



## 4. ENVIRONMENTAL PROFILE

A variety of environmental considerations affect transportation planning and projects in the North Front Range region. These include air quality, historic and archaeological sites, agriculture, habitat and species, water and wetlands, and conservation areas (current and potential). Of these, the NFRMPO has some specifically designated responsibilities with regard to air quality.

### A. Air Quality

North Front Range air quality is regulated by stringent state and federal laws. The North Front Range Transportation and Air Quality Planning Council (NFRT&AQPC) is a designated lead air quality planning organization. Air quality planning, and conformity with the State Implementation Plan (SIP) is a federally and state sanctioned function of the MPO. The NFRMPO must address motor vehicle emissions which constitute a major source of carbon monoxide (CO) and ozone pollutants. The region has been in violation of the National Ambient Air Quality Standards (NAAQS) for CO and ozone, and therefore designated as a maintenance area for CO and nonattainment area for ozone.

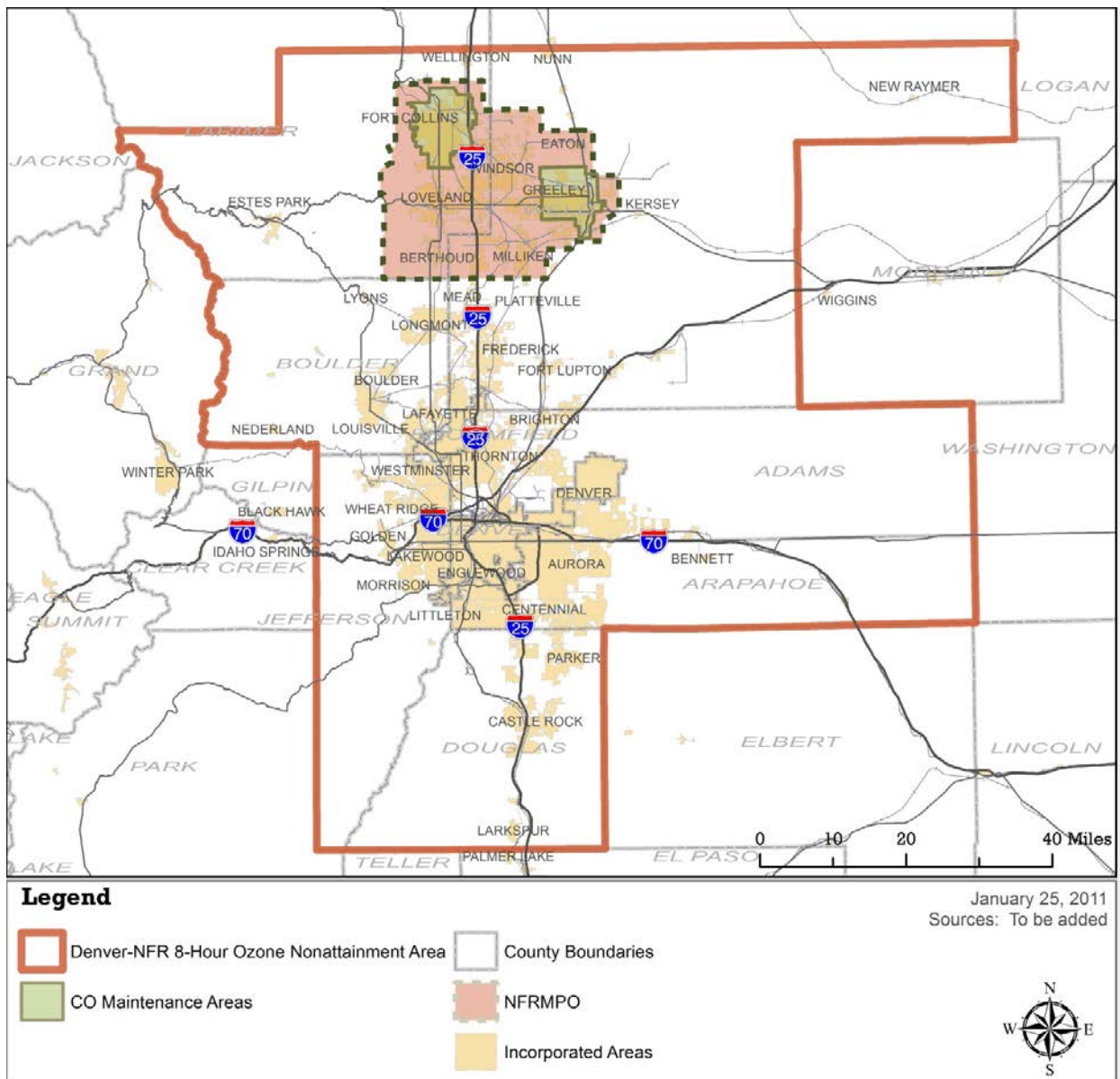
In 1993, the Governor of Colorado designated the North Front Range Transportation and Air Quality Planning Council as the lead air quality planning organization for the Greeley and Fort Collins carbon monoxide areas. The Council, in cooperation with the Colorado Air Pollution Control Division, CDOT, and local governments, is responsible for the development and implementation of the Fort Collins and Greeley carbon monoxide elements of the State Implementation Plan, as well as other transportation-related air quality planning projects within the NFRMPO boundary. In 2011, the Council is working with the state to update its role as lead air quality organization for all pollutants or nonattainment areas that affect the North Front Range, including ozone.

