# APPENDIX 3A

## Environmental Methodology

## Environmental Issues Methodology

This paper provides an introduction to environmental issues pertinent to the NEPA process that will follow the Alternatives Analysis (AA) of the PDN HCTS and the selection of a locally preferred alternative. It defines issues of consequence to alternative selection, discusses how these issues will be analyzed as the alternatives analysis progresses, and identifies the principle issues of concern when evaluating the various alternatives. A concluding section describes the anticipated level of effort for a NEPA document as well as the various agency consultation requirements.

## Environmental Issues

The following discusses the anticipated environmental level of analysis based on the long list of alternatives identified by the Technical Committee. The environmental review considers transit in mixed traffic and in a separated guideway, and the need for park and ride lots in various locations within the project limits.

### Cultural Resources

Cultural resources are afforded protection under various federal and state laws and generally refer to archaeological sites, historic buildings, or other objects that represent human activity. In general, these resources must be a least 50 years old and meet certain criteria of historic significance. A review of the data available from the Archaeological Records Management Section of the New Mexico Historic Preservation Division indicates sporadic coverage of the area with past surveys. A variety of archaeological sites, several concentrated along both banks of the river, and historic buildings are located in the general area. The Petroglyph National Monument is within the study and, while there is Federal legislation for a transportation corridor through the monument, any individual petroglyphs or other cultural resources within the right-of-way will need to be considered if improvements occur beyond the existing roadway.

For the alternatives analysis, a records search and windshield survey will be conducted for the alternatives advanced for detailed evaluation. The screening-level evaluation will not address Cultural Resources because cultural resources are not anticipated to be a key issue.

During the NEPA documentation phase of the project, additional cultural resource investigations such as pedestrian survey and resource documentation may be required. However, it is not expected to be a major influence on the Alternatives Analysis as much of the project area will be on existing, previously disturbed right-of-way, and isolated impacts associated with park-and-ride lot development or other project elements can likely be addressed through data recovery efforts. Consultation with the State Historic Preservation Officer will be needed during the NEPA documentation phase.

### Section 4(f) Resources

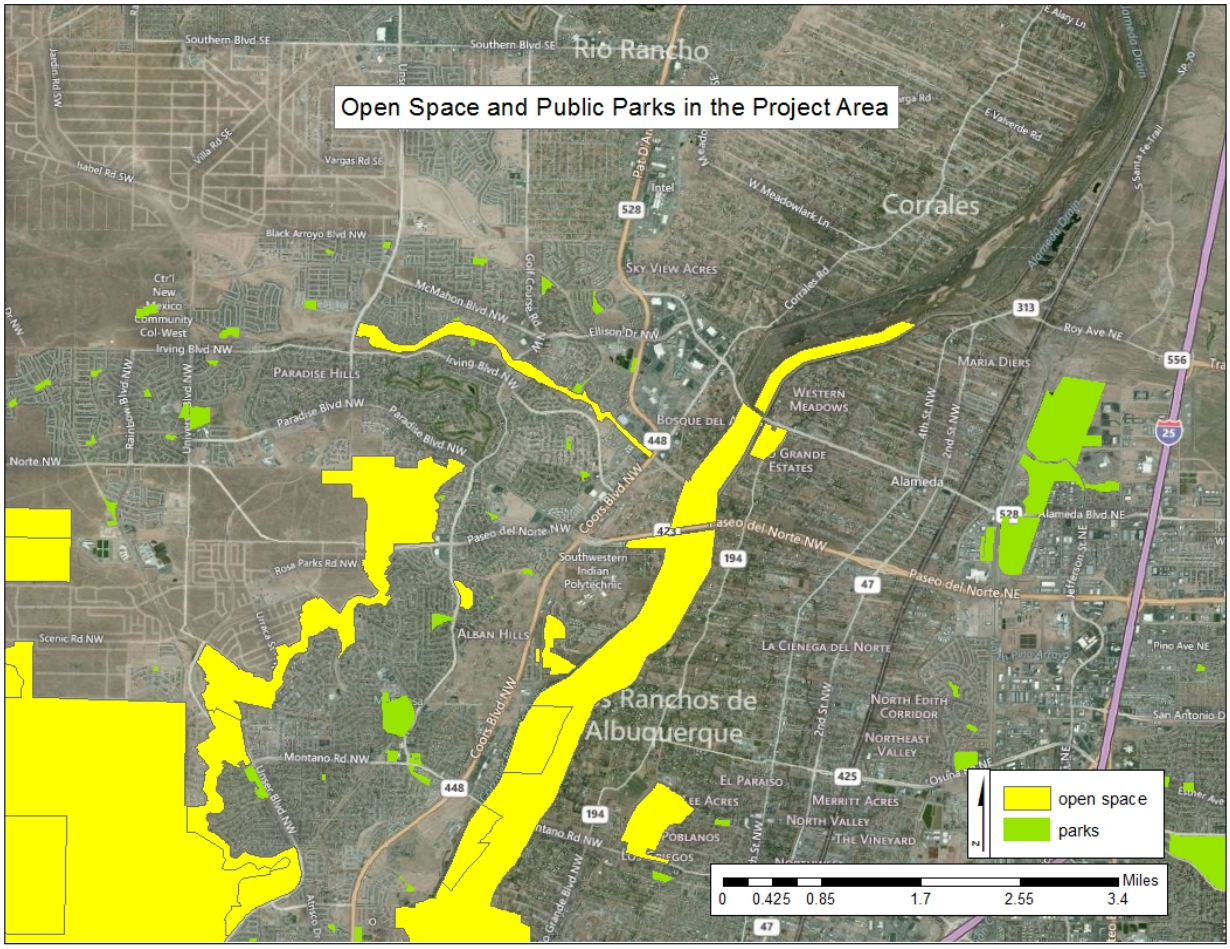
Section 4(f) of the Department of Transportation Act of 1966 states that the US Department of Transportation may not approve the use of land from a significant publicly-owned park, recreation area, wildlife or wildfowl refuge, or a significant historic site unless a determination is made that:

- There is no feasible and prudent alternative to the use of land from the property; and
- The action includes all possible planning to minimize harm to the property resulting from such use.

