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COMPASS

COMMUNITY PLANNING ASSOCIATION

of Southwest Idaho

COMPASS Environmental Review Process, 2008-2013

Report No. 09-2014 (January 2014)

Introduction

One of the planning requirements in the federal transportation law, *Moving Ahead for Progress in the 21st Century Act* (MAP-21), is that metropolitan planning organizations consult with federal and state resource agencies during development of their long-range transportation plans to identify potential environmental mitigation activities to help restore and maintain environmental functions affected by the plan[1].

The purpose of linking transportation planning and the environment more closely is to consider environmental and community values early in the planning process, and to carry them through project development, design, and construction. The goal of this environmental review in the development of the regional long-range transportation plan for Ada and Canyon Counties, *Communities in Motion*, is to create a seamless decision-making process that minimizes duplication of effort, promotes environmental stewardship, and reduces delays in project implementation.

Environmental Review Process

COMPASS has conducted an environmental review process since 2008. Initially, directors of 18 environmental and resource agencies were invited to participate, and the first meeting was attended by representatives from 16 of those agencies. In subsequent meetings, the participants discussed the purpose of the environmental review process, the federal guidelines for it, and the identification or exclusion of areas that are not feasible for transportation projects based on environmental or resource issues. The initial participants identified other agencies or entities that should be part of the process, and in 2010, reviewed the transportation corridors for *Communities in Motion 2035*. (List of participating agencies is in Appendix A.)

Agencies in the environmental review process have also discussed how to effectively use information from environmental impact statements that have already been prepared for transportation projects, how to consider project pros and cons collectively, and how to approach the concept of cumulative impacts. Participating agencies have shared information that is already publicly available, and as new information becomes available it should be provided to COMPASS to update the characterization.

The current data maps are listed in Appendix B.

Environmental Suitability Analysis

[1] Moving Ahead for Progress in the 21st Century Act of 2012, 23,U.S.C.134.(i)(2)(D)

Through the work group partnership, COMPASS is able to access the most current and complete environmental and resource data available for the two-county area. COMPASS has produced environmental and resource maps using the shared data, but wanted to use the data for more than simply mapping. To this end, the work group discussed various methods for employing the data to determine which Treasure Valley areas would be the most and least suitable for new or widened roads.

COMPASS used CommunityViz© software in the *Communities in Motion 2040* (CIM 2040) scenario planning process[2], and the environmental review group commented on potential environmental effects of the four draft scenarios during the public comment period in May 2012. To build upon the regional review of the potential environmental issues, COMPASS and the work group drafted a methodology for using a CommunityViz© suitability analysis tool to assess subsequent priority transportation corridors for environmental and resource values.

In February 2013, the work group reviewed the environmental suitability tool and methodology. Work group members discussed what data to include, how to assign "weights" to different data, and whether any conclusions would be defensible and usable in later project-level planning. The group suggested categorizing the various environmental data sets to help stakeholders and the public visualize clusters of environmentally sensitive areas as well as enable the CommunityViz© suitability analysis tool to identify key areas for preservation and/or conservation. Data were weighted for the initial analysis by giving a high value for items with federal requirements.

In May 2013, the environmental review group reviewed results of the environmental suitability analysis of priority transportation corridors for CIM 2040. Written summaries of the corridors include a description of environmental concerns and likely issues[3].

CIM 2040 Corridors and Projects in Priority Order

1. Interstate 84 (Centennial Way Interchange to Franklin Boulevard Interchange)
2. State Highway 44/State Street High Capacity Corridor
3. US Highway 20/26 *(Chinden Boulevard)* (Middleton Road to Eagle Road)
4. State Highway 55 (Snake River to City of Nampa)
5. Regional park and ride lots (near-term improvements)
6. Linder Road (includes river crossing and new overpass – *Lake Hazel Road to State Highway 44*)
7. Franklin Road (bottleneck between Star Road and McDermott Road)
8. Caldwell/Nampa Boulevard (Linden Street to Orchard Avenue)
9. Ustick Road (Montana Avenue to McDermott Road)

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[2] http://www.compassidaho.org/prodserv/cim2040_scenarioplanning.htm
[3] http://www.compassidaho.org/prodserv/cim2040.htm

10. Regional park and ride lots (medium-term improvements)
11. *valley**connect*** near-term (capital/operating)
12. Treasure Valley High Capacity Corridor (study to determine locally preferred option)
13. State Highway 45 reroute (in City of Nampa – *Bowmont Road to Interstate 84*)
14. State Highway 16 (Kuna-Mora Road to Ada/Gem County Line)
15. Boise Downtown Circulator
16. *valley**connect*** medium-term (capital/operating)
17. State Highway 55 (State Highway 44 to Ada/Boise County Line)
18. Middleton Road (State Highway 55 in City of Nampa to Main Street in Middleton)
19. Overland Road (multi-modal corridor plan)
20. North/South Kuna Corridor (railroad crossing in the City of Kuna)
21. Cherry Lane (Middleton Road to Black Cat Road)
22. Lake Hazel Road/Amity Road (as a corridor – *Lake Hazel Road, McDermott Road to Linder Road; Amity Road, Southside Boulevard to Black Cat Road)*
23. State Highway 55/Midland Boulevard Bottleneck *(in City of Nampa)*
24. State Highway 45 (Greenhurst Road to Bowmont Road)
25. Victory Road (Happy Valley Road to McDermott Road)
26. US Highway 20/26 (City of Caldwell to City of Parma)
27. Three Cities River Crossing (preserving land for a future project – *bridge over the Boise River east of City of Eagle*)
28. Star/Robinson Road (Greenhurst Road to Ustick Road)
29. CIM 2040 transit, long-term (capital/operating)
30. Greenhurst Road (Middleton Road to McDermott Road /*Happy Valley Road*)
31. Happy Valley Road (Greenhurst Road to Stamm Lane)
32. Bowmont Road to Kuna-Mora Road (new connection)
33. Beacon Light/Purple Sage (new connection – *preserving land for a future project*)

Segments in parenthesis indicate the section for prioritized, needed improvements. Italics provide additional clarification.

The environmental suitability analysis tool provided a method to distill an abundance of environmental and resource data into useable information about potential conflict areas and concerns when addressing future transportation system needs. Figure 1 shows potential issues along CIM 2040 priority corridors and Appendix C provides the same information in a matrix of environmental and resource issues in CIM 2040 priority corridors.

