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Draft Tier 1 Environmental Impact Statement and Preliminary Section 4(f) Evaluation

Section 3.9, Visual and Aesthetics

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3.9 Visual and Aesthetics

This section describes the regulatory setting, methodology, and affected environment applicable to visual and aesthetic resources in the vicinity the Interstate 11 (I-11) Corridor Study Area (Study Area). It evaluates the extent to which the No Build Alternative and Build Corridor Alternatives would affect these aesthetic resources and identifies mitigation measures to avoid or minimize these impacts.

3.9.1 Regulatory Setting

The National Environmental Policy Act of 1969 (NEPA) and Council on Environmental Quality regulations to implement NEPA discuss visual impacts under the heading of aesthetics. These regulations identify aesthetics as one of the elements or factors in the human environment that must be considered to determine the effects of a project.

NEPA requires the federal government to do the following:

> "…use all practicable means... [to]…assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings [and to] … preserve important historic, cultural and natural aspects of our national heritage, and maintain whenever possible, an environment that supports diversity and variety of individual choice." [42 United States Code [USC] § 4331 [NEPA § 101 (b)(2)]]
>
> To this end, federal agencies are directed to:
>
> "…utilize a systematic, interdisciplinary approach that will insure that integrated use of the natural and social sciences and the environmental design arts in planning and decision making that may have an impact on man's environment." [42 USC § 4332 [NEPA § 102 (2)(A)]]"

Technical Advisory T6640.8A identifies visual resources as an item to be included in environmental and Section 4(f) documents (Federal Highway Administration [FHWA] 1987). When Bureau of Land Management (BLM) lands are present and may be impacted by a project, NEPA and the Federal Land Policy and Management Act are the primary laws that are applicable. These rules and regulations require BLM to address potential effects on visual resources. Visual resources on BLM-administered lands are managed within the context of the Visual Resource Management (VRM) system, as described in BLM Manual 8400 – Visual Resource Management (BLM 1986). Various other federal laws and programs also are considered to protect the scenic values of visual resources. For example, National Park Service (NPS) resource management objectives were considered in the assessment of visual impacts to the scenic quality of the trails and other important recreational locations within NPS lands.

Similarly, state and local governments engage in efforts for VRM, usually through establishing specific goals and objectives regarding visual resources in city or county General Plans and Comprehensive Plans. These state and local level plans and policies for VRM will be referred to in detail for individual I-11 projects as part of the Tier 2 NEPA analysis.

3.9.2 Methodology

FHWA published the *Guidelines for the Visual Impact Assessment of Highway Projects* (FHWA 2015) in January 2015 as an update to the original 1980s Visual Impact Assessment (VIA) document. The guidelines require that each project subject to NEPA determine the level of documentation needed for the visual impact assessment (VIA). There are four different levels of VIA documentation, which are based on the scope, complexity, and controversy associated with a project.

The level of VIA prepared for I-11 was based on the nature and limitations of the Draft Tier 1 Environmental Impact Statement and Preliminary Section 4(f) Evaluation (Draft Tier 1 EIS) rather than direct use of the VIA Scoping Questionnaire. An "Abbreviated VIA" was determined to be the appropriate level of documentation.

The visual effects analysis of the Build Corridor Alternatives considered impacts within the 2,000-foot-wide I-11 Corridor for Options co-located within existing facilities and new construction.

3.9.2.1 Area of Visual Effect

The Area of Visual Effect (AVE), or Analysis Area, is the area in which the project could potentially be visible, given the presence or absence of intervening topography, vegetation, and structures. Project features in the foreground and middleground often obscure background views. Where background views are available, the visibility of project elements would be substantially reduced or indistinguishable. FHWA guidelines define background views as those beyond 3 to 5 miles from the viewer. For the purposes of this analysis, a more conservative approach was used, and the AVE was defined as 5 miles from the edge of any Build Corridor Alternative because anything outside these limits would be in the background (see **Figure 3.9-1** [Area of Visual Effect]).

3.9.2.2 Inventory

The visual resources inventory and the assessment of potential impacts include the evaluation of visual character, visual quality, viewer sensitivity, and visual contrast levels of the proposed project. BLM VRM classifications and NPS resource management objectives also were included in the inventory to assess conformance.

The inventory and assessment methods are based on FHWA's Guidelines for the VIA of Highway Projects (FHWA 2015) and are consistent with and adhere to the BLM VRM Manual (VRM 8400 Series 1984). As part of the inventory methods, existing geographic conditions were characterized to identify the limits of individual Landscape Units (LUs). A LU can be visualized as an outdoor room that exhibits a distinct visual character, and the LU will often correspond to a place or district that is commonly known among local viewers. LUs were identified based on land use (cultural environment) and landscape character (natural environment) considerations. Representative viewpoints within each LU were selected for detailed analysis to further characterize the existing conditions and potential impacts to each LU. **Appendix E9** contains detailed description of the LUs identified along the I-11 Corridor and the associated representative viewpoints.

Data collected within the AVE were based on reviews of aerial photographs, topographic maps, planning documents, and field investigations.

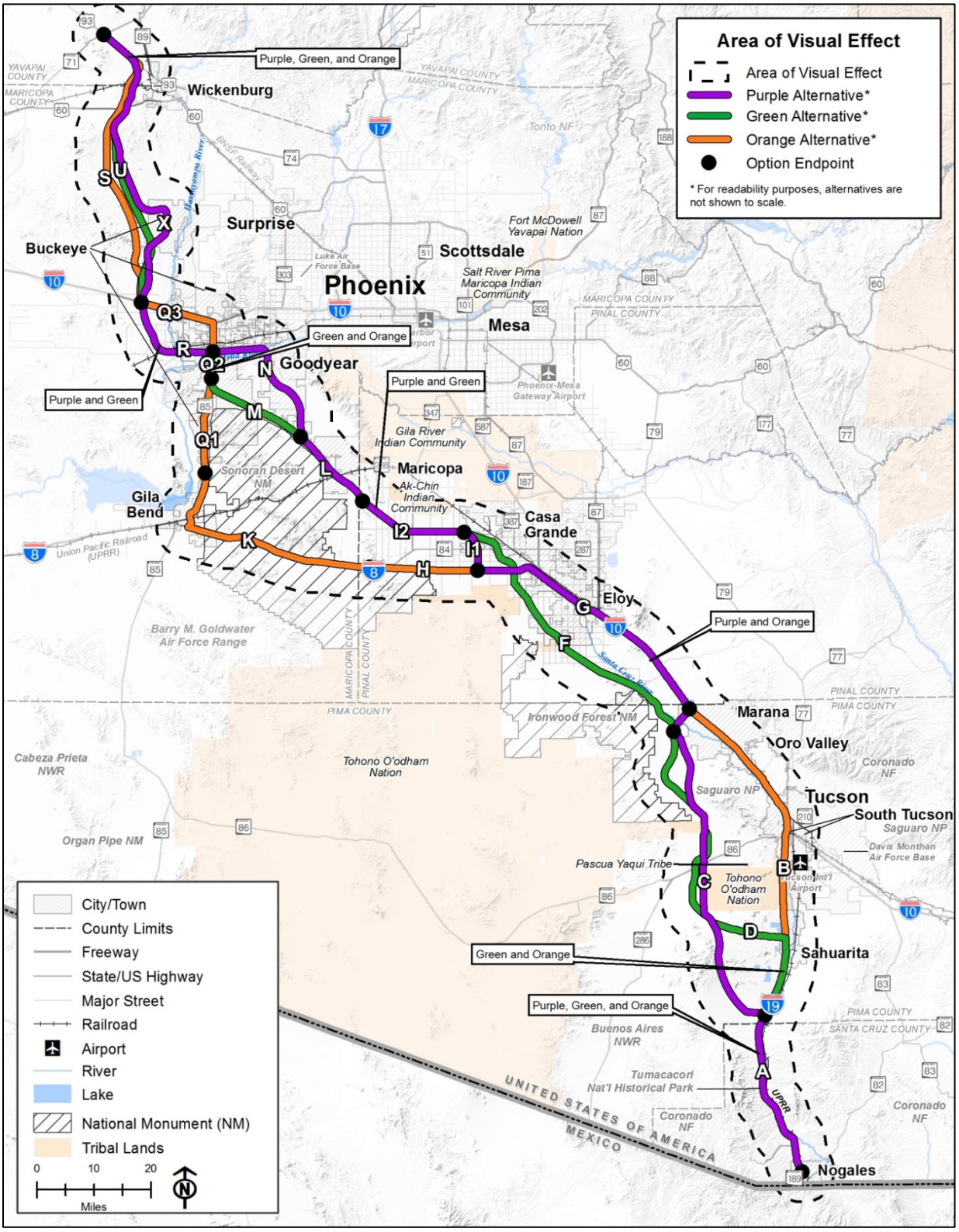

Figure 3.9-1 Area of Visual Effect

Visual Character

Visual character is the physical appearance of the landscape, including natural (vegetation and water features), physical (landform), and cultural features (human modifications, such as buildings and infrastructure) that give landscape a unique identity. The assessment of landscape character does not place value on the characterization (i.e., as positive or negative). Developed areas, including residences and other land uses such as agriculture or industrial facilities, have landscape character, although developed areas have modified the natural landscape. These cultural (i.e., man-made) modifications within the Build Corridor Alternatives range from not modified (natural) to completely modified based on occurrences of urban and rural development; infrastructure (e.g., roads, railroads, and transmission lines); mines; and other structural features.

Existing landscape character was evaluated by means of aerial photography and field reconnaissance.

Visual Quality

Visual quality is a result of the interactive experience between viewers and their environment. This relates directly to the intrinsic qualities of a landscape, or the elements and characteristics of a place that makes it distinct and memorable. Overall visual quality of the landscape is determined by evaluating the landform, vegetation, water, color, and cultural features. Typically, more complex or distinct landscapes have a higher visual quality rating or value.

The evaluation of visual quality for I-11 employs an approach that is consistent with both FHWA and BLM visual inventory guidelines. FHWA approach to assessing visual quality has been used for both natural and developed settings by looking at the relationships of key visual quality indicators. The BLM VRM system evaluates the visual quality of natural landscape. BLM's scenic quality criteria are a measure of aesthetic value of a specific area of land defined by characteristics that include landform, vegetation, water, scarcity, color, adjacent scenery, and cultural modifications.

The LUs in the AVE were assigned a range of high to low ratings based on a combination of the following key indicators of visual quality:

- **Vividness:** The memorability of the visual impression received from contrasting landscape elements as they combine to form a striking and distinctive visual pattern. Memorable, striking (high), above average (moderate), and plain or common (low).
- **Intactness:** The integrity of visual order in the natural and built landscape, and the extent to which the landscape is free from visual encroachment. Free of encroaching elements (high), developed elements retain integrity (moderate), and cluttered or lacking integrity (low).
- **Unity:** The visual coherence and harmony of a landscape when considered as a whole. Coherent/harmonious (high), partially contiguous (moderate), and disjointed/jarring (low).

The visual quality scores reflect an overall assessment of each LU. For the discussion of visual quality associated with each LU described in the VIA, it is important to note that these are general evaluations for the unit as a whole. Specific locations within the unit may have higher or lower visual quality than the average. For purposes of this Draft Tier 1 EIS, a total of 15 LU types distributed throughout the AVE were defined. These LUs will be refined and examined in more detail as part of the Tier 2 NEPA analysis.

Anticipated Viewer Response

The impact assessment attempts to predict viewer response to landscape changes by evaluating viewer awareness, exposure to the project, and visual contrast levels anticipated as a result of the project.

Viewer Sensitivity

Viewer Awareness

Viewer awareness is a measure of public concern for change to the characteristic landscape. Viewer awareness is determined by evaluating "use" of the resource by viewers (type of use, user attitude and expectations, quantity of use, and use duration).

Viewer Exposure

Viewer exposure reflects how the project would be seen and at what distance. It is typically assessed by measuring the number of viewers exposed to the project, type of viewer activity, duration of the viewer's view, the speed at which the viewer moves, and viewer position.