Section 4(f) properties in the project area include City of Albuquerque parks and open space as seen in Figure 1. While some alternatives do go through open space or the Petroglyph National Monument, a proposed transportation action could be environmentally cleared if the use is limited to previously disturbed areas in the existing right-of-way, does not affect the use or function of the property, impacts only a small percentage of the property, and governing jurisdictions support the action. In most cases, these 4(f) impacts would be *de minimis* and could be approved through a streamlined process. The route using the Calabacillas Arroyo would require a greater level of effort. This issue could influence alternative selection in the AA.

Both the screening level and detailed level of analysis will involve measuring the length of the route within a 4(f) resource. If needed, a more formal 4(f) analysis will be conducted during the NEPA phase of the project.

**Figure 1: Albuquerque Open Space and Parks**




*Source: Albuquerque Geographic Information Systems Database*

## Land Use

Land use is governed by development plans and zoning regulations. The Federal Transit Administration requires that federally funded transit projects be consistent with official plans for the comprehensive development of an area. Current land uses in the project area include a mix of residential, commercial, industrial, parks, and open space. There is also a sizeable amount of undeveloped land.

The screening evaluation will consider developable land within a ¼-mile of park and ride lots and stations. The undeveloped land would address the need to allocate land to support high capacity service with park-and-ride locations and also provide a basis for possible future transit oriented or supportive uses where such are compatible with local plans and regulations.

For the detailed AA evaluation, existing and planned land uses will be reviewed as well as the potential for transit oriented or supportive uses along an alternative route. Current zoning data and plans and policies will also be reviewed to determine if premium transit service is compatible with land use goals and plans for the area. The proposed locations and characteristics of park-and-ride lots will be developed in more detail in the detailed analysis of the AA and could affect the ranking of alternatives.

Changes associated with the direct effects of the project on adjacent lands would be covered in the Land Use section of a future environmental document. The potential encouragement of TOD or supportive land use changes would most likely be addressed in the Cumulative and Indirect section of a future NEPA document.

## Community Resources and Economic Considerations

Community facilities include schools, churches, government facilities, and social services that are used by members of a community. Economic considerations include displacement of businesses, changes in access to businesses, changes in employment or loss of property tax revenues.

Other than a general recognition of community facilities within the study area, this issue will be addressed as part of the detailed analysis. The detailed level of analysis will include documentation of the existing business and community services along each route and will include field verification of the properties. This issue is not expected to influence on the alternative selection in the AA.

## Environmental Justice

Related to these resource considerations are civil rights and environmental justice, which protect minority, low-income, or other special status populations from discrimination and from bearing disproportionate adverse impacts of transportation improvements.

The screening evaluation will consider how mobility may be improved for all populations.

For the detailed analysis, data from the US Census Bureau will be used to determine if special-status populations exist within the study influence area. Alternatives will then be assessed as to their impacts to these populations. This could potentially affect the alternative selection but it is not likely as increased access to transit is generally considered a net benefit.

## Water Quality

The project crosses the Rio Grande, the central waterway though New Mexico. As such, it is considered a Water of the United States and is regulated by the US Army Corps of Engineers (USACE) under the Clean Water Act. Any construction or disturbance within the Ordinary High Water Mark (OHWM) of the waterway will require coordination and a permit from the USACE. Additional drainages are present in the project area. If these drainages contain a definable bed and bank and drain into the Rio Grande, they too could be considered Waters of the US. One such drainage is the Calabacillas Arroyo, which has been identified as an alternative route in the long list of alternatives.

For the both the screening and the detailed analysis, all Waters of the US within the project limits will be identified and the appropriate consultation will be determined. Permitting will be pursued during the NEPA-documentation phase of the project. Because a crossing of the Rio Grande is a common element of all potential routes, water quality is not expected to influence the alternative selection for crossing the river. However, water quality will be an important consideration when reviewing the alternative route using the Calabacillas Arroyo.

## Wetlands

Wetlands are transitional lands between terrestrial and aquatic systems that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation that is typically adapted for life in saturated soil conditions. Construction in wetlands is also regulated by the Clean Water Act through a permitting process.

No formal analysis will occur at the screening level because the primary concerns will be with the Rio Grande crossing which is a common element to all potential routes. A preliminary identification of wetlands will occur in support of the AA detailed evaluation with a greater level of effort that will include delineation and consultation with the USACE during NEPA documentation. As mentioned above, this issue is not expected to influence the alternative selection in the AA.

## Floodplains

Floodplains, regulated by Executive Order 11988, are defined as the land area immediately adjacent to an active stream channel that becomes inundated at high flows. Typically, discussion and analysis of floodplains reference the “100-year” floodplain. The Federal Emergency Management Agency (FEMA) administers the Flood Insurance Rate Map (FIRM) program that identifies the 100-year flood hazard areas of the United States. Floodplain impacts occur if a project adversely affects the functional characteristics of an existing floodplain or supports incompatible floodplain development.

The Albuquerque FIRM maps will be reviewed to identify the 100-year floodplain. This issue is not expected to influence the alternative selection in the AA as the primary floodplain concerns will be with the Rio Grande crossing which is a common element to all potential routes. Therefore, it will not be a specific evaluation criterion in the AA.

## Vegetation and Wildlife

Existing conditions within the project area consist primarily of a developed built environment with invasive weeds and landscaped plants. In contrast to the developed nature of most of the project area, the land adjacent to the Rio Grande and the Calabacillas Arroyo includes wildlife habitat.

A general description and characterization of the wildlife habitat will be completed for the AA. A biological investigation with more detailed survey and identification is anticipated for the NEPA documentation. The investigation would include undisturbed portions of the right-of-way as well as proposed park-and-ride lot locations. This issue is not expected to influence the alternative selection in the AA as the primary habitat concerns will be with the Rio Grande crossing which is a common element to all potential routes.