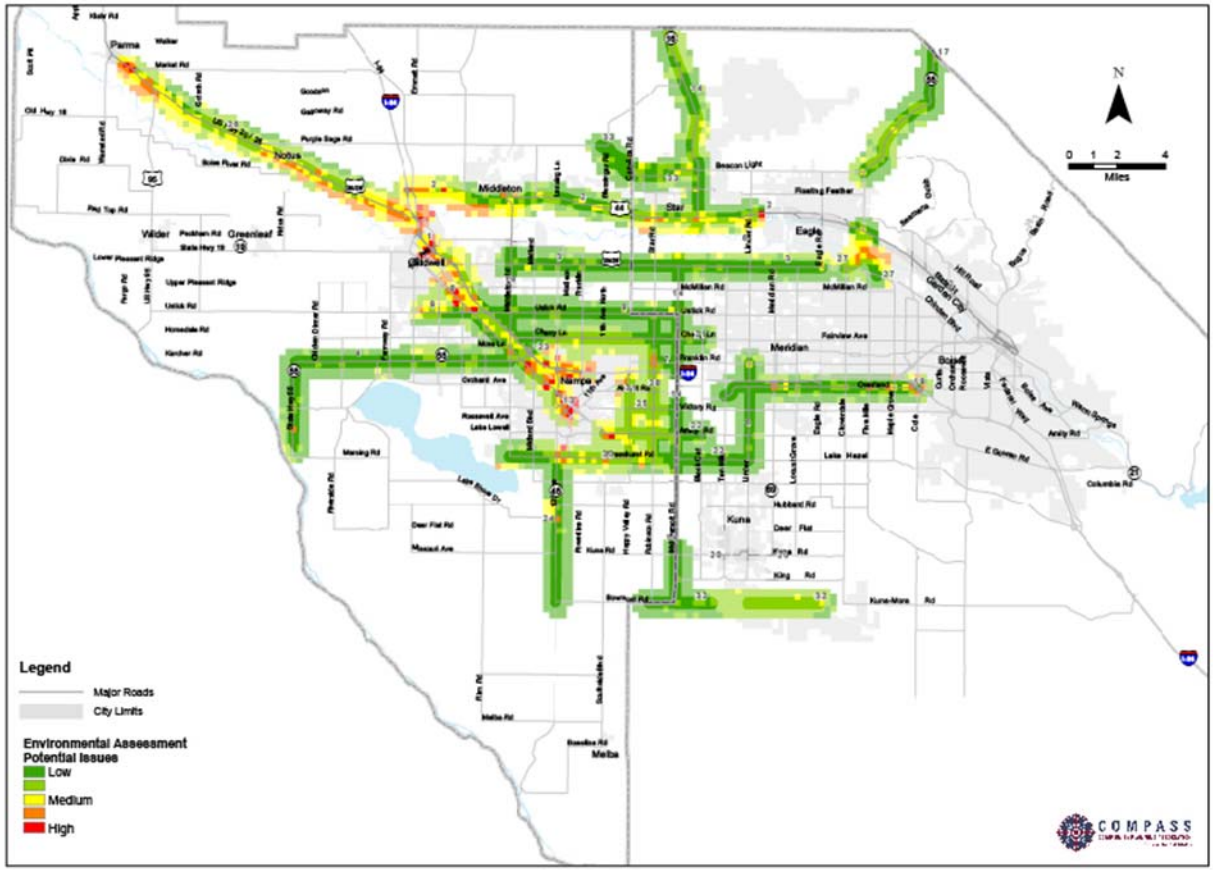

Figure 1. Potential Environmental Issues along CIM 2040 Priority Corridors. A larger version of this map is available online.[4]

The following categories were used in the initial analysis to pinpoint potential environmental impacts along the priority corridors:

- Hydrological areas
  - water quality and quantity
  - runoff (stormwater)
  - streams, wetlands, and canals
  - groundwater
  - floodplains and floodway areas

- Habitat and wildlife areas
  - Boise foothills
  - aquatic and riparian habitats
  - wildlife management areas
  - endangered species

- Traffic noise

- Hazardous materials/contaminated sites
  - potential remediation sites
  - gas stations

[4] http://www.compassidaho.org/prodserv/mapgis-maps_cim_environmental.htm

- Cultural and historic resources
    - historic sites, trails, and/or structures
    - aesthetics
- Environmental justice
- Open space, parks, and recreation areas
    - parks
    - cemeteries
- Agricultural and farmland
- Land use
    - existing residential neighborhoods
    - schools
    - railroads
    - Army National Guard tank trail
    - airports/private airstrips

The results of the analysis were used to associate general mitigation strategies with the types of environmental issues and concerns that were identified. The general mitigation strategies are discussed later in this document.

Environmental Issues and Concerns

The purpose of compiling the environmental and resource data and the use of maps to display the information is to help identify general "areas of concern" that could trigger relevant agencies to be invited into the transportation planning process as early as possible.

The following sections describe potential areas of concern within the COMPASS long-range transportation planning area.

Hydrological Areas

Water Quality: Surface Water and Groundwater

Typical water quality impacts of transportation projects result from runoff from construction sites, and stream or wetland disturbances.

The State of Idaho is required to identify water bodies that don't meet surface water quality standards and to establish a "cleanup plan," called a total maximum daily load (TMDL), for each. A TMDL includes recommendations for reducing pollution, as well as a monitoring plan to verify compliance.

Within Ada and Canyon Counties, the following water bodies have water quality TMDL plans:

- Lower Boise River - *Lower Boise River TMDL: Subbasin Assessment, Total Maximum Daily Loads*. Approved in January 2000.
    - *Sediment and Bacteria Addendum* approved in December 2003.
    - *Total Phosphorus Implementation Plan* completed in December 2008.
    - *Lake Lowell TMDL Addendum* approved in December 2010.
- Snake River - *Mid Snake River/Succor Creek Subbasin Assessment and Total Maximum Daily Load*. Approved in January 2004.
    - *Succor Creek Temperature Revised Addendum* approved in December 2007.