Factors that may limit views include viewer orientation and distance from the project and the physical elements of topography and vegetation that may screen project elements. In general, the closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer.

FHWA guidelines define three distance zones (FHWA 2015):

- Foreground views: 0.25 to 0.5 mile from the viewer
- Middleground views: from foreground zone to 3 to 5 miles from the viewer
- Background views: beyond the middleground zone

Features within the foreground and middleground often obscure background views. Where background views are available, the perceived mass and visibility of project elements are reduced and become a less substantial portion of the total landscape because detail is lost. Elements of the project begin to blend in scale and color with existing landscape elements of the background, so that only broad forms, large-scale patterns, and muted colors associated with both the existing landscape and the project would dominate the visual landscape (FHWA 2015). Therefore, the AVE was defined as 5 miles from the edge of any Build Corridor Alternative, as anything outside these limits would be in the background.

Visual Contrast Level

The magnitude of visual change is determined by assessing the compatibility of the project features with the existing visual quality of the LU and the viewer exposure. The visual character elements of scale, diversity, continuity, and dominance are assessed to determine compatibility of the impact. Four visual contrast levels for the I-11 analysis were established:

- **Not Noticeable**: Changes in the landscape scenery or views that would not be evident unless pointed out due to such factors as previous disturbance, viewshed limiting factors (e.g., distance, viewer orientation, and terrain), dominance of adjacent landscape features, and background terrain. Changes are typically viewed in the background and are

unobstructed. This level may include middleground views that are partially screened or foreground views that are completely screened.

- **Noticeable**: Changes in the landscape scenery or views that would be evident but visually subordinate to the setting due to the factors described above. These changes may attract slight attention but do not compete with adjacent landscape scenery or views. Changes are typically viewed in the middleground or background or are unobstructed. However, this level may include foreground views that are partially screened.
- **Co-Dominant**: Changes in the landscape scenery or views that attract attention and begin to compete with adjacent landscape scenery or views. Changes are typically viewed in the middleground and are unobstructed or partially screened in the foreground.
- **Dominant**: Changes in the landscape scenery or views that become the focal point or most dominant feature in the setting. Changes are typically viewed in the foreground and are unobstructed. In extreme cases, they may be partially screened. Such changes often cause a lasting impression when viewed from the landscape.

BLM VRM System

To address portions of the Build Corridor Alternatives that cross BLM-administered lands, the VIA evaluates the compatibility of I-11 to applicable BLM VRM classifications to determine conformance with adopted policies. BLM VRM classifications, ranging from Class I to Class IV, and their associated objectives define the levels of acceptable visual change (contrast) allowed on BLM-administered land. BLM designates these classifications based in part on the inventoried scenic values (visual resource inventory [VRI]) and other land use allocations during the resource management planning process.

Table 3.9-1 (BLM VRM Objectives) describes the management objectives associated with each BLM VRM Class designation, per BLM Manual H-8410-1 (BLM 1986).

National Park Service Resource Management Objectives

The NPS resource management objectives were considered in the assessment of visual impacts to the scenic quality of the trails and other important recreational locations in Saguaro National Park (SNP) (West). The park lies within the AVE, and the Build Corridor Alternatives could potentially be visible from the area. For this purpose, Key Observation Points (KOPs) were identified based on issues and concerns raised by NPS and FHWA staff and based on the experience of users on viewing platforms where recreational visitors would be visually sensitive. The assessment will analyze the magnitude of change to the visual character and visual quality, and also will analyze the effects on park users from the sensitive viewing platforms. To analyze these effects and identify the differences between the Build Corridor Alternatives, the basic design elements of form, line, color, and texture will be used to describe the visual quality and rate the degree of visual contrast.

Table 3.9-1 BLM VRM Objectives

Class	Description
Class I Objective	The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.
Class II Objective	The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be very low. Management activities may be seen, but should not attract attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.
Class III Objective	The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.
Class IV Objective	The objective of this class is to provide for management activities that require major modifications of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and may be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repetition of the basic elements.

SOURCE: BLM 1986.

3.9.3 Affected Environment

The following sections describe the inventoried visual resources within the AVE, including the regional visual character, visual quality, sensitive viewers, and VRM classifications.

3.9.3.1 Visual Character

The overall visual character of the Analysis Area is associated with its location within the Basin and Range Province (Fenneman 1931), which is distinguished by isolated, roughly parallel mountain ranges separated by closed desert basins. In general, the mountain ranges in the Analysis Area trend north-south and have distinctive alluvial areas at their bases, known locally as bajadas. A subdivision of the Basin and Range Province, the Sonoran Desert, comprises the entire Analysis Area. The Sonoran Desert is characterized by desert mountains with intervening desert plains. The Sonoran Desert subdivision typically has smaller mountain ranges, and rock pediments are much more prevalent.

Southern Arizona mountain ranges are characterized by the “Sky Islands” physiography, which is related to basin and range faulting and provides dominant visual elements in the overall landscape. These ranges are significantly higher in elevation and contain more diverse vegetation communities. Mountain ranges in the southern section include the Tumacacori, San Cayetano, Patagonia, Santa Rita, Sierrita, Santa Catalina, Roskruge, and Picacho Mountains. Mountain ranges in the Central Section and North Section include the Table Top, Maricopa, Gila Bend, Belmont, White Tank, and Vulture Mountains. Notable long desert valleys include Avra Valley, Santa Cruz Flats, Little Rainbow Valley, Buckeye Valley, and the Hassayampa Plain.

Major bodies of water in the southwest are limited to larger river systems such as the Santa Cruz, Gila, and Hassayampa Rivers. Portions of these rivers are ephemeral and others flow year-round. Rivers are a key visual resource within the Study Area. The Santa Cruz River Valley bisects the bajada landscape between the Tumacacori and Santa Rita mountain ranges. The river floodplain is constrained between these alluvial bases, and there are several canyons along the Santa Cruz River between Nogales and Tubac. In Tucson, the Santa Cruz River is highly channelized and surrounded by urban development. In the Central Section, the Gila River flows through Buckeye towards Gila Bend and is surrounded primarily by agricultural land uses and undeveloped areas. The Hassayampa River has a substantial floodplain that traverses Hassayampa Plain on undeveloped land between I-10 and Wickenburg.

Vegetation communities that occur in the Analysis Area include two subdivisions of the Sonoran Desert (Brown 1994), the Arizona upland and lower Colorado River Valley. Natural areas outside of developed landscape areas and the vegetation associated with these areas are primary visual resources. These vegetation communities are typically either arid or naturally appearing grazing land of creosote, tarbush, and other desert scrub. Mixed desert cacti landscapes, which typically include yucca, barrel cactus, prickly-pear, and ocotillo, occur along bajadas within the Santa Cruz Valley and lower slopes of the Tumacacori, San Cayetano, Santa Rita, and Santa Catalina Mountains. Open stands of saguaro, cholla, ocotillo, and paloverde become more prevalent in the upper foothills of the Santa Catalina Mountains. Valley plain areas are typically dominated by creosote, mixed cacti, and desert grasses.

Dense riparian areas are found concentrated along non-channelized portions of the Santa Cruz River, the Gila River, and the Hassayampa River. Riparian areas also are found along drainage ways and canyons that cut across bajadas and into the surrounding valley landscapes. There tends to be less variety and density of riparian vegetation along these smaller drainage ways, although they are noticeably distinct when they bisect lower-lying valleys dominated by creosote.

Regionally, the Analysis Area has a range of developed and natural landscapes, from highly urbanized areas in the Tucson metropolitan area to the relatively intact wilderness of the Santa Rita and Maricopa Mountains.

In the South Section, urban development is dominant, particularly around the Tucson metropolitan area. Other smaller urban and suburban development concentrations occur in and near Nogales, Tumacacori, Tubac, Amado, Green Valley, Sahuarita, Casa Grande, Gila Bend, Buckeye, and Wickenburg. Large-scale industrial land uses typically occur near larger urban areas and are most heavily concentrated along the I-10 corridor in Tucson. Near Green Valley, mining operations are concentrated along the west side of I-19, south of the San Xavier Indian Reservation.

The Central Section and North Section have a few industrial facilities, including the Gila River Power Station, a landfill, and the Toyota Proving Grounds. Between Nogales and Sahuarita, agricultural land uses are common along the Santa Cruz River, and are generally within or adjacent to the floodplain. Agricultural activities such as dryland and irrigated agriculture dominate the valley landscapes near Avra Valley, Marana, Casa Grande, and Buckeye. Agricultural land uses and undeveloped areas primarily dominate the Central Section. The North Section is one of the least-developed areas within the I-11 Corridor, although there are some rural and suburban residences near I-10 and Sun Valley Parkway.

3.9.3.2 Visual Quality

Fifteen distinct LU types were defined within the AVE (see **Figure 3.9-2** [Landscape Units and Viewpoints within the AVE {Purple Alternative}]**, Figure 3.9-3** [Landscape Units and Viewpoints within the AVE {Green Alternative}]**,** and **Figure 3.9-4** [Landscape Units and Viewpoints within the AVE {Orange Alternative}]). The LU determination was based in part on landform, existing land uses, visual character, and presence of special features. The relative distinctness, intactness, and unity of the landscape also were evaluated. The existing visual quality of the AVE is generally in the moderate to low range for most LUs. Two LU types, one in the South Section and the other in the North Section, are relatively undisturbed or have lower levels of disturbance over a larger area. The most common LU type is associated with rural residential development in varied landscape settings. For detailed information for LUs, including viewpoint photos, see **Appendix E9**.

3.9.3.3 Affected Viewers

A viewer observing an existing scene has a range of available responses that are inherent to all human beings. The FHWA VIA guidelines recognize three types of visual perception, and these correspond to each of the three types of visual resources:

- When viewing the components of a scene's natural environment, viewers inherently evaluate the natural harmony of the existing scene, determining if the composition is harmonious or inharmonious.
- When viewing the components of the cultural environment, viewers evaluate the scene's cultural order, determining if the composition is orderly or disorderly.
- When viewing the project environment, viewers evaluate the coherence of the project components, determining if the project's composition is coherent or incoherent.

There are two distinct groups of viewers within the AVE: neighbors and travelers. Neighbors are those people who are adjacent to the highway and have “views of the road.” Travelers are those people who are using the highway and have “views from the road.” Neighbors and travelers are further subdivided into the following categories that help establish viewer preferences and their awareness to changes in visual resources (for details about viewer types and their awareness, see **Appendix E9**):

- **Neighbors - Residential:** Those who live within viewing distance of the I-11 Corridor.
- **Neighbors - Recreational:** Those who supply a recreational service for others to consume and enjoy, are sometimes permanent; visitors are consumers of the recreational service and are more transitory.
- **Neighbors - Commercial:** Those who occupy or use office buildings, warehouses, and other commercial structures.
- **Neighbors - Industrial:** Those who mine or harvest raw materials, manufacture goods and services, or transport goods, services, and people.
- **Neighbors - Agricultural:** Those who often work in fields and pastures.

