

5. INDIRECT EFFECTS

5.1 Guidance and Methodology

A technical report describing the detailed analysis conducted to assess indirect impacts associated with the proposed project is provided in **Appendix P: Indirect Impacts Analysis Technical Report**. The analysis in the technical report was developed using TxDOT's 2016 *Indirect Impacts Analysis Guidance* which is based on the 2002 NCHRP Report entitled *NCHRP Report 466: Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* (NCHRP, 2002) and the AASHTO *Practitioner's Handbook 12: Assessing Indirect and Cumulative Impacts Under NEPA* (AASHTO, 2011). The *Indirect Impacts Analysis Technical Report* will be updated before publication of the FEIS to reflect TxDOT's and the Mobility Authority's decision to pursue non-tolled mainlanes for this project.

The indirect impact analysis is based on several central definitions. In addition to direct effects, major transportation projects may also have indirect effects on land use and the environment. As defined by the CEQ, indirect effects are

caused by an action and occur later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. (40 CFR §1508.8)

It should be noted that guidance documents use different terms, including "indirect effects" (AASHTO guidance) and "indirect impacts" (TxDOT guidance). For the purpose of this analysis, both terms are used and the meanings are the same.

NCHRP Report 466 (2002) identifies three broad categories of indirect effects:

- **Encroachment-alteration effects:** These effects may result from changes in ecosystems, natural processes, or socioeconomic conditions that are caused by the proposed action but occur later in time or farther removed in distance. One example of this type of effect would be a change in habitat or flow regime downstream resulting from installation of a new culvert.
- **Project-influenced development effects:** Sometimes called induced growth or the "land use effect." For transportation projects, induced growth effects are most often related to changes in accessibility of an area, which in turn affects the area's attractiveness for development. Indirect impacts associated with induced development are also similar to direct impacts but would occur in association with future land use development undertaken by others over the development horizon within a larger study area beyond the direct footprint of the proposed project.

- Effects related to project-influenced development: These are impacts to the natural or human environment that may result from project-influenced changes in land use.

As described in the *Indirect Impacts Analysis Technical Report*, encroachment-alteration effects are discussed in the DEIS document following each resource's direct effects discussion, per current TxDOT direction. Encroachment-alteration impacts are summarized in Table 1 in the *Indirect Impacts Analysis Technical Report*.

The following six steps from TxDOT's *Indirect Impacts Analysis Guidance* are addressed in the induced growth impact analysis (TxDOT, 2016):

1. Define the methodology.
2. Define the area of influence (AOI) and study time frame.
3. Identify areas subject to induced growth in the AOI.
4. Determine if growth is likely to occur in the induced growth areas.
5. Identify resources subject to induced growth impacts.
6. Identify mitigation, if applicable.

Additional guidance utilized throughout the analysis includes the 2002 NCHRP report entitled