Once developed, the TMDLs are tied to U.S. Army Corps of Engineers Section 404 and 401 water quality permit requirements for dredging and filling. The dredging and filling of waters of the United States is regulated under the federal Clean Water Act by the U.S. Army Corps of Engineers, with oversight by the U.S. Environmental Protection Agency (EPA). Preliminary identification of such waters, including wetlands, can be done using National Wetland Inventory maps. Since these maps are general, wetland boundaries must be identified more clearly through a delineation process that reviews the soils, vegetation, and hydrology of the potentially impacted property. Some wetlands on the National Wetland Inventory maps may not be regulated under the Clean Water Act, and it is possible there are wetlands that are regulated, but not identified on the maps.

Construction and on-going operation of transportation facilities can result in groundwater effects, such as contamination from sediments and transportation-related chemicals, and loss of aquifer recharge as permeable surfaces are covered by concrete and asphalt.

Floodplains

Building transportation facilities across a river or stream (transverse) or along a river or stream (longitudinal) can trigger National Environmental Policy Act (NEPA) requirements. The 100-year floodplain boundary is the trigger point in Idaho. (A 100 year floodplain means that in any year, there is a 1% chance of flooding—not that flooding would only occur once every 100 years.) For work in floodplains that requires permit approval, environmental documentation must explain the impacts the project will have on the floodplain, and on the resources within the project area. Furthermore, Presidential Executive Order 11988 (May 24, 1977) directs federal agencies to avoid, to the extent possible, adverse impacts associated with floodplains and to avoid direct or indirect support of floodplain development.

CIM 2040 list of priority corridors and projects includes a new bridge across the Boise River as Priority 27 on the list, as described below. This project is not funded.

- Three Cities River Crossing connecting State Highway 20/26 to State Highway 44 between Cloverdale and Fairview (environmental work completed in 2006) - UNFUNDED.

In addition, widening of existing river crossings is recommended for Middleton Road (Priority X) and Linder Road (Priority Y).

In addition to the Boise River crossings, a number of flood zones along area streams would be affected by the roadway project needs included in CIM 2040.

Wetlands

Wetlands are areas that are inundated or saturated by surface water or groundwater and support vegetation typically adapted for life in saturated soils. Wetlands generally include swamps, marshes, bogs, and similar areas and provide important amenities, including groundwater recharge, flood flow alteration, water quality improvements, erosion control and shoreline stabilization, and fish and wildlife food and habitat.

Impacts from transportation projects may harm wetlands due to increased sediment loads and deposition; toxic runoff; alteration of natural drainage patterns; water level increases or decreases; wetland filling or displacement; wetland draining due to channel straightening, deepening, or widening; and development in wetland buffer areas. When wetlands are adversely affected by a transportation project, transportation agencies provide compensation for the impacts by restoring or enhancing existing wetlands and/or creating new wetlands.

Hazardous Waste

Contamination can be a result of current or historic land uses or activities, such as dry cleaning plants, auto body shops, industrial facilities, gas stations, or fuel/chemical storage facilities.

Soil and groundwater contamination from hazardous substances and petroleum products is often encountered on transportation projects. Also, some projects may generate hazardous materials. For example, projects with structures, such as existing bridges, may involve asbestos-containing materials and/or lead-based paint requiring testing and analysis during project development. An initial site assessment can also uncover existing contamination via site visits and soil testing.

Contaminated Sites

Locating transportation facilities over contaminated sites can be expensive due the high cost of remediation. Appendix B provides a link to a map of storage tank sites in Ada and Canyon Counties.

Wildlife, Fish, and Habitat Considerations

The likely transportation effects on wildlife include wildlife mortality from road construction activities, wildlife mortality from collisions with vehicles, and modification of animal behavior. Roads fragment animal populations and their habitats, reduce genetic diversity, and limit dispersal of young. The effect of road avoidance caused by traffic disturbance is much greater than just increased mortality.

Improperly designed and/or constructed stream crossings can also create barriers to fish and other aquatic species' movement.

Roads also influence human development patterns on the landscape, such as where development will likely occur in the future, therefore indirectly affecting wildlife and their habitat. Transportation projects and associated land uses can contribute to increased human use and activities in formerly remote areas, spread exotic and invasive species, and loss and fragmentation of wildlife habitat.

Another consideration is the likely effects on threatened, endangered, proposed, or candidate species. Issues of concern include:

- Direct effects from construction, including noise disturbances habitat disruption.
- Interference with essential wildlife functions such as wintering, foraging, migration, breeding, and rearing.
- Degradation or loss of essential habitat.
- Habitat fragmentation and edge effects.
- Collisions between vehicles and animals.
- Loss of animal or plant populations.
- Impacts to wildlife food resources.
- Water quality impacts.

Table 1. Threatened and Endangered Species in Ada and Canyon Counties[5] (May 2013)

Listed Species	Comments	Ada County	Canyon County
Bull trout *(Salvelinus confluentus)*	Threatened	X	
Slick spot peppergrass (*Lepidium papilliferum)*	Threatened	X	X
Idaho springsnail *(Pyrgulopsis idahoensis)*[6]	Endangered - Mainstem Snake River Only	X	X

[5] Source: Idaho Governor's Office of Species Conservation. Informational list on the Internet. Not intended for consultation purposes. Information found on Internet in May 2013 at http://species.idaho.gov/thr_endgr.html.

Traffic Noise

All ITD projects and some local transportation projects must adhere to procedures and requirements established by federal law, Federal Highway Administration (FHWA) regulations, and ITD noise analysis guidelines.

The level of noise (defined as unwanted sound) near state highways depends on six things:

- Traffic volume
- Speed of the traffic
- Percentage of trucks in the flow of traffic
- Distance to the highway
- Intervening topography and structures
- Atmospheric conditions

The Federal Highway Administration has established noise abatement criteria guidelines for several categories of land use activities, which include "equivalent sound level" (Leq) noise levels (Table 2).

Table 2. Noise Abatement Criteria Guidelines

Type	Acceptable Noise Level	Land Use Description
Category A	Leq = 57 dBA*	Lands on which "serenity and quiet are of extraordinary significance and serve an important public need……"
Category B	Leq = 67 dBA	Picnic areas, recreation areas, parks, residences, motels, schools, churches, libraries, and hospitals.
Category C	Leq = 72 dBA	Developed lands, properties or activities not included in Category A or B (i.e., most commercial and industrial activities).
Category D	Leq = n.a.	Undeveloped lands.
Category E	Leq = 52 dBA	Interior of residences, libraries, etc.