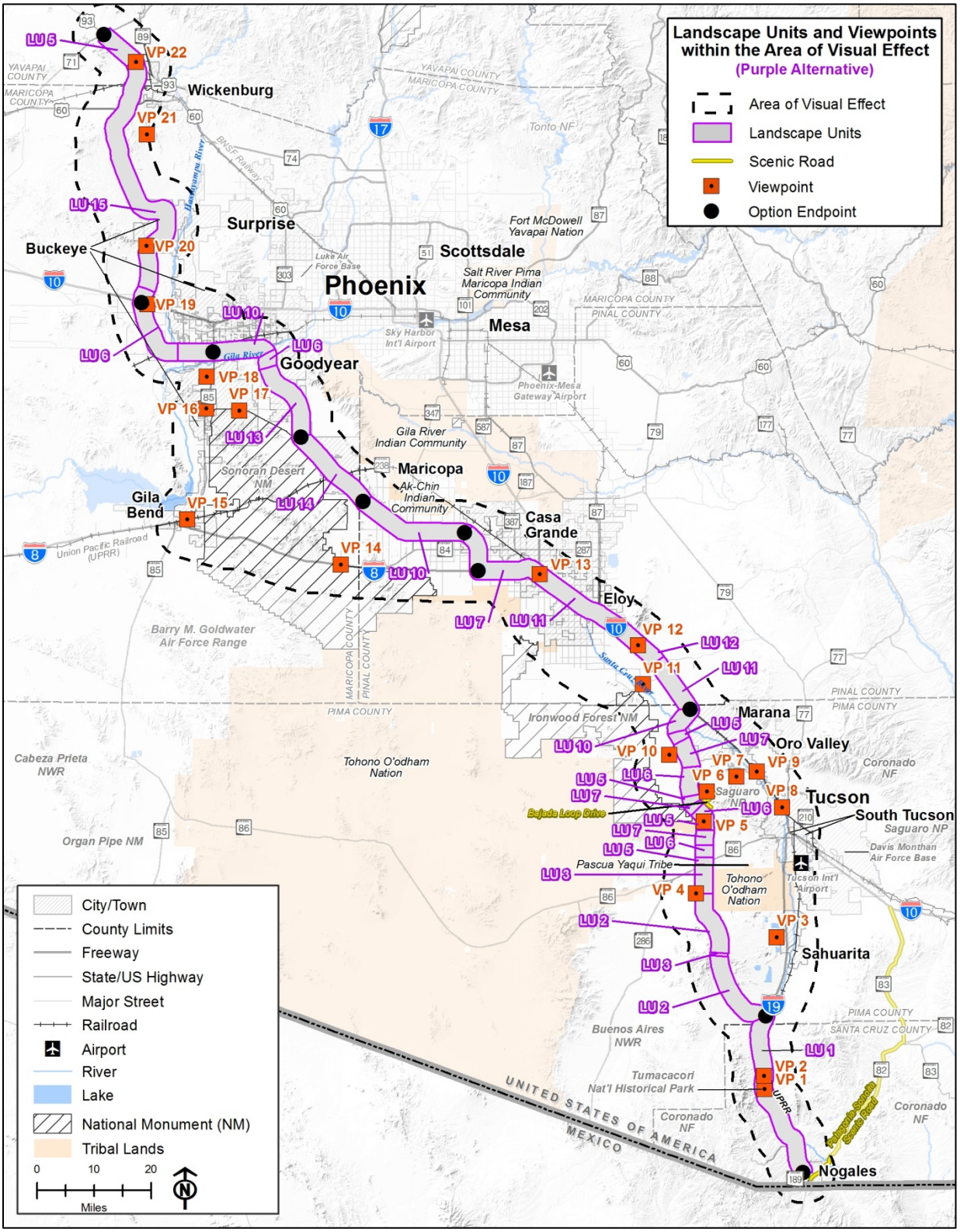

Figure 3.9-2 Landscape Units and Viewpoints within the AVE (Purple Alternative)

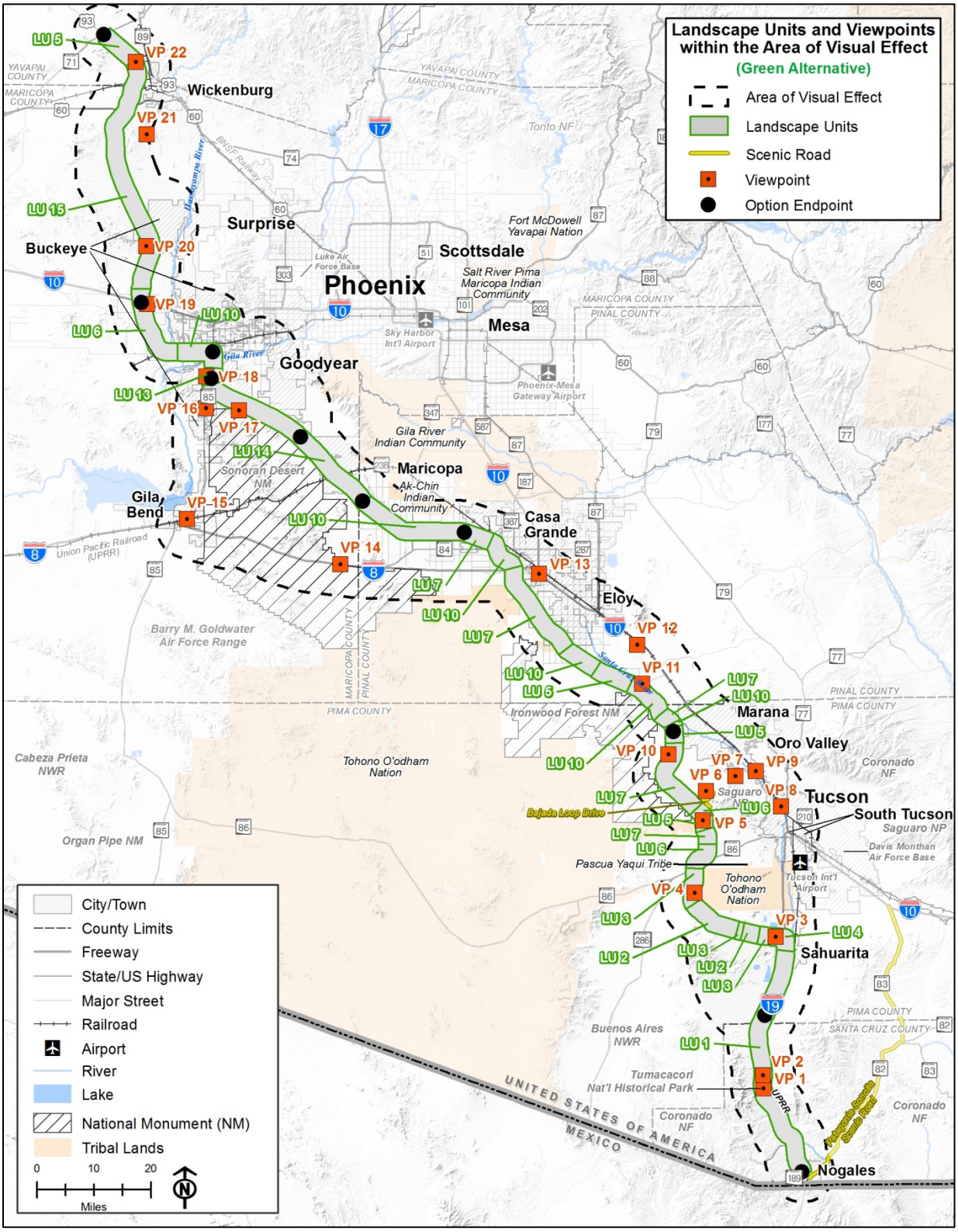

Figure 3.9-3 Landscape Units and Viewpoints within the AVE (Green Alternative)

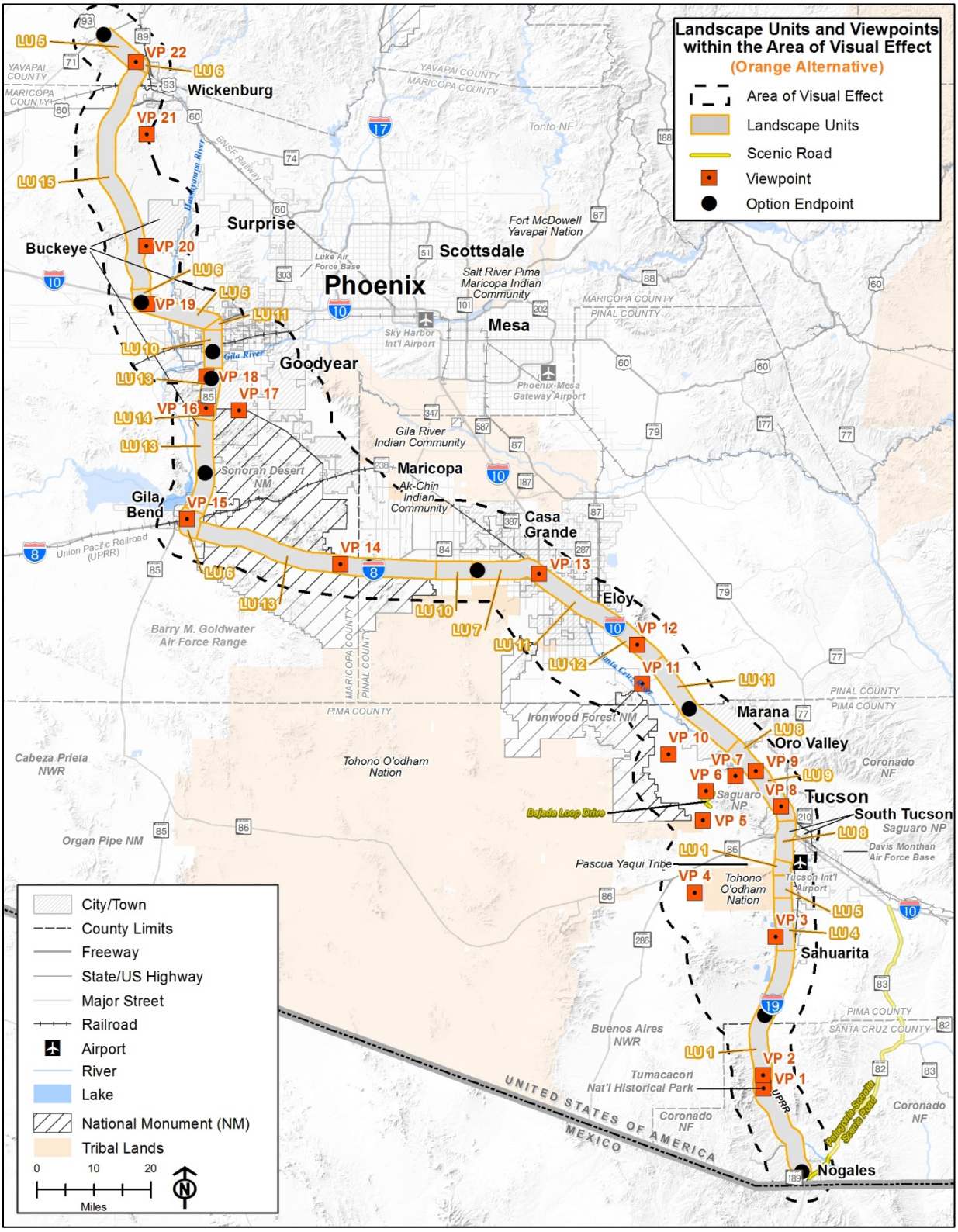

Figure 3.9-4 Landscape Units and Viewpoints within the AVE (Orange Alternative)

- **Travelers - Recreational/Touring:** Those who are traveling on a highway, primarily for enjoyment, usually to a pre-determined destination.
- **Travelers - Commuting:** Those who are regular travelers of the same route.
- **Travelers - Shipping:** Those who make a living using a highway primarily to move goods.

3.9.3.4 BLM VRM Designations

The portions of the Build Corridor Alternatives that fall within BLM lands would be subject to compliance with VRM designations. BLM Class I lands are limited to wildernesses, none of which falls within a Build Corridor Alternative (see **Figure 3.9-5** [BLM Visual Resource Management System, South Section]**, Figure 3.9-6** [BLM Visual Resource Management System, Central Section]**,** and **Figure 3.9-7** [BLM Visual Resource Management System, North Section]). Outside of wilderness, most of the Sonoran Desert National Monument is designated as VRM Class II. In the North Section, the BLM-designated multi-use corridor is managed as VRM Class III within the Vulture Mountains Recreation Area (VMRA), and as Class IV outside of the VMRA. The majority of these BLM-administered lands within the Build Corridor Alternatives are allocated to VRM Class III. These include BLM lands that encompass the existing I-8 and State Route (SR) 85. VRM Class III areas are compatible with the BLM VRM objective. Hence, BLM would not need an amendment to their Resource Management Plan in Class III areas.