A number of regional strategies are being implemented to offset the increase in emissions which accompanies the high population growth rates in the North Front Range. Strategies include a regional Transportation Demand Management (TDM) program with carpool and vanpool programs, regional transit planning, and coordination with the Denver Regional Transportation District (RTD) on inter-regional transit services.

### Carbon Monoxide Maintenance Areas—Greeley and Fort Collins

In the late 1980s, both Greeley and Fort Collins had violations of the NAAQS for carbon monoxide (CO). As a result, their previous nonattainment status continued with the passage of the Clean Air Act Amendments of 1991. In the 1990s, CO levels improved substantially, and Greeley was re-designated to maintenance status on May 10, 1999, with a revision to the SIP in December 2002 that removed the Inspection and Maintenance (I/M) program and the oxygenated fuels program. Fort Collins was re-designated to a maintenance area in July 2002. The same programs were removed at the end of 2006. **Figure 4-1** shows the two CO maintenance areas. A summary of the conformity documentation for the Greeley and Fort Collins CO Maintenance Plans is provided in **Appendix C**.

**Figure 4-1 Carbon Monoxide Maintenance Areas and 8-Hour Ozone Nonattainment Area**



### Denver-North Front Range 8-Hour Ozone Nonattainment Area

In November 2007, the United States Environmental Protection Agency (EPA) designated the Denver/North Front Range region as a nonattainment area for the 8-hour ozone standard of 0.08 parts per million (ppm), adopted in 1997. The ozone nonattainment area is shown in **Figure 4-1**. This was due to violations of the 8-hour ozone standard that occurred in the summer of 2007. The official nonattainment designation effectively terminated the Early Action Compact (EAC) of earlier years, and necessitated adopting a SIP for ozone within one year, per EPA requirements. In addition, nonattainment status meant that businesses needing air quality permits would have more stringent requirements. Most importantly, from the MPO's perspective, ozone conformity determinations now



are required for all Transportation Improvement Programs and Regional Transportation Plans. A summary of the conformity documentation for the Denver-North Front Range Ozone SIP is provided in **Appendix C**.

In March 2008, EPA established a more stringent 8-hour standard for ozone, based on a review of the most recent health effects information. The standard currently is set at a level of 0.075 ppm averaged over an eight-hour period. States will have to submit revised state implementation plans for the new ozone standard by March 2013. However, according to the *2008 Ozone Action Plan*, it contains provisions intended to begin moving the region to compliance with the 2008 standard.

As of early 2011, EPA has proposed to release an even more stringent 8-hour ozone standard ranging between 0.06 and 0.07 ppm.

### **Ozone Action Plan (2008)**

In 2008, after several months of analysis and evaluation and public input, the Regional Air Quality Council and NFRMPO proposed an Ozone Action Plan to the state. The Colorado Air Quality Control Commission approved the plan in December 2008. The Ozone Action Plan includes a range of control measures to be included in the SIP, including federally-enforceable measures, state-only enforceable measures, and measures for further evaluation.

#### **Federally-enforceable measures include:**

1. Increase the system-wide control requirements for all condensate tanks.
2. Remove exemptions for selected small sources required to file air pollution emission notices and obtain permits.
3. Require general application of permit requirements and reasonably available control technology (RACT) for all Volatile Organic Compound (VOC) stationary sources greater than two tons per year and Nitrogen Oxide (NO<sub>x</sub>) stationary sources greater than five tons per year in the entire nonattainment area.

