that sidewalks not be built at this time.

Bicycle Level of Service

There are no bicycle priority destinations within 1320 feet of the Research Innovation Center. Currently, bicyclists operate in the bike lane on Overland Trail. As indicated earlier, bicyclists who use Rampart Road are generally comfortable sharing the road with motor vehicles.

Transit Level of Service

Currently, Transfort operates two bus routes that go through the Overland/Elizabeth intersection. Routes 2 and 3 operate along Overland trail between Elizabeth Street and Prospect Road, providing connections to the CSU Transit Center on Main Campus and to the Downtown Fort Collins Transit Center. In the short range future, it is not likely that Transfort will expand the system to serve the CSU Foothills Campus. The Fort Collins Transit System Plan shows long range service on Overland Trail, but not entering the CSU Foothills Campus. The Innovation Research Center, is more than 0.75 miles from the Overland/Rampart intersection. By common transit planning standards, this walking distance is considered to be excessive.

IV. CONCLUSIONS

This study assessed the impacts of Research Innovation Center on the short range (2013) street system in the vicinity of the proposed development. As a result of this analysis, the following is concluded:

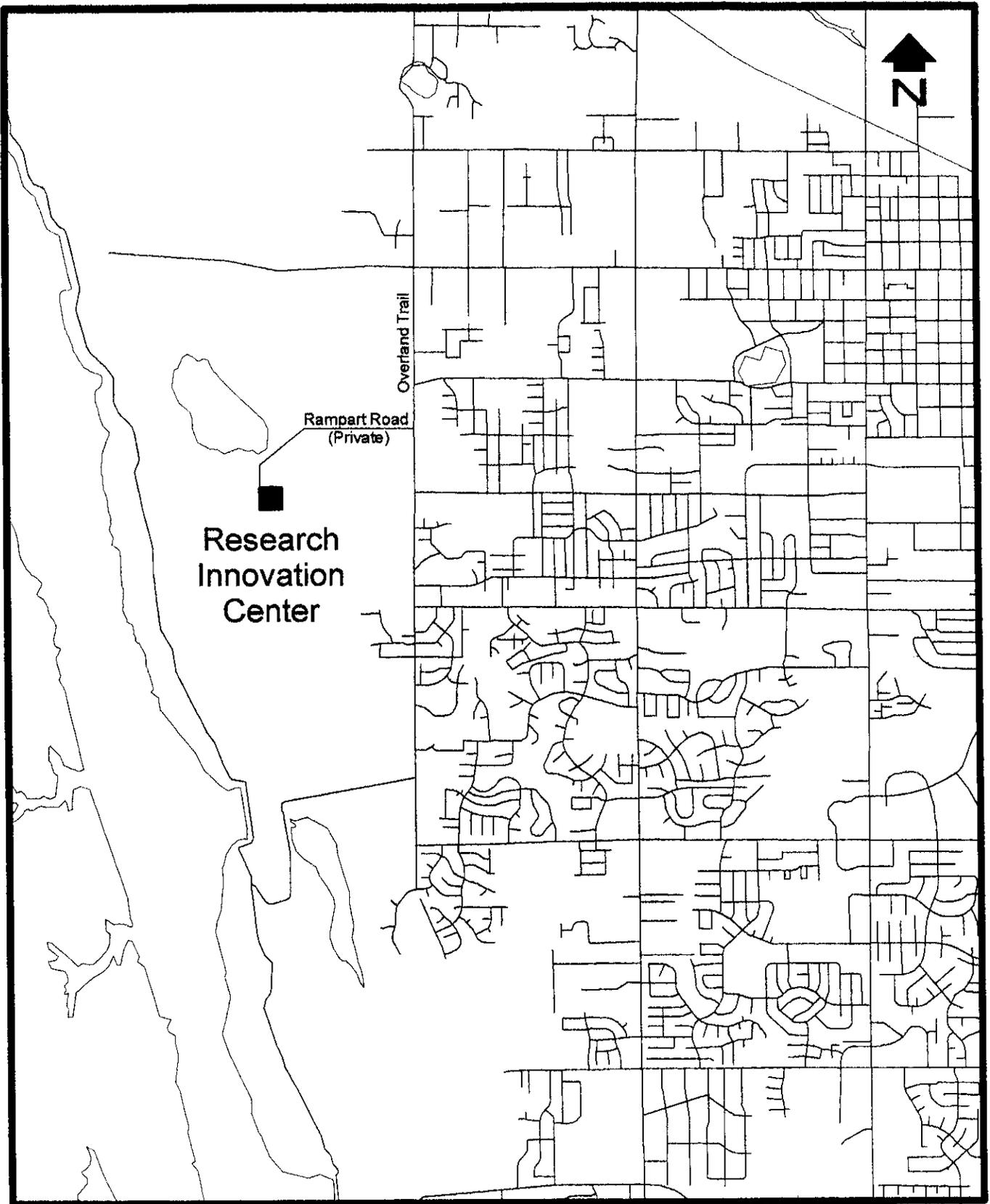
- The development of Research Innovation Center is feasible from a traffic engineering standpoint. At full development, Research Innovation Center will generate approximately 520 daily trip ends, 81 morning peak hour trip ends, and 74 afternoon peak hour trip ends.
- Currently, the Overland/Rampart intersection operates acceptably with current control and geometry.
- According to the Larimer County Urban Area Street Standards (LCUASS) a northbound left turn lane is required at the Overland/Rampart intersection.
- According to the Larimer County Urban Area Street Standards (LCUASS), a southbound right turn lane is required in the short range future at the Overland/Rampart intersection.
- In the short range (2013) future, signals will not likely be warranted at the Overland/Rampart intersection.
- In the short range (2013) background traffic future, the Overland/Rampart intersection will operate acceptably.
- In the short range (2013) future, given full development of Research Innovation Center and an increase in background traffic, the Overland/Rampart intersection will operate acceptably. The required short range (2013) geometry is shown in Figure 8.
- It is recommended that sidewalks not be built along this property frontage until/unless sidewalks are built along the frontage of adjacent properties. Bicyclists can operate on the bike lanes on Overland Trail and share the road with vehicles on Rampart Road. This area is not and will not likely be served by transit in the short range future.