3.9.3.5 SNP (West) and Tucson Mountain Park

SNP (West) and Tucson Mountain Park lie in the south section of the AVE, with the Orange Alternative on the east side and the Purple and Green Alternatives on the west side. Visibility modeling was conducted to reveal the visually exposed areas within the landscape for each Build Corridor Alternative. The visibility analysis uses the National Elevation Dataset from the United States (US) Geological Survey for topological information. These data do not account for structures or vegetation that may be present. The analysis also assumes a viewing height of 5.5 feet from the ground. The areas exposed to views of the Build Corridor Alternatives are listed in **Table 3.9-2** (Visibility of Build Corridor Alternatives from SNP (West) and Tucson Mountain Park).

Table 3.9-2 Visibility of Build Corridor Alternatives from SNP (West) and Tucson Mountain Park

Build Corridor Alternative	Saguaro Wilderness Area in Viewshed	SNP (West) Area in Viewshed	Tucson Mountain Park Area in Viewshed
Purple Alternative (Option C)	6021.8 acres	9984.8 acres	5863.4 acres
Green Alternative (Option D)	5249.1 acres	8289.1 acres	6250.1 acres
Orange Alternative (Option B)	278.1 acres	4257.9 acres	0 acres

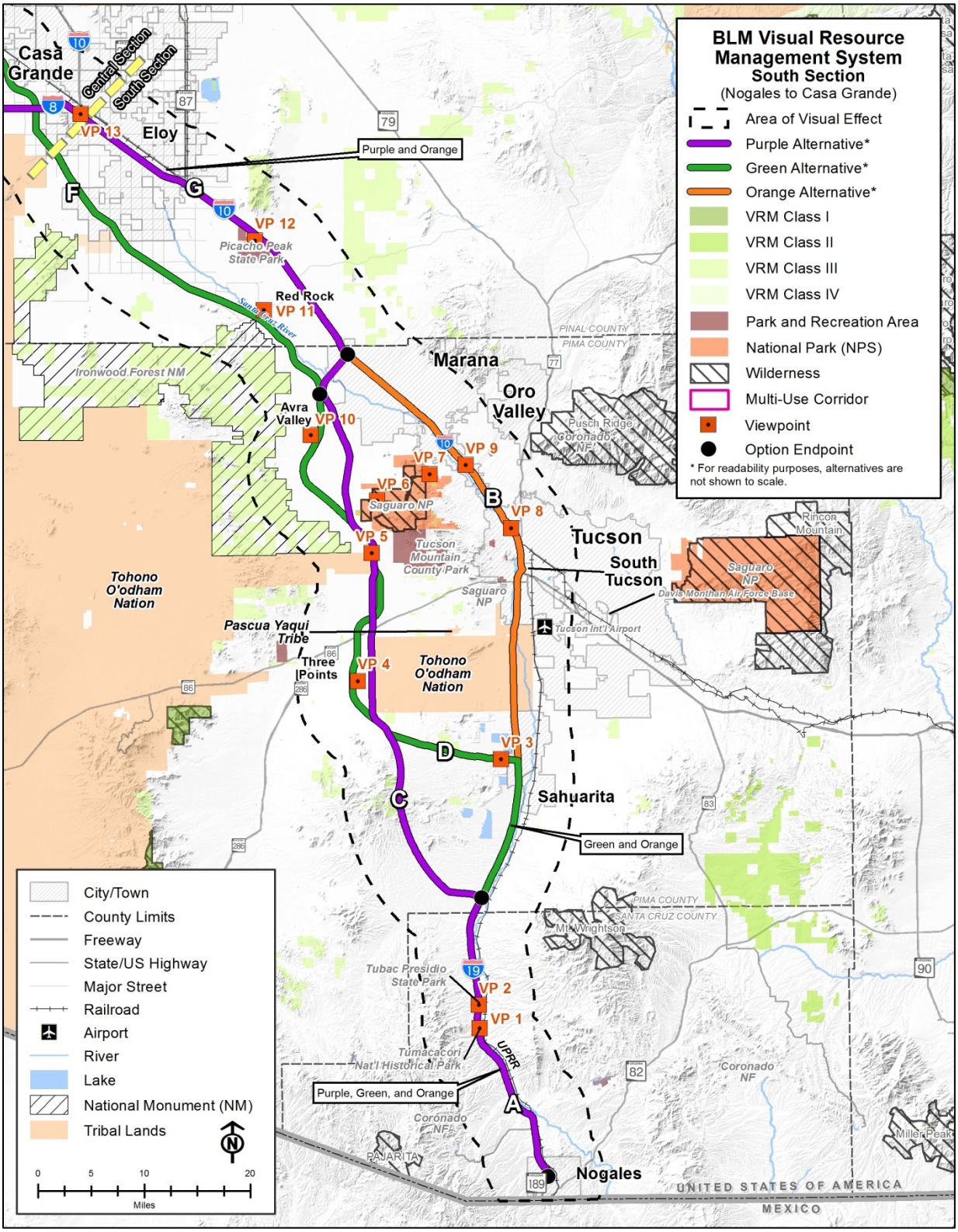

Figure 3.9-5 BLM Visual Resource Management System, South Section

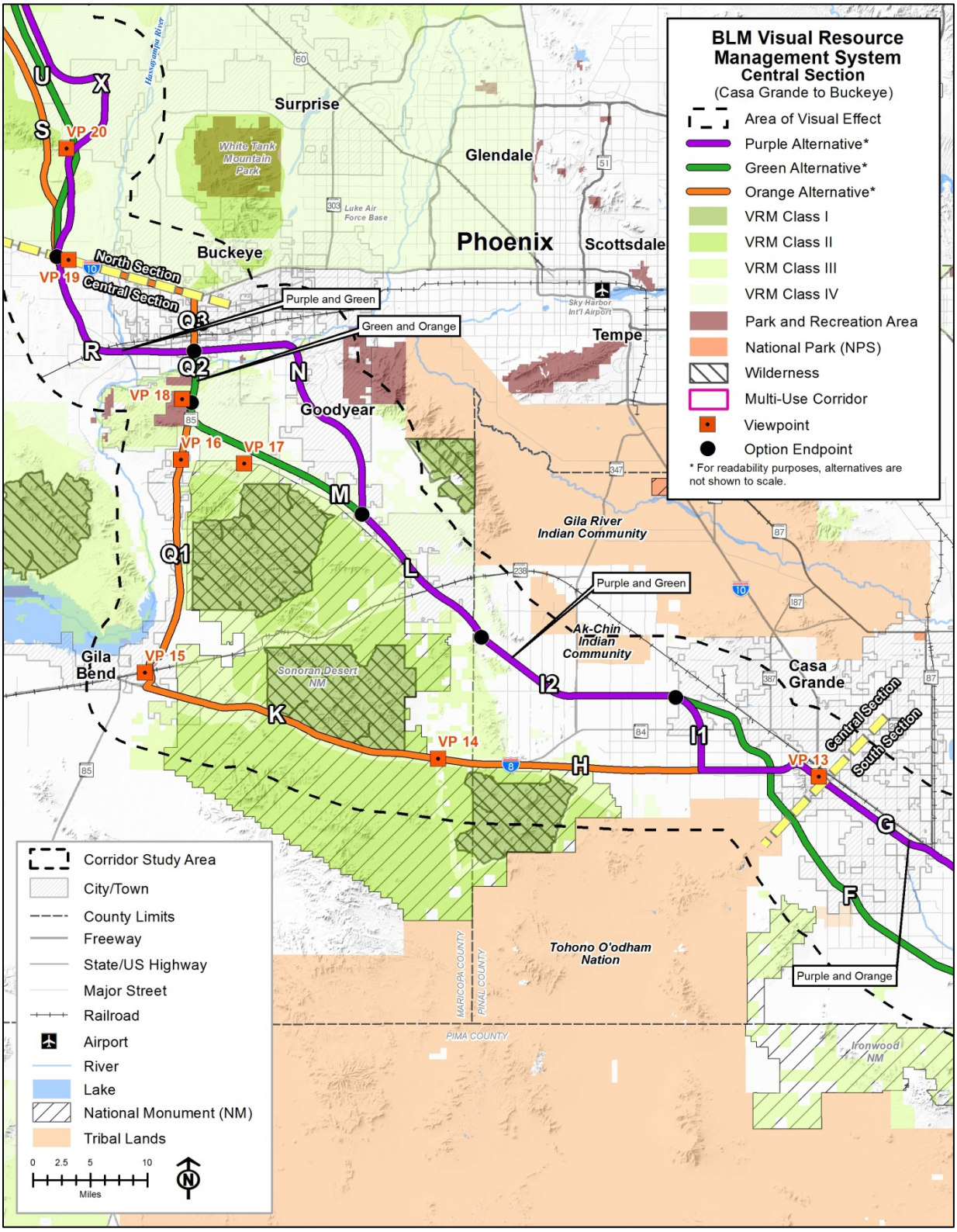

Figure 3.9-6 BLM Visual Resource Management System, Central Section

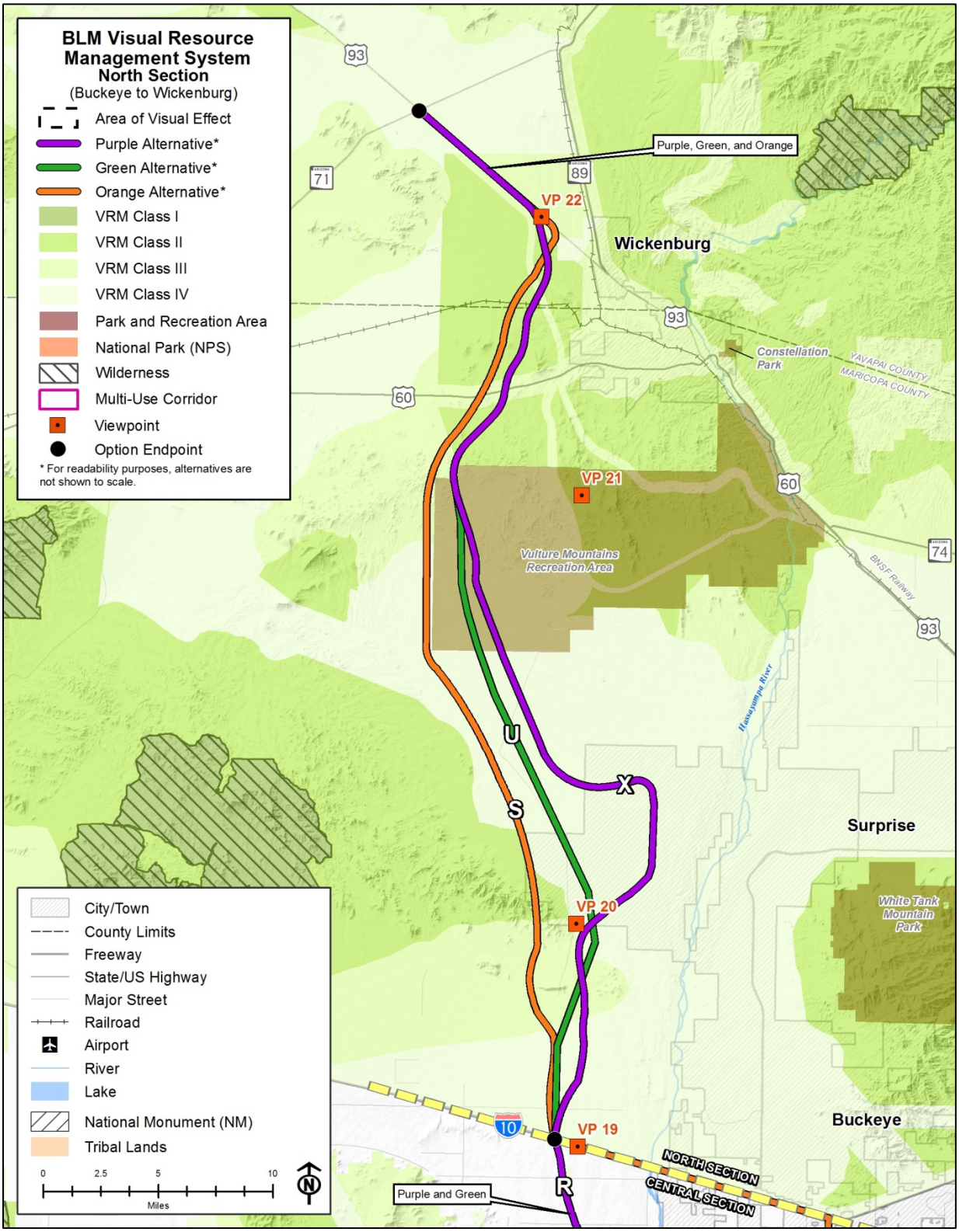

Figure 3.9-7 BLM Visual Resource Management System, North Section

NPS and FHWA identified six KOPs within the two parks for potential VIA (see **Figure 3.9-8** [KOPs within SNP (West) and Tucson Mountain Park]). These KOPs are the viewing platforms most frequently visited by park users, and they will have higher viewer sensitivity compared to other locations in the park. Also, KOPs located at a higher elevation, such as Wasson Peak, Hugh Norris Trail, and Sus Hill, will provide a wider horizontal field of view to hikers, and therefore will have a greater visual impact. For detailed information about the KOPs, see **Appendix E9**.