#### **State-only enforceable measures in the plan include:**

1. Implement a motor vehicle inspection/maintenance program in the North Front Range (Larimer and Weld counties).
2. Implement more stringent cut-points for the Denver metro area inspection/maintenance program.
3. Continue implementing the high-emitter pilot program in the Denver metro area.
4. Tighten state collector plate requirements.
5. Implement statewide control requirements for reciprocating internal combustion engines (RICE).
6. By 2009, require low-bleed control devices on all new and existing pneumatic valves in oil and gas operations.
7. Expand current requirements for VOC controls in the entire nonattainment area.

### **Background - Early Action Compact for Ozone**

Prior to 2007, the NFRMPO was included in the nonattainment area by EPA because of identified ozone precursor contributions from the region and monitors that exceeded the 8-hour ozone NAAQS. In 2004,

EPA included all of the NFRMPO and additional parts of Larimer and Weld counties that had the highest concentration of emissions, within the nonattainment boundary.

Larimer and Weld counties joined with the Denver metro region in an Early Action Compact (EAC) with EPA to defer nonattainment status. The EAC outlined control measures in place by the end of 2005 and required ozone readings to be back in compliance by the end of 2007. Control measures that affected the NFRMPO were emissions controls on stationary sources at oil and gas wells. In addition, EPA required that the Reid Vapor Pressure (RVP), or evaporation rate, of gasoline be reduced to 7.8 pounds per square inch (psi) from the previous 9.0 psi RVP gasoline in the Denver area.

The EAC did not require any controls on mobile sources in the NFR. At that time, the Denver metro area was subject to an automotive inspection and maintenance program, but the EAC did not require it for the NFR.

## **B. Historic and Archaeological Sites**

Section 106 of the National Historic Preservation Act (NHPA) sets forth the process that federal agencies and their designated representatives must follow when planning projects that have the potential to affect significant historic and prehistoric properties. The Colorado State Register of Historic Places and the National Register of Historic Properties identify sites, areas, and communities that reflect the state's cultural heritage and resources.

### **Mitigation**

The potential impact of implementing a transportation improvement project relative to identified historic sites, as well as other sites considered for inclusion in the historic registers, must be evaluated prior to project initiation.

For construction projects and many maintenance activities, a certified historian and archaeologist conducts on-the-ground surveys to identify, record, and evaluate cultural resources for eligibility to the National Register of Historic Places. When significant sites are identified within a proposed project area, an interdisciplinary team determines how best to avoid the sites or minimize adverse effects during construction.

## **C. Agricultural Land**

Agriculture in the North Front Range is a major contributor to the economic vitality of the region. The Colorado Department of Agriculture prepares statistics with profiles of Weld and Larimer counties. In 2007, Weld County had 2,088,715 acres of land in farms with a market value of more than \$1.5 billion worth of products sold; and Larimer County had 489,819 acres with a product market value of more than \$128 million. The majority of sales was in livestock for both counties (82 and 61 percent, respectively). Weld County is one of the leading agricultural producers in the state for a variety of crops and livestock items, and also has high rankings nationwide for total value of products, especially livestock. **Table 4-1** shows the percentage of each type of agricultural land by county.



A large percentage of the rural land under cultivation within the North Front Range region is irrigated through an intricate network of canals, making it highly productive. These canals and their lateral ditches are crossed by streets, roads, highways, bike paths, sidewalks, and railroads. These crossings sometimes pose engineering, project scheduling, and funding/contractual challenges during the development and implementation of transportation improvement projects and programs.

In addition, the conversion of agricultural land to urban and transportation uses is a regional and community issue. Conversions for transportation uses are typically addressed at a project level through actions to avoid or minimize such impacts. (See the Farmland Protection Policy Act [PL 97-98; 7 U.S.C. 4201 et seq.]) The potential conversions are coordinated with federal agencies, particularly with regard to National Environmental Policy Act processes. Reporting of these kinds of conversions to the Natural Resources Conservation Service of the U.S. Department of Agriculture is coordinated through CDOT.