## Threatened and Endangered Species

The Endangered Species Act mandates that federal actions do not jeopardize the continued existence of listed threatened or endangered species, species proposed for listing, or adversely modify or destroy the critical habitat of such species. This stretch of the Rio Grande is identified as critical habitat for the endangered Rio Grande silvery minnow. Also, riparian areas often provide suitable habitat for other protected species such as the Southwest willow flycatcher and the yellow-billed cuckoo. Potential habitat may also exist for other protected species such as the Townsend's big-eared bat or Western burrowing owl.

Preliminary identification of suitable habitat will occur during the AA with more detailed survey conducted during the NEPA documentation. If potential impacts to protected species are identified, consultation with the US Fish and Wildlife Service (USFWS) and the New Mexico Department of Game and Fish (NMDGF) will be needed. This issue is not expected to influence the alternative selection in the AA as the primary habitat concerns will be with the Rio Grande crossing which is a common element to all potential routes. Therefore, it will not be a specific evaluation criterion in the AA.

## Farmlands

The Farmland Protection Policy Act (FPPA) of 1981 protects against the unnecessary and irreversible conversion of farmland to nonagricultural uses. The only farmlands within the study area occur in the North Valley including some adjacent to Paseo del Norte.

All prime farmland, defined as irrigated fields not already committed to urban development or water storage, will be identified within the project area. This issue is not expected to be a major influence on the alternative selection in the AA. Therefore, it will not be a specific evaluation criterion in the AA.

## Visual Resources

The visual, scenic, and aesthetic qualities of a landscape are an environmental component that must be taken into account. This issue is not expected to be a major influence on the screening-level alternative selection as all alternatives will have a fairly consistent impact to any visual resources. Depending on how routes are defined for the detailed evaluation, visual impacts may need to be addressed. For example, proposing a transit guideway on top of a Paseo del Norte berm would likely require an assessment of visual resources.

In the subsequent NEPA phase, a visual impact analysis will systematically identify the visual resources and the viewers in the corridor and will describe the impacts of the project as well as any mitigation measures.

### Hazardous Materials

The Hazardous Materials Transportation Act defines hazardous material as substances or materials that when transported in commerce may create a risk to health, safety, and property. The Comprehensive Environmental Response, Compensations, and Liability Act (CERCLA) covers additional hazardous substances.

During the NEPA documentation phase, a preliminary initial site assessment (PISA) will be prepared in order to identify Recognized Environmental Conditions (RECs) that may impact the project site, including parcels proposed for acquisition. A REC is the presence of a release of any hazardous substance or petroleum product that has or may have impacted the project site, including the site surface, subsurface, or groundwater. RECs can potentially affect the health of construction workers; impose cleanup costs or regulated activity and use limitations; or present lasting issues of environmental risk. Identification activities will include records searches, historical research, interviews, and site reconnaissance.

Hazardous materials are not expected to be a major influence on the alternative selection in the AA since the most common RECs have well established and economical methods of cleanup and management. Accordingly, it will not be a specific evaluation criterion in the AA.

### Air Quality

Air quality regulations pertinent to transportation projects are found in the Clean Air Act Amendments of 1990 (CAA) and the Final Transportation Conformity rule (40 CFR Parts 51 and 93). The CAA required the US Environmental Protection Agency (EPA) to develop National Ambient Air Quality Standards (NAAQS) for several major air pollutants. These pollutants, known as criteria pollutants, are carbon monoxide, nitrogen dioxide (usually referenced as oxides of nitrogen or NOx), ozone, particulate matter ($PM_{10}$ and $PM_{2.5}$), sulfur dioxide, and lead.

Bernalillo County is under maintenance for CO and has experienced no violations of the federal CO standard for several years. For the AA detailed evaluation, a qualitative and limited quantitative analysis will be completed. The number of estimated riders will be used to calculate a reduction in CO emissions within the project area. As transit projects are generally expected to reduce congestion and improve air quality, this issue is not expected to be a major influence on the alternative selection in the AA.

### Noise

Because intrusive noise is among the most significant environmental concerns of planned transit projects, FTA strives to reduce noise to acceptable levels for affected noise-sensitive land uses.

Noise-sensitive land uses and potential impacts will be identified as part of the AA detailed evaluation. Impacts and any necessary mitigation needs will be determined during the NEPA documentation phase.

Depending on the nature and location of noise-sensitive sites and the configuration of the alternatives, this issue may influence the alternative selection in the AA.

### Indirect and Cumulative Impacts

NEPA directs federal agencies to examine the environmental consequences of proposed activities. This includes indirect and cumulative impacts. Indirect impacts are a consequence of the proposed action that occur later in time or away from the immediate project area while cumulative impacts result from incremental impacts of the action when added to past, present, and reasonably foreseeable future actions.

A preliminary analysis of indirect and cumulative impacts will be presented in the AA with a detailed evaluation provided in the NEPA documentation. This issue is not expected to be a major influence on the alternative selection in the AA.

### Pedestrian and Bicycle Accommodations

As part of the environmental analysis, pedestrian and bicycle accommodations will be considered. Pedestrian access to stations and park-and-ride lots will be considered as well as potential impacts to pedestrian crossings at major street intersections. This issue is not expected to be a major influence on the alternative selection in the AA as pedestrian access issue will be fairly uniform for all alternatives.

### Construction Activities

Construction activities will result in temporary impacts that are unavoidable and will cease upon completion of the project. These impacts could include temporary delays to motorists and temporary impacts to property access. These impacts will be common to all alternatives and this issue is not expected to be a major influence on the alternative selection in the AA.

## Summary

Because the Paseo del Norte HCTS study area is within the urbanized Albuquerque metropolitan area, there are few environmental resources present. The project alternatives are similar in terms of their effects to environmental resources. Most of the study area consists of the existing paved highway and adjacent development.

As such, land use compatibility, noise, and possibly 4(f) resources will be the major considerations in developing alternatives. Natural Resource concerns such as water quality and wetlands, general habitat and threatened and endangered species may be a concern in open space areas and at the river crossing. Additional issues such as farmlands, hazardous materials, cultural resources, and air quality will be concerns that need to be addressed in the NEPA documentation but are not expected to be major influences on project decisions.