*Acceptable noise level

Future projects and alternatives within a corridor must analyze existing noise levels and predict future noise levels to determine noise impacts.

Social and Economic Conditions

Communities adjacent to or bisected by a transportation project usually will experience social and economic changes. The FHWA publication, *Community Impact*

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[6] Petition to de-list is currently under review. Retrieved May 2013. http://species.idaho.gov/list/snails.html

Assessment: A Quick Reference for Transportation[7], and website[8] provide information and guidance.

The Idaho Transportation Department has prepared three report checklists (below) to assist in preparing the social and economic impacts sections of environmental documents. These studies should be performed in coordination with local agencies.

- The Social Impacts Report covers community cohesion (neighborhood population characteristics and linkages with churches, schools, and other community facilities), parks and recreation activities and facilities, population characteristics and growth, government, religious and social facilities and services, pedestrian and bicycle facilities, and environmental justice.

- The Economic Impacts Report covers overall economic climate, farm, and business activity; employment; property values; and local economic issues.

- The Relocation Impacts Report covers population characteristics (ethnicity and race, handicapped, elderly, family, income level, owner/tenant status); businesses (numbers and types of businesses and farms), employment, availability of replacement sites; and long term stability of the area.

Environmental Justice

According to the 1994 Executive Order *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, federal agencies are required to identify and address disproportionate adverse human health and environmental effects, including the interrelated social and economic effects, of their programs, policies, and activities on minority and low-income populations in the United States. This environmental justice analysis requires in-depth studies of communities affected by transportation projects and requires effective community outreach to correctly identify potential impacts. This process is intended to ensure that the project avoids, minimizes, or mitigates adverse effects on minority and low-income populations. Appendix D provides a link to a map of environmental justice areas in Ada and Canyon Counties.

For related information on environmental justice issues, see The Civil Rights Act of 1964, Title VI (§ 2000d et seq.) of chapter 21 of Title 42, The Public Health and Welfare.

Air Quality

[7] http://www.ciatrans.net/CIA_Quick_Reference/Purpose.html
[8] http://www.fhwa.dot.gov/environment/community_impact_assessment/

Transportation projects affect air quality in the short-term during construction and in the long-term for those living next to busy streets and highways (Brugge, 2007: http://www.ehjournal.net/content/6/1/23). The federal government mandates that any transportation projects using federal funds or deemed to be "regionally significant" in nonattainment and maintenance areas cannot contribute to a degradation of air quality (40CFR93). Thus, transportation plans must "conform" to air quality plans.

The *Northern Ada County PM10 SIP Maintenance Plan and Redesignation Request* contains motor vehicle emissions budgets for three pollutants: coarse particulate matter (PM10), oxides of nitrogen (NOX), and volatile organic compounds (VOCs).

Transportation conformity is demonstrated when a nonattainment or maintenance area can show, within the applicable guidelines and regulations, that planned transportation projects listed in a transportation program or plan will not cause or contribute to exceedances of EPA's health-based air quality standards. A finding of nonconformance would prevent the implementation of certain federally funded and/or regionally significant transportation projects. The CIM 2040 air quality conformity determination is available at www.compassidaho.org/prodserv/aq-demo.htm.

There is heightened concern for human health from projects that result in air toxics emissions and particulate matter from mobile sources, particularly diesel exhaust. The *National Air Toxics Assessment*[9] asserts that a large number of human epidemiology studies show increased lung cancer associated with diesel exhaust and significant potential for non-cancer health effects. Also, the Control of Emissions of Hazardous Air Pollutants from Mobile Sources Final Rule[10] lists 21 compounds emitted from motor vehicles that are known or suspected to cause cancer or other serious health effects.

Agricultural and Farmland

The loss of productive farmland to highways, urban sprawl, and other types of development is a cause for concern. Highways may increase the pressure for conversion from farming to other uses. By making inaccessible areas more accessible, highways increase potential for development. In turn, development increases land values and property taxes, tending to make farming economically unprofitable. Adjacent development is seen as incompatible with farming, and farming activities may be considered a "nuisance" by newcomers. Additional traffic moving at high speeds creates a safety hazard for slow moving farm machinery.

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[9] http://www.epa.gov/ttn/atw/nata
[10] 66 FR 17230, March 29, 2001

Farmlands defined as "prime,[11]" "unique,[12]" or of state or local significance are protected by federal and state legislation.

Appendix D provides a link to a map of prime farmland. Note that these prime farmlands do not include lands outside irrigated areas. Many of the prime farmlands within the areas affected by the proposed corridors are within areas of impact already identified for urban development.

Open Space, Parks, and Recreation Areas

A significant publicly owned park, recreation area, wildlife or waterfowl refuge, or historic site, as well as designated wild and scenic rivers, are subject to federal requirements (Section 4(f) of the Department of Transportation Act of 1966 [49 USC 303][13]; [23CFR 774]) and need to be considered in any NEPA document. Section 4(f) declares a national policy to preserve, where possible, "the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." These types of lands are often referred to as "4(f)" lands.

Transportation projects can cross "4(f)" lands only if there is no "feasible and prudent alternative" and the sponsoring agency demonstrates that all possible planning to minimize harm has been accomplished. Before the use of these "4(f)" lands for a transportation project can be approved, supporting information must demonstrate that there are unique problems or unusual factors involved in the use of alternatives that avoid these properties or that the alternatives would result in extraordinary social, economic, or environmental impacts, costs, or community disruption.

In addition to mandating protection of certain land uses, FHWA rules require that when the project's impacts in the proximity of the 4(f) lands are so severe that the resources' activities, features, or attributes are substantially impaired, then Section

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[11] *Prime Farmland* is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Prime farmland includes land that possesses the above characteristics and may include land currently used as cropland, pastureland, rangeland, or forestland. It does not include land already in or committed to urban development or water storage.

[12] *Unique Farmland* is land other than prime farmland that is used for production of specific high-value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply to economically produce sustained high quality or high yields of specific crops when treated and managed according to acceptable farming methods. Examples of such crops include lentils, nuts, annual cropped white wheat, cranberries, fruits, and vegetables.