APPENDIX A

Attachment A Transportation Impact Study Base Assumptions

Project Information		
Project Name CSU Research Innovation Center (RIC)		
Project Location CSU Foothill Campus - Rampart Road		
TIS Assumptions		
Type of Study	Full: No	Intermediate: Yes
Study Area Boundaries	North: Rampart Road	South: Rampart Road
	East: Overland	West: Overland
Study Years	Short Range: 2013	Long Range: 2020
Future Traffic Growth Rate	NFR RTP-Overland-2.3% - Rampart-0%	
Study Intersections	1. Overland/Rampart	5.
	2.	
	3.	
	4.	8.
Time Period for Study	AM: 7:00-9:00	PM: 4:00-6:00 Sat Noon:
Trip Generation Rates	Per ITE Attached	
Trip Adjustment Factors	Passby: N/A	Captive Market: N/A
Overall Trip Distribution	SEE ATTACHED SKETCH	
Mode Split Assumptions	N/A	
Committed Roadway Improvements	None Known	
Other Traffic Studies	CMMAP Building	
Areas Requiring Special Study		

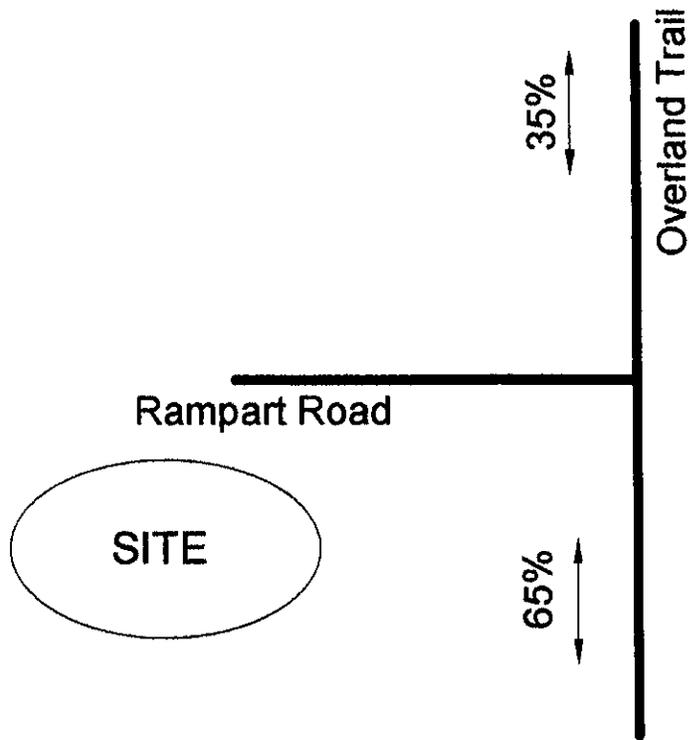
Date: March 31, 2008Traffic Engineer: Delich AssociatesLocal Entity Engineer: OK PER EMAIL 4-10-08



SCALE: 1"=3000'

SITE LOCATION

Figure 1



← AM/PM

TRIP DISTRIBUTION

Figure 4

**TABLE 2
Trip Generation**

Code	Use	Size	AWDTE		AM Peak Hour				PM Peak Hour			
			Rate	Trips	Rate	In	Rate	Out	Rate	In	Rate	Out
760	Research & Development	60 KSF	8.11	486	1.03	62	0.21	13	0.16	10	0.92	55
760	Research & Development	200 Employ	2.77	554	0.37	74	0.06	12	0.04	8	0.37	74
Average				520		68		13		9		65

APPENDIX B

MATTHEW J. DELICH, P.E.
 2272 GLEN HAVEN DRIVE
 LOVELAND, CO 80538
 Phone: (970) 669-2061

TABULAR SUMMARY OF VEHICLE COUNTS

Date: 2/13/2004 Observer: Joseph
 Day: Wednesday Jurisdiction: Larimer County

Intersection: **Overland / Rampart**

R = right turn
 S = straight
 L = left turn

Time Begins	Northbound:			Southbound:			Total north/south	Eastbound:			Westbound:			Total east/west	Total All		
	L	S	R	Total	L	S		R	Total	L	S	R	Total				
7-15	11	101		112	73	9	82	194	1	3		4			4	198	
7-30	16	129		145	81	10	91	236	4	4		8			8	244	
7-45	22	148		170	86	11	97	267	2	5		7			7	274	
8-00	19	127		146	71	6	77	223	1	3		4			4	227	
8-15	17	110		127	73	14	87	214	3	4		7			7	221	
8-30	16	91		107	94	8	102	209	1	2		3			3	212	
7:30-8:30	74	514	0	588	0	311	41	352	10	0	16	26	0	0	0	26	966
PHF				0.86				0.91				0.81			n/a		

4-15	3	91		94	112	0	112	206	7	17		24			0	24	230
4-30	7	80		87	116	2	118	205	10	22		32			0	32	237
4-45	1	100		101	127	0	127	228	7	25		32			0	32	260
5-00	1	73		74	140	1	141	215	13	22		35			0	35	250
5-15	1	88		89	122	2	124	213	3	11		14			0	14	227
5-30	2	94		96	132	1	133	229	2	8		10			0	10	239
4:15-5:15	12	344	0	356	0	495	3	498	37	0	86	123	0	0	0	123	977
PHF				0.88				0.88				0.88			n/a		

APPENDIX C

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	10	16	74	514	311	41
Peak Hour Factor	0.85	0.85	0.86	0.86	0.91	0.91
Hourly flow rate (vph)	12	19	86	598	342	45
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1134	364	387			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1134	364	387			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	97	93			
cM capacity (veh/h)	208	681	1172			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	31	684	387			
Volume Left	12	86	0			
Volume Right	19	0	45			
cSH	363	1172	1700			
Volume to Capacity	0.08	0.07	0.23			
Queue Length 95th (ft)	7	6	0			
Control Delay (s)	15.8	1.9	0.0			
Lane LOS	C	A				
Approach Delay (s)	15.8	1.9	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			63.3%	ICU Level of Service		B
Analysis Period (min)			15			

Joseph
Matthew J. Delich, P. E.