Similar visibility modeling was conducted to reveal the visually exposed areas in the landscape for the Central Arizona Project (CAP) Design Option, as shown in **Table 3.9-3** (Visibility of CAP Design Option from SNP [West] and Tucson Mountain Park) (see **Appendix E9** for details).

Table 3.9-3 Visibility of CAP Design Option from SNP (West) and Tucson Mountain Park

Build Corridor Alternative	Saguaro Wilderness Area in Viewshed	SNP (West) Area in Viewshed	Tucson Mountain Park Area in Viewshed
Purple Alternative (Option C) CAP Design Option	4766.1 acres	7461.0 acres	7752.3 acres
Green Alternative (Option D) CAP Design Option	5120.5 acres	8072.6 acres	7704.9 acres

3.9.3.6 Light Pollution

Light pollution is excessive and/or misdirected artificial light with the potential to adversely impact visual conditions at night. The four common components of light pollution include:

1. **Glare** – excessive brightness that causes visual discomfort and/or safety issues
2. **Skyglow** – brightening of the night sky over inhabited areas, reducing visibility of stars, celestial objects, and other aspects of the night sky
3. **Light trespass** – light falling where it is not intended or needed
4. **Clutter** – bright, confusing, and excessive groupings of light sources

Light pollution exists in Arizona and within the AVE. Existing light pollution impacts motorists in terms of glare and clutter, and residents, tourists and scientists in terms of skyglow. Light trespass may occur along Arizona Department of Transportation (ADOT) roads from construction lighting and roadway lighting. Glare, light trespass and clutter can occur as a direct impact from a roadway project. Skyglow is a cumulative effect and impacts urbanized areas.

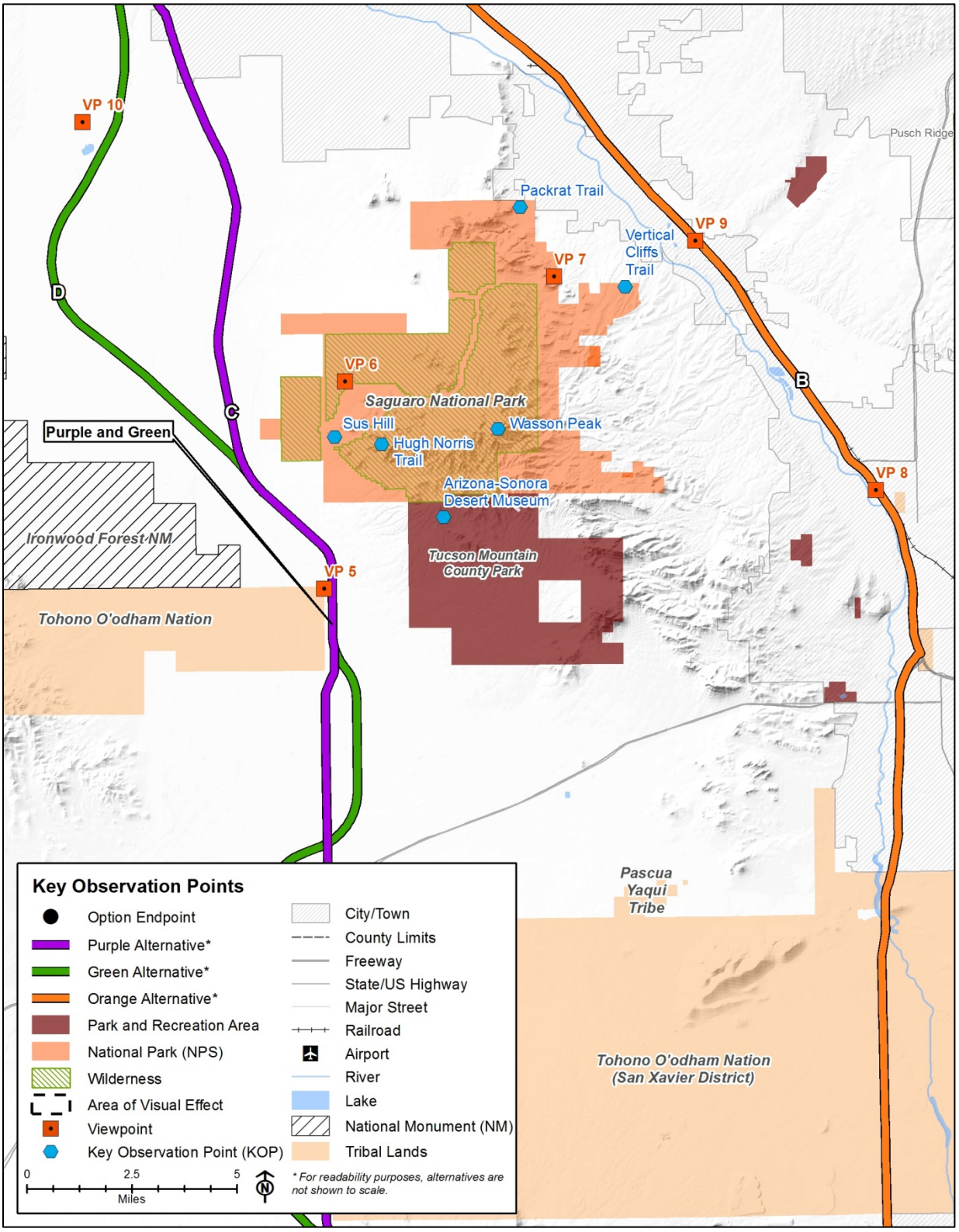

Figure 3.9-8 KOPs within SNP (West) and Tucson Mountain Park

Skyglow is an impact that is increasing, and efforts to protect dark skies have been initiated. These efforts focus on lighting design and fixtures that reduce glare, skyglow, and light trespass and clutter. An example of a broad effort focused on reducing light pollution is the program implemented by the International Dark-Sky Association (2017). The association uses different designations for dark sky places, and follows a rigorous application process. The process requires applicants to demonstrate robust community support for dark-sky protection and to document how a proposed site achieves designation-specific program requirements.

Figure 3.9-9 (Dark Sky Locations, Scientific Observatories, and Recreational Star-gazing Location within 50 Miles of the AVE) shows the International Dark-Sky Association's "dark sky places" near the I-11 Corridor. Within southern Arizona, two places are designated by International Dark-Sky Association: Oracle State Park and Kartchner Caverns State Park.

Skyglow impacts astronomical observatories and scientists seeking dark skies for research observations. A major city's glow is a serious problem anywhere within 50 miles of the city center, and it is visible for at least 150 miles. Numerous scientific observatories and telescopes exist in the vicinity of the Study Area. Six major observatories are located within 50 miles of the AVE:

1. Kitt Peak National Observatory is approximately 40 miles southwest of Tucson and 15 miles from the AVE.
2. Fred Lawrence Whipple Observatories is located at the top of Mount Hopkins, approximately 10 miles East of Amado and 1 mile from the AVE
3. The Sabino and Grasslands Canyon Observatory are located northeast of Tucson, approximately 6 miles from the AVE.
4. Winer Observatory is in Sonoita, approximately 40 miles south of Tucson, 15 miles east of I-19, and 21 miles from the AVE.
5. Patterson Observatory is in Sierra Vista, approximately 40 miles Northeast of Nogales and 38 miles from the AVE.
6. San Pedro Valley Observatory is in Benson, approximately 40 miles southeast of Tucson and 37 miles from the AVE.

In addition to the astronomical observatories, SNP in partnership with the Kitt Peak National Observatory hosts star parties at the Red Hills Visitor Center. At these star parties, which are part of an educational program, park visitors learn about the night sky. The park is an important night sky resource and offers recreational stargazing, and guided night hikes to explore and experience the Sonoran Desert.

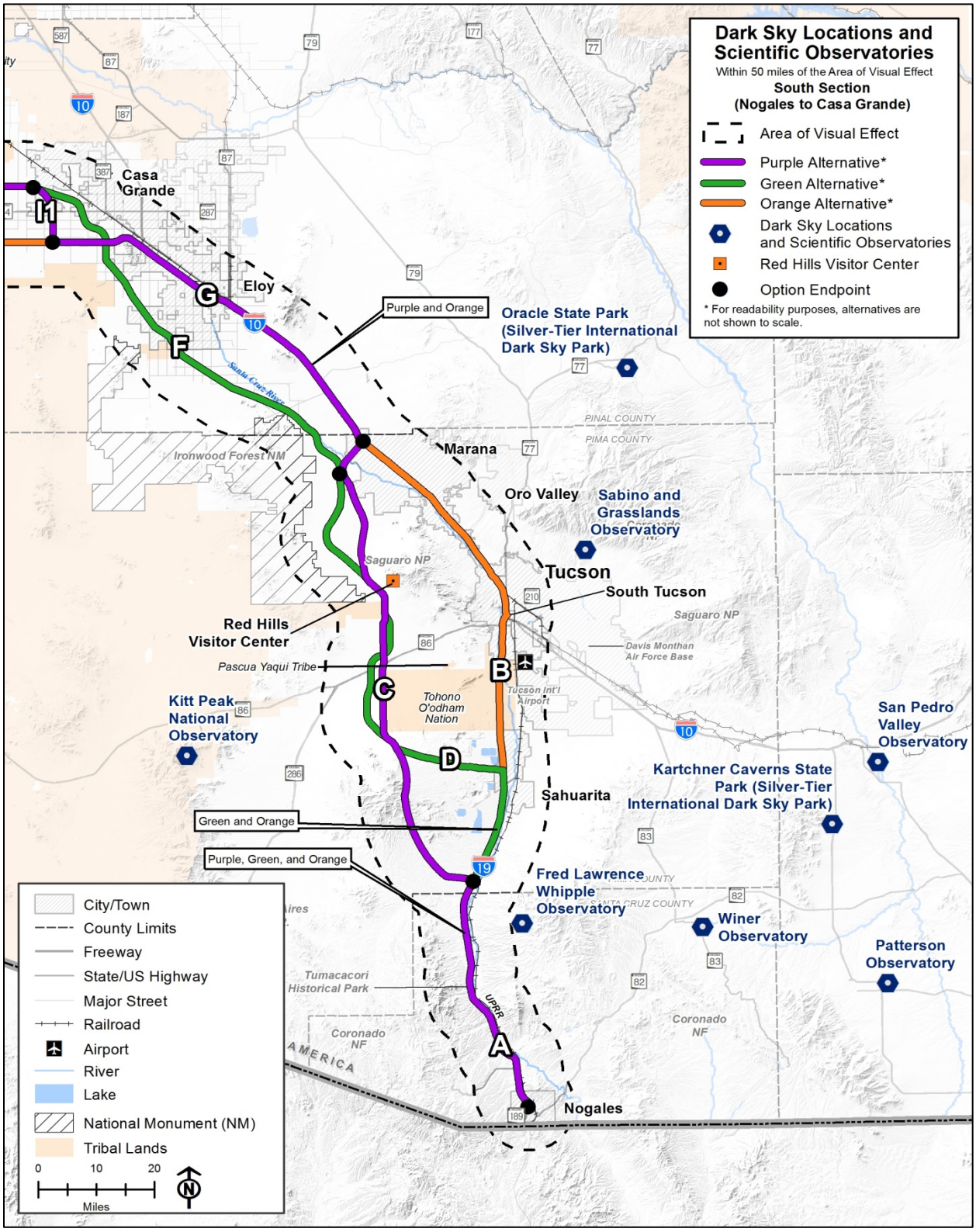

Figure 3.9-9 Dark Sky Locations, Scientific Observatories, and Recreational Star-gazing Location within 50 Miles of the AVE

3.9.4 Environmental Consequences

This section provides a summary of potential effects on visual resources associated with each Build Corridor Alternative and the No Build Alternative. For each Build Corridor Alternative, a table summarizes the potential types of impacts throughout the Analysis Area for different types of viewers. Most representative locations are accompanied by a specific viewpoint that was analyzed. **Appendix E9** provides more information on the representative viewpoints noted in the table as well as other viewpoints throughout the Study Area. The potential for impacts is based on whether an area of higher visual quality would be affected and how sensitive the viewers are to change. Other key elements with respect to the potential for impacts include the visibility of a future project and the nature of the change in terms of contrast level. **Appendix E9** provides additional information on this analysis.

