

CHAPTER 4. ADDITIONAL IMPACTS (CONSTRUCTION, CUMULATIVE, AND UNAVOIDABLE) AND PERMITS/APPROVALS NEEDED

This chapter discusses the additional impacts of the **No Build Alternative** and the build alternatives under the categories of construction impacts (including the relationship between the use of the environment during construction and long-term productivity that could result from the Sunrise Project), cumulative impacts, and unavoidable impacts (including irretrievable or irreversible commitment of resources).

Alternatives 2 and 3 and the **Preferred Alternative** are discussed together as the build alternatives because the impacts are similar in type, though they may differ in degree. Where there is an important difference, it is noted.

The section on Permits and Approvals Needed for the Preferred Alternative includes a new table (Table 35) on permits and approvals that are still needed for the **Preferred Alternative**. Some of the approvals discussed in the SDEIS have been obtained, while others will be obtained prior to the Record of Decision.

Construction Impacts

Alternative 1—No Build

Alternative 1—No Build would not create construction impacts. Therefore, this section applies only to **Alternatives 2 and 3** and the design options.

Build Alternatives

The build alternatives would cause substantial construction impacts. Construction activities common to both alternatives and the design options would be trucking fill material to raise the roadbed, constructing bridges, moving earth and

rock on the site, and reconstructing the interchanges.

Constructing the Sunrise Project would affect the immediate vicinity of businesses and residences and also be more widespread in the project area. Typical construction impacts are as follows:

- Increased use of local and arterial roads by construction equipment and truck traffic resulting in traffic delays.
- Temporary traffic rerouting and road and access closures.
- Construction noise from heavy equipment operation and the construction of bridges and wall forms.
- Blasting noise and dust.
- Dust from excavating and placing fill.
- Lighting in construction areas in the evening.

Additional impacts on businesses include:

- Traffic rerouting, temporary road and driveway closures and delays.
- Temporary loss of visibility from key roadways.
- Difficulty maneuvering trucks.

Over 2 million cubic yards of fill could be moved from borrow pits outside the immediate area of the Sunrise Project. This would require crossing arterial and collector streets, especially SE 135th Avenue, SE 142nd Avenue, and SE 152nd Avenue. The truck volumes are expected to interfere with other traffic movement. Constructing bridges would require trucking of other building materials, resulting in a greater impact under **Alternative 2** and the **Preferred Alternative** than **Alternative 3** because **Alternative 2** and the **Preferred Alternative** have more bridges. Moving

construction materials would temporarily increase the congestion on the major roadways in the area.

The reconstruction of the existing I-205/OR 212/224 Interchange would produce short-term negative impacts to the truck traffic originating or ending in the Clackamas Industrial Area. Likewise, this project would impact through truck traffic using the OR 212 freight route that connects US 26 and I-205. The need to continue to provide access from I-205 to OR 212/224 during this reconstruction may require the construction of a temporary interchange facility while the existing interchange is rebuilt.

A large cut to the east of Rock Creek may require blasting of the basalt. If the excavated material is suitable for fill, it would be trucked to other portions of the facility for reuse. If the material is not suitable, then it would be necessary to truck it to an external site for disposal. Constructing the Rock Creek Interchange could interrupt traffic on OR 212, OR 224, SE 152nd Avenue, and SE 162nd Avenue for varying periods of time.

The construction impact is larger than the proposed right-of-way in the Rock Creek Junction area, near the Windswept Waters development. Temporary construction easements are assumed to be necessary.

Businesses and communities. Impacts to both business districts and neighborhoods have the potential to affect business traffic and residential livability.

Air quality. The primary impacts of construction would be the generation of dust from site clearing, excavation, and grading activities, and impacts to traffic flow in the project area. Traffic congestion increases idling times and reduces travel speeds, resulting in increased vehicle emission levels. Construction of concrete structures may have associated dust-emitting sources, such as concrete mixing operations. Stationary sources such as concrete mix plants are generally required to obtain air contaminant discharge permits from the Oregon Department of Environmental Quality and to comply with

regulations to control dust and other pollutant emissions.

Construction impacts would vary in extent and location, depending on the alternative or design options selected and on weather conditions (e.g., rain suppresses dust but increases erosion). Construction impacts would logically be lowest with **Alternative 1–No Build** and higher for any build alternative.

Communities and Businesses/Environmental Justice. Construction impacts would be temporary and borne equally throughout the project alignment, resulting in no disproportionate impact to EJ sensitive communities. Building the Sunrise Project has the potential to affect business revenue in the short term when customers or vendors have to make detours or site visibility is affected. These impacts are typically mitigated by working with affected businesses to develop signage and schedules that seek to reduce impacts.

Energy. The Preferred Alternative will use approximately 54.7 millions of gallons of fuel to construct or between 2 and 16 percent less energy to construct than Alternatives 2 and 3. The majority (67 percent) of construction energy would be used for roadway construction, with the balance for structures (25 percent), and other project elements (8 percent).

Views. Construction would create temporary disturbances of views, such as construction staging and stockpiling area that are on exposed ground. The location of these sites is typically determined by the contractor. Lighting may cause spillover onto adjacent areas without proper controls. Some of the temporary effects result from safety measures (e.g., brightly colored signs, safety lights) and cannot be mitigated.

Biology. Construction activities and fill slopes would create at least a temporary impact to the wildlife corridor between the unnamed tributary to Rock Creek and Rock Creek. The banks of the fill slope would be planted with vegetation appropriate for the wildlife that use the area, but it would take several years for the plants to grow

tall enough to provide cover for traveling wildlife. Consequently, wildlife may avoid the area for some time.

While no suitable habitat for bald eagles exists within areas directly impacted by the project, the Clackamas River and its riparian forest provides suitable forage and perching habitat. Construction activities may indirectly affect the use of this habitat. Impacts are expected to be insignificant due to the high level of existing human disturbance and implementation of the minimization and avoidance measures that limit blasting and construction during critical nesting and winter roosting periods.

Geology and soils. In the Midpoint area, construction traffic could create unstable roadway subgrades where there are wetlands and areas with shallow groundwater because the soils are likely to be weak and compressible. Shallow groundwater and seeps, found in places along the slopes in the Midpoint area, could also have adverse effects on slope stability during construction of temporary cut slopes.

Placing fill while benching slopes could also potentially affect the temporary stability of slopes that have weaker soils underneath. For example, slopes underlain by Quaternary alluvium (or similar materials) may result in smaller failures or slumps if the cuts are too steep.

Erosion during construction could greatly increase the sediment load being carried by surface runoff water into adjacent streams or lakes, thus causing subsequent environmental degradation. Development of deep gullies caused by continued long-term erosion could result in excessive maintenance costs associated with shallow cut or fill slope instability.

Hazardous Materials. Areas planned for construction of the build alternatives could possibly involve the disturbance of soil containing up to 400 mg/kg lead. A Contaminated Media Management Plan is needed to address proper soil management and worker health and safety training.

Noise. Construction noise levels for the project would result from normal construction activities. Noise levels for these activities can be expected to range from 70 to 100 dBA at sites located 15 meters (50 feet) from the activities. These noise levels, although temporary in nature, can be annoying. Clackamas County exempts construction noise from regulations between the hours of 6 a.m. and 10 p.m.

Water quality. The Sunrise Project has the potential to have short-term construction related impacts to water quality, such as increased rates and volumes of sediment-laden runoff, accidental leaks and spills from construction vehicles and equipment, general disturbance of ground covers, and removal of riparian vegetation. The impacts would be mitigated through compliance with applicable regulations.

Relationship between Short-term Use of the Environment and Long-term Productivity

NEPA requires discussion and disclosure of how short-term disruptions of the environment by a proposed action are or are not balanced by enhancement of long-term productivity. The long- versus short-term productivity language reflects the need to disclose the trade-offs associated with taking an action like building infrastructure such as the Sunrise Project. Because Oregon transportation projects arise out of the state and local comprehensive land use and transportation planning processes, the short-term impacts would normally be consistent with the maintenance and enhancement of long-term productivity. Oregon's land use and transportation planning process takes into account the goals and needs of communities for land use, transportation, environmental protection, and economic development.

Alternative 1 - No Build

The **No Build Alternative** would have few short-term effects because there would be only minor, localized construction impacts where planned road improvements would be made.

In the long term, the reliability and efficiency of the transportation system in the study area would diminish substantially under the **No Build Alternative**. Business representatives and commuters participating in the public outreach efforts for the SDEIS expressed frustration with the unpredictability of existing travel times and conditions within the corridor. Drivers state that travel times vary widely, causing interruption of freight movement and dispatch times. Many factors probably contribute to reduced reliability: the high volume of traffic, the high proportion of large trucks, the steep grades near I-205 and Rock Creek Junction that slow large trucks, an imbalance in the use of available travel lanes based on specific origins and destinations of drivers, and the presence of signalized intersections.