Based on the preliminary evaluation of environmental and cultural issues, significant impacts are not anticipated. For this reason, it is expected that future project(s) be evaluated using an environmental assessment (EA). In addition to the FHWA and FTA, coordination with the following agencies is anticipated as part of the environmental documentation:

- US Army Corps of Engineers (USACE)
- US Fish and Wildlife Service (USFWS)
- New Mexico Environment Department (NMED)
- New Mexico Department of Game and Fish (NMDGF)
- New Mexico Historic Preservation Division (SHPO)
- Mid-Region Council of Governments
- AMAFCA
- Middle Rio Grande Conservancy District
- City of Rio Rancho
- Sandoval County
- Bernalillo County
- City of Albuquerque
  - Dept. of Municipal Development
  - Planning Department
  - Air Quality
  - ABQ Ride
  - Police & Fire
- Village of Los Ranchos

### Coordination Efforts during the AA

Currently, the project is being coordinated through a Technical Committee consisting primarily of representatives from various departments of the MRCOG, NMDOT, City of Albuquerque and City of Rio Rancho. With regard to pre-NEPA preparations, coordination during the AA should include local agencies such as Los Ranchos, City of Albuquerque, Rio Rancho, Bernalillo County, and Sandoval County. Particular emphasis will be placed on municipalities or departments that are not represented in the TAC or are not principle members. Resource Agencies such as SHPO, USACE, USFWS, NMED, and NMDGF would be better positioned to provide meaningful input during the NEPA phase specifically with regard to the locally preferred alternative.

# APPENDIX 3B

## Environmental Effects

# Environmental Effects

This section provides an analysis of environmental effects of the various alternatives. A relative level of impact is assessed for each alternative as they pertain to a particular environmental topic. The methodology for impact assessment was established in the earlier submittal entitled *Environmental Issues Methodology*.

## Cultural Resources

To assess potential impacts to cultural resources, a files search was conducted of known archaeological and historic sites located along each route. The New Mexico Cultural Resource Inventory System (NMCRIS) map server was reviewed to determine the location of known sites along the various routes. A tally of the number of sites that could potentially be impacted along each route is provided below.

### *Northwest*

The Yellow Route contains the highest number of sites with 15 cultural resource sites located along the route. The Pink Route contains 2 sites and the Purple Route contains none.

### *Paseo del Norte*

The Brown Route, common to all routes, contains five cultural resource sites.

### *Journal Center*

For the Journal Center portion of the project area, no sites are currently documented along the Blue or Cyan routes and a single site is located along the Green route.

In the Northwest, the Yellow Route has the greatest potential to impact cultural resources, and there is no substantial difference in potential cultural resource impacts in the Journal Center area. Once a preferred alternative is developed and the project proceeds into the environmental documentation phase, intensive survey and documentation of the preferred route will be needed.

## 4(f) Resources

To assess potential impacts to 4(f) resources, the length of each route located within a 4(f) property was measured.

### *Northwest*

The Yellow Route includes 0.11 miles adjacent to the Calabacillas Arroyo Open Space, 0.26 miles in the Petroglyph National Monument, and an additional 0.35 miles adjacent to the Petroglyph National Monument along the north side of the right-of-way. Both the Pink and Purple routes include 0.12 miles adjacent to the Modular Skate Park and 0.05 miles adjacent to the Clabacillas Arroyo Open Space.

### *Paseo del Norte*

The Brown Route includes 0.75 miles that go through the Bosque Open Space. Any bridge rehabilitation or work to either side of the roadway in this area could constitute a use of the 4(f) property.

### *Journal Center*

There are no 4(f) properties within the Journal Center portion of the study area.

While the Yellow Route contains the most area through a 4(f) resource, a proposed transportation action could be environmentally cleared if the use is limited to previously disturbed areas in the existing right-of-way, does not affect the use or function of the property, impacts only a small percentage of the property, and governing jurisdictions support the action. In this case, the 4(f) impacts would be *de minimis* and could be approved through a streamlined process.

## Wetlands and Water Quality

The US Fish and Wildlife Service National Wetland Inventory was reviewed for wetland and riparian identification and the Digital Flood Insurance Rate Maps of the Federal Emergency Management Agency were used to identify 100-year flood zones.

### *Northwest*

All three routes cross the Calabacillas Arroyo, which is identified as the 100-year flood zone and as potentially containing intermittent riverine wetlands. This arroyo is also considered Waters of the United States under the jurisdiction of the US Army Corps of Engineers. Any work within the high water mark of the arroyo will require a permit under Section 404 of the Clean Water Act. Specific permitting needs will be determined during the subsequent NEPA documentation.

### *Paseo del Norte*

The Paseo del Norte portion of the project area crosses the Rio Grande which is lined with riparian and wetland habitat. This stretch of the Rio Grande is in the 100-year flood zone and is a jurisdictional waterway.

### *Journal Center*

The Blue route crosses the east/west oriented Arroyo del Piño, North Arroyo del Piño, and Bear Arroyo, all of which are in the 100-year flood zone and qualify as jurisdictional waterways. Any culvert extension or work within the ordinary high water mark will require a Section 404 permit.