The potential visual resource impacts due to the CAP Design Option would be similar to the impacts of Option C and Option D (Sandario Road Portion). The representative locations Sandario Road (Viewpoint 5) and SNP (West) (Viewpoint 6) in **Table 3.9 4** (Visual Resource Impact Summary for the Purple Alternative) and **Table 3.9 5** (Visual Resource Impact Summary for the Green Alternative) show the potential visual resource impacts for the CAP Design Option.

3.9.4.1 Purple Alternative

Table 3.9-4 (Visual Resource Impact Summary for the Purple Alternative) summarizes the types of potential impacts for each viewer type throughout the Purple Alternative.

3.9.4.2 Green Alternative

Table 3.9-5 (Visual Resource Impact Summary for the Green Alternative) summarizes the types of potential impacts for each viewer type throughout the Green Alternative.

3.9.4.3 Orange Alternative

Table 3.9-6 (Visual Resource Impact Summary for the Orange Alternative) summarizes the types of potential impacts for each viewer type throughout the Orange Alternative.

Table 3.9-4 Visual Resource Impact Summary for the Purple Alternative

Representative Location	Typical Viewer Type	Representative VP# [1]	LU [2]	LU Visual Quality Rating (Existing)	Anticipated Viewer Response		
					Viewer Sensitivity		Visual Contrast Level
					Viewer Awareness	Viewer Exposure	
I-19 Corridor (no viewpoint)	Travelers (commuting, shipping)	N/A	1	Moderate	Moderate	Limited to foreground views	Not Noticeable
I-19 Tumacacori National Historical Park	Neighbors (recreational)	1	1	Moderate	High	Partially obstructed foreground views	Not Noticeable
I-19 Rural residential areas along I-19 corridor including Nogales, Rio Rico, Tumacacori, Tubac, Agua Linda, Amado, and Arivaca Junction	Neighbors (residential)	2	1	Moderate	High	Partially obstructed foreground views	Not Noticeable
Rural communities in Pima County such as Three Points and Avra Valley	Neighbors (residential)	4, 10	3, 7	Moderate	High	Partially obstructed foreground and middleground views	Co-Dominant
Sandario Road	Travelers (commuting)	5	5	Moderate	Moderate	Foreground views	Co-Dominant
SNP (West)	Neighbors (recreational)	6	6	Moderate	High	Superior, unobstructed views of the existing Avra Valley landscape in the middleground.	Co-Dominant (daytime) to Dominant (nighttime)

Table 3.9-4 Visual Resource Impact Summary for the Purple Alternative (Continued)

Representative Location	Typical Viewer Type	Representative VP# (1)	LU (2)	LU Visual Quality Rating (Existing)	Anticipated Viewer Response		
					Viewer Sensitivity		Visual Contrast Level
					Viewer Awareness	Viewer Exposure	
I-10 Picacho Peak State Park	Neighbors (recreational)	12	12	Moderate	High	Foreground views from higher elevations within the park.	Not Noticeable
I-10 Transitional Development	Neighbors (residential)	13	11	Moderate to Low	High	Views would be limited to the foreground. I-11 would not likely be visible in the middleground due to partial to complete vegetation screening.	Not Noticeable
I-10 at 355th Avenue	Travelers (commuting shipping)	19	6	Moderate to Low	Low	Limited to foreground views	Not Noticeable
Aguila Road	Travelers (recreational)	20	15	High	Moderate to High	Foreground views	Dominant
Rural residents in Wintersburg and Wickenburg	Neighbors (residential)	N/A	10, 15	Moderate to Low	High	Foreground and middleground views	Co-Dominant
Vulture Mine Road	Travelers (recreational) Neighbors (recreational)	21	15	High	High to Moderate	Corridor views would be obstructed due to distance, intervening terrain, and vegetation screening.	Not Noticeable
US 93	Travelers (commuting, shipping, recreational)	22	5	Moderate	High to Low	Foreground views	Not Noticeable

(1) For more information on viewpoints, see **Appendix E9**.
(2) LUs are mapped in **Figure 3.9-2** (Landscape Units and Viewpoints within the AVE [Purple Alternative]).
NOTE: VP = Viewpoint.

Table 3.9-5 Visual Resource Impact Summary for the Green Alternative

Representative Location	Typical Viewer Type	Representative VP# [1]	LU [2]	LU Visual Quality Rating (Existing)	Anticipated Viewer Response		
					Viewer Sensitivity		Visual Contrast Level
					Viewer Awareness	Viewer Exposure	
Interstate 19 (I-19) Corridor (no viewpoint)	Travelers (commuting, shipping)	N/A	1	Moderate	Moderate	Limited to foreground views.	Not Noticeable
I-19 Tumacacori National Historical Park	Neighbors (recreational)	1	1	Moderate	High	Partially obstructed foreground views	Not Noticeable
I-19 Rural residential areas along I-19 corridor including Nogales, Rio Rico, Tumacacori, Tubac, Agua Linda, Amado, and Arivaca Junction	Neighbors (residential)	2	1	Moderate	High	Partially obstructed foreground views.	Not Noticeable
Twin Buttes Road	Travelers and Neighbors (recreational)	3	4	Moderate to Low	Moderate	Foreground views.	Noticeable
Rural communities in Pima County such as Three Points and Avra Valley	Neighbors (residential)	4, 10	3, 7	Moderate	High	Partially obstructed foreground and middleground views.	Co-Dominant
Sandario Road	Travelers (commuting)	5	5	Moderate	Moderate	Foreground views.	Co-Dominant

Table 3.9-5 Visual Resource Impact Summary for the Green Alternative (Continued)

Representative Location	Typical Viewer Type	Represen-tative VP# [1]	LU [2]	LU Visual Quality Rating (Existing)	Anticipated Viewer Response		
					Viewer Sensitivity		Visual Contrast Level
					Viewer Awareness	Viewer Exposure	
SNP (West)	Neighbors (recreational)	6	6	Moderate	High	Superior, unobstructed views of the existing Avra Valley landscape in the middleground.	Co-Dominant (daytime) to Dominant (nighttime)
Red Rock Agricultural Area and Rural Residences	Neighbors (residential)	11	11	Moderate	High	Partially obstructed middleground views.	Co-Dominant
Sonoran Desert National Monument	Neighbors (recreational)	17	14	Moderate	High	Foreground views.	Co-Dominant
Buckeye Hills Regional Park	Neighbors (recreational) Travelers (commuting, shipping)	18	13	Moderate	High to Low	Travelers would have unobstructed foreground views; recreational viewers would have unobstructed to partially obstructed foreground and middleground views at higher elevations.	Not Noticeable
I-10 at 355th Avenue	Travelers (commuting shipping)	19	6	Moderate to Low	Low	Limited to foreground views.	Not Noticeable
Aguila Road	Travelers (recreational)	20	15	High	High to Moderate	Foreground views.	Dominant
Vulture Mine Road	Travelers (recreational) Neighbors (recreational)	21	15	High	High to Moderate	Corridor views would be obstructed due to distance, intervening terrain, and vegetation screening.	Not Noticeable

Table 3.9-5 Visual Resource Impact Summary for the Green Alternative (Continued)

Representative Location	Typical Viewer Type	Represen-tative VP# (1)	LU (2)	LU Visual Quality Rating (Existing)	Anticipated Viewer Response		
					Viewer Sensitivity		Visual Contrast Level
					Viewer Awareness	Viewer Exposure	
Rural residents in Wintersburg and Wickenburg	Neighbors (residential)	N/A	10, 15	Moderate to Low	High	Foreground and middleground views.	Co-Dominant
US 93	Travelers (commuting, shipping, recreational)	22	5	Moderate	High to Low	Foreground views.	Not Noticeable

(1) For more information on viewpoints, see **Appendix E9**.

(2) LUs are mapped in **Figure 3.9-**3 (Landscape Units and Viewpoints within the AVE [Green Alternative])

NOTE: VP = Viewpoint.

Table 3.9-6 Visual Resource Impact Summary for the Orange Alternative

Representative Location	Typical Viewer Type	Represen-tative VP# [1]	LU [2]	LU Visual Quality Rating (Existing)	Anticipated Viewer Response		
					Viewer Sensitivity		Visual Contrast Level
					Viewer Awareness	Viewer Exposure	
Interstate 19 (I-19) Corridor (no viewpoint)	Travelers (commuting, shipping)	N/A	1	Moderate	Low	Limited to foreground views.	Not Noticeable
I-19 Tumacacori National Historic Park	Neighbors (recreational)	1	1	Moderate	High	Partially obstructed foreground views.	Not Noticeable
I-19 Rural residential areas along I-19 corridor including Nogales, Rio Rico, Tumacacori, Tubac, Agua Linda, Amado, and Arivaca Junction	Neighbors (residential)	2	1	Moderate	High	Partially obstructed foreground views.	Not Noticeable
Picture Rocks Road	Travelers (recreational, commuting)	7	8	Moderate	Moderate	Partially obstructed middleground to background views.	Not Noticeable
Suburban/urban residents along I-19 and I-10 corridor from Green Valley through Tucson	Neighbors (residential)	N/A	1, 4, 8	Moderate to Low	High	Partially obscured views limited to foreground and middleground.	Not Noticeable
Commercial and industrial areas along I-19 and I-10	Neighbors (commercial, industrial)	N/A	1,8,9	Moderate to Low	Low	Foreground and middleground views.	Not Noticeable

Table 3.9-6 Visual Resource Impact Summary for the Orange Alternative (Continued)

Representative Location	Typical Viewer Type	Represen-tative VP# [1]	LU [2]	LU Visual Quality Rating (Existing)	Anticipated Viewer Response		
					Viewer Sensitivity		Visual Contrast Level
					Viewer Awareness	Viewer Exposure	
I-10 Downtown Tucson Historic Districts Barrios Anita, Barrio El Membrillio, El Paso, and Southwestern Railroad	Neighbors (residential, commercial)	N/A	8, 9	Moderate to Low	High	Foreground views. The range of solutions for capacity improvements includes potential right-of-way expansion or elevated facility along I-10. Either option, or a combination thereof, would expose the historic districts to impacted foreground views.	Co-Dominant to Dominant
I-10 Downtown Tucson	Travelers (commuting, shipping)	8,9	9	Low	Low	Limited to foreground views.	Not Noticeable to Noticeable, depending on configuration of additional lanes
I-10 Picacho Peak State Park	Neighbors (recreational)	12	12	Moderate	High	Foreground views from higher elevations within the park.	Not Noticeable
I-10 Transitional Development	Neighbors (residential)	13	12	Moderate to Low	High	Views would be limited to the foreground. The I-11 Corridor would not likely be visible in the middleground due to partial to complete vegetation screening.	Not Noticeable