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	37	86	12	344	495	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	42	98	14	391	562	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	982	564	566			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	982	564	566			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	81	99			
cM capacity (veh/h)	272	525	1006			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	140	405	566			
Volume Left	42	14	0			
Volume Right	98	0	3			
cSH	410	1006	1700			
Volume to Capacity	0.34	0.01	0.33			
Queue Length 95th (ft)	37	1	0			
Control Delay (s)	18.2	0.4	0.0			
Lane LOS	C	A				
Approach Delay (s)	18.2	0.4	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			2.5			
Intersection Capacity Utilization		41.8%		ICU Level of Service		A
Analysis Period (min)			15			

Joseph
Matthew J. Delich, P. E.

UNSIGNALIZED INTERSECTIONS

Level-of-Service	Average Total Delay sec/veh
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

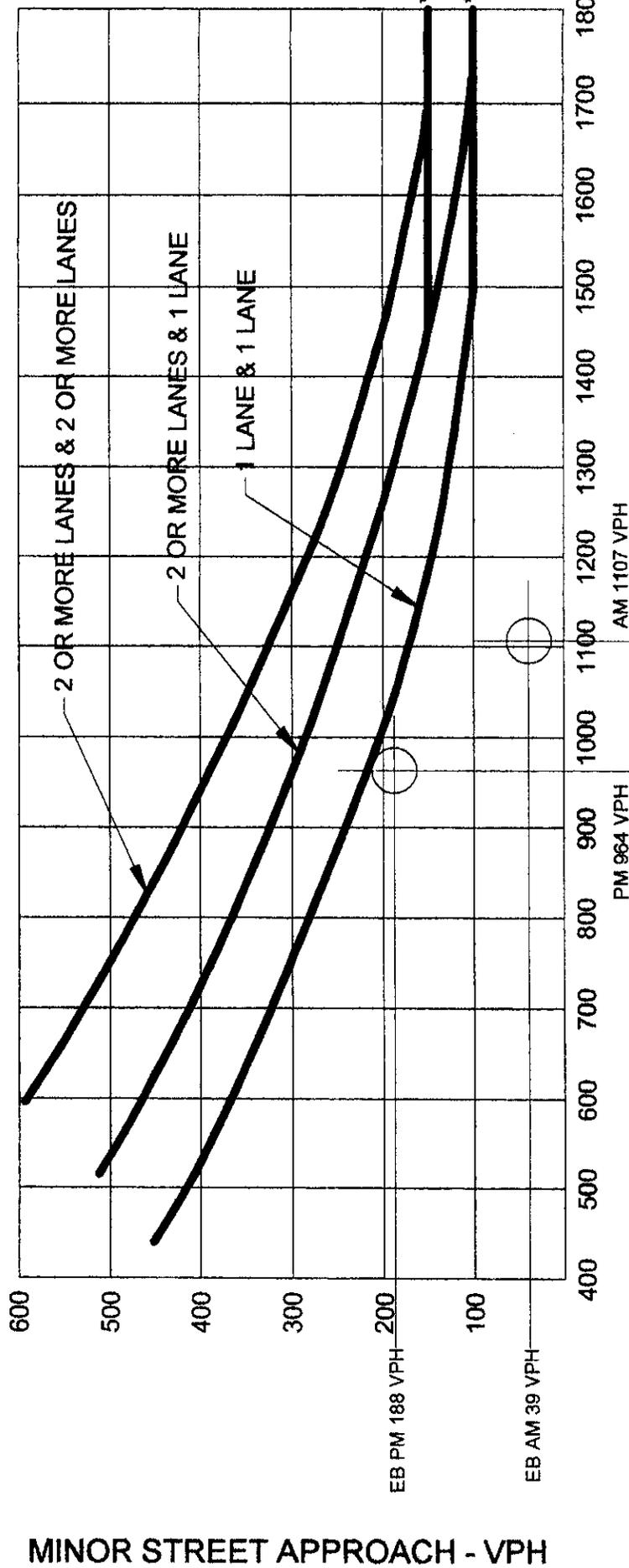
**Table 4-3
Fort Collins (City Limits)
Motor Vehicle LOS Standards (Intersections)**

Intersection type	Land Use (from structure plan)			
	* Commercial corridors	Other corridors within:		
		Mixed use districts	Low density mixed use residential	All other areas
Signalized intersections (overall)	D	E*	D	D
Any Leg	E	E	D	E
Any Movement	E	E	D	E
Stop sign control (arterial/collector or local— any approach leg)	N/A	F**	F**	E
Stop sign control (collector/local—any approach leg)	N/A	C	C	C
* mitigating measures required ** considered normal in an urban environment				

APPENDIX D

FIGURE 4C-3. WARRANT 3, PEAK HOUR

MUTCD, 2003 EDITION, PAGE 4C-7



MAJOR STREET - TOTAL OF BOTH APPROACH - VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