**Table 4-1 Agricultural Production Statistics (2007 Inventory)**

Type of Land	Larimer (%)	Weld (%)
Woodland	6.37%	--
Cropland	24.50%	47.30%
Pasture	63.99%	48.77%
Other uses	5.15%	3.93%

Source: Colorado Agricultural Statistics, USDA, Census for Agriculture, County Profiles, 2007.

## D. Threatened and Endangered Species

Wildlife habitat and its ability to support diverse species is important in the NFRMPO. Numerous laws and regulations protect wildlife species and their habitats within the MPO region. **Figure 4-2** illustrates some of the region’s bird and mammal species that are either threatened or important to this area. Short-grass prairie is the major habitat that supports species, as well as riparian areas along major waterways, including the Cache la Poudre, Big Thompson, Little Thompson, and South Platte Rivers. Along with individual pockets of habitat, some larger habitat areas cover the entire region. These include the Preble’s Meadow Jumping Mouse and Mule Deer overall ranges.

Many agencies helped in the compilation of important habitat and designated wildlife areas including: The U.S. Fish and Wildlife Service (USFWS), Colorado Division of Wildlife (CDOW), and the Colorado Natural Heritage Program (CNHP).

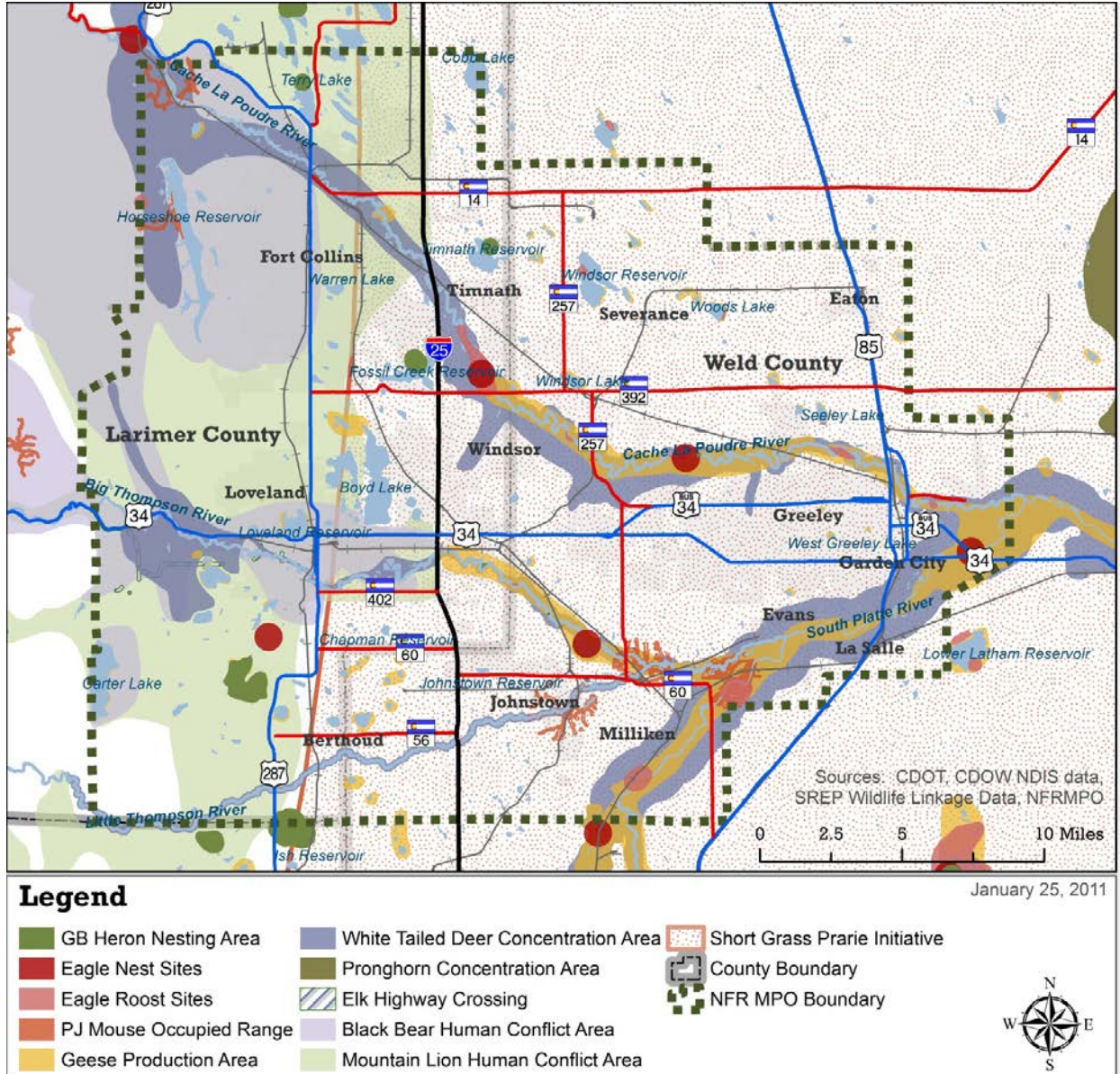
The NFRMPO recognizes that threatened and endangered bird, mammal, plant, and fish species inhabit Larimer and Weld counties. Further research must be conducted before a transportation project begins to determine if threatened and endangered species are an issue within the given geography.