Table 3.9-6 Visual Resource Impact Summary for the Orange Alternative (Continued)

Representative Location	Typical Viewer Type	Represen-tative VP# [1]	LU [2]	LU Visual Quality Rating (Existing)	Anticipated Viewer Response		
					Viewer Sensitivity		Visual Contrast Level
					Viewer Awareness	Viewer Exposure	
I-8	Travelers (shipping, recreational)	14	13	Moderate	High to Low	Limited to foreground views.	Not Noticeable
I-8 Gila Bend	Neighbors (residential commercial) Travelers (commuting, shipping)	15	6	Moderate	High to Low	The flat terrain and vegetation cover would limit views to the foreground, on or adjacent to the corridor.	Noticeable
State Route 85	Travelers (commuting, shipping, recreational)	16	14	Moderate to Low	High to Low	Limited to foreground views.	Not Noticeable
Buckeye Hills Regional Park	Neighbors (recreational) Travelers (commuting, shipping)	18	13	Moderate	High to Low	Travelers would have unobstructed foreground views; recreational viewers would have unobstructed to partially obstructed foreground and middleground views at higher elevations within the park.	Not Noticeable
I-10 at 355th Avenue	Travelers (commuting shipping)	19	5	Moderate to Low	Low	Limited to foreground views.	Not Noticeable

Table 3.9-6 Visual Resource Impact Summary for the Orange Alternative (Continued)

Representative Location	Typical Viewer Type	Represen-tative VP# (1)	LU (2)	LU Visual Quality Rating (Existing)	Anticipated Viewer Response		
					Viewer Sensitivity		Visual Contrast Level
					Viewer Awareness	Viewer Exposure	
Vulture Mine Road	Travelers (recreational) Neighbors (recreational)	21	15	High	High to Moderate	Corridor views would be obstructed due to distance, intervening terrain, and vegetation screening.	Not Noticeable
Rural residents in Wickenburg	Neighbors (residential)	N/A	10, 15	Moderate to Low	High	Foreground and middleground views.	Co-Dominant
US 93	Travelers (recreational, commuting, shipping)	22	5	Moderate	High to Low	Limited to foreground views.	Not Noticeable

(1) For more information on viewpoints, see **Appendix E9**.
(2) LUs are mapped in **Figure 3.9-4** (Landscape Units and Viewpoints within the AVE [Orange Alternative]).
NOTE: VP = Viewpoint.

3.9.4.4 Effects on BLM Visual Resource Management

Table 3.9-7 (Potential Impacts on BLM VRM Class I and II Designations) summarizes the effects of the Build Corridor Alternatives on BLM VRM Class I and II lands by section and Corridor Option.

Table 3.9-7 Potential Impacts on BLM VRM Class I and II Designations

Sections, Build Corridor Alternatives, and Corridor Options	Potential Impact on BLM VRM Class I	Potential Impact on BLM VRM Class II
Purple Alternative		
A+C+G	Not present	Not present
I[1,2]+L+N+R	Not present	Not present
X	Not present	Not present
Green Alternative		
A+D+F	Not present	Not present
I2+L+M+Q2+R	Not present	Not present
U	Not present	Not present
Orange Alternative		
A+B+G	Not present	Not present
H+K+Q[1,2,3]	Option H – Co-located with I-8; improvements within current ADOT right-of-way (ROW), and no additional lanes are proposed. Option K – Co-located with I-8; improvements within current ADOT ROW. Option Q1 – Co-located with SR 85; improvements within current ADOT ROW. Option Q2 – Co-located with SR 85; improvements within current ADOT ROW. Option Q3 – Co-located with SR 85 and I-10; improvement within current ADOT ROW.	Option H – Co-located with I-8; improvements within current ADOT ROW. Option K – Co-located with I-8; improvements within current ADOT ROW. Option Q1 – Co-located with SR 85; improvements within current ADOT ROW. Option Q2 – Co-located with SR 85; improvements within current ADOT ROW. Option Q3 – Co-located with SR 85 and I-10; improvement within current ADOT ROW.
S	Not present	Encroaches on Class II VRM lands in two locations. Southernmost location spans the width of Option S for approximately 1 mile; northernmost location extends approximately 1,750 feet into the corridor at the widest point. Potential conflicts exist for approximately 1,500 feet (see **Figure 3.9-10** [Compatibility with BLM Visual Resource Management System, North Section]).

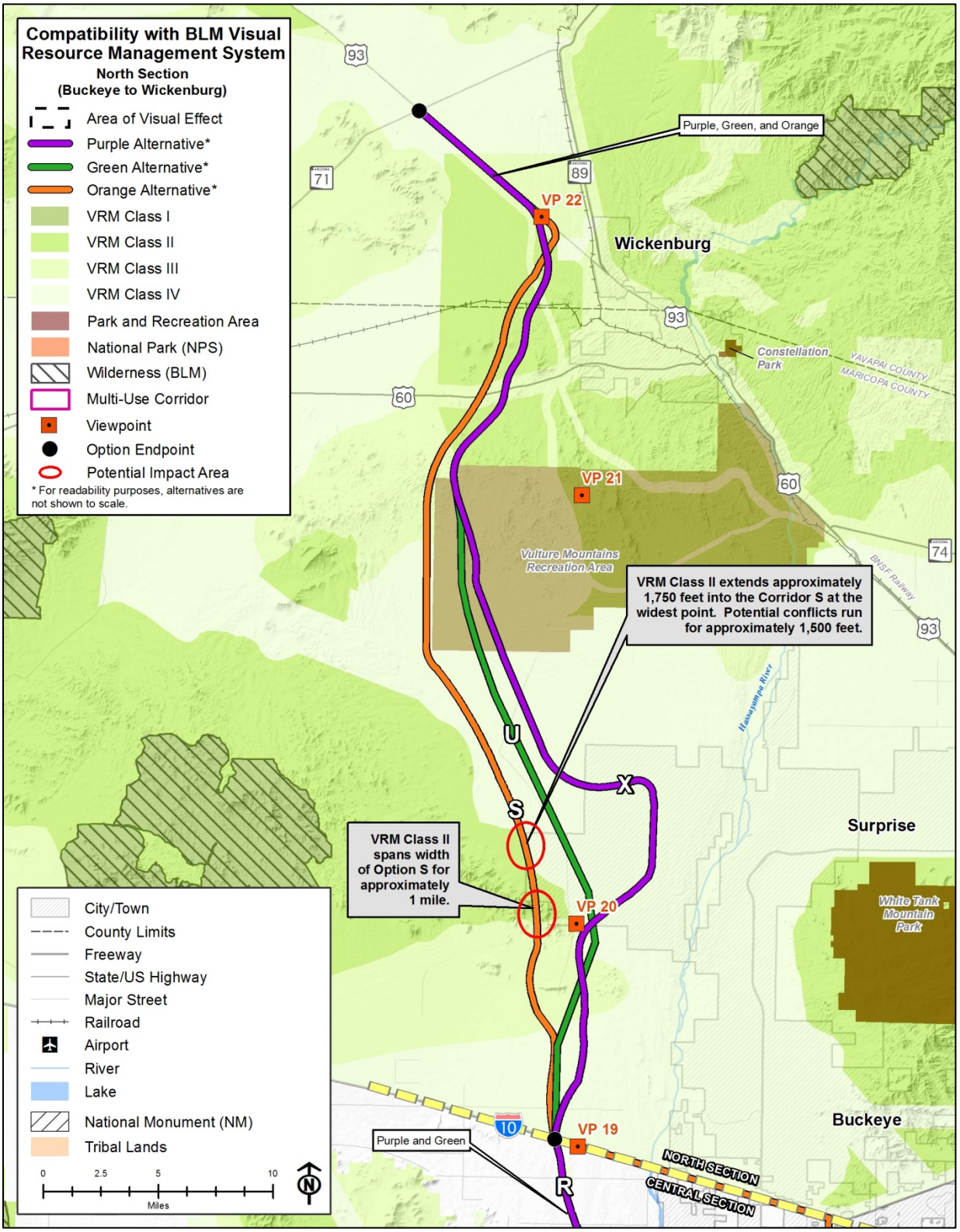

Figure 3.9-10 Compatibility with BLM Visual Resource Management System, North Section

3.9.4.5 Effects on SNP (West) and Tucson Mountain Park Visual Resources

The recreational destinations used by locals and visitors year-round were the KOPs assessed to understand the impacts on SNP's visual resources. All these KOPs are sensitive viewing platforms, and the magnitude of visual impact varies depending on the location of each within the park and the time of the visit (daytime or nighttime); that said, recreational viewers are usually associated with high visual sensitivity.

The Sus Hill, Hugh Norris Trail, and Arizona-Sonoran Desert Museum KOPs on the west side of the park are located along the Green Alternative (Option D) and the Purple Alternative (Option C), where improvements would be incongruous in the overall setting and would create Co-Dominant (daytime) or Dominant (nighttime) visual contrast due to scale. Recreational viewers will have middleground views of the Green and Purple Alternatives, and the overall visual impact is likely to be high because of high viewer sensitivity and superior, unobstructed views. The CAP Design Option will have slightly higher visual impacts, as it is aligned closer to both the park areas compared to Option C and Option D (Sandario Road Portion).

The Vertical Cliffs Trail and Packrat Trail KOPs on the east side of the park are located along the I-10 corridor and Orange Alternative (Option B). The Tucson Metropolitan Area in the middleground dominates the landscape and provides a high level of visual absorption. The change to the visual quality rating would be low because the Orange Alternative would be co-located with the existing I-10.

The Wasson Peak KOP, which is the highest viewing platform in the park, provides superior panoramic views of the existing landscape on the west and east side of SNP (West) in the background. Overall, the visual impact due to the Build Corridor Alternatives and the CAP Design Option is anticipated to be moderate to neutral due to viewing distance, dominance of the developed area in the middleground, and screening by vegetation and topography in the foreground.

Visitors to SNP (West) and Tucson Mountain Park expect high-quality experiences related to solitude, natural quiet, and landscape views. The visual intrusions related to the Build Corridor Alternatives could impact the visual resources and result in unsatisfactory visitor experiences.

3.9.4.6 Light Pollution Effects

The following discussion summarizes the potential light pollution effects that are applicable to all of the Build Corridor Alternatives.

All Build Corridor Alternatives would include lighting that meets ADOT standards. These standards reflect appropriate safety requirements for construction activities and operation of Interstate roadway facilities. These standards also reflect ADOT's approach to minimizing glare, skyglow, light trespass and clutter. No site-specific roadway or lighting designs are available at the Tier 1 stage. Analyses of potential effects of roadway lighting designs are anticipated in the Tier 2 analysis.

In general, the Build Corridor Alternatives would incrementally increase skyglow, but would not be expected to substantially increase glare, light trespass, or clutter. Build Corridor Alternatives on new alignments where no road currently exists would increase sky glow the most because they would:

- Introduce new sources of light.
- Provide transportation corridor access to the adjacent areas, which could encourage adjacent development based on local zoning.

Vehicle lights would be one of the new sources of light along the I-11 Corridor; however, the light would be limited to viewers within or immediately adjacent to the corridor. Also, unobstructed nighttime views of I-11 would be more apparent due to vehicle lights. The additional new sources of light have the potential to impact night sky viewing in nearby SNP (West), which is an important night sky resource for recreational stargazing.

Table 3.9-8 (Potential Effects on Light Pollution: Contribution to Skyglow) summarizes the potential contribution to skyglow due to the different alternatives.