[13] http://www.environment.fhwa.dot.gov/4f/4fAtGlance.asp

4(f) is also called into effect even if the project does not actually intrude into the 4(f) lands. Impacts may include:

- Resources affected by noise levels.
- Aesthetic features of the resource compromised by the transportation facility.
- Access restricted, or the use of the resource or area is substantially diminished.
- Vibrations impair use of the resource and diminish the value of wildlife habitat.

Appendix D provides a link to maps of "4(f)" lands, including public parks, schools, and cemeteries in the two-county region.

Historic, Cultural, and Archaeological Resources

Areas containing historic, cultural, or archeological resources are subject to several state and federal regulations.

- The National Historic Preservation Act of 1966, as amended (16 USC 470f, Section 106)[14], requires federal agencies, including FHWA, to take into account the effects of a project on properties included in or eligible for inclusion in the National Register of Historic Places and, to the maximum extent possible, complete planning and actions necessary to minimize harm to any National Register eligible property.

- The Archaeological Resources Protection Act of 1979[15] applies to archaeological resources on tribal lands and non-tribal lands under federal jurisdiction, such as lands managed by the Bureau of Land Management, National Park Service, or U.S. Army Corps of Engineers. Under this legislation, ITD must apply for and obtain a permit when such resources could be impacted by a project (see Section 1800.07of the Archaeological Resources Act of 1979).

- The Idaho Graves Protection Act (Title 27 Idaho Statutes, Cemeteries and Crematoriums, Chapter 5 - Protection of Graves)[16] requires that graves disturbed by construction or other activities be re-interred at public expense.

- The National Environmental Policy Act, 42 USC Section 4231[17], requires that all actions sponsored, funded, permitted, or approved by federal agencies undergo planning to ensure that historic and cultural resources are given due weight in project decision-making.

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[14] http://www.achp.gov/nhpa.html
[15] http://www.nps.gov/archeology/tools/Laws/arpa.htm
[16] http://legislature.idaho.gov/idstat/Title27/T27CH5.htm
[17] http://www.gsa.gov/portal/content/104676?utm_source=PBS&utm_medium=print-radio&utm_term=nepa&utm_campaign=shortcuts

Appendix B provides a link to a map depicting some historical trails and buildings in the region. This map does not include properties that could be listed or fall under the above regulations. Due to concerns about protecting archeological and historic sites, some locations are not published and are available only to authorized persons. Early consultation with the State Historic Preservation Officer and other interested persons and parties during the early stages of planning is essential.

General Mitigation Strategies

The following sections discuss general mitigation strategies, for the long-range regional transportation plan and its projects, as identified by the participating environmental and resource agencies.

The NEPA process is intended to help public officials make decisions based on understanding of environmental consequences and to take actions that protect, restore, and enhance the environment (40 CFR § 1500.1(b):Purpose)[18]. These regulations define mitigation as:

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments.
- For stream and wetland mitigation, the federal mitigation rule applies.[19] Impacts to a wetland or other aquatic resource must first be avoided and minimized, and then compensated if unavoidable.
- Compensating for the lost functions of the impacted aquatic resources.
- Ensuring successful compensation through measurable and enforceable ecological performance standards.

The Federal Highway Administration has produced a document called *Eco-Logical: An Ecosystem Approach to Developing Infrastructure Projects*[20], which encourages federal, state, tribal, and local partners involved in infrastructure planning, design, review, and construction to use flexibility in regulatory processes. Specifically, the document outlines the conceptual groundwork for integrating plans across agency boundaries, and endorses ecosystem-based mitigation of infrastructure impacts that cannot be avoided.

Air Quality

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[18] NEPA and Transportation Decision Making. Mitigation of Environmental Impacts. http://environment.fhwa.dot.gov/projdev/tdmmitig2.asp Retrieved 1/22/2009.
[19] 40 CFR § 230: Compensatory Mitigation for Losses of Aquatic Resources. http://water.epa.gov/lawsregs/guidance/wetlands/upload/2008_04_10_wetlands_wetlands_mitigation_final_rule_4_10_08.pdf Retrieved 9/6/2013.
[20] www.environment.fhwa.dot.gov/ecological/eco_index.asp

As a general mitigation strategy, a more compact and walkable community design, expanded public transportation and non-motorized transportation systems, and maintaining and maximizing the use of the existing transportation infrastructure would likely reduce transportation-related air emissions. Examples of these strategies include making use of the existing rail line between Caldwell, Nampa, and Boise for commuter rail, and adding bike paths along the rail corridor; providing infrastructure to support flexible carpooling; and providing frequent service public transport to heavily used public events and cultural centers, such as Boise State University and the Idaho Center.

Mitigation Measures for Fugitive Dust and Emissions During Construction

Developing a dust prevention and control plan (according to local ordinances) prior to initiating a construction project is a key first step in mitigating for dust and emissions during construction. Dust control measures that may be included in the plan entail:

- Watering roadways
- Covering loads
- Sweeping roadways
- Reducing speed limits through construction zone

Additional mitigation measures during construction can include:

- Properly maintaining construction equipment.
- Evaluating the use of available alternative engines and diesel fuels, such as:
  - Engines using fuel cell technology
  - Electric engines
  - Engines using liquefied or compressed natural gas
  - Diesel engines that meet the proposed EPA 2007 regulation of 0.01 g/bhp-hr (grams per brake horsepower hour)
  - Diesel engines outfitted with catalyzed diesel particulate filters and fueled with low sulfur (less than 15 ppm sulfur) fuel
    - o Diesel engines fueled with biodiesel (diesel generated from plants rather than petroleum)
    - o Fueling on-site equipment, such as mining equipment, with lower sulfur highway diesel instead of off-road diesel fuel
- Reducing construction-related traffic trips and unnecessary idling.
- Using newer, “cleaner” construction equipment.
- Installing control equipment on diesel construction equipment.
- Rerouting diesel truck traffic away from communities and schools.

Adopting a “Construction Emissions Mitigation Plan” helps ensure that the procedures for implementing all proposed mitigation measures are sufficiently defined to ensure a reduction in the environmental impact from diesel particulates and nitrogen oxides due to the project’s construction.

Design and implementation of mitigation measures should include consultation of ITD, local highway district, cities, counties and the Idaho Department of Environmental Quality (DEQ).