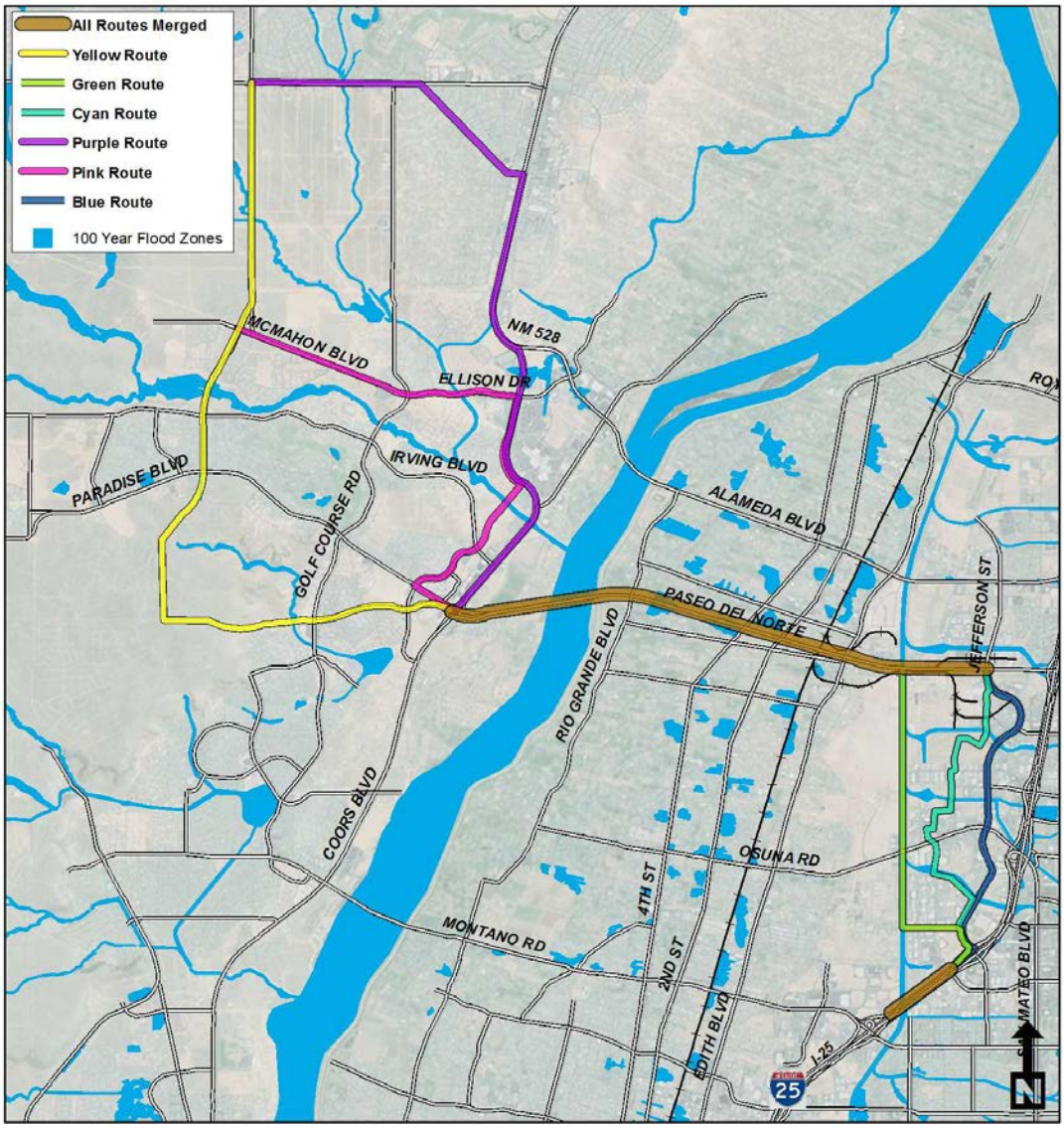
The Cyan Route also crosses the Arroyo del Piño and North Arroyo del Piño. At Bear Arroyo, the route turns east and extends along arroyo for 0.5 miles. The typical section in this area shows fill required along the north side of the drainage within the ordinary high water mark. If this fill amount is greater than 0.1 acres, a Standard Individual 404 Permit would be required. This requires a substantially larger amount of analysis than the streamlined Nationwide permits that are applicable to smaller crossings. Also, a determination of whether or not this option impacts the functional characteristics of the 100-year flood zone will be needed.

The Green Route travels along the east side of the North Diversion Channel, also a juridicational waterway and in the 100-year flood zone. In contrast to the Cyan Route, this typical section does not require additional fill within the channel. Any improvements at the Arroyo del Piño, North Arroyo del Piño, and Bear Arroyo crossings would require Section 404 permit and 100-year flood zone considerations.

All routes in the Northwest portion of the study area will require a similar amount of consideration concerning flood zones, wetlands, and jurisdictional waterways. The greatest area of concern for the study area is the Rio Grande Crossing, which is a common element to all route options. In the Journal

Center area, the Cyan Route would potentially have the greatest impacts to jurisdictional waterways and the 100-year flood zone.

**Figure 1: 100 Year Flood Zones**




## Farmlands and Wildlife Habitat

Soil survey data from the Natural Resource Conservation Service indicated prime farmland is not present within the study area. As such, it is not specifically discussed in the options below. The US Fish and Wildlife Critical Habitat Tracker was reviewed for threatened or endangered species habitat.

### *Northwest*

Critical habitat for threatened or endangered species does not exist among the Northwest Routes. However, the Calabacillas Arroyo crossing, a common element to all three routes, is a direct outlet to the Rio Grande. This stretch of the Rio Grande is designated critical habitat for the endangered Rio

Grande silvery minnow. As such, special consideration will be needed to address water quality for any roadway drainage leading into the arroyo.

### *Paseo del Norte*

In contrast to the developed nature of the Northwest and Journal Center areas, the Paseo del Norte portion of the project area crosses the Rio Grande which is lined with riparian and wetland habitat that can potentially be used by wildlife. As mentioned above, this stretch of the Rio Grande is critical habitat for the endangered Rio Grande silvery minnow. Additionally, riparian environments often provide potential habitat for several other animal species protected by the endangered Species Act. Potential habitat exists for the yellow-billed cuckoo (federal candidate species), Southwestern willow flycatcher (federal endangered species), Western burrowing owl (federal species of concern), Townsend's big-eared bat (federal species of concern), spotted bat (state threatened species) and the New Mexico meadow jumping mouse (federal candidate species). Bald eagles (protected by the Bald and Golden Eagle Protection Act) are also likely to occur along the river during the winter months. If potential impacts to protected species are identified during the NEPA phase, consultation with the US Fish and Wildlife Service and the New Mexico Department of Game and Fish would be undertaken.

### *Journal Center*

The Journal Center portion of the project area is a fully urban and developed environment with invasive weedy and landscaped plant species. There are no critical habitat concerns for this portion of the project area.

The majority of the study area is a fully developed urban setting with no farmland or critical habitat concerns. The primary area of concern is the Rio Grande crossing, which is a common element to all options. As such, this category does not have an effect on alternative selection.