Planned road improvements by Metro, ODOT, and Clackamas County would not be sufficient to handle the predicted population and employment growth and the resulting increased demand for travel. Average travel speeds would be half of those that would occur under the build alternatives. Only one-third of vehicles could be accommodated by the planned improvements of **Alternative 1** compared to the capacity of the build alternatives. Westbound traffic at I-205 would line up on OR 212/224 as far east as Carver Bridge. Traffic westbound on the Milwaukie Expressway would likely back up on SE 82nd Drive to OR 212/224. Typical weekday congestion would grow from about four hours currently up to nine hours—five hours in the morning and four in the afternoon. Despite increased congestion, demand for travel in the corridor would increase and range from approximately 28,000 vehicles per day (vpd) east of Rock Creek to nearly 53,000 vpd near SE 102nd Avenue. Congestion would remain most severe where volumes are highest. Additionally, parallel roadways, such as SE Sunnyside Road, SE Sunnybrook Boulevard, and SE Jennifer Street, are not intended to accommodate the amount of traffic and generally long-distance nature of trips created by future growth. Traffic on almost all side streets would have increasing difficulty entering and exiting OR 212/224 and SE 82nd Drive.

The delays and congestion that would be experienced would negatively affect long-term productivity because the industrial areas in the corridor would be unable to retain and attract businesses as a result. Delays impose costs on businesses in terms of fuel consumed and delayed delivery of goods and services. Those extra costs reduce productivity.

The increased congestion would also reduce the productivity of commuters, who would require more time and fuel to travel to their places of work, including those who use bus transit. The Metro 2035 RTP and the Clackamas County Comprehensive Plan identify the need for the Sunrise Project as a regional highway facility and freight route, and **Alternative 1** would not meet those long-term needs to accommodate projected growth. **Alternative 1** would also not meet freight movement goals for OR 212/224 in the Oregon Transportation Plan.

Long-term productivity for business and individuals would decrease under the **No Build Alternative** because of extreme traffic congestion. The comparatively minimal short-term impacts and the benefits of not disrupting the area now, would in fact hinder long-term productivity because the congestion would interfere with people's ability to move through the area, seriously affecting delivery and commuting times. Therefore, minimizing the use of resources and avoiding impacts in the short term would not be consistent with the need for maintenance and enhancement of productivity in the long term.

Build Alternatives

All of the **build alternatives** would construct a new highway facility across developed and undeveloped land. Short-term, construction-related impacts would be greater than under the **No Build Alternative**. Even with construction occurring off of the existing highway for most of the construction period, there would be disruptions to people's travel patterns as a result of significant traffic to and from the construction site, and there would be short-term impacts at the interchanges during construction of new

access points and ramps. Impacts could be higher for people who live in the immediate areas than for those traveling through. Constructing improvements under the **build alternatives** would use much more energy than constructing the **No Build Alternative** improvements. However, the **Preferred Alternative** will use between 2 and 16 percent less energy to construct than **Alternatives 2 and 3**.

Mitigation measures for construction impacts such as vegetation removal, soil erosion, increased light and noise levels, and increased air emissions can minimize and avoid some impacts but cannot completely remove the risk of impacts occurring. Unavoidable short-term impacts to local businesses such as traffic detours and loss of street visibility would likely be most marked along SE 82nd Drive and at the west end of OR 212/224, where there is more commercial/retail development. Temporary construction easements would be needed at Rock Creek Junction and would affect residential access. Construction activities and fill slopes would create a temporary impact to the wildlife corridor near Rock Creek and wildlife may avoid the area for some time.

Long-term productivity as a result of the Sunrise Project would be higher than without the project. The purpose of the Sunrise Project is to effectively address the existing congestion and safety problems in the OR 212/224 corridor between I-205 and Rock Creek Junction, and to serve the growing demand for regional travel and access to the state highway system. Congestion under the build alternatives would be less by 2030 than under the **No Build Alternative**. The Sunrise Project would accommodate the planned growth in jobs and population, which is expected to be almost 100 percent between 2005 and 2030. New and more frequent local transit service would be provided under the build alternatives, along with new express bus service along the Sunrise Project. The **build alternatives** propose new multi-use path improvements that would connect to the existing I-205 trail system, filling in gaps in that system. Again, by reducing travel times and improving mobility, transit users,

cyclists, and pedestrians can use their time more safely and productively. The **Preferred Alternative** extends the multi-use path all the way to SE 172nd Avenue, further enhancing mobility.

OR 212/224 near I-205 is ranked in the top 10 percent of state routes for vehicle crash rate. The high crash rate is attributed to severe congestion and roadway deficiencies. Inadequate bicycle and pedestrian facilities reduce the safety and connectivity for these modes of travel in the project area. By improving safety in the project area, the build alternatives would reduce the incidence of accidents, which would improve productivity by reducing the resources that are consumed when an accident occurs, such as time lost to injury and recovery.

OR 212/224 is designated as a statewide and regional freight route, with trucks making up 12 percent of the traffic on the project section of the highway. OR 212/224 serves the Clackamas Industrial Area, which is a major freight distribution center for the Northwest. This area is expected to nearly double its employment by the year 2015. Long delays are currently reported for trucks accessing I-205 from the distribution center. By improving mobility, the Sunrise Project would reduce delays and allow that time to be used more productively by businesses and individuals. Both of the original **Alternatives 2 and 3** and the **Preferred Alternative** would expand the transportation infrastructure to provide for improved passenger and freight mobility, especially in industrial areas. The Sunrise Project would improve access and transportation capacity so that businesses could use their land more intensively and could accommodate more jobs than without a build alternative. The Sunrise Project is consistent with Clackamas County's Economic Development Plan, which focuses on attracting and retaining businesses, improving freight mobility, developing a workforce, marketing, and providing utility infrastructure.

The **build alternatives** would meet the Oregon Transportation Plan goals for freight movement

and would comply with the RTP and the Clackamas County Comprehensive Plan, which identify the need for the Sunrise Project as a regional highway facility and freight route. The build alternatives would also be consistent with the planned land uses and would implement the local transportation policies that require the creation of a through-route for freight in the OR 212/224 corridor between I-205 and US 26. Consequently, the use of resources in the short-term and the imposition of short-term impacts is consistent with the maintenance and enhancement of productivity in the longer term.

Cumulative Impacts

Cumulative impacts on the environment are those that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

General Historic Overview

The Sunrise Project area was homeland to the Clackamas Indians who occupied the area when the first Euroamericans visited the area in the early 1800s. The Native Americans fished at Willamette Falls and had villages and fishing stations along the Clackamas and Willamette rivers. Hunting and gathering camps were located in the uplands surrounding the project area.

The Sunrise Project has been the focus of historical activity since the early to mid-1800s. The early settlers were attracted to the rich farmland and rivers, and made use of the power source provided by the falls at Oregon City. Early settlements were centered around the falls and along the Willamette and Clackamas rivers. The overland branch of the Oregon Trail passed through the project area and many of the early travelers settled in the newly created communities of Gladstone and Oregon City.

Between 1847 and 1865, the county rural population began to grow, creating the need for rural centers. As the rural population increased,

so did the need for better transportation routes. Several spurs and wagon roads developed as offshoots from the well-established Barlow Trail.

The town of Clackamas was platted in 1869-70 and developed around the railroad. The Oregon Central Railroad ran its line through Clackamas (previously called Marshfield) in 1869. In 1870, Clackamas donated land to the railroad under the stipulation that a depot be built in the town. The depot was constructed shortly after the land transaction. The community benefited greatly from the railroad, and many businesses developed there because of it.

The continued growth of rural areas and small towns in Clackamas County followed a pattern that was similar to the rest of Oregon for most of the first half of the twentieth century. Most of the growth occurred in or near small towns.

After the Second World War, suburban residential and commercial development followed the existing road system into northwestern Clackamas County, creating a large urban area by the 1960s. While suburban growth has continued until the present day, a series of major decisions made during the 1970s have played a major role in shaping the urban form of northwestern Clackamas County

Major Decisions of the 1970s

Two major transportation projects, I-205 and the Milwaukie Expressway (OR 224), and two major land use policy decisions set the stage for the development that occurred in the last 30 years in the study area. During this time, a major regional employment, manufacturing, and wholesale distribution complex has developed, along with residential areas in urban unincorporated Clackamas County and in the City of Happy Valley. The transportation and land use patterns that evolved as a result of these transportation projects and policy decisions provide the impetus for the expected future growth in the 2002 UGB expansion areas of Damascus and East Happy Valley urban areas. This urbanization pattern has

set the stage for future expansion of the UGB over the next twenty years.

Major highway projects

I-205 and the Milwaukie Expressway (OR 224), both built in the 1970s, are the transportation and freight backbone of the regional transportation system in Clackamas County's portion of the Portland metropolitan area east of the Willamette River. The other main transportation corridor in this area is OR 99E, also known as McLoughlin Boulevard.