### Wildlife Habitat Mitigation

CDOT has recognized the importance of the short-grass prairie habitat and created a proactive mitigation strategy by participating in the Short-Grass Prairie Initiative (SGPI). This initiative covers a little more than a third of the state, extending out to the eastern border. It goes from the northern to southern most points of the state. The SGPI included the Nature Conservancy, USFWS, and other federal

agencies and protected up to 50,000 acres of the short-grass prairie in eastern Colorado. This allows for CDOT projects that impact short-grass prairie to offset the project's impacts against the areas that have been created through the SGPI.

**Figure 4-2 Wildlife Habitats**





The Colorado Department of Natural Resources is responsible for protecting and preserving the state's fish and wildlife resources from actions of any state agency, or funded by a state agency, which may obstruct, damage, diminish, destroy, change, modify, or vary the natural existing shape and form of any stream or its bank or tributaries.

Certification from the Colorado DOW must be obtained for actions with adverse impacts to streams or its bank or tributaries. Certification is provided by the DOW which includes appropriate measures to eliminate or diminish adverse effects to such streams or their banks or tributaries.

The Migratory Bird Treaty Act (MBTA) is a federal law that protects migratory birds, nests, and eggs. This protection is extended to all birds except the rock dove (pigeon), English sparrow, and European starling.

## E. Water Features and Water Quality

Numerous water bodies lie within and run through the North Front Range region. These include major rivers such as the Cache La Poudre, Big and Little Thompson, and South Platte rivers, along with their minor tributary creeks and streams. The region also contains many lakes and reservoirs such as Horsetooth and Windsor reservoirs; and Loveland, Carter, and Boyd lakes. Two aquifers, Laramie and Laramie-Fox Hills, flow through the south eastern portion of the MPO region. The water features and aquifers are illustrated in **Figure 4-3**.