Hydrological Issues

Planning for permeability in developed and developing areas can mitigate storm water effects in the Boise River and its tributaries, including canals. To minimize impacts, both land use and transportation planning should emphasize/require redevelopment over new development; require low impact development and strongly encourage zero impact development; restore permeability, habitats, and ecosystems wherever possible; and avoid and/or fully accommodate sensitive ecological areas, such as streams, riparian areas, wetlands, buffers, groundwater recharge areas, etc.

Water Quality

General water quality and quantity mitigation measures include:

- Establishing procedures for control of runoff from construction projects.
- Designing storm sewers to catch sediment runoff and prevent it from reaching streams and rivers.
- Using basins to detain runoff and allow absorption.
- Reducing the use of sand and salt on icy roads.
- Increasing road/surface sweeping to pick up materials before they can enter the storm sewers.
- Using permeable surfaces where appropriate to reduce runoff and the loss of aquifer recharge.

On April 10, 2008, final rules were published in the Federal Register[21] explaining new requirements for mitigating the losses of waters of the United States associated with permitted fills[22]. The rule explains the responsibilities of the permittee for ensuring the mitigation action selected succeeds in replacing the lost waters. Traditionally, a mitigation site is located at or adjacent to the impact site (ion-site compensatory mitigation) or at another location generally within the same watershed as the impact site (offsite compensatory mitigation). If agencies implementing transportation projects intend to develop offsite mitigation "banks" to be prepared for future mitigation needs, they must follow the procedures set out in the mitigation rule. Mitigation requirements for projects are determined at the time

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[21] Vol 73, No. 70, pages 19594-19704

[22] "Compensatory Mitigation for Losses of Aquatic Resources." *Code of Federal Regulations.* Title 40, 230. http://water.epa.gov/lawsregs/guidance/wetlands/upload/2008_04_10_wetlands_wetlands_mitigation_final_rule_4_10_08.pdf. September 6, 2013.

of permitting, but it is prudent to plan ahead by evaluating areas potentially affected and identifying potential mitigation sites or ideas for mitigation.

Run-Off (Stormwater)

To mitigate water quality impacts from stormwater run-off, the first steps are to check on Construction General Permit applicability and to develop a Stormwater Pollution Prevention Plan (SWPPP) or a Stormwater Management Plan[23]. General mitigation strategies are listed below:

- Ensure stormwater requirements are planned/met prior to project implementation.
- Implement the SWPPP if applicable; if not applicable, implement stormwater best management practices[24].
- Implement recommended erosion and sediment control practices as found in the *Idaho Construction Site Erosion and Sediment Control Field Guide*[25] published by the Idaho Small Business Development Center.
- Involve ITD, EPA, Idaho Department of Water Resources (IDWR), U.S. Army Corps of Engineers, local canal or drainage district, health districts, local public works, and local highway district.

Aquatic Resources Disturbances (Streams, Wetlands, Canals, etc.)

Generally, all projects that may result in the placement of fill into wetlands or other aquatic resources must be evaluated to determine how to avoid the filling, and if unavoidable, how to minimize and mitigate for the loss. Furthermore, if federal funds are accepted for a project, the transportation agency will be subject to FHWA (or Western Federal Lands) policies regarding wetland mitigation.[26]

Avoiding streams and wetlands during the design, construction, and maintenance of the transportation system is the preferred strategy. “No net loss” policies protect, restore, and enhance natural wetlands and other aquatic resources that could be adversely impacted by transportation-related construction, maintenance, and operations activities. In the event of unavoidable impacts, the federal mitigation rule requires mitigation such as wetland mitigation banking or stream corridor preservation to help ensure no overall net loss of wetland functions.

Any permit requirements need to be met prior to the project construction, such as completing the 401/404 “dredge and fill” permit applicability/certification process. For streams, a “Short Term Activity Exemption” from DEQ and/or a Stream Channel

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[23] The ACHD NPDES permit, Municipal Separate Storm Sewer System (MS4), requires a Stormwater Management Plan which requires runoff control measures from most developments.

[24] www.deq.idaho.gov/water/data_reports/storm_water/catalog/sec_1/text.pdf

[25] www.idahosbdc.org/index.cfm?fuseaction=content.fieldguide

[26] These policies are based on Executive Order 11990 Protection of Wetlands. http://water.epa.gov/lawsregs/guidance/wetlands/eo11990.cfm

Protection Act permit from IDWR may be needed. Transportation agencies should consult with ITD/local highway districts, EPA, U.S. Army Corps of Engineers, IDWR, and DEQ early in the planning and/or design process.

Groundwater

The indirect effects of growth should be estimated and compared to assess the impacts to drinking water supplies and to communities that are dependent upon groundwater wells, source water protection areas, and the recharge and discharge of the Boise River and its tributaries. This analysis should also note where there is evidence of decreasing aquifer levels. It should be performed for projects with and without low impact development techniques and for both new development and redevelopment, so the results could be used to determine appropriate mitigation strategies. General mitigation strategies include preventing pollution infiltration and excessive drawdown of groundwater supplies, and implementing effective well-head protection.

General strategies to mitigate excavation impacts on groundwater include:

- Avoid areas of higher groundwater.
- Develop a plan for dewatering (temporary removal of water from a site) in areas of expected groundwater intrusion.
- Apply for a Short Term Activity Exemption from DEQ.
- Implement steps in the Short Term Activity Exemption for dewatering operations.

Local highway districts, DEQ, IDWR, EPA, ITD, should be involved in planning groundwater mitigation activities.

Floodplain Disturbances

Floodplains possess significant natural features and perform numerous functions important to the public interest. By definition floodplains are areas that are likely to flood. Federally funded projects and those involving federal lands must be evaluated for their impact on floodplains, as required by agencies' regulations implementing Executive Order 11988.[27] The regulations are intended to ensure agencies' responsibilities reduce the risk of flood loss; minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. One requirement of agencies to achieve flood protection is elevating new structures above the base flood level rather than filling in land.

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[27] The intent of Executive Order 11988 is to "avoid to the extent possible the long and short term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative" (http://www.archives.gov/federal-register/codification/executive-order/11988.html. Retrieved 9/6/2013). For example, see the Army Corps of Engineers regulation, 33 CFR 320.4(l).