I-205, formally known as Oregon Highway No. 64, the East Portland Freeway, was the largest of these major highway construction projects. This 26.6-mile-long route starts at I-5 at Tualatin, travels through Clackamas and Multnomah Counties to the Columbia River and then continues through Clark County, Washington, to rejoin I-5 just north of Vancouver, Washington.

I-205 is now one of the most heavily traveled portions of interstate highway in Oregon and is a major truck route for the region. Average daily traffic on I-205 near its connection with I-84 in Portland is 148,300 vehicles per day. It took 14 years to complete construction of I-205, which was built and opened in segments:

- The first contract for construction of Willamette River Bridge at West Linn and Oregon City was awarded on January 11, 1968.
- The connection from I-5 to Oregon City was opened to traffic on May 28, 1970.
- The segment between Oregon City and Sunnyside Road was completed in 1974. At that time, I-205 was connected to OR 213N (SE 82nd Avenue) and to the Milwaukie Expressway (OR 224).
- By 1978-1979, construction on the remaining 9.2-mile section of I-205 in Oregon was underway. The final section of the I-205 project was one of the first Oregon highways to successfully follow the requirements of the National Environmental Policy Act.

- The Glenn L. Jackson Bridge, which spans the Columbia River and connects Oregon and Washington, was opened in December 1982.

Completion of I-205 was the final step in establishing the major truck freight distribution center now located along OR 212/224 and the Milwaukie Expressway (OR 224).

The Milwaukie Expressway (OR 224), also built in the 1970s, is a 4-mile roadway traveling through Milwaukie to I-205. An early plan map for this project is dated 1949. OR 224 starts at OR 99E on the western edge of Milwaukie and travels east about four miles until it intersects with I-205 south of the Clackamas Regional Center (this section is the Milwaukie Expressway; east of I-205 the road is named OR 212/224). This four-lane expressway provides a major east-west traffic connection for employment areas and provides a north-south connection as well, connecting to US 99E and thus to Portland.

OR 212 continues east, as OR 212/224, through the Clackamas Industrial Area until it reaches the Rock Creek Junction where it turns south to Carver and then travels through rural Clackamas County to Estacada.

OR 212 continues east through the city of Damascus to US 26, which continues through the city of Sandy, over Mount Hood, and then to Bend and other parts of central Oregon, supporting the freight distribution function of the study area.

Major land use policy decisions

Beginning in 1973, Oregon established a statewide planning system that was intended to direct growth towards the urban areas as defined by urban growth boundaries. The establishment of the Portland regional UGB beginning in 1977 committed most of the land in the land use study area to future urban development. The subsequent adoption of the Clackamas County Comprehensive Plan in 1981 committed the area around I-205, OR 212, and OR 212/224 to future development as a regional retail and office center, an employment/manufacturing center,

and one of the largest truck distribution centers in the region. These decisions created the policy framework that guided the expansions of urban uses in the vicinity of the Sunrise Project, which has, in turn, produced the demand for more transportation facilities in the area.

The second major policy decision that affects the Sunrise Project was a major expansion of the UGB in 2002. The location of the regional UGB did not significantly change for nearly 20 years after it was first established. Two small expansions located northeast of the Sunrise Project were approved in the late 1990s, followed in 2002 with a major expansion of the UGB that added 12,000 acres of land to the north and east of the Sunrise Project. The 2002 UGB expansion area, which contains the new city of Damascus and the easternmost part of the city of Happy Valley, is expected to eventually contain an estimated 45,000 new jobs and 25,000 new households.

Past, Present, and Foreseeable Future Actions

The following list includes past, present, and foreseeable future actions in the Sunrise Corridor area from the I-205 interchange area to just east of the Rock Creek Junction and areas beyond the project in all directions that could be included in a cumulative effects analysis.

Transportation projects

Past highway projects

- I-205 is a 26.6 mile-long route that meets I-5 south of Portland at Tualatin and joins I-5 just north of Vancouver, Washington.
- OR 224 is a 22-mile roadway from Milwaukie to Estacada that intersects with I-205 about four miles east of Milwaukie and then traverses the project area to the Rock Creek Junction where it turns south.

No build and build assumptions for future road projects (arterial)

- SE 82nd Drive widen between SE Lawnfield Road and OR 212/224 (from 2 to 5 lanes).

- OR 212, improve connection to SE Mather Road via SE 102nd Avenue and SE Industrial Way (from 2 to 3 lanes).
- New arterial at Rock Creek Boulevard, create a new northerly extension from OR 224 at Rock Creek Junction that curves east to connect to SE 162nd and SE 172nd avenues (5 lanes). *Half of this street has been built by the school district in conjunction with the construction of two new schools.*
- SE 172nd Avenue, widen between SE Foster Road and OR 212 (from 2 to 5 lanes).
- Widen OR 224 between Rock Creek Junction and Carver Bridge (from 2 to 5 lanes).
- Carver Bridge, widen to 5 lanes.
- SE 82nd Drive, improvements, Gladstone to OR 212/224 (from 2 to 5 lanes).
- SE Sunnybrook Boulevard Extension from SE 82nd Avenue (OR 213N) to Harmony Road (construct a new 3-lane facility).
- Create a climbing lane on OR 212 between Rock Creek Junction and SE 172nd Avenue.

Proposed transportation projects outside of the Sunrise Project

Arterial road projects, Damascus

- SE 242nd Avenue, widen from OR 212 to Palmquist (from 2 to 5 lanes, 35 mph).
- OR 212 from Rock Creek to SE 257th Avenue (5 lanes, 35 mph).
- SE Sunnyside Road extension from SE 172nd to SE 242nd avenues (a new 5-lane facility, 35 mph).
- SE 232nd Avenue extension from OR 212 to Borges Road (a new 3-lane facility, 25 mph).
- SE 190th Avenue extension, widen from Tillstrom Road to SE 172nd (from 2 to 5 lanes, 35 mph).

Arterial road projects, outside the UGB, south of the Clackamas River

- Gronlund Road (widen from 2 to 5 lanes, 35 mph).
- Bradley Road (widen from 2 to 3 lanes, 35 mph).
- Forsythe Road (widen from 2 to 5 lanes, 35 mph).

- Holcomb Boulevard (widen from 2 to 3 lanes, 35 mph).
- Clackamas River Drive (widen from 2 to 3 lanes, 35 mph).
- OR 213 (south of I-205) (4 lanes).
- A new crossing of the Clackamas River connecting the I-205/Gladstone interchange with Clackamas River Drive (5 lanes, 35 mph).

Transit-related projects

- I-205 Light Rail with Station at Clackamas Town Center. The Green Line was completed and opened in September 2009.
- New bus routes connecting the Oregon City Transit Center with Carver (and Clackamas Town Center Transit Center) via Holcomb Boulevard and Forsythe Road. Buses would run every 30 minutes during service hours.

Rail projects

- Oregon Iron Works Railroad spur.
- Closure of SE Lawnfield Road at-grade crossing of UPRR to vehicles.

Bicycle network and related projects

- I-205 multi-use path improvements (existing gap completed between SE 82nd Drive and SE Roots Road).
- Sunrise Project multi-use path construction, from I-205 multi-use path to SE 122nd Avenue/OR 212/224. The Preferred Alternative extended this future multi-use path from the proposed terminus at SE 122nd Avenue to a new terminus at the existing Rock Creek Junction.
- Bike paths and sidewalks on all proposed arterial streets listed above.

Other agency plans

The alternatives would not prevent future completion of the planned trails, as identified in the Sunrise Project SDEIS, within the Sunrise Project area. Additionally, construction of a mixed-use trail as a component of the Sunrise Project would partially address the regional desire for a trail in this area.

- **Parks.** Both Metro and the North Clackamas Parks District identify several planned parks, greenspaces, natural resources areas, and trails or linear parks as part of the planned regional trails and greenways system.
- **Sewer.** Clackamas County's Water Environmental Services constructed a sewer trunk line beside Rock Creek in 2008. A sewer trunk line in SE 172nd Avenue was connected to the new trunk line in 2009. This is the first step in the delivery of sewer services to the east Happy Valley area within the Rock Creek basin.
- **Water.** The Clackamas River Water District proposes a 6-million-gallon water reservoir about 800 feet west of SE 152nd Drive above the bluff and near its eastern edge. Sunrise Water Authority has proposed to put a new water reservoir northwest of the intersection of SE 172nd Avenue and Armstrong Circle.
- **Camp Withycombe.** The site's armory and readiness training center functions have been identified for upgrade or replacement to house the corporate headquarters of the 41st Brigade as well as joint forces in a new Armed Forces Readiness Center for realigned units from closing installations in the region. A new master plan for the site is being developed to identify how this and other future development on the site would be accommodated within the effective period of the Master Plan. Part of this master plan includes the possible construction of an overcrossing of UPRR tracks from Industrial Way to SE 82nd Drive via SE Tolbert Street.