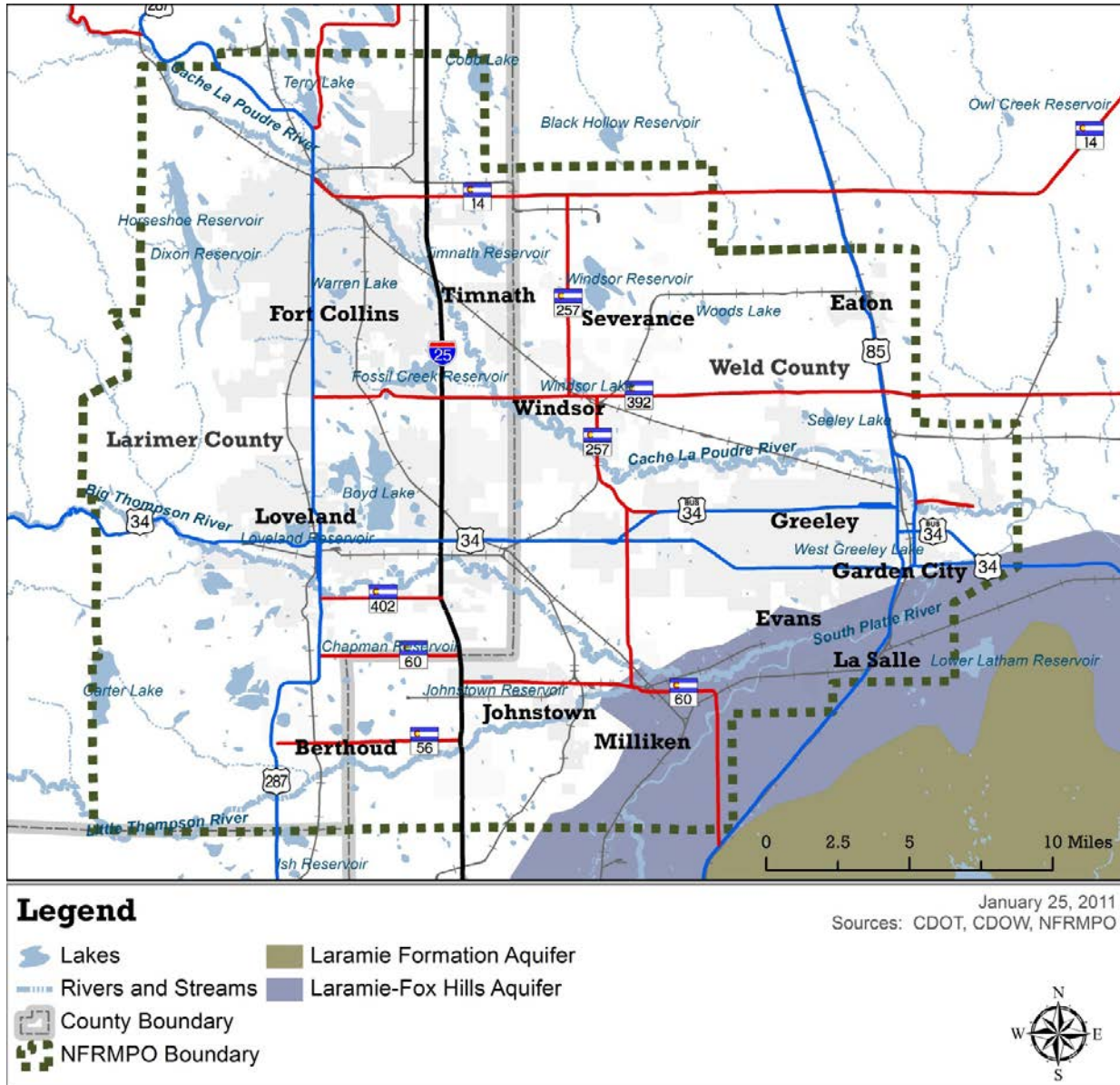
The Federal Clean Water Act (CWA) protects the waters throughout the United States. From this act, the National Pollution Discharge Elimination System (NPDES) was created to develop water discharge standards to prevent pollution from entering our nation's waters.

The CWA is administered by the Colorado Department of Health and Environment (CDPHE) throughout the state. The USEPA oversees the Clean Water Act throughout the nation but has granted the Department of Health and Environment this same duty in Colorado.

### Water Quality Mitigation

In accordance with CDOT's Long Range Plan, mitigation strategies are used for water quality. The primary method to control storm water discharges is through best management practices that avoid or control runoff. CDOT's Municipal Separate Storm Sewer System (MS4) permit will set into motion a series of requirements to improve water quality in urban areas. These requirements include new programs, training, public involvement, monitoring, and planning.

**Figure 4-3 Water Features and Aquifers**







## F. Wetlands

Wetlands are areas that are inundated or saturated by surface or ground water at a frequency or duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. In the North Front Range region, wetlands are primarily found adjacent to streams or rivers where the ground stays saturated. Wetlands are regulated by standards set by Section 404 of the Clean Water Act.

### Wetland Mitigation

CDOT projects are required by federal law to first avoid and minimize impacts to wetlands. Where impacts are unavoidable, they must be mitigated. Preference must be given to the use of wetland banks where the project impacts occur within the Service Area of an approved wetland bank. Use of wetland banks is not appropriate where locally important ecological functions should be replaced on-site. Outside of an approved wetland bank's Service Area, mitigation should be on-site or within the same watershed where the impacts are occurring.

As Colorado communities continue to grow, mitigating for wetland impacts is becoming increasingly difficult and expensive. Anticipating and planning for future projects and operations in order to avoid and minimize impacts as much as possible is increasingly important, as is proactive identification of methods to mitigate unavoidable impacts.