Table 3.9-8 Potential Effects on Light Pollution: Contribution to Skyglow

Build Corridor Alternatives and Options	Potential for Light Pollution (Skyglow)
Purple Alternative	
A+C+G	Low+High+Moderate
I[1,2]+L+N+R	High+High+High+High
X	High
Green Alternative	
A+D+F	Low+High+High
I2+L+M+Q2+R	High+High+High+Moderate+High
U	High
Orange Alternative	
A+B+G	Low+Low+Moderate
H+K+Q[1,2,3]	Moderate+Moderate+Moderate+Moderate+Moderate
S	High

NOTES:

High: Areas where the Corridor Options follow new alignments in undeveloped areas.

Moderate: Areas where the Corridor Options follow new alignments in partially developed areas or existing alignments in undeveloped areas.

Low: Areas where the Corridor Options follow existing major road in developed areas.

3.9.4.7 No Build Alternative

The No Build Alternative would not substantially change the visual character or quality in the Study Area because it would not involve construction or modification to accommodate additional infrastructure (e.g., additional lanes, overpasses, median modifications) associated with I-11. This Draft Tier 1 EIS does not assess the specific environmental impacts associated with planned and committed projects, but these impacts would be considered as part of the environmental review process for individual projects. Most committed projects involve widening and improvements that would affect existing transportation facilities rather than introduce new features into the landscape.

Over time, the visual character and quality in the AVE would change with or without I-11 because of the continued urbanization of the corridor, especially in Tucson, Casa Grande, and Phoenix. Urban expansion could encroach on portions of the AVE that are currently rural or undeveloped, leading to a more urbanized character for the AVE. Anticipated changes would have beneficial and adverse impacts on visual quality. The visual character and quality of new development would depend on what is constructed. Future development may or may not be harmonious with the existing visual elements and patterns, and community members may or may not object to the changes.

3.9.4.8 Summary

The Build Corridor Alternatives would create a range of potential effects on viewsheds. These effects represent trade-offs rather than a definitive choice for which alternative (the Purple, Green, or Orange Alternative) would produce the lowest overall potential for visual impacts. **Table 3.9-9** (Summary of Potential Impacts on Visual and Aesthetics) located at the end of this section, summarizes the key impact topics.

3.9.5 Potential Mitigation Strategies

An Abbreviated VIA was conducted for the Draft Tier 1 EIS and this VIA describes how mitigation strategies avoid, minimize, or compensate for adverse visual impacts and how beneficial visual impacts will be incorporated in the project. However, it is recognized that it may not be possible to mitigate all visual impacts on SNP's designated wilderness area and other natural areas.

Mitigation measures to address the visual impacts caused by the Tier 1 Build Corridor Alternatives are general rather than specific because the level of engineering design and corresponding visual effects analysis are general and comparative rather than site-specific. The Tier 2 VIA will provide project-specific mitigation measures for the individual projects and components of the recommended alternative. The following general mitigation strategies are recommended for I-11 that will help avoid, minimize, or compensate for adverse visual impacts:

- Prepare landscape design plans for visually sensitive areas. These plans should:
  - Protect existing vegetation and add new vegetation to minimize the visual effects of I-11 features and to retain and enhance the areas' natural features.
  - Minimize the spatial limits of earthwork and grading where possible. Site restoration plans should be implemented as soon as possible.
  - Protect and enhance existing rock outcrops.
  - Include and treat newly exposed rock outcrops by considering scale, shape, slope, and fracturing and by using rock stain where desert rock varnish has been disturbed to reduce the color contrast with adjacent rocks.
  - Salvage protected native plants to the extent possible.
  - Protect existing views and do not block those views with new vegetation or other I-11 features such as signs.
- Include grading designs that create natural-looking slopes, surfaces, and transitions.
- Include landscape treatments in stormwater channels and basins to help blend them into their surroundings and create new visual resources in the landscape.

- Enhance sound walls, retaining walls, headwalls, concrete barriers, riprap, and similar I-11 features that are highly visible by selecting colors that complement their surroundings and/or by using artistic surface treatments, including textures and patterns that support an overall design theme compatible with their setting.
- Select lighting standards, guardrails, and other supporting features that minimize visual impacts. Use natural-tone metals with non-contrasting, non-glare finishes and color choices that match their settings.
- Select roadway lighting that is compatible with dark skies objectives and policies, or do not use roadway lighting at all in the vicinity of the Tucson Mitigation Corridor and SNP.
- Minimize fugitive light from portable light sources used during construction near sensitive receptors to the maximum extent feasible, given safety considerations. All lights should be screened and directed downward toward work activities, and should be screened and directed away from the night sky and nearby residents to the maximum extent possible.
- Make sure that bridge designs and designs for other vertical I-11 components conform to the design standards applicable to the entire corridor or to the special design standards in key locations where these features can become visual resources.
- Define the storage sites for equipment, materials and stockpiles, and borrow sites in the Tier 2 project plans. Site selection should consider and minimize visual impacts, and should include screening to minimize visual impacts, where appropriate. To minimize the impact of staging areas on visual quality and character, return these areas to preconstruction conditions once the staging facilities are decommissioned and removed. Restore all disturbed terrain, and install replacement plantings in areas where vegetation was removed. All replacement plantings should be native and indigenous to the area. Staging areas would be restored through the implementation of these measures.

3.9.6 Future Tier 2 Analysis

After completion of the Tier 1 EIS, further VIAs are anticipated as part of the Tier 2 NEPA analyses. Individual Tier 2 projects would be assessed using the VIA Scoping Questionnaire. Depending on the findings of the questionnaire, an Abbreviated VIA may be needed or a more involved Standard VIA or Expanded VIA may be required.

Table 3.9-9 Summary of Potential Impacts on Visual and Aesthetics

<table>
<tr><th>Topics</th><th>No Build Alternative</th><th>Purple Alternative</th><th>Green Alternative</th><th>Orange Alternative</th></tr>
<tr><td rowspan="3">Overall Visual Effects</td><td rowspan="3">No Interstate 11 (I-11) impacts were identified.

Existing conditions and baseline trends would continue.

The other projects in the I-11 Corridor Study Area (Study Area) are subject to their own evaluation.</td><td colspan="3">Option A is shared by all Build Corridor Alternatives, creating the same visual effects. Since all the Build Corridor Alternatives would be co-located with I-19, it is anticipated that any visual changes to the landscape as a result of I-11 would not be noticeable.</td></tr>
<tr><td colspan="2">The Purple and Green Build Corridor Alternatives in the vicinity of the Tucson Mitigation Corridor (Option C/D) would build new corridor facilities and change the character of the existing landscape. I-11 would be visible from Sandario Road, the Tohono O'odham Nation (Garcia Strip), and rural residences such as those in the Three Points neighborhood. North of the Tucson Mitigation Corridor, the Green Alternative (Option D) would have similar visual effects as the Purple Alternative (Option C), but the Green Alternative is closer to low-density residential development in Avra Valley.

The Purple Alternative (Option C) and the Green Alternative (Option D) also would affect the views from SNP-West, Tucson Mountain Park (trails), and Ironwood Forest National Monument.

Visitors to SNP-West and Tucson Mountain Park would see the Purple Alternative in the middleground and background (depending on location). I-11 would be more apparent at night where vehicle and street lights are visible.</td><td>The Orange Alternative (Option B) would have the least visual effect on motorists and the majority of the neighbors because the character of the landscape would remain the same.

The primary exception to this is in downtown Tucson, where the range of future cross sections necessary to provide capacity improvements along I-10 could include right-of-way expansion or an elevated facility. Either option, or a combination thereof, would expose the adjacent historic districts to impacted foreground views.</td></tr>
<tr><td>The Purple Alternative where it is co-located with I-10 and a short portion of I-8 in Pinal County would not change the character of the landscape. Thus, it does not affect adjacent land uses, including the visitor views of Picacho Peak State Park.</td><td>The Green Alternative (Option F) would affect the character of the landscape, as I-11 would be a new facility. Residential viewers of the rural neighborhoods in Red Rock would have partially obstructed middleground views.</td><td>The Orange Alternative (Option G) would be co-located with I-10 and a short portion of I-8 in Pinal County, and hence would not affect the character of the landscape. Thus, it would not affect the visitor views of Picacho Peak State Park.</td></tr>
</table>

Table 3.9-9 Summary of Potential Impacts on Visual and Aesthetics (Continued)

Topics	No Build Alternative	Purple Alternative	Green Alternative	Orange Alternative
Overall Visual Effects (Con't)		New roadway facilities along Option N and Option R would introduce changes to the landscape character in the surrounding agricultural areas and limited residential development of Goodyear and Buckeye. These changes to the landscape character would only be visible in foreground views.	Option M would cause changes to the landscape character due to the introduction of new dominant features, and it would affect the views of visitors within the Sonoran Desert National Monument and North Maricopa Mountains Wilderness.	The Orange Alternative would have the least changes to the landscape character in the Central Section, as it requires the least amount of new roadway and related facilities due to co-located facilities.
		The Purple Alternative (Option X), Green Alternative (Option U), and Orange Alternative (Option S) in the North Section would change the character of the landscape. These alternatives would affect the views of the travelers along Aguila Road and Vulture Mine Road, of the residential viewers of Wintersburg and Wickenburg, and of the recreational visitors to the Vulture Mountains Recreation Area.		
Class II Visual Resource Management (VRM) Lands	No I-11 impacts were identified. Existing conditions and baseline trends would continue. The other projects in the Study Area are subject to their own evaluation.	The Purple Alternative does not encroach on Class I and II VRM Lands.	The Green Alternative does not encroach on Class I and II VRM Lands.	The Orange Alternative (Option S) encroaches on Class II VRM lands in two locations, for a total of approximately 1.25 miles.
SNP (West) and Tucson Mountain Park		The Purple Alternative (Option C) and the Green Alternative (Option D) would cause the most changes to the landscape character on the west side of the park.		The Orange Alternative (Option B) would cause the least changes to the landscape character on the east side of the park as it would be co-located with the existing I-10 corridor.

Table 3.9-9 Summary of Potential Impacts on Visual and Aesthetics (Continued)

Topics	No Build Alternative	Purple Alternative	Green Alternative	Orange Alternative
Light Pollution (Skyglow)	No I-11 impacts were identified. Existing conditions and baseline trends would continue. The other projects in the Study Area are subject to their own evaluation.	The Purple and Green Alternatives would both, in equal measure, have the most potential for generating light pollution in the Central and North Section.	The Green Alternative would introduce the most new roadway and related facilities in the South Section, which implies that it would generate the most new light and therefore have a corresponding potential for light pollution.	The Orange Alternative would have the least potential to increase skyglow due to its lower overall level of new roadway and related facilities.
Indirect Effects	Programmed transportation improvements plus projected population and employment growth could: • Generally continue current growth and development, with associated visual effects, along existing transportation corridors.	Land development induced by I-11 could: • Change the landscape character, particularly in rural areas or near recreation areas where development is currently limited. • Create potential for changes in landscape character near new interchanges as agricultural land or open space is developed.	The Green Alternative would be similar to the Purple Alternative, except: • Potential effects may have increased intensity due to more Corridor Options requiring new facility development.	• Overall potential indirect changes to the landscape character would be lower than with the Purple and Green Alternatives in the South and Central Sections due to the Orange Alternative's co-location with existing transportation facilities. • In Tucson, ordinances authorize designation of Tucson Historic Preservation Zones, Tucson Neighborhood Preservation Zones, and City Historic Landmarks that require review of new construction to protect the settings of historic buildings.

Table 3.9-9 Summary of Potential Impacts on Visual and Aesthetics (Continued)

Topics	No Build Alternative	Purple Alternative	Green Alternative	Orange Alternative
Indirect Effects (Con't)				• In Tucson, the Rio Nuevo and Downtown Zone requires that exterior alterations to National Register of Historic Places listed or eligible buildings follow national standards for the rehabilitation of historic buildings. • Indirect effects would be similar to the Purple and Green Alternatives in the North Section.