SHORT RANGE TOTAL PEAK HOUR WARRANT AT OVERLAND/RAMPART

APPENDIX E

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	10	16	74	576	348	41
Peak Hour Factor	0.85	0.85	0.86	0.86	0.91	0.91
Hourly flow rate (vph)	12	19	86	670	382	45
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1247	405	427			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1247	405	427			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	97	92			
cM capacity (veh/h)	177	646	1132			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	31	756	427			
Volume Left	12	86	0			
Volume Right	19	0	45			
cSH	320	1132	1700			
Volume to Capacity	0.10	0.08	0.25			
Queue Length 95th (ft)	8	6	0			
Control Delay (s)	17.4	1.9	0.0			
Lane LOS	C	A				
Approach Delay (s)	17.4	1.9	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization		68.5%		ICU Level of Service		C
Analysis Period (min)			15			

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	37	86	12	385	555	3
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	42	98	14	438	631	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1097	632	634			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1097	632	634			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	80	99			
cM capacity (veh/h)	232	480	949			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	140	451	634			
Volume Left	42	14	0			
Volume Right	98	0	3			
cSH	364	949	1700			
Volume to Capacity	0.38	0.01	0.37			
Queue Length 95th (ft)	44	1	0			
Control Delay (s)	21.0	0.4	0.0			
Lane LOS	C	A				
Approach Delay (s)	21.0	0.4	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay			2.6			
Intersection Capacity Utilization		44.0%		ICU Level of Service		A
Analysis Period (min)			15			

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APPENDIX F

HCM Unsignalized Intersection Capacity Analysis

3: Rampart & Overland
Short Total AM

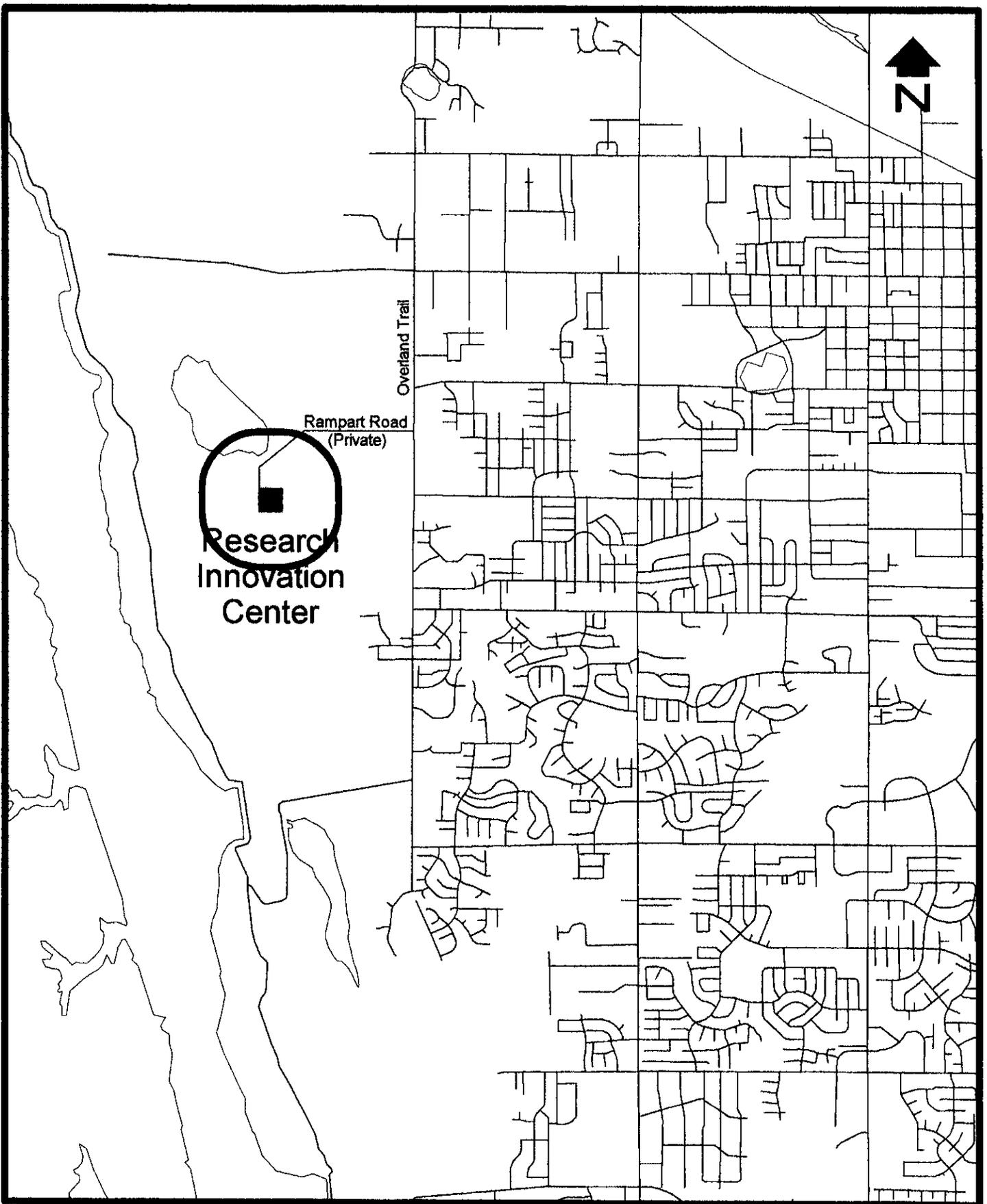
						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	15	24	118	576	348	65
Peak Hour Factor	0.85	0.85	0.86	0.86	0.91	0.91
Hourly flow rate (vph)	18	28	137	670	382	71
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1327	382	454			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1327	382	454			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	88	96	88			
cM capacity (veh/h)	150	665	1107			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	46	137	670	382	71	
Volume Left	18	137	0	0	0	
Volume Right	28	0	0	0	71	
cSH	287	1107	1700	1700	1700	
Volume to Capacity	0.16	0.12	0.39	0.22	0.04	
Queue Length 95th (ft)	14	11	0	0	0	
Control Delay (s)	19.9	8.7	0.0	0.0	0.0	
Lane LOS	C	A				
Approach Delay (s)	19.9	1.5		0.0		
Approach LOS	C					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			40.3%		ICU Level of Service	A
Analysis Period (min)			15			