Local agencies require permits under floodplain ordinances for structures in floodplains, including roads and berms. Most local ordinances do not allow structures in floodways.[28]

Recurring national and regional experience with flood damage to structures placed in floodplains should be a strong reminder of the inherent risks of development on lands which flood and the subsequent investment of public resources which are used in response to flood damage. When flooding occurs, occupants and owners take measures that further complicate the impacts of development in the floodplain, such as raising the height of access roads and attempting to maintain a river channel in a permanent location. Furthermore, the occupancy of floodplains by permanent structures eliminates any future opportunities to restore floodplain features that might be crucial to restoring some components of the aquatic ecosystem.

Hazardous Waste

Discovery of localized contamination or abandoned underground storage tanks could be mitigated by conducting a site assessment/prior use inventory for known or suspected contamination[29]. If contamination is encountered, a remedial investigation should be conducted using DEQ's *Risk Evaluation Manual*[30].

Using brownfield sites, or other sites contaminated with hazardous wastes, for transportation projects can offer advantages because the sites would be cleaned up and re-used, thereby avoiding impacts to uncontaminated sites and providing benefits to the community. Involve DEQ, EPA, ITD, local highway districts, and cities and counties early in the process.

Habitat and Wildlife Areas

General mitigation strategies include identifying critical wildlife habitat areas and avoiding and minimizing impacts to those areas. Habitat fragmentation can be avoided by consulting mapped habitat areas when road planning, and modifying routes accordingly. Consult with the appropriate agencies early in the planning process and encourage applicable scientific data collection and sharing among agencies to help integrate transportation and land use decisions early in relevant planning processes.

The following measures can be taken to mitigate impacts on wildlife when project avoidance and minimization are not feasible:

- Adjust timing of activities to avoid sensitive seasons and/or times of day.

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[28] According to the Federal Emergency Management Agency (FEMA), the regulatory floodway "means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood…" http://www.fema.gov/floodplain-management/floodway

[29] DEQ's Waste Division Inventory http://www.deq.idaho.gov/Applications/WDI

[30] http://www.deq.idaho.gov/Applications/Brownfields/index.cfm?site=risk.htm

- Avoid direct mortality from road construction activities:
    - Locate future roadways away from important wildlife habitat
    - Conduct a survey of wildlife present prior to construction
    - Alter timing of construction to limit impacts to wildlife
- Avoid direct mortality from collision with vehicles:
    - Locate future roadways away from important wildlife habitat
    - Alter and enforce speed limits
    - Establish wildlife crossing areas, including underpasses, overpasses, etc.
    - Use wildlife-proof fencing in conjunction with wildlife crossing areas
    - Use de-icing chemicals that don't attract wildlife
    - Remove or alter vegetation composition along roadways so that vegetation doesn't attract wildlife
    - Properly design and construct stream crossings
- Avoid disruption of landscape processes and loss of biodiversity by preventing habitat fragmentation:
    - Integrate transportation and land use decisions early in both planning processes
    - Locate future roadways away from important wildlife habitat
    - Mitigate for the loss of habitats, and the disruption of ecological processes, in important wildlife habitat areas
        - Consider replacing, protecting, or restoring lost habitat
        - Look beyond the actual footprint of the roadway when determining the number of acres of habitat loss
        - Properly design and construct stream crossings
        - Use other best management practices
- Avoid spread of exotic or invasive species:
    - Monitor for exotic species and treat as necessary. Maintain this monitoring and treatment program for a specific number of years after construction is complete.
    - Use best management practices.
    - Ensure plantings used for projects do not include exotic or invasive species.

Unavoidable habitat fragmentation can be mitigated by providing bridges or other structures to span streams, wetlands, seepage areas, riparian areas, shorelines, open water, etc. These structures are often designed to accommodate both wildlife and water movement.

Several agencies should be involved early in the process: Idaho Department of Fish and Game, EPA, Idaho Department of Lands, U.S. Forest Service, Bureau of Land Management, other public land management agencies (if lands affected by project), U.S. Fish and Wildlife Service (if threatened, endangered, or candidate species

habitat is involved), ITD , FHWA, IDWR, DEQ, cities, counties, and local highway districts.

Traffic Noise

To help ensure that comparative analyses of project alternatives include consideration for minimizing or avoiding traffic noise impacts, comprehensive planning and coordination should be accomplished as early as possible in the project development process. This could reduce or eliminate the need for costly abatement later in the design process.

In addition to considering and abating noise impacts when constructing transportation projects, these issues also need to be considered when developing near roadways. Abatement for noise impacts needs to be considered and studied when planning projects and developments within or encroaching on any major highway corridor or major local arterial roadway. In addition to noise barrier walls, abatement options include siting less noise sensitive uses, such as commercial or industrial facilities, closer to major roads, or designing buildings with no windows or other openings toward the roadway.

In general, heavier truck volumes, higher speeds, and a greater percentage of commercial vehicles (e.g., trucks) results in increased noise levels. Traffic/noise data concerning such factors is most pertinent within or near urban settings.

Construction Noise

Construction noise can be mitigated by controlling hours of work, shielding the work site, and requiring certain equipment types, quieter mufflers, etc. Backup beepers on equipment can be heard for a considerable distance. These may be eliminated if a flagger is used for backing of equipment, or could be replaced by a flashing strobe light at night time. FHWA has developed resources including a "Construction Noise Handbook," and construction noise model[31] to assist in choosing mitigation measures.

Agricultural and Farmland

As a general mitigation strategy, a more compact and walkable community design, expanded public transportation systems, and maintaining and maximizing the use of existing transportation infrastructure would help avoid or minimize encroachment on prime farmland. Impacts to prime farmland can be avoided or minimized by using less desirable farmland for transportation projects. The transportation planning process should involve local planning and zoning agencies and the Natural Resources Conservation Service to identify farmland value.

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[31] http://www.fhwa.dot.gov/environment/noise/construction_noise /

There is no required mitigation for loss of prime farmland or a change in use to any non-agricultural use. Increased soil erosion can be mitigated by using accepted erosion control methods during construction and the design of adequate water removal systems for runoff, as described above.