Land use decisions

Land use decisions – past

- Original Regional UGB location decision – 1977.
- UGB expansions late 1990s and 2002— Pleasant Valley UGB expansion area, Rock Creek UGB Expansion Area, and Damascus Boring Concept Plan Area.

Land use decisions – future

- East Happy Valley Comprehensive Plan—Happy Valley implementation of their portion of the Damascus Boring Concept Plan. Happy Valley adopted the East Happy Valley Comprehensive Plan in May 2009.
- Damascus Comprehensive Plan—Damascus to implement their portion of the Damascus Boring Concept Plan.

Land use decisions – development on private land

- **Providence Hospital.** The hospital plans to develop a campus on property north of Rock Creek Junction, east of Rock Creek. A minimum of 30 net acres is needed to accommodate a full-service regional medical center to be developed over a 40-year period. At full build-out, the proposed medical center will:
 - Have up to 5,000 employees, about 45 percent of employees in the Rock Creek Employment Area as a whole. This is an employee density of 72 employees per gross acre and 170 employees per net acre.
 - Have a building inventory of 1.6 million gross square feet (gsf), including a 400- to 500-bed hospital and related inpatient facilities (1.1 million gsf) and outpatient facilities (0.5 million gsf), and up to 4,430 structured parking spaces.
- **Windswept Waters.** This 192-lot subdivision is between OR 224 and the Clackamas River, south of the Rock Creek intersection and north of Carver. In 2003 the comprehensive plan designation was changed from Medium Density Residential to Low Density Residential. In 2005 the zone was changed from FU-10 to a combination of R-7 (Low Density Residential), MR-1 (Medium Density Residential), and OSM (Open Space Management). At the time the SDEIS was published, the site was under construction. Phase 1 of this subdivision was completed in 2008, and construction began on a number of houses.
- **River Rim.** Design Review was approved for 144 single-family townhome lots on the western edge of OR 224, approximately 1,000 feet south of the OR 212/224 intersection (Rock Creek Interchange). At the time the SDEIS was published, the site was under construction. This subdivision was completed in 2008, and construction began on a number of houses.
- **Clackamas Town Center** expansion and Light Rail Station. At the time the SDEIS was published, the site was under construction. The MAX Green Line was completed and opened in September 2009.
- **Clackamas Community College** expansion at Harmony Road/82nd Avenue—Nurse Training Program. At the time the SDEIS was published, the site was under construction. This building is complete and opened in 2009.
- **Wentzel Park Estates**, an approved 76-lot planned unit development and associated zone change at 14830 SE 142nd Avenue. In 2004, a zone change converted FU-10 (Future Urbanizable, 10-acre minimum lot size) to R-8.5 (Urban Low Density Residential, 8,500-square foot average lot size), resulting in 76 lots east of SE 142nd Avenue and north of OR 212/224. This development north of the corridor will contribute to the significant residential development occurring in the Sunnyside neighborhood above the bluff. It appears that **Design Option C-3** may take up to 22 lots and new homes in this subdivision. Phase 1 of this subdivision was completed in 2006 and construction began on a number of houses. The **Preferred Alternative** will not directly impact the subdivision.

Zoning changes

Approved zone change from Industrial to Commercial at 15251 SE 142nd Avenue. The subject land contains both local and jurisdictional wetlands. The approval for the zone change permitted the applicant to impact the wetlands in exchange for off-site mitigation. The proposal will likely have mitigation and permitting challenges. Development of expected commercial uses may also include rerouting and enhancement of

Sieben Creek. The land use action had not been finalized as of May 2010; since the publication of the SDEIS, the property has been annexed to Happy Valley.

Changes to natural resources

Local and jurisdictional wetlands exist on the site at 15251 SE 142nd Avenue (see paragraph under “Zoning changes”).

Cow Creek flows southwest to the Clackamas River through commercial and industrial areas. The drainage has become almost entirely contained in underground structures.

Sieben Creek flows south from the hills north of the project area. South of OR 212/224 the creek has been ditched to the Clackamas River.

Dean Creek flows from the Mount Talbert area to Mount Scott Creek. It has been ditched at the I-205 crossing.

Cumulative impacts by topic area

Transportation

The future road projects common to all alternatives are expected to occur in support of the developing urban areas. In addition the road system will expand as local streets are built as part of the development process. Those projects would support the expanding urban area in the new additions to the UGB. While the projects would not be enough by themselves to provide adequate transportation infrastructure to support the new urban development, they would provide enough accessibility to allow development to occur for the foreseeable future. **Alternative 1–No Build**, in combination with the future highway and road projects common to all alternatives, would negatively impact this future transportation system by allowing increased congestion to affect the future arterial road system and freight movement on the main roads. The future arterial road facilities would support the future development in the Sunrise Project vicinity.

The build alternatives would support the future transportation system by carrying much of the through traffic and freight movement in the corridor. The build alternatives, in combination with the future highway and road projects common to all alternatives, would positively impact the future transportation system by providing the capacity needed to manage congestion on the future arterial road system and accommodate freight movement as needed.

The development of future area road improvements common to all alternatives would result in an increase in the number of bike lanes and pedestrian facilities in the vicinity of the Sunrise Project. **Alternative 1–No Build** in combination with a planned bicycle network and related projects would allow the growth of more congestion and create additional safety concerns for bicycle lanes on roadways. **Alternatives 2 and 3** would provide additional multi-use path improvements from the I-205 Interchange to SE 122nd Avenue. The **Preferred Alternative** will extend the non-motorized multi-use path farther (between the Midpoint and Rock Creek Junction) east than the build alternatives, thereby having a greater positive and cumulative effect on the network for alternative modes. The cumulative effects of the **Preferred Alternative** in combination with bicycle network and related projects will do the most to increase opportunities for walking and bicycling in the vicinity of the Sunrise Project compared to **Alternatives 1 through 3**.

Land use

Cumulative land use impacts can consist of the loss of developable land when converting to a transportation use, the potential of new roadways to induce growth, and degree of compliance with land use plans. Major highway projects and land use policy decisions, discussed at the beginning of this section, supported the urban development that occurred in the last 30 years in the vicinity of the Sunrise Project, development that was planned at the local and regional levels. Present and future projects are planned in the same context. The negative land use effect related to transportation infrastructure

development is that conversion of land to highway use prevents that land from hosting residents or jobs and adds to the previous conversions that have occurred as the cities in the Metro region have grown. However, because of Oregon's land use laws and the presence of the UGB, the amount of available housing and employment land is monitored and expanded when needed.

In addition, land development in Oregon is not primarily driven by the development of the highway system to the same extent that it is in other states. The availability of sewer service, water service, and land zoned for urban development within the UGB will drive development over the next 20- to 30- year time period. Similarly, the Oregon land use planning system directs urban growth and densities towards those areas that are within UGBs and away from lands that are outside the UGB, and the land use planning system defines the priority areas to be brought into UGBs in the future. Lands outside the future expansion area for the UGB are not expected to be available for large scale urban development.

Therefore, there is an assumption the population and employment growth forecast for the study area and the resulting future land uses will occur regardless of the outcome of the decision concerning whether or not to build the Sunrise Project.

Alternative 1 would negatively impact the future transportation system by allowing increased congestion. Congestion and limited freight access opportunities are expected to have the effect of limiting employment and other types of development envisioned in local plans. It is understood that future urban growth may slow down as traffic and congestion problems increase and as other portions of the region that have developable lands within the UGB compete for the region's growth. However it is unlikely that development of the area around the Sunrise Project and the area to the east of the project, within the UGB, will actually be stopped by traffic and congestion problems.

The cumulative effects of the **build alternatives** in combination with past highway and land use policy actions would be to continue to support future urban development in the Sunrise Project vicinity and in the newer urban areas to the south and east by providing the capacity needed to manage congestion on the future arterial road system and accommodate freight movement as needed.

The cumulative effects of the **build alternatives** may also be present in the form of more rapid development. The increased access to I-205, providing a streamlining of movement to and from Portland and other distribution centers, would likely result in the area around I-205 becoming increasingly commercial, with loss of remaining residential areas. As the residential centers in the vicinity of OR 212 are displaced, they would increasingly relocate to the east, taking advantage of the streamlined access of the now-outlying areas to I-205.

The decisions as to where new urban development will occur are made within the policy framework of local and regional land use planning. The Sunrise Project **build alternatives** are not expected to induce substantial amounts of growth on vacant land because there would be no new direct access to undeveloped parcels and no changes to planned land uses are associated with the project. This project is expected to meet the needs of the existing development pattern of those areas that are already planned for development.

Parks and recreation

There are no existing parks within the project area, but several located within a few miles of the Sunrise corridor. Clackamas County and the cities of Damascus and Happy Valley are also developing additional parks and trails in the project area. As the area surrounding the Sunrise Project develops, it is likely to have more park and recreational facilities added over time. The project will be constructed to accommodate existing and planned bicycle and pedestrian facilities, and has been found to have *de minimis* impacts on the Clackamas Elementary School.