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	60	128	18	385	555	6
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	68	145	20	438	631	7
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1109	631	638			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1109	631	638			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	70	98			
cM capacity (veh/h)	227	481	946			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	214	20	438	631	7	
Volume Left	68	20	0	0	0	
Volume Right	145	0	0	0	7	
cSH	354	946	1700	1700	1700	
Volume to Capacity	0.60	0.02	0.26	0.37	0.00	
Queue Length 95th (ft)	94	2	0	0	0	
Control Delay (s)	29.4	8.9	0.0	0.0	0.0	
Lane LOS	D	A				
Approach Delay (s)	29.4	0.4		0.0		
Approach LOS	D					
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utilization			47.1%	ICU Level of Service		A
Analysis Period (min)			15			

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APPENDIX F



SCALE: 1"=3000'

PEDESTRIAN INFLUENCE AREA

Figure 1

Appendix E

Department of the Army Correspondence
and Nationwide Permit 12 Information



DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
DENVER REGULATORY OFFICE, 9307 SOUTH WADSWORTH BOULEVARD
LITTLETON, COLORADO 80128-6901

November 5, 2010

Ms. Susanne Cordery-Cotter
Colorado State University
6030 Campus Delivery
Ft. Collins, CO 80523-6030

**RE: Installation of an Electrical Line at Two Locations, College Lake Outlet Ditch
Nationwide Permit No. 12, Corps File No. NWO-2010-951-DEN**

Dear Ms. Cordery-Cotter:

Reference is made to a November 4, 2010 site meeting by Mr. Terry McKee of my office with you and Mr. Robert Blinderman concerning the above-mentioned project located in Section 8, T7N, R69W, Larimer County, Colorado.

Based on the information provided, this office has determined that the work within Colorado is authorized by the **Department of the Army Nationwide Permit No. 12**, found in the March 12, 2007, Federal Register. Enclosed is a fact sheet, which fully describes this Nationwide Permit and lists the General Conditions, Section 404 Only Conditions, and Colorado Regional Conditions, which must be adhered to for this authorization to remain valid.

Although an Individual Department of the Army permit will not be required for this work, this does not eliminate the requirement that any other applicable Federal, state, tribal or local permits be obtained as required. Please be advised that deviations from the original plans and specifications of this project could require additional authorization from this office.

The applicant is responsible for all work accomplished in accordance with the terms and conditions of the nationwide permit. If a contractor or other authorized representative will be accomplishing the work authorized by the nationwide permit on behalf of the applicant, it is strongly recommended that they be provided a copy of this letter and the attached conditions so that they are aware of the limitations of the applicable nationwide permit. Any activity which fails to comply with all the terms and conditions of the nationwide permit will be considered unauthorized and subject to appropriate enforcement action.

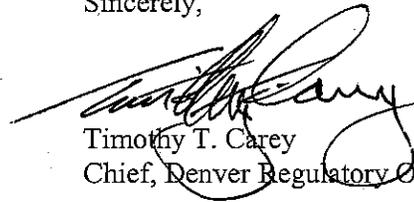
This verification is valid until the NWP is modified, reissued, or revoked. All of the existing NWPs are scheduled to be modified, reissued, or revoked prior to March 18, 2012. It is incumbent upon you to remain informed of changes to the NWPs. We will issue a public notice when the NWPs are reissued. Furthermore, if you commence or are under contract to commence this activity before the date that the relevant NWP is modified or revoked, you will have twelve (12) months from the date of the modification or revocation of the NWP to complete the activity under the present terms and conditions of this NWP. In compliance with general Condition 14, the attached "Certification of Completed Work" form (blue) must be signed and returned to this office upon completion of the authorized work and any required mitigation.

Should anyone at any time become aware that either an endangered and/or threatened species or its critical habitat exists within the project area, this office must be notified immediately.

The Omaha District, Regulatory Branch is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to complete our Customer Service Survey found on our website at <http://per2.nwp.usace.army.mil/survey.html>. If you do not have Internet access, you may call and request a paper copy of the survey that you can complete and return to us by mail or fax. (Completing the survey is a voluntary action)

If there are any questions call **Mr. Terry McKee** of my office at **(303) 979-4120** and reference **Corps File No. NWO-2010-951-DEN**.

Sincerely,



Timothy T. Carey
Chief, Denver Regulatory Office

tm

Enclosures

Copies Furnished:

U.S. Fish & Wildlife Service
Colorado Department of Public Health & Environment
Environmental Protection Agency
Colorado Division of Wildlife
State Historic Preservation Office

**FACT SHEET
NATIONWIDE PERMIT 12**

UTILITY LINE ACTIVITIES. Activities required for the construction, maintenance, repair, and removal of utility lines and associated facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2 acre of waters of the United States.

Utility lines: This NWP authorizes the construction, maintenance, or repair of utility lines, including outfall and intake structures, and the associated excavation, backfill, or bedding for the utility lines, in all waters of the United States, provided there is no change in pre-construction contours. A "utility line" is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, and telegraph messages, and radio and television communication. The term "utility line" does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

Utility line substations: This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a power line or utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2 acre of waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

Foundations for overhead utility line towers, poles, and anchors: This NWP authorizes the construction or maintenance of foundations for overhead utility line towers, poles, and anchors in all waters of the United States, provided the foundations are the minimum size necessary and separate footings for each tower leg (rather than a larger single pad) are used where feasible.