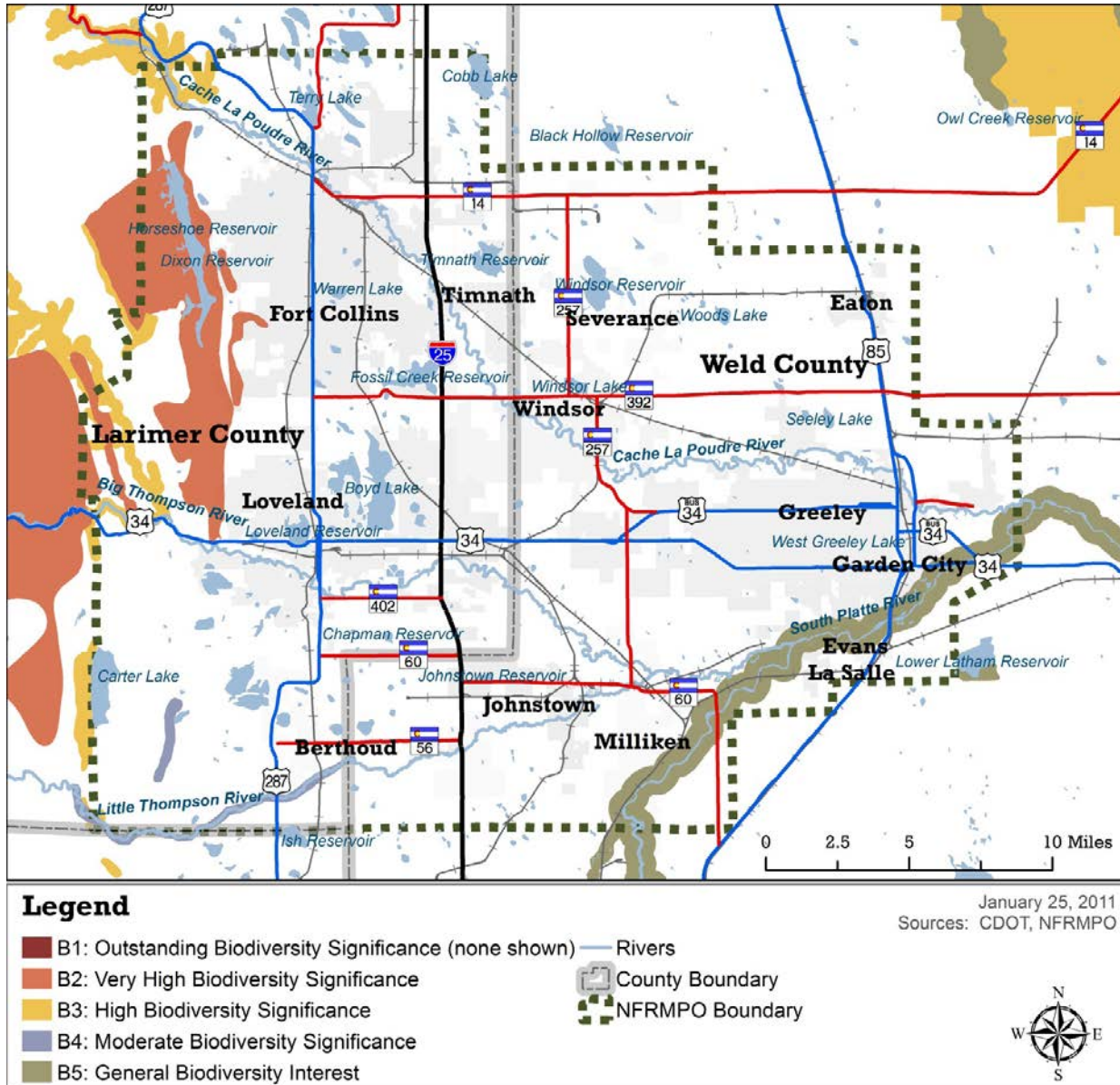
CDOT is currently involved in the identification and development of proactive mitigation programs for wetlands. Current programs include the development of new wetland banks and cooperative partnerships with state, local, and federal agencies for the development of wetland enhancement and restoration programs.