Appendix A

Participating Agencies

The following agencies participated in the environmental review process, beginning in November 2008, by attending meetings, sharing information, and reviewing documents:

- Ada County Development Services
- Idaho Department of Agriculture – Soil Conservation Commission
- Idaho Department of Environmental Quality
- Idaho Department of Fish and Game
- Idaho Department of Lands
- Idaho Department of Water Resources
- Idaho Office of Species Conservation
- Idaho Rivers United
- Idaho State Historical Society
- Idaho Transportation Department
- Local Highway Technical Assistance Council
- U.S. Army Corps of Engineers
- U.S. Department of Agriculture - Natural Resources Conservation Service
- U.S. Department of Transportation – Federal Highway Administration
- U.S. Bureau of Land Management
- U.S. Bureau of Reclamation
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- U.S. Forest Service

Appendix B. Maps

The following maps are available at:
http://www.compassidaho.org/prodserv/mapgis-maps_cim_environmental.htm

Mapped environmental information: *Communities in Motion 2035*

- Slideshow of maps
- Birds of Prey area
- Bridges and dams
- Environmental justice
- FEMA flood zones
- Ground water: Areas of concern
- Ground water: Shallow aquifers
- Ground water: Vulnerable
- Habitat: Areas of critical concern (Bureau of Land Management)
- Habitat: Elk and deer winter range
- Habitat: Slickspot peppergrass
- Habitat: Sage grouse
- Habitat: Wildlife zones
- Historical map
- Impaired streams (303d)
- Nitrate priority areas
- Open space (parks, golf courses, cemeteries, public land)
- Parks and schools
- Prime farmland (irrigated, currently undeveloped)
- Public land ownership
- Ridge-to-Rivers trails
- Slopes (steep)
- Soils (USDA WebSoilSurvey)
- Storage tanks (above ground, underground and leaking)
- Streams and canals
- Wetlands

Mapped environmental information: *Communities in Motion 2040*

- CIM 2040 Vision and prioritized corridors with environmental justice consideration areas (2013)
- Environmental scan on prioritized corridors (2013)

Appendix C. Matrix of Environmental and Resource Issues in CIM 2040 Priority Corridors

Corridors in Priority Order	Aesthetics	Airport	Canal	Cemetery	Neighborhood	Flood way/ plain	Gas station	Historic, cultural, architectural	Farm land	Noise	Park	Remediation site	Rail line	River	School	Slope	Tank trail	wetlands	Wildlife, Fish, Habitat
1. Interstate 84 (Canyon County)		x	x							x				x					
2. State Highway 44/State Street					x	x		x		x				x				x	x
3. US 20/26 (Middleton Road to Eagle Road)					x	x			x	x									
4. State Highway 55 (Snake River to City of Nampa)				x										x		x			x
5. Regional park and ride lots (near term)																			
6. Linder Road (Lake Hazel Road to State Highway 44)	x				x				x	x				x	x			x	x
7. Franklin Road (bottleneck between Star Road and McDermott Road)					x														
8. Caldwell/Nampa Blvd (Linden Street to Orchard Avenue)			x									x		x					
9. Ustick Road (Montana Avenue to McDermott Road)			x		x				x				x	x	x				
10. Regional park and ride lots (medium term)																			
11. *valley***connect** (near term)																			
12. Treasure Valley High Capacity Corridor																			
13. State Highway 45 reroute (in City of Nampa – *Bowmont Road to Interstate 84*)			x												x				
14. State Highway 16 (Kuna-Mora Road to Ada/Gem County line)								x						x					x
15. Boise Downtown Circulator																			
16. *valley***connect** (medium term)																			
17. State Highway 55 (State Highway 44 to Ada/Boise County line)				x	x									x		x			x
18. Middleton Road (State Highway 55 in the City of Nampa to Main Street in the City of Middleton)						x			x					x					x
19. Overland Road (study)																			
20. North/south Kuna corridor (rail crossing in City of Kuna)			x						x				x						
21. Cherry Lane (Middleton Road to Black Cat Road)			x			x			x										
22. Lake Hazel/Amity (as a corridor – *Lake Hazel, McDermott Road to Linder Road; Amity Road, Southside Boulevard to Black Cat Road*)			x			x			x										
23. State Highway 55/Midland Boulevard Bottleneck *(in City of Nampa)*																			
24. State Highway 45 (Greenhurst Road to Bowmont Road)			x												x				
25. Victory Road (Happy Valley Road to McDermott Road)					x				x										
26. US 20/26 (City of Caldwell to City of Parma)		x			x	x			x	x									
27. Three Cities River Crossing (preserving land for a future project – *bridge over the Boise River east of City of Eagle*)						x		x						x					x
28. Star/Robinson Road (Greenhurst Road to Ustick Road)			x		x				x				x						
29. CIM 2040 transit (long term)																			
30. Greenhurst Road (Middleton Road to McDermott Road)				x			x				x								
31. Happy Valley Road (Greenhurst Road to Stamm Lane)		x			x	x			x						x			x	
32. Bowmont Road to Kuna-Mora Road (new connection)					x				x								x		
34. Beacon Light/Purple Sage (new connection)		x			x											x			

Appendix D. Matrix Resource Agency Involvement in Environmental Considerations

	Air quality	Water quality	Flood-plains	Wetlands	Hazardous waste	Contaminated sites	Wildlife, fish, habitat	Agriculture and farmland	Noise	Historic, cultural, architectural	Social and economic conditions
Ada County Development Services			x					x			x
Idaho Department of Agriculture - Soil Conservation Commission								x			
Idaho Department of Environmental Quality	x	x			x	x	x				
Idaho Department of Fish and Game		x		x			x				
Idaho Department of Lands							x				
Idaho Department of Water Resources			x	x			x				
Idaho Office of Species Conservation							x				
Idaho Rivers United		x	x	x			x				
Idaho State Historical Society										x	
Idaho Transportation Department	x			x	x	x	x		x		x
Local Highway Technical Assistance Council	x			x	x	x	x				x
U.S. Army Corp of Engineers			x	x							
U.S. Department of Agriculture - Natural Resources Conservation Service								x		x	
U.S. Department of Transportation - Federal Highway Administration				x					x		x
U.S. Bureau of Land Management							x	x			
U.S. Bureau of Reclamation			x	x							
U.S. Environmental Protection Agency	x	x		x	x	x	x				
U.S. Fish and Wildlife Service							x				
U.S. Forest Service							x	x			