There will be no other park or recreational impacts associated with the project.

Communities and businesses

The cumulative effects of **Alternative 1** would be to allow increased congestion and reduced access to the regional transportation system so that there would be a significant negative impact on future employment growth and the viability of the business districts in the Sunrise Project area.

The Old Clackamas and Hollywood neighborhoods have already been impacted by expansion of transportation facilities and incursion of industrial and commercial development. All **build alternatives** would add to the previous encroachment to some degree. The future of the manufactured home parks located within or adjacent to the Clackamas Industrial Area is also a concern; nationwide market forces at this time are supporting the conversion of manufactured home parks to other uses. **The Preferred Alternative would have the lowest impact on manufactured homes compared to Alternatives 2 and 3.**

The improved regional accessibility of the **build alternatives** and the **design options** may make neighborhoods more attractive for intensification and redevelopment. The risk would be the potential loss of affordable housing, particularly in manufactured home parks. It is also reasonable to expect requests to convert some of these existing residential areas to commercial or industrial land uses, similar to previous requests for changes in Hollywood and Old Clackamas.

However, within the land use study area there are over 210 acres of vacant residential land, comprising 185 acres of vacant land zoned for single-family units and 25 acres of vacant land zoned for multi-family units. There are almost 10 acres of vacant land zoned MR1, which allows development of manufactured home parks. Another 15 acres is zoned for multi-family units at densities of up to 18 units/acre.

Another factor in the ability of people to be relocated to comparable housing is the existing

real estate market, including vacancy rates for multi-family and single-family residences. The vacancy rate for multi-family housing has risen from 3.1 percent in 2008 to 5.6 percent in late 2009, one of the highest in the region. In the single-family, detached house market, the median sale price has continued to decline from the first quarter of 2008, from \$295,000 to \$236,000 in the third quarter of 2009. The increase in the vacancy rates combined with decline in housing prices could make finding suitable units for relocated residents easier during the acquisition period than in the years past. This flat real estate market is expected to stay flat at least until 2013.

Under the **build alternatives**, development of the supply of vacant employment land within the land use study area is likely to be more employment-intensive with the more supportive transportation system. Also, existing employment areas are expected to intensify over time due to the cumulative effects of a more efficient and convenient transportation system.

Environmental Justice

None of the 74 identified affordable housing units would be affected by the Sunrise Project. However, the **build alternatives** and some of the design options, in combination with other past, present, and reasonably future actions, may support gentrification or redevelopment/ replacement of moderate and low-income areas (such as the manufactured home parks that are already at risk from market forces). **The Preferred Alternative will have the lowest direct impacts compared to Alternatives 2 and 3.**

Visual resources

The cumulative effects and benefits would be expected to be approximately the same for both **Alternatives 2 and 3** and all the design options. The main cumulative effect of the proposed project and other proposed or current land use projects is increased man-made development, particularly roads, intersections, buildings, parking lots, and on- and off-ramps, which would potentially cause the character of the project

area, especially in the Midpoint and Rock Creek Junction areas, to become urbanized more rapidly than if the highway were not built. Road and development projects would also contribute to the collective removal of vegetation and grading of terrain in the project area. This would negatively affect existing views by decreasing the color, form, texture, and line variation that trees, shrubs, and hills provide. Conversely, some new plantings may be associated with new or redevelopment projects, but views would be altered until plantings mature over time. However, transportation improvement projects such as widened roads would potentially reduce traffic congestion, which can encroach upon views, particularly in areas that are currently less developed.

New roads and associated improvements can also further encroach on visual resources and contribute to the segmentation of existing visual resources, such as those of fields and intact stands of trees. The projects would also contribute to the collective removal of vegetation and grading of terrain in the project area. This would negatively affect existing views by decreasing the color, form, texture, and line variation that trees, shrubs, and hills provide.

Noise

The cumulative effects for noise will include noise from traffic on project roadways along with construction noise during project construction.

During project construction, noise levels throughout the corridor could, at times, exceed the existing and future traffic noise levels. Major construction activities, such as demolition and site preparation, hauling, concrete pumping, and paving would occur throughout the corridor, sometimes within 50 to 100 feet of noise-sensitive properties. Although there may be other unrelated construction activities that could be occurring at the same time as this project, within the study area of 500 feet from the proposed right-of-way, this project will likely be the dominant noise source.

In addition to the direct effects within the project study area, noise from hauling to and from the site along with noise from construction staging areas could also contribute to the cumulative noise impact in a larger area within this part of Clackamas County. The impacts will include noise from cement mixers, haul trucks, and other large delivery trucks accessing the project corridor using established haul routes. All construction activities, including noise from staging, lay-down, and storage areas, will be required to meet the local noise regulations or obtain a noise variance from the appropriate agency. The cumulative noise levels will vary, and be dependent on the level of area traffic, construction phases and proximity of noise-sensitive properties to the project corridor. While there is no accurate method of predicting the cumulative noise levels, the construction noise levels presented in the Noise Section are likely the loudest noise levels that will be experienced by noise-sensitive properties in the corridor.

Following construction, the cumulative study area noise levels will be dominated by traffic along the project, along with I-205 and other major roadways. Noise from other local unrelated highway and roadway improvement projects as well as industrial, commercial, and residential construction projects will continue to add to the noise environment in and around the project corridors.

Air quality

USDOT has determined that Metro's 2035 RTP, which includes the Sunrise Project, meets all air quality conformity requirements. The Sunrise Project has been included in the region-wide air quality analysis which demonstrates continued conformity through 2035. Background concentrations representing the cumulative emissions of other sources in the area are added into the predicted local concentrations for carbon monoxide at intersections. Because of these inclusive analysis methodologies, the impacts evaluated already represent cumulative air quality impacts.

In addition, Clackamas County and ODOT have worked with Metro to determine the Sunrise Project improvements that comprise the Sunrise Project **Preferred Alternative**, and are included in the 2035 Regional Transportation Plan (RTP) financially-constrained system. On June 10, 2010, Metro Council and JPACT approved final adoption of the 2035 RTP and associated air quality conformity finding. FHWA and FTA issued the USDOT air quality conformity finding on the 2035 RTP on September 20, 2010. The design concept and scope of the Sunrise Project in this NEPA document is consistent with the project as described in Metro's 2035 RTP and the assumptions in Metro's regional emissions analysis for the associated air quality conformity determination.

Energy

The Sunrise Project will be constructed in a region projected to gain one million residents by 2030. Many other road, land development, and infrastructure projects are planned or forecast in addition to the Sunrise Project. Unlike land development, the project would not create new trips, but could have the effect of accelerating development, and therefore, affect the pace of additional energy demand. However, when considered in the context of the entire Portland metropolitan region and prospects for slower economic growth compared to the last decade, the Sunrise Project will have a marginal impact on total fuel consumption, and cumulative energy effects resulting from the Sunrise Project will be minimal.

Biology

The project area is in a part of the region that has undergone significant development in the last 30 years. This development has had a large impact on the health of the local ecosystem, particularly in terms of fish and wildlife habitat. Past and planned road and land use development projects add to the biological impacts of the Sunrise Project, primarily as a result of increased impervious paved and roofed surfaces. Residential development is expected to continue on the vacant lands in the vicinity of the Sunrise

Project, which adds roofs to the sum of impervious surfaces. It is assumed that future projects will comply with state water quality standards for detention/retention and water quality treatment existing at the time of construction. However, single-family development is generally not required to treat stormwater, which increases the negative impacts from stormwater runoff from roofs and driveways.

New urban areas to the south and the east of the proposed Sunrise Project have begun to develop and will continue to do so over time. If all privately held land were to fully develop, the Mount Talbert to Rock Creek wildlife corridor could be severed.

New bus lines would presumably use existing facilities and will not result in additional impacts to fish, wildlife, and botanical resources. These new bus lines may benefit those resources by slowing the demand for additional new facilities. Nevertheless, it is safe to assume that increased growth would occur and would negatively impact fish habitat.

Sewer and water projects built as part of a road construction project or built in existing road prisms do not constitute significant impacts to biological resources because the areas are already disrupted by construction. Sewer projects that follow stream corridors can be very disruptive to the natural environment.

Camp Withycombe plans to add new facilities to the camp in order to locate the new 41st Brigade headquarters and logistics center. Wildlife habitats at the camp are already compromised due to the existing amount of activity there.

It is unknown whether the wetland on the future medical care complex site would be adversely affected. Permits would be required from USACE and DSL. The agricultural field provides limited wildlife habitat.

Mitigation of the project's impacts to fish and wildlife habitat and treatment of stormwater as described below would minimize the contribution

of the **Preferred Alternative** to negative cumulative impacts to biological resources in the area.