Access roads: This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including overhead power lines and utility line substations, in non-tidal waters of the United States, provided the total discharge from a single and complete project does not cause the loss of greater than 1/2-acre of non-tidal waters of the United States. This NWP does not authorize discharges into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that

the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (See 33 CFR Part 322). Overhead utility lines constructed over section 10 waters and utility lines that are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit.

This NWP also authorizes temporary structures, fills, and work necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if any of the following criteria are met: (1) the activity involves mechanized land clearing in a forested wetland for the utility line right-of-way; (2) a section 10 permit is required; (3) the utility line in waters of the United States, excluding overhead lines, exceeds 500 feet; (4) the utility line is placed within a jurisdictional area (i.e., water of the United States), and it runs parallel to a stream bed that is within that jurisdictional area; (5) discharges that result in the loss of greater than 1/10-acre of waters of the United States; (6) permanent access roads are constructed above grade in waters of the United States for a distance of more than 500 feet; or (7) permanent access roads are constructed in waters of the United States with impervious materials. (Sections 10 and 404)

Note 1: Where the proposed utility line is constructed or installed in navigable waters of the United States (i.e., section 10 waters), copies of the pre-construction notification and NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.

Note 2: Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of the work, accordance with the requirements for temporary fills.

Note 3: Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to Section 9 of the Rivers and Harbors Act of 1899. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15).

General Conditions: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as appropriate, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer.

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Culverts placed in streams must be installed to maintain low flow conditions.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. **Adverse Effects From Impoundments.** If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. **Management of Water Flows.** To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. **Fills Within 100-Year Floodplains.** The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. **Equipment.** Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. **Soil Erosion and Sediment Controls.** Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. **Removal of Temporary Fills.** Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. **Proper Maintenance.** Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety.

15. **Wild and Scenic Rivers.** No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency in the area (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

16. **Tribal Rights.** No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

17. Endangered Species. (a) No activity is authorized under any NWP which is likely to jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees shall notify the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that may be affected by the proposed work or that utilize the designated critical habitat that may be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, both lethal and non-lethal "takes" of protected species are in violation of the ESA. Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide Web pages at <http://www.fws.gov/> and <http://www.noaa.gov/fisheries.html> respectively.

18. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees

must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, explaining the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

19. Designated Critical Resource Waters. Critical resource waters include, NOAA-designated marine sanctuaries, National Estuarine Research Reserves, state natural heritage sites, and outstanding national resource waters or other waters officially designated by a state as having particular environmental or ecological significance and identified by the district engineer after notice and opportunity for public comment. The district engineer may also designate additional critical resource waters after notice and opportunity for comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, and 50 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 27, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

20. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10 acre and require pre-construction notification, unless the district engineer determines in writing that some other form of mitigation would be more environmentally appropriate and provides a project-specific waiver of this requirement. For wetland losses of 1/10 acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream restoration, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2 acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2 acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and

should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWP.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee arrangements or separate activity-specific compensatory mitigation. In all cases, the mitigation provisions will specify the party responsible for accomplishing and/or complying with the mitigation plan.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

21. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

22. Coastal Zone Management. *Not Applicable.*

23. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

24. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13,

the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

25. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

26. Compliance Certification. Each permittee who received an NWP verification from the Corps must submit a signed certification regarding the completed work and any required mitigation. The certification form must be forwarded by the Corps with the NWP verification letter and will include:

- (a) A statement that the authorized work was done in accordance with the NWP authorization, including any general or specific conditions;
- (b) A statement that any required mitigation was completed in accordance with the permit conditions; and
- (c) The signature of the permittee certifying the completion of the work and mitigation.

27. Pre-Construction Notification. *Not Applicable.*

28. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

Further Information

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.
2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.
4. NWPs do not authorize any injury to the property or rights of others.
5. NWPs do not authorize interference with any existing or proposed Federal project.

**Nationwide Permit (March 12, 2007)
Finalized Regional Conditions for the
State of Colorado**

Final Regional Conditions Applicable to Specific Nationwide Permits within Colorado

a. Nationwide Permit Nos. 12 and 14, Utility Line Activities and Linear Transportation Projects. In the Colorado River Basin, utility line and road activities crossing perennial waters or special aquatic sites require notification to the District Engineer in accordance with General Condition 27 (Pre-Construction Notification). In addition, post-construction reporting for activities in all other jurisdictional waters is required and must include information required by General Condition 27 (Pre-Construction Notification) including location, supporting drawings and maps. The post-construction reporting must also include a statement certifying that the General Conditions of the nationwide permits have been followed.

NOTE: The above condition does not apply in the Omaha District portion of Colorado.

b. Nationwide Permit No. 13 Bank Stabilization. In Colorado, bank stabilization activities necessary for erosion prevention in streams that average less than 20 feet in width (measured between the ordinary high water marks) are limited to the placement of no more than 1/4 cubic yard of suitable fill* material per running foot below the plane of the ordinary high water mark. Activities greater than 1/4 cubic yard may be authorized if the permittee notifies the District Engineer in accordance with General Condition 27 (Pre-Construction Notification) and the Corps determines the adverse environmental effects are minimal. [* See (g) for definition of Suitable Fill]

c. Nationwide Permit No. 27 Aquatic Habitat Restoration, Establishment, and Enhancement Activities.