## G. Conservation Areas

The Colorado Natural Heritage Program has identified Potential Conservation Areas (PCA) on a statewide map. **Figure 4-4** identifies the areas within the NFRMPO. These areas are the best estimate of the primary area required to support the long-term survival of targeted species or natural communities. The size and configuration of a PCA will be dictated by what species, communities, or systems the Colorado Natural Heritage Program seeks to conserve at a given location. The PCAs do not necessarily preclude human activities, but the target's ability to function naturally might be greatly influenced by them, and the areas may require management. **Figure 4-4** identifies the conservation areas within the NFRMPO. The areas with "very high" and "high" biodiversity significance are generally found around Horsetooth Reservoir, Devil's Backbone, hogbacks, and along waterways in the foothills on the western edge of the North Front Range region. The area along the South Platte River also has general biodiversity interest.

The Regionally Significant Corridors identified for this plan have minimal contact with the PCAs, with the main contact points crossing over rivers. Proposed bike and pedestrian trails could potentially have more of an impact on the PCAs than Regionally Significant Corridors, especially along the South Platte River because of its biodiversity interest.

**Figure 4-4 Potential Conservation Areas**





## H. Energy

Significant oil and gas production has been underway within the North Front Range region for most of the past century. Consequently, it is not unusual to see drilling rigs and operations equipment being transported from one place to another. Much of the petroleum is transported away from well heads by tank trucks rather than through pipelines.

The presence of a thriving oil and gas production industry has had air quality consequences due to the emissions of gaseous pollutants from wellheads. Modeling of air quality for transportation conformity analyses is required to take these emissions into consideration. Consequently, some unique dependencies exist in the North Front Range region between the oil and gas industry and the expansion and maintenance of the transportation system.

The Niobrara Shale is a shale rock formation covering Northeastern Colorado, Southeast Wyoming, Southwest Nebraska, and Northwest Kansas. Oil and natural gas can be found within these rock formations beneath the ground surface at depths of approximately 7,000 feet. Companies drill wells vertically and horizontally to access the oil and gas and use a complex fracture system to extract the resource. Companies are still in the early stages of exploration of the Niobrara play; however, they say results appear to be promising and assessment of long-term production is occurring. In 2010 and 2011, oil and gas companies are actively expanding their mineral interests and leases in Weld County Colorado. Depending on outcomes from early exploration, the 2040 RTP may need to more fully assess the effects of this oil and gas play on regional transportation and infrastructure systems and needs.

## I. Planning and Environmental Linkages (PEL)

The 2035 RTP in 2007 referenced an environmental streamlining project (Strategic Transportation and Environmental Planning Process for Urbanizing Places (STEP UP)) for Colorado to develop an improved process for addressing environmental impacts of transportation projects at early stages of planning. At that time, the pilot project was a partnership by a number of agencies with the NFRMPO to develop tools to assist with more comprehensive and effective transportation, land use, and environmental planning. The target for STEP UP was to provide high quality data, limit environmental impacts, and have coordination early on with Resource Agencies and other public officials having responsibilities for environmental matters.

Since that time, CDOT has not implemented STEP UP as originally intended, because the challenges of organizing data proved to be greater than anticipated. However, CDOT continues to pursue Planning and Environmental Linkages (PEL) as an effort to improve efficiency, reduce environmental impacts, and lower costs of implementing transportation projects through the environmental review stages. It also helps to streamline projects and shorten decision-making by identifying planning studies before a full-blown National Environmental Policy Act (NEPA) process occurs, which requires evaluation of relevant environmental effects of a federal project or action, including developing alternatives.

CDOT's PEL program provides guidance for the agency and regional transportation planning partners to integrate useful NEPA information into statewide and regional transportation planning processes, particularly how to incorporate data and analysis conducted during the planning stage into the project-level environmental review processes and avoid redundant work. The program complies with the

requirements of the most recent Highway appropriations bill (SAFETEA-LU) environmental consultation and mitigation requirements for transportation planning.

In June 2009, the NFRMPO, with 14 other regional, state, and federal agencies, approved a partnering agreement to support a coordinated and collaborative interagency process for a PEL approach to transportation project development.

## **J. Environmental Forum**

In 2007, before the development of the 2035 RTP, CDOT coordinated an Environmental Forum with resource agencies and MPOs. In fall 2010, CDOT coordinated another such forum. The meeting enabled resource agencies to identify important environmental issues for the region that may affect this plan update. A few issues identified during the forum included:

- ▶ The air quality portion of this plan should reflect the current ozone nonattainment status.
- ▶ The region has a lack of wetland mitigation banks.
- ▶ The habitat section of this plan should note the addition of the Mountain Plover as a proposed threatened bird species (in the eastern portion of the region).