Wetlands

Development in this portion of Clackamas County, such as land clearing for agriculture and subsequent urban development and associated drainage improvement, has likely resulted in a significant loss of wetland acreage and wetland function over time. The hydrology and plant communities of the remaining wetlands have been altered significantly as a consequence, and linkages between wetlands and other native habitats are largely lost. Existing water quantity and water quality functions tend to be more prevalent than fish and wildlife habitat support functions. Fish and wildlife habitat functions of existing wetlands are greatly reduced relative to historical conditions as a result of habitat loss and fragmentation, disturbance from pedestrian and vehicular traffic, altered hydrology, establishment of invasive plant species, maintenance activities (e.g., mowing), and similar impacts that have occurred outside of the API that affect conditions within the API.

Water quantity and water quality functions are less impacted by the above factors; however, actions such as drainage improvements (e.g., ditching) have adversely impacted these functions.

The proposed project would significantly add to this cumulative loss by further impacts to wetland acreage and function. If pressure to develop in wetlands increases, many impacts to remaining small- and medium-sized wetlands could occur.

Water quality

No cumulative water quality effects are anticipated from **Alternative 1** or the proposed project. No cumulative impacts are expected because the project will treat runoff from all but 16 acres of impervious surface in the project area and an area equivalent to the 16 acres not treated on-site will be treated off-site. Therefore,

the net impacts will be a zero contribution to cumulative impacts. If the project prompts redevelopment in the area, such redevelopment would require stormwater mitigation in addition to the project-related stormwater mitigation.

Geology and soils

With respect to landslide areas and slope stability, cumulative effects to geology and soils will be minimal because no other large construction projects are planned to occur in the same slide-prone areas as the Sunrise Project. Adequate alignment width has been provided to allow for the incorporation of engineering design of mitigation measures to address the issues. With mitigation such as adjusting the elevation of the roadway, minimizing grading/cutting of the slope, adding buttress fills, and use of retaining structures such as soldier pile and secant pile retaining walls, the **Preferred Alternative** will not contribute to cumulative impacts on the landslide areas or soil stability.

Mitigation for embankment dead loads—replacing soft, compressible soils and improving soil consistency—will ensure that the project would not contribute to cumulative effects from stresses on soils.

Mitigation for potential seismically-induced liquefaction, such as stone piers or columns, and removal and replacement of liquefiable soils, will prevent the project from contributing to cumulative effects from potential liquefaction.

Because the proposed roadway cuts required for the project would be technically feasible and will limit the potential for erosion, the Sunrise Project will not contribute to cumulative impacts on the soils or geology of the area.

Cultural resources

The SHPO has concurred that the **Preferred Alternative** would have no direct impacts on archaeological or historic resources. However, there will be indirect effects to above-ground resources and always the risk of damage to the protected site despite protection. Therefore, project will contribute an insignificant decline in

the quality or availability of the resources, or both and will have cumulative effects in the area.

Urbanization would occur regardless of the proposed Sunrise Project; constructing the highway may accelerate development of currently undeveloped and open lands, especially in east Happy Valley and Damascus. That development is likely to result in the loss of archaeological resources that may be present on developable lands in these areas.

If development triggers federal involvement, the developer would be required to determine whether archaeological resources would be affected by the proposed development and to mitigate for adverse effects to significant resources. Oregon state law protects archaeological resources, but no surveys prior to development are required if there is no federal agency involvement. Unrecorded and unreported archaeological resources are therefore likely to be unknowingly disturbed or destroyed.

Similarly, development and urbanization of areas recently added to the urban growth boundary may also affect existing cultural resources (above- and below-ground historic and archaeological resources) located within the urban growth boundary.

The build alternatives would directly affect between zero and three above-ground historic resources and would potentially affect one archaeological resource. **Due to avoidance measures implemented for the Preferred Alternative, there are no direct impacts associated with the Preferred Alternative.**

Hazardous materials

Major cumulative effects related to remediation of contaminated soil/groundwater due to the construction of the Sunrise Project are not expected. Concerns may arise that a project the size of the Sunrise Project could create a shortage of experts available to handle the workload across the region. The opinion of the contributors to this FEIS is that qualified contractors can absorb the work.

Utilities

The network of utilities in the project area is currently deemed sufficient and is expanded as projected needs increase. The utility infrastructure that would be needed by the project, chiefly electrical lines to deliver energy for lighting, exists in the area and would be sufficient to support the project. The project needs for would chiefly be electricity for lighting during construction and operations. The draw on the electrical grid during operations would add a low demand compared to other existing uses in the study area, such as industry. Given the small amount of project impact and the ability of utility providers to expand services based on projected demand, no cumulative impacts associated with the Sunrise Project are expected.

Summary for Preferred Alternative

Table 33 presents a brief overview of the cumulative impacts of the **Preferred Alternative**. The table outlines the general context of the environmental resource, the direct and indirect impacts associated with the project, mitigation proposed to address the impacts, and the conclusion. For more detailed review of these elements, see Tables 2 and 3 (Summary of Impacts, and Mitigation Commitments) and Chapter 3 (Affected Environment, Environmental Consequences, and Mitigation Measures).

Table 33. Summary of Cumulative Impacts from the Preferred Alternative

Transportation

The **Preferred Alternative** will have beneficial cumulative effects on local and regional mobility in combination with past, present, and future projects. Those projects will support the expanding urban area in the new additions to the UGB. While the projects will not be enough by themselves to provide adequate transportation infrastructure to support planned urban development, they will provide enough accessibility to allow development to occur for the foreseeable future. The **Preferred Alternative** will add capacity to the multi-use system by adding a multi-use path between I-205 and the Rock Creek Junction. Because the Sunrise Project is part of the planned network for this area, it will contribute to the positive cumulative effect of road improvements in terms of improved mobility and safety across the region.

Land Use

The proposed conversion of existing and potential land uses to highway use will add to the previous conversions that have occurred. However, under Oregon's land use planning system, the amount of available housing and employment is monitored and expanded when needed either through an expansion of the urban growth boundary or changes in allowed densities of development. In addition, the **Preferred Alternative** will provide the capacity that is needed to maintain mobility on the transportation system given the planned growth.

Financial compensation and relocation assistance, and property access mitigation will prevent a negative cumulative impact on the potential for redevelopment or development of vacant lands.

Decisions as to where new urban development will occur are made within the policy framework of local and regional land use planning. Since the build alternatives are not expected to induce additional population or employment growth because land use plans already anticipate those growth areas, the project will result in a general transfer of demand, rather than an increase in demand, for development throughout the region.

For these reasons, the project will support plans for development of lands in the area and is not expected to contribute to negative cumulative impacts related to land use.

Parks and Recreation

As the area surrounding the Sunrise Project develops, it is likely to have more park and recreational facilities added over time. The project will be constructed to accommodate existing and planned bicycle and pedestrian facilities, and has been found to have *de minimis* impacts on the Clackamas Elementary School.

Businesses and Communities

In the latter half of the 20th century, suburban residential and commercial development expanded along the road network into northwestern Clackamas County, creating a large urban area by the 1960s. The adoption of the Clackamas County Comprehensive Plan in 1981 committed the area around I-205, OR 224, and OR 212/224 to future development as regional retail, manufacturing, and distribution centers in the region. Older residential areas, such as the Old Clackamas (platted in 1969) and Hollywood neighborhoods, were affected by the expansion of transportation facilities and incursion of industrial and commercial development as a result of population and employment growth going back many decades.

The **Preferred Alternative** will add to the previous encroachments and rising traffic levels on nearby streets, thereby changing community character in those neighborhoods. However, the impact is expected to be balanced by improved neighborhood conditions in communities south of OR 212/224 because the project will attract future traffic from OR 212/224 that could otherwise require future encroachments in those areas. Businesses are likely to experience a net benefit from better mobility on the arterial networks with the Sunrise Project than without it.

Financial compensation, relocation assistance, property access mitigation and application of community development strategies will prevent a negative economic impact on residents and businesses. Because the project alignment will not bisect any communities, it will not add to previous impacts on community cohesion in this part of the Metro region. Therefore, negative cumulative impacts related to the **Preferred Alternative** are expected to be minor.

Environmental Justice

There has been targeted outreach to potentially affected communities, and mobility benefits of the project will not be denied to potentially affected communities. Project effects (e.g., noise, displacements, visual impacts) will occur throughout the corridor and will not disproportionately affect EJ communities following mitigation. Displacement impacts will be compensated for in accordance with the Uniform Act and noise walls will reduce impacts below future No Build conditions. Therefore, there will be no cumulative impacts by the project on EJ communities.

Visual Character and Resources

The **Preferred Alternative** will result in potential declines in visual quality in the area due to the construction of the roadway, ramps, increase in traffic, and removal of vegetation. This will add to the trend of development of the built environment that has been ongoing and is planned for the area. Mitigation to blend the project into the surrounding landscape and screen visibility of the project to residential viewers will moderate the project's contribution to cumulative impacts to visual resources.