(1) For activities that include a fishery enhancement component, the Corps will send the Preconstruction Notification to the Colorado Division of Wildlife (CDOW) for review. In accordance with General Condition 27 (Pre-construction Notification), CDOW will have 10 days from receipt of Corps notification to indicate that they will be commenting on the proposed project. CDOW will then have an additional 15 days after the initial 10-day period to provide those comments. If CDOW raises concerns, the applicant may either modify their plans, in coordination with CDOW, or apply for a standard individual permit.

(2) For activities involving the length of a stream, the post-project stream sinuosity will not be significantly reduced, unless it is demonstrated that the reduction in sinuosity is consistent with the natural morphological evolution of the stream (sinuosity is the ratio of stream length to project reach length).

(3) Structures will allow the upstream and downstream passage of aquatic organisms, including fish native to the reach, as well as recreational water craft or other navigational activities, unless specifically waived in writing by the District Engineer. The use of grout and/or concrete in building structures is not authorized by this nationwide permit.

(4) The construction of water parks (i.e. kayak courses) and flood control projects are not authorized by this nationwide permit.

d. Nationwide Permits Nos. 29 and 39; Residential Developments and Commercial and Institutional Developments. A copy of the existing FEMA/locally-approved floodplain map must be submitted with the Pre-Construction Notification. When reviewing proposed developments, the Corps will utilize the most accurate and reliable FEMA/locally-approved pre-project floodplain mapping, not post-project floodplain mapping based on a CLOMR or LOMR. However, the Corps will accept revisions to existing floodplain mapping if the revisions resolve inaccuracies in the original floodplain mapping and if the revisions accurately reflect pre-project conditions.

Regional Conditions Applicable to All Nationwide Permits within Colorado (Continued)

e. Removal of Temporary Fills. General Condition 13 (Removal of Temporary Fills) is amended by adding the following: When temporary fills are placed in wetlands in Colorado, a horizontal marker (i.e. fabric, certified weed-free straw, etc.) must be used to delineate the existing ground elevation of wetlands that will be temporarily filled during construction.

f. Spawning Areas. General Condition 3 (Spawning Areas) is amended by adding the following: In Colorado, all Designated Critical Resource Waters (see enclosure 1) are considered important spawning areas. Therefore, in accordance with General Condition 19 (Designated Critical Resource Waters), the discharge of dredged or fill material is not authorized by the following nationwide permits in these waters: NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49 and 50. In addition, in accordance with General Condition 27 (Pre-Construction Notification), notification to the District Engineer is required for use of the following nationwide permits in these waters: NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37 and 38.

g. Suitable Fill. In Colorado, use of broken concrete as fill material requires notification to the District Engineer in accordance with General Condition 27 (Pre-Construction Notification). Permittees must demonstrate that soft engineering methods utilizing native or non-manmade materials are not practicable (with respect to cost, existing technology, and logistics), before broken concrete is allowed as suitable fill. Use of broken concrete with exposed rebar is prohibited in perennial waters and special aquatic sites.

h. Invasive Aquatic Species. General Condition 11 is amended by adding the following condition for work in perennial or intermittent waters of the United States: If heavy equipment is used for the subject project that was previously working in another stream, river, lake, pond or wetland within 10 days of initiating work, one of the following procedures is necessary to prevent the spread of New Zealand Mud Snails and other aquatic hitchhikers:

(1) Remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, etc.) and keep the equipment dry for 10 days; or

(2) Remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, etc.) and spray/soak equipment with either a 1:1 solution of Formula 409 Household Cleaner and water, or a solution of Sparquat 256 (5 ounces Sparquat per gallon of water). Treated equipment must be kept moist for at least 10 minutes; or

(3) Remove all mud and debris from equipment (tracks, turrets, buckets, drags, teeth, etc.) and spray/soak equipment with water greater than 120 degrees F for at least 10 minutes.

Regional Conditions for Revocations Specific to Certain Geographic Areas

i. Fens: All Nationwide permits, except permit Nos. 3, 6, 20, 27, 32, 38 and 47, are revoked in fens and wetlands adjacent to fens. Use of nationwide permit Nos. 3, 20, 27 and 38, requires notification to the District Engineer, in accordance with General Condition 27 (Pre-Construction Notification), and the permittee may not begin the activity until the Corps determines the adverse environmental effects are minimal. The following defines a fen:

Fen soils (histosols) are normally saturated throughout the growing season, although they may not be during drought conditions. The primary source of hydrology for fens is groundwater. Histosols are defined in accordance with the U.S. Department of Agriculture, Natural Resources Conservation Service publications on Keys to Soil Taxonomy and Field Indicators of Hydric Soils in the United States (<http://soils.usda.gov/technical/classification/taxonomy>).

j. Springs: Within the state of Colorado, all NWPs, except permit 47 (original 'C'), require preconstruction notification pursuant to General Condition 27 for discharges of dredged or fill material within 100 feet of the point of groundwater discharge of natural springs. A spring source is defined as any location where

groundwater emanates from a point in the ground. For purposes of this regional condition, springs do not include seeps or other discharges which do not have a defined channel.

ADDITIONAL INFORMATION

The following provides additional information regarding minimization of impacts and compliance with existing general Conditions:

a. Permittees are reminded of the existing General Condition No. 6 which prohibits the use of unsuitable material. Organic debris, building waste, asphalt, car bodies, and trash are not suitable material. Also, General Condition 12 requires appropriate erosion and sediment controls (i.e. all fills must be permanently stabilized to prevent erosion and siltation into waters and wetlands at the earliest practicable date). Streambed material or other small aggregate material placed along a bank as stabilization will not meet General Condition 12. Also, use of erosion control mats that contain plastic netting may not meet General Condition 12 if deemed harmful to wildlife.

b. Designated Critical Resource Waters in Colorado. In Colorado, a list of designated Critical Resource Waters has been published in accordance with General Condition 19 (Designated Critical Resource Waters). This list will be published on the Albuquerque District Regulatory home page and will be attached to nationwide permit summaries distributed to the public. A copy is attached (see Enclosure 1).