## Hazardous Materials

The Environmental Protection Agency's EnviroMapper was reviewed to identify hazardous waste concerns within the study area. While no brownfields or superfund sites are located in the study area, there are hazardous waste and toxic release sites present. The City of Albuquerque listing of landfills was also reviewed. A tally of hazardous material concerns for each route is presented below.

### *Northwest*

The Yellow Route includes three locations of hazardous waste concern; the Pink Route has 12 locations of concern; and the Purple Route contains 27.

### *Paseo del Norte*

The Brown Route also contains four hazardous waste locations with an additional area of concern located along the El Pueblo option. This route also runs through the buffer zone of the Los Angeles Landfill between Edith and Jefferson on the north side of Paseo del Norte.

### *Journal Center*

The Blue Route includes 13 hazardous waste locations; the Cyan Route has 11 locations; and the Green Route has two. An additional area of concern is located along the Office Road option for the Green Route.

In the Northwest, the Yellow Route has the fewest number of hazardous waste concerns and the Green route has the fewest areas of concern in the Journal Center area.

## Environmental Justice

Environmental justice regulations were enacted to protect minority, low-income, or other special status populations from discrimination and from bearing disproportionate adverse impacts of transportation improvements. While environmental justice considerations could potentially affect alternative selection, especially regarding the acquiring of right-of-way property along a route, it is not likely as increased access to transit is generally considered a net benefit.

The United States Census Bureau Tract boundaries within the study area are shown in Figure 2. The 2007-2011 American Community Survey 5-Year Estimates was sourced for the demographic data as shown in Table 1.

### *Northwest*

Within the northwest project area, Tract 9406 in the southwestern portion has a minority population of 51.9%. The population in this tract would be directly encountered by the Yellow Route only. In general, the northwest project area has a very low rate of "Families Below Poverty" compared to the New Mexico average of 14.4%. Only tract 47.52 has a high rate of 23.7%, and may have environmental justice concerns. This tract, which lies in the southeast quadrant of the northwest project area, is crossed by all three northwest routes (Yellow, Pink, and Purple) as well as the Brown Route.

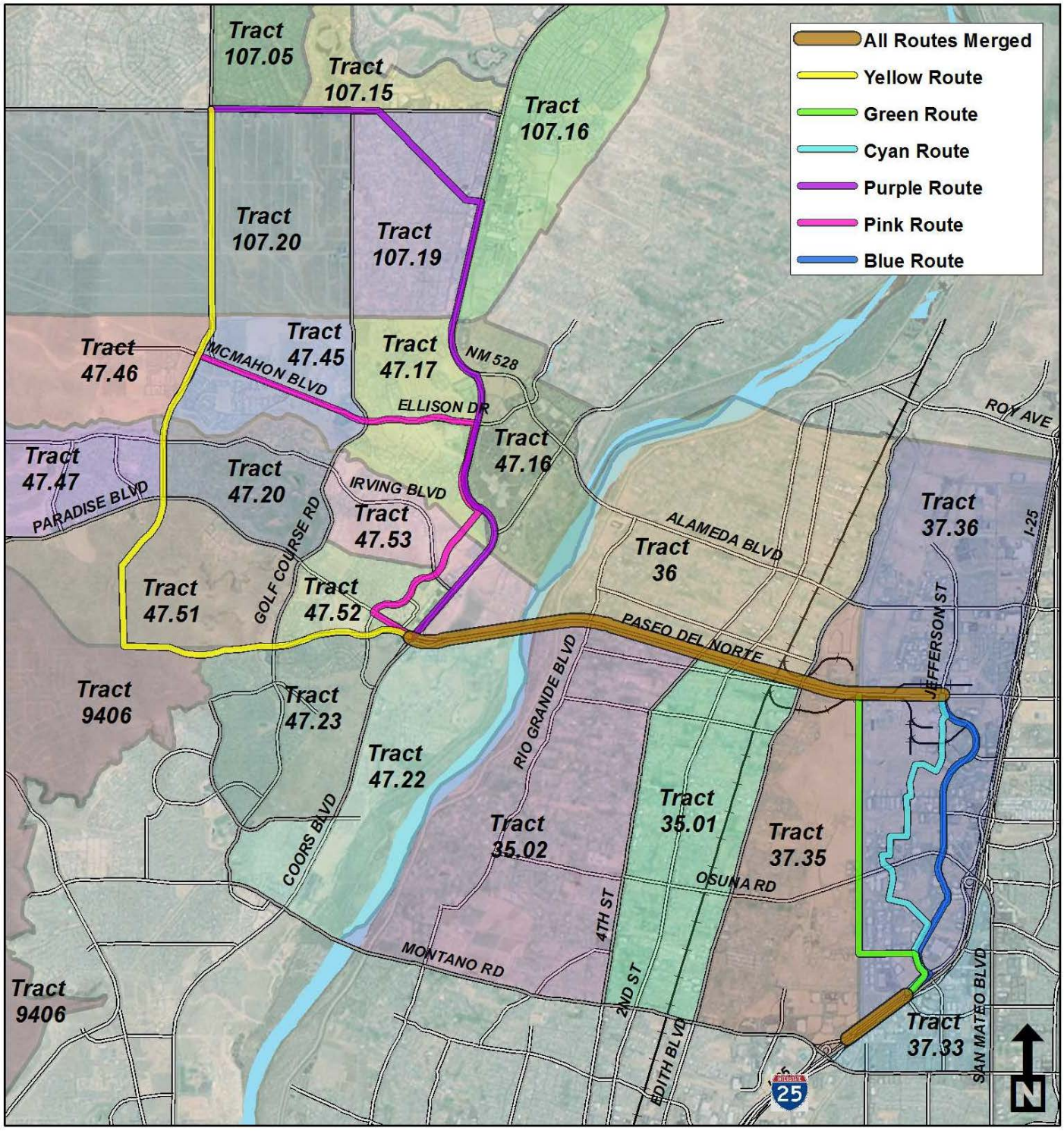
### *Paseo del Norte*

Tract 35.01 which lies on the south side in the center of the Brown Route has a relatively high rate of Hispanic residents with 57% compared to the New Mexico rate of 41.1%, and a relatively high rate of "Families Below Poverty" with 19.8% compared to New Mexico's rate of 14.4%.