Table 33. Summary of Cumulative Impacts from the Preferred Alternative

Noise

Traffic noise levels in the study area will increase with or without the Sunrise Project. After construction, the study area noise levels will be dominated by traffic along the project, along with I-205 and other major roadways. Noise from other local unrelated highway and roadway improvement projects as well as industrial, commercial, and residential construction projects will continue to add to the noise environment in and around the study area. Mitigation provided by recommended noise walls will minimize negative impacts from traffic noise from the Sunrise Project for most of the neighborhoods. Some noise impacts, chiefly along the Bluff, will not be mitigated. Without the Sunrise Project, the noise model predicts that by 2030 there will be 262 properties that exceed the noise abatement criteria in the study area. With the mitigation proposed by the **Preferred Alternative**, there will be 241 property noise impacts in this same area. Therefore, the Sunrise Project will moderately improve long-term cumulative noise impacts in the study area as a whole, compared to the No Build condition.

Air Quality

The forecast traffic volumes used in the analysis of the air quality emissions burden included traffic from the overall project area traffic. Background concentrations representing the cumulative emissions of other sources in the area are added into the predicted local concentrations for carbon monoxide at intersections. Based on modeling completed for the project, the **Preferred Alternative** will not cause an exceedance of the NAAQS, so there will be no contribution to cumulative impacts on air quality.

Energy

Long term, the project is not expected to have a significant cumulative effect on the region's energy use. The Sunrise Project will be constructed in a region projected to gain one million residents by 2030. Decisions regarding new urban development and roadways are made within the framework of local and regional land use planning. Many other road and infrastructure projects in addition to the Sunrise Project are planned in the Portland metropolitan region. This project is expected to meet the needs of the existing development pattern of those areas that are already planned for development. Since the build alternatives are not expected to induce additional population or employment growth to the Portland metropolitan region as a whole, the **Preferred Alternative** will result in a general transfer of demand and not an increase in travel demand throughout the region. The Sunrise Project, when considered in context of the entire Portland metropolitan region, will have a marginal impact on total fuel consumption.

Biology

The project area is in a part of the region that has undergone significant development in the last 30 years. This development has had a large impact on the health of the local ecosystem, particularly in terms of fish and wildlife habitat. Future development, including the proposed project, continue this trend. Important impacts from future development and the Sunrise Project include increased impervious surface in the drainage basins and development of vacant land that currently provides some (if limited) habitat value and connectivity, particularly for the Mount Talbert to Rock Creek wildlife corridor will continue this trend. The Sunrise Project proposes a wide range of mitigation measures associated with biological resources. Mitigation of the project's impacts to fish and wildlife habitat and treatment of stormwater as described in Chapter 3 will minimize the contribution of the **Preferred Alternative** to negative cumulative impacts to biological resources in the area.

Water Quality

The **Preferred Alternative** will occur within seven major drainage basins. On-site water quality and quantity mitigation for all but 16 acres of impervious surface created by the project or contributing to the project from adjacent county and state roadways is included in the project, so runoff is not expected to affect any of the creeks' morphology or water quality (see page ii and 93 of the Water Quality Technical Report). Offsite treatment will occur for the 16 acres where treatment is not now provided. All treatment will be within the affected basins.

Future development of existing vacant and developable land within the seven basins but outside of the project's footprint is expected to increase the amount of impervious surface; not only will the project not contribute to those cumulative impacts, in fact it will offset a small amount of existing or future untreated areas because the project's mitigation is over-sized for its expected impacts. Therefore, the **Preferred Alternative** will marginally improve water quality within the study area, when considered in context of existing and planned development and there will be no adverse cumulative impacts resulting in a significant loss of wetland acreage and wetland function over time. The hydrology and plant communities of the remaining wetlands have been altered significantly and linkages between wetlands and other native habitats are largely lost. Existing water quantity and water quality functions tend to be more prevalent than fish and wildlife habitat support functions. Water quantity and water quality functions are less impacted by development; however, actions such as drainage improvements (e.g., ditching) have adversely impacted these functions. The **Preferred Alternative** would unavoidably impact 23 acres of wetlands, which adds to previous and future loss of original wetlands. Credits from the local wetland bank would be purchased to mitigate the impacts. The preservation of wetland functions in the local wetland bank would minimize cumulative impacts resulting from the project since the credits for functions and acreages would be within the same drainage basins as the project.

Table 33. Summary of Cumulative Impacts from the Preferred Alternative

Wetlands

As Clackamas County has developed, wetlands have been replaced with urban and industrial development, The **Preferred Alternative** avoids wetland impacts as much as possible, but unavoidable impacts will occur to 23 acres of wetlands. To mitigate these losses, the purchase of credits from the local wetland bank will minimize cumulative impacts resulting from the project.

Geology and Soils

The potential impact of site grading on the stability of existing slopes has been identified and measures are available to mitigate the potential impacts. Mitigation of impacts related to groundwater, erodible soils, slope stability, embankment fill and settlement, and seismically-induced liquefaction will prevent negative cumulative impacts. Cumulative effects to geology and soils will be further minimized because no other large construction projects have occurred or are planned to occur in the same slide-prone areas as the Sunrise Project.

Cultural Resources

The SHPO has concurred that the **Preferred Alternative** will have no direct impacts on archaeological or historic resources. Indirect impacts and the presence of a site where the significant resources, while protected, will be adjacent to the project means the project will likely contribute an insignificant amount to a gradual decline in the quantity and/or availability of resources.

Hazardous Materials

Several sites with potential hazardous materials issues occur in the project area. Mitigation measures such as spill prevention plans, contaminated media management plans, hazardous materials site assessments for sites acquired by ODOT, and compliance with the terms of the Consent Decree for Northwest Pipe and Casing will ensure that the **Preferred Alternative** would have no direct impacts and therefore no negative cumulative impacts.

Utilities

The needs of the project for utilities is chiefly electricity to power illumination of the highway. There is sufficient infrastructure to support the project in conjunction with other past, present, and reasonably foreseeable future projects. The power grid in the project area is sufficient and can be expanded to meet forecasted demand. Therefore, the **Preferred Alternative** will not result in cumulative impacts to utilities.

Unavoidable Impacts

Irretrievable and Irreversible Commitment of Resources

Implementation of the proposed action involves a commitment of a range of natural, physical, human, and fiscal resources. NEPA requires the EIS to identify how building the Sunrise Project would commit resources that could not in the future be retrieved (once the resource is used, it is gone, such as fuel or labor) and commit resources to a use in a way that could not be reversed (such as natural wetlands that could not be recreated).

The commitment of these resources is based on the concept that residents in the immediate area, state, and region would benefit by the improved quality of the transportation system. These benefits would consist of improved accessibility and safety, savings in time, and greater availability of quality services which are anticipated to outweigh the commitment of these resources.

Land consumption

Land used in the construction of the Sunrise Project is considered an irreversible commitment during the time period that the land is used for a highway facility. The **build alternatives** would commit land from existing uses to transportation and related uses. While this land might be retrievable in the long term, if a greater need arises for use of the land or if the highway facility is no longer needed, it represents an irreversible commitment within the foreseeable future. While the land can be converted to another use, there is no reason to believe such a conversion would ever be necessary or desirable. **Alternative 2 with Design Option B-2** would have the largest impact by converting about 520 acres of land to transportation. **Alternative 3 with Design Option A-2** would have the least impact among the build alternatives by converting about 477

acres. The **Preferred Alternative** will convert about 496 acres of land to transportation uses.

Natural resources

Large amounts of natural resources are used in the fabrication and preparation of construction materials. Additionally **Alternatives 2 and 3** would cause irretrievable loss or conversion of wetlands and upland and riparian habitats to pavement or roadway slopes. **Alternative 2** would impact 101 acres of habitat and 32 acres of wetlands. **Alternative 3** would impact 99 acres of habitat. **Design Option B-2** would have the greatest impacts on habitat while **Design Option C-3** would have the least. The **Preferred Alternative** will impact 94 acres of habitat and 23 acres of wetland.

Energy resources

Alternatives 2 and 3 would require the irreversible and irretrievable expenditure of energy resources, approximately 35,800 to 43,300 gallons of fuel per day for the operation of vehicles on the corridor in 2030 or 13.07 to 15.80 million gallons of fuel annually.

To construct the project, the commitment of energy sources would include petroleum products expended by construction equipment on the site and in transport to and from the site, and the energy invested in the preparations or fabrication of the construction materials. Construction is estimated to require between 56 and 62 million gallons of fuel. The **Preferred Alternative** would use approximately 55 millions of gallons of fuel to construct or between 2 and 16 percent less energy to construct than **Alternatives 2 and 3**.

Materials

Considerable amounts of highway construction materials such as cement, aggregate, and bituminous material would be used to build the Sunrise Project. These materials are generally not retrievable except for those items that have some salvage value and can be recycled. However, they are not in short supply and their use would not have an adverse effect upon

continued availability of these resources.