c. Federally-Listed Threatened and Endangered Species. General Condition 17 requires that non-federal permittees notify the District Engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project. Information on such species, to include occurrence by county in Colorado, may be found at the following U.S. Fish and Wildlife Service website: <http://mountain-prairie.fws.gov/endspp/CountyLists/Colorado.htm>

DESIGNATED CRITICAL RESOURCE WATERS IN COLORADO

The following waters within the State of Colorado are designated as critical resource waters. In accordance with General Condition 19 (Designated Critical Resource Waters), the discharge of dredged or fill material is not authorized by the following nationwide permits in these waters: NWP's 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49 and 50. In addition, in accordance with General Condition 27 (Pre-Construction Notification), notification to the District Engineer is required for use of the following nationwide permits in these waters: NWP's 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37 and 38.

a. Outstanding Natural Resource Waters:

- Cache la Poudre Basin: All tributaries to the Cache La Poudre River system, including all lakes and reservoirs, which are within Rock Mountain National Park;
- Laramie River: All tributaries to the Laramie River system, including all lakes and reservoirs which are in the Rawah Wilderness Area;
- North Fork Gunnison River: All tributaries to North Fork Gunnison River system, including lakes, reservoirs and wetlands within the West Elk and Raggeds Wilderness Area;
- North Platte River: All tributaries to the North Platte River and Encampment Rivers, including all lakes and reservoirs, which are in the Mount Zirkle Wilderness Area;
- San Miguel River: All tributaries, lakes, reservoirs, and wetlands within the boundaries of the Lizard Head and Mt. Sneffels Wilderness Area;
- Roaring Fork River: All tributaries to the Roaring Fork River system, including lakes, reservoirs and wetlands within the Maroon Bells/Snowmass Wilderness Area;
- Uncompahgre River: All tributaries to the Uncompahgre River system, including lakes, reservoirs, and wetlands within the Mt. Sneffels and Big Blue Wilderness Areas;
- Upper Arkansas River Basin: All streams, wetlands, lakes, and reservoirs within the Mount Massive and Collegiate Peaks Wilderness Areas;
- Upper Colorado River: Mainstem of the Colorado River system including tributaries, lakes, reservoirs, and wetlands within Rocky Mountain National Park;
- Upper Gunnison River Basin: All tributaries, lakes, reservoirs, and wetlands in the La Garita Wilderness Area. All tributaries to the Gunnison River system, including lakes, reservoirs, and wetlands within West Elk, Collegiate Peaks, Maroon Bells, Raggeds, Fossil Ridge, Oh-Be-Joyful and Big Blue Wilderness Areas;
- White River: Trapper's Lake and tributaries to Trapper's Lake;
- Yampa River: All tributaries to the Yampa River, including lakes, reservoirs and wetlands within Zirkle Wilderness Area.

b. Gold Medal Waters. Gold Medal Waters, as identified by the State of Colorado, are defined in the Colorado Fishing Season Information brochure, on the Colorado Division of Wildlife website (<http://wildlife.state.co.us>) or can be obtained at any Colorado Division of Wildlife or Corps office in Colorado.

c. Cutthroat Trout Waters. Waters designated as Cutthroat Trout Waters by the Colorado Division of Wildlife, Colorado Wildlife Commission, as listed in the Colorado Division of Wildlife's regulation at Chapter 0, Appendix C, which can be accessed via the following website address:
<http://wildlife.state.co.us/NR/rdonlyres/4D6FFAC6-64EB-4516-A5E9-AE91B7392A95/0/Ch00.pdf>

Certification of Completed Work

Corps File Number: _____

Name of Permittee: _____

Date of Issuance: _____

Expiration Date: _____

Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the following address:

U. S. Army Corps of Engineers
Denver Regulatory Office
9307 South Wadsworth Blvd.
Littleton, Colorado 80128-6901

Phone (303) 979-4120
Fax (303) 979-0602

Please note that your permitted activity is subject to a compliance inspection by a U. S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of said permit, and required mitigation was completed in accordance with the permit conditions.¹

Signature of Permittee

¹ If your permit included wetlands monitoring and annual reports, these activities will continue after submittal of this form until you are notified by the Denver Regulatory Office that your mitigation is successful and monitoring reports are no longer required.

Appendix F

*Letter of Response from the
State Historic Preservation Office*



ORY *Colorado*

July 19, 2011

Valerie Nottingham
Chief, Environmental Quality Branch
Division of Environmental Protection, ORF
National Institutes of Health
Building 13, Room 2S11
9000 Rockville Pike
Bethesda, MD 20892

RE: Imaging Facility Shell at Rocky Mountain Regional Biocontainment Laboratory at Colorado State University Foothills Research Campus. (CHS #59779)

Dear Ms. Nottingham:

On July 19, 2011, our office received email correspondence from Mark Radtke of the National Institutes of Health regarding the review of the above-mentioned project under Section 106 of the National Historic Preservation Act (Section 106).

After review of the additional information, we believe that a finding of no historic properties affected [36 CFR 800.4(d)(1)] would be appropriate for the proposed undertaking described in your June 14, 2011 correspondence.

If unidentified archaeological resources are discovered during construction, work must be interrupted until the resources have been evaluated in terms of the National Register criteria, 36 CFR 60.4, in consultation with this office. We request being involved in the consultation process with the local government, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking, and with other consulting parties. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings. Please note that our compliance letter does not end the 30-day review period provided to other consulting parties. If we may be of further assistance, please contact Amy Pallante, our Section 106 Compliance Manager, at (303) 866-4678.

Sincerely,

Edward C. Nichols
State Historic Preservation Officer

cc: Mark Radtke/National Institutes of Health