### *Journal Center*

Within the Journal Center portion of the project area, Tract 37.33, which is located at the very southeast portion of the project area, nearest the city center, has a relatively high rate of minorities with 65% compared to the New Mexico rate of 31.8%. This is unlikely to be an issue as the tract is only adjacent to the south side of I-25 at the southeastern extent of the study area.

Figure 2: U.S. Census Bureau Tracts



### Table 1: American Community Survey 5-Year Estimates

| | | | | Bernalillo County | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | New Mexico | Bernalillo County | Sandoval County | Tract 35.01 | Tract 35.02 | Tract 36 | Tract 37.33 | Tract 37.35 | Tract 37.36 | Tract 47.16 | Tract 47.17 | Tract 47.20 | Tract 47.22 |
| Total population | 2,037,136 | 655,306 | 128,280 | 5,883 | 4,738 | 5,887 | 3,226 | 6,024 | 2,007 | 2,209 | 8,049 | 4,080 | 4,732 |
| AGE | | | | | | | | | | | | | |
| Under 19 years | 28.4% | 26.8% | 29.3% | 25.5% | 22.5% | 22.6% | 27.8% | 22.9% | 34.8% | 20.9% | 29.9% | 28.7% | 27.1% |
| 20 to 24 years | 7.1% | 7.6% | 5.4% | 7.8% | 1.6% | 4.0% | 12.3% | 3.1% | 7.4% | 6.2% | 7.8% | 3.0% | 11.8% |
| 25 to 64 years | 51.5% | 53.4% | 53.2% | 51.5% | 54.7% | 55.1% | 56.8% | 60.0% | 46.6% | 60.7% | 57.8% | 50.6% | 53.6% |
| 65 years and over | 13.1% | 12.1% | 12.0% | 15.2% | 21.2% | 18.3% | 2.9% | 14.0% | 11.2% | 12.3% | 4.6% | 17.8% | 7.6% |
| Median age (years) | 36.5 | 35.8 | 37.7 | 39.3 | 51.0 | 47.3 | 27.7 | 37.1 | 30.2 | 39.5 | 31.4 | 40.0 | 31.0 |
| RACE & ETHNICITY | | | | | | | | | | | | | |
| Minority Race | 31.8% | 31.3% | 30.5% | 27.9% | 9.3% | 26.0% | 65.0% | 24.4% | 31.6% | 21.3% | 26.7% | 20.8% | 34.1% |
| Hispanic or Latino (of any race) | 45.9% | 47.3% | 34.8% | 57.0% | 34.3% | 54.2% | 46.6% | 49.2% | 49.4% | 37.8% | 43.1% | 39.9% | 36.7% |
| COMMUTING TO WORK | | | | | | | | | | | | | |
| Drove Alone | 78.0% | 78.8% | 77.8% | 79.4% | 71.0% | 74.0% | 78.5% | 79.8% | 83.4% | 86.4% | 79.6% | 84.3% | 83.6% |
| Carpooled | 11.5% | 10.9% | 11.6% | 7.5% | 13.9% | 10.9% | 9.0% | 12.2% | 11.9% | 7.1% | 10.4% | 7.5% | 8.7% |
| Public transportation | 1.1% | 1.8% | 1.3% | 4.1% | 2.9% | 1.3% | 4.7% | 1.2% | 1.2% | 1.9% | 1.8% | 0.8% | 0.6% |
| Mean Travel Time to Work (min.) | 21.8 | 22 | 29.2 | 20.2 | 22.5 | 24 | 17 | 18.6 | 22 | 25.8 | 26.4 | 27.4 | 20.3 |
| INCOME | | | | | | | | | | | | | |
| Median Household Income ($) | 44,631 | 48,231 | 57,651 | 37,898 | 72,846 | 58,750 | 32,342 | 57,064 | 31,441 | 41,682 | 60,169 | 64,921 | 50,492 |
| Families Below Poverty | 14.4% | 12.5% | 9.3% | 19.8% | 5.5% | 4.3% | 15.0% | 6.0% | 14.6% | 12.9% | 7.7% | 8.7% | 3.9% |

| | | | | | | | | | Sandoval County | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Tract 47.23 | Tract 47.45 | Tract 47.46 | Tract 47.47 | Tract 47.51 | Tract 47.52 | Tract 47.53 | Tract 9406 | Tract 107.05 | Tract 107.15 | Tract 107.16 | Tract 107.19 | Tract 107.20 |
| Total population | 7,027 | 6,653 | 7,239 | 5,126 | 2,314 | 3,876 | 2,924 | 5,701 | 5,918 | 3,908 | 6,028 | 3,808 | 6,573 |
| AGE | | | | | | | | | | | | | |
| Under 19 years | 27.8% | 35.7% | 34.3% | 31.7% | 28.3% | 27.9% | 30.1% | 32.4% | 30.3% | 18.3% | 19.3% | 21.7% | 38.3% |
| 20 to 24 years | 5.9% | 6.1% | 8.9% | 8.4% | 6.2% | 5.7% | 1.5% | 9.0% | 5.2% | 9.3% | 6.1% | 6.4% | 3.1% |
| 25 to 64 years | 57.7% | 51.9% | 51.3% | 52.5% | 48.8% | 54.1% | 61.0% | 55.2% | 52.8% | 48.3% | 46.9% | 58.1% | 55.5% |
| 65 years and over | 8.6% | 6.4% | 5.5% | 7.5% | 16.8% | 12.2% | 7.4% | 3.6% | 11.7% | 24.2% | 27.7% | 13.8% | 3.0% |
| Median age (years) | 40.2 | 32.3 | 28.4 | 32.4 | 37.0 | 44.2 | 42.7 | 30.6 | 36.6 | 49.0 | 46.6 | 43.7 | 33.4 |
| RACE & ETHNICITY | | | | | | | | | | | | | |
| Minority Race | 20.8% | 21.7% | 28.0% | 22.1% | 18.9% | 30.1% | 17.3% | 51.9% | 18.9% | 14.7% | 12.6% | 12.3% | 20.6% |
| Hispanic or Latino (of any race) | 41.1% | 47.2% | 48.0% | 42.4% | 33.0% | 49.9% | 46.0% | 35.6% | 45.7% | 35.5% | 33.3% | 34.4% | 38.3% |
| COMMUTING TO WORK | | | | | | | | | | | | | |
| Drove Alone | 83.7% | 85.6% | 78.4% | 88.3% | 75.4% | 85.0% | 78.5% | 74.0% | 81.4% | 88.1% | 85.8% | 79.1% | 75.5% |
| Carpooled | 9.5% | 7.5% | 18.8% | 7.3% | 16.4% | 10.4% | 9.8% | 18.5% | 9.6% | 6.8% | 10.6% | 12.8% | 11.9% |
| Public transportation | 0.9% | 0.5% | 0.8% | 0.0% | 0.5% | 1.0% | 2.5% | 1.2% | 1.3% | 2.0% | 0.5% | 1.6% | 0.0% |
| Mean Travel Time to Work (min.) | 24.4 | 28 | 27 | 26.4 | 24 | 24.8 | 26.2 | 32.1 | 27.2 | 23.4 | 25.3 | 25 | 28 |
| INCOME | | | | | | | | | | | | | |
| Median Household Income ($) | 88,625 | 78,057 | 66,630 | 57,500 | 88,869 | 58,545 | 77,420 | 65,265 | 57,237 | 44,000 | 44,181 | 53,654 | 72,928 |
| Families Below Poverty | 0.7% | 3.4% | 1.0% | 11.0% | 0.0% | 23.7% | 4.3% | 11.8% | 5.9% | 6.3% | 5.5% | 8.8% | 2.3% |