Alternative 2 with Design Option B-2 is estimated to require the most materials because the size of the split diamond interchange is noticeably larger than the project under either **Alternative 2** or **3**. The **Preferred Alternative** is estimated to use 3 percent fewer cubic yards of aggregate and concrete and 9 percent fewer linear feet of fence and barrier materials than **Alternative 2 with Design Option B-2** because the midpoint interchange is smaller. The **Preferred Alternative** is estimated to use 7 percent more cubic yards and 5 percent more linear feet of materials compared to **Alternative 2**. The **Preferred Alternative** will use 2 percent more structural steel (tons) than **Alternative 2 with Design Option B-2** and 6 percent more than **Alternative 2**.

Financial resources

Funds expected in the design, construction, operation, and maintenance of the Sunrise Project would be totally committed and unavailable for other uses.

Summary of Unavoidable Impacts

Transportation

Congestion on the road network would continue to grow even when the Sunrise Project is built.

Land use, communities, and businesses

Changes to access and circulation will require longer traveling distances for residents and businesses at specific points in the Sunrise Project area. The conversion of developable land to transportation uses is unavoidable.

Environmental Justice

Displacement of some low-income housing is likely. Whether residents could be relocated within the land use study area is unknown; however, recent declines in median housing values coupled with increases in vacancy rates for multi-family housing could make finding

comparable housing easier than it might otherwise have been without the current economic downturn. There is also over 200 acres of vacant land within the land use study area that could be developed for multi-family and single-family housing.

Visual resources

Permanent impacts to some visual resources will be unavoidable.

Noise

Areas adjacent to the project will experience an increase in traffic noise levels with and without the project. Federal funds may be used for noise abatement measures when the following criteria can be met: an impact has been identified, the measures would substantially reduce the noise impact (feasibility criteria), and the overall benefits from abatement outweigh other potential adverse effects and the cost of abatement (reasonableness criteria). ODOT's Noise Mitigation Manual, Section 4.500 (ODOT 2009) has procedures and guidelines to determine whether proposed abatement meets the criteria for feasibility and reasonableness. The general abatement selection criteria to be considered in making noise mitigation recommendations are summarized as follows:

- Noise mitigation must provide a 5 dBA reduction in noise levels with a typical goal of 7 to 8 dBA, or higher, at first row receivers.
- Cost of abatement is typically capped at \$25,000 per benefited residence. Costs up to \$35,000 can be considered under specific circumstances.
- Opinions of impacted residents (property owners).
- Absolute noise levels of 60 dBA L_{eq} or higher.
- Residences constructed after 1996 generally not offered mitigation unless the project causes an increase of 5 dBA or more.

- Other environmental impacts from mitigation need to be considered, such as impacts on visual, cultural or wildlife resources.
- Other sources of noise, access locations, and safety.

Noise increases that do not meet the benefit and criteria for funding of abatement measures as above, will not be mitigated for noise impacts. Noise mitigation that was analyzed in the Midpoint area did not meet acceptance criteria in some locations. Potential measures that were evaluated would not sufficiently reduce potential noise increases, would result in other potential environmental impacts, in particular, narrowing the wildlife corridor for any structures on the bluff and displacing more businesses, and/or would result in costs that exceed ODOT's reasonable criterion.

Because of the substantial noise increases in the Bluff neighborhood, and the only moderate performance but high costs of the walls that were analyzed, a further analysis of the wall costs and a preliminary analysis of some additional potential noise mitigation methods were performed. The results are summarized in the 2010 Technical Report but discussed in the most detail in the 2007 Noise Technical Report, in the section "Bluff Neighborhood Mitigation Analysis."

For the Bluff neighborhood, topography and distance from the proposed project would likely require walls of from 35 to 60 feet high at the top of the bluff or in the highway median to meet the ODOT reasonable criterion. Aside from the environmental impacts such walls would create, additional right-of-way would be required and the cost would be prohibitive.

Other methods of mitigation were analyzed, including realignment of the highway, covering the highway, or using quiet pavements. Generally, covering the road and constructing the wall at the top of the bluff were found to provide the best noise reductions for the residential areas. Moving the road offered moderate reduction in noise levels and

performed better for the west end of the neighborhood than the east end. The measures, including the wall at the top of the bluff, had very high preliminary estimates of cost in the range of \$100,000 to \$1,000,000 per residence. No feasible and reasonable methods of noise reduction were found for the Bluff neighborhood.

Biology and wetlands

Replacement of upland, riparian, and wetland habitats with pavement will be unavoidable. Many of these impacts will be mitigated.

Cultural Resources

Alternatives 2 and 3 would have had unavoidable impacts to one archaeological resource. The **Preferred Alternative** was designed with avoidance and protection measures to the resource, and thus will not have unavoidable impacts to the archaeological resource in the project area.

Geology and Soils

Excavation into rock and dewatering (if required) for construction of the interchange in the Rock Creek Junction area will be unavoidable.

Utilities

Relocation of public and private utilities will be unavoidable.

Permits and Approvals Needed for the Preferred Alternative

Table 34 presents the permit requirements for the **Preferred Alternative**.

Table 34. Permits or Approvals Needed for the Preferred Alternative

Issuing Agency	Permit/Approval	Purpose	Conclusion
Federal			
US Army Corps of Engineers	Clean Water Act, Section 404	For placing fill in waters of the U.S.	Prior to FHWA authorizing construction funding. Joint Permit Application is the application form for both the Section 404 permit and the Removal/Fill Permit.
Federal Emergency Management Agency	(Conditional) Letter of Map Revision (CLOMR/LOMR)	When changes to a floodplain are due to new construction and involve changes to a previously established floodway	Prior to FHWA authorizing construction funding
State			
Oregon Transportation Commission	Interchange Area Management Plan(s) (IAMPs)	Required to plan for land use and access at interchanges. The IAMPs are: Sunrise West IAMP Sunrise Midpoint IAMP Rock Creek Junction IAMP	Each IAMP will be approved by the OTC prior to the commencement of construction of each interchange
Oregon Department of State Lands	Removal-Fill	For removal or filling in waters of the state	Before FHWA authorizes construction funding
	Section 401 Water Quality Certificate	Issued in conjunction with the Corps Clean Water Act, Section 404 permit Removal-Fill, for removal or filling in waters of the state	Before FHWA authorizes construction funding
Oregon Department of Fish and Wildlife	Fish Passage Consultation	Prior to replacement of culverts, the owner or operator must obtain approval through consultation of a plan for providing fish passage	Before FHWA authorizes construction funding
Oregon Department of Environmental Quality	Air Contaminant Discharge Permit	Construction related activities, such as concrete batch plants and asphalt batch plants	Before FHWA authorizes construction funding
Oregon State Historic Preservation Office	State of Oregon Archaeological Permits	For any excavations in known archaeological sites or for exploratory excavations to determine if archaeological deposits are present on lands owned by local or state agencies	Before FHWA authorizes construction funding Six parcels under single ownership were not surveyed because the private owner declined to allow access to archaeologists. Parcels are on SE Morning Way, OR 212 (west side, south of Rock Creek junction), on the north side of OR 212/224 west of SE 152 nd Avenue, some about highway, 2 are north of highway)

Table 34: Permits or Approvals Needed for the Preferred Alternative

Issuing Agency	Permit/Approval	Purpose	Conclusion
Local			
Clackamas County, Land Use and Planning Division	Land Development Permit	For any new structures or uses outside of the right-of-way	Before building permit applications
	Habitat Conservation Area District	For proposed modification of land within mapped Habitat Conservation Areas and floodplains; e.g., road crossings of surface waters	Before building permit applications
	Floodplain Permits	Any floodway or flood fringe modification	Before any modifications
	Utilities Permit (no official name)	Some utility relocations may require a land use application submittal	Before building permit applications
Clackamas County, Building Codes Division	Building Permits	For any structures: buildings, bridges, walls, etc., built outside of the current or future public right-of-way	Before construction
	Grading Permit	Grading, site preparation for any grading outside of the right-of-way	Before construction
Clackamas County Service District No. 1	Stormwater Permit	Facilities for water quality treatment and potential detention	Before construction
	Natural Resource Assessment & Buffer Variances	In sensitive areas and buffers to stream, rivers, wetlands, etc., if there are impacts to the resources and/or their buffers	Before construction
Clackamas County (delegated by Oregon Department of Environmental Quality)	NPDES/1200-C	Construction stormwater & erosion control	Before construction
Clackamas County, Engineering Division	Development Permit Application for Site and Road Work	For road work within existing County right-of-way	Before construction
Clackamas County, Sheriff	Noise variance	If construction activities are expected to occur at night between 10 p.m. and 6 a.m.	Before nighttime construction begins
City of Damascus	Rock Junction IAMP	Adoption of IAMP as part of future Comprehensive Plan and Transportation System Plan	Before construction
City of Happy Valley	Sunrise West IAMP Midpoint IAMP Rock Creek Junction IAMP	Adoption of IAMP as part of updates to Comprehensive Plan and Transportation System Plan	Before construction

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