## Visual Resources

The visual, scenic, and aesthetic qualities of a landscape are an environmental consideration for both distant and immediate perspectives. The development of a transit system likely will not impact a broader scale viewshed. However, several portions of the study area are landscaped along medians or sidewalks. The development of a transit system could impact these immediate foreground views. Below is a description of aesthetic/landscaping concerns along each route.

### *Northwest*

The Yellow Route contains very little in the way of landscaped medians or other aesthetic enhancements of the right-of-way. The Pink Route contains aesthetic median landscaping along McMahon Boulevard and Coors Boulevard. Of the Northwest routes, the Purple Route contains the most landscaped right-of-way.

### *Paseo del Norte*

The Brown Route contain little aesthetic landscaping within the right-of-way.

### *Journal Center*

The Blue Route contains landscaped medians between Masthead Street and Paseo del Norte. The Cyan Route has less aesthetic development with limited landscaping located at the Masthead roundabout. No landscaping is present along the Green Route.

Aesthetic landscaping and immediate foreground views would be least impacted along the Yellow Route in the northwest, and along the Green Route in the Journal Center portion of the study area.

## Air Quality

When signal preference is provided to busses at intersections with existing congestion, operational performance will decrease and potential air quality impacts will occur. To assess potential impacts to air quality, a discussion of relative corridor congestion is provided below. An air quality hot spot analysis may be required during NEPA documentation.

### *Northwest*

The Yellow Route currently experiences the least amount of traffic congestion, followed by the Pink Route, with the Purple Route being the most congested in the Northwest portion of the study area.

### *Paseo del Norte*

The Brown Route is common to all options and air quality considerations are not a primary issue in this portion of the study area.

### *Journal Center*

For the Journal Center area, the Green and Cyan routes are the least congested, with the Blue experiencing the most traffic congestion.

The Yellow Route, Brown Route, and Green or Cyan would have the fewest Air Quality impacts based on current levels of congestion. As indicated above, a hot spot air quality analysis may be needed during the subsequent NEPA phase of project development.

## Noise

The FTA defines noise sensitive land uses according to three categories:

- Category 1 includes uses where quiet is an essential element such as at a concert hall or National Historic Landmark
- Category 2 includes residences and buildings where people sleep
- Category 3 includes institutions with the primary use occurring during the day or evening such as schools, libraries, or places of worship

Commercial and industrial land uses are generally not considered as they are often compatible with higher noise levels. Only category 2 and 3 uses are present within the study area. Below are the distances of each route that travel through category 2 or 3 land uses.

### *Northwest*

The Yellow Route crosses 2.98 miles of noise sensitive land uses, the Pink Route crosses through 3.19 miles, and the Purple Route crosses 2.64 miles.

### *Paseo del Norte*

The Brown Route crosses through 0.75 miles of noise sensitive land uses.

### *Journal Center*

The Blue Route crosses through only 0.08 miles of noise sensitive land uses and the Cyan Route crosses through 0.04 miles. A 1.15-mile long area of residential development is located along the west side of the Green Route. In addition, the Office Road option of the Green Route includes an extra 0.04 miles.

In the Northwest, all three routes cross similar amounts of noise sensitive land uses while in the Journal Center area, the Green Route clearly crosses a larger amount of noise sensitive area.

## Environmental Summary

Below is a matrix of the various routes that evaluates their environmental impacts. Only the Northwest and Journal Center areas were included as the Paseo del Norte area is a common element for all options. Scores range from 1 to 3 with a higher score indicating the more beneficial option. The same value was applied to options without substantial differences in a particular category. Based on the analysis below, the Yellow and Green Routes would have the fewest environmental impacts.

**Table 2: Environmental Issues Matrix**

| | Route | Cultural Resource | 4(f) | Enviro. Justice | Water Quality | Wildlife | Haz Mat | Visual | Air Qual. | Noise | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| North west | Yellow | 1 | 1 | 2 | 3 | 3 | 3 | 3 | 3 | 2 | 21 |
| | Pink | 2 | 2 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 20 |
| | Purple | 3 | 2 | 3 | 3 | 2 | 1 | 1 | 1 | 2 | 18 |
| Journal Center | Blue | 3 | 3 | 2 | 2 | 3 | 1 | 1 | 1 | 2 | 18 |
| | Cyan | 3 | 3 | 2 | 1 | 3 | 2 | 3 | 3 | 2 | 22 |
| | Green | 3 | 3 | 2 | 2 | 3 | 3 | 3 | 3 | 1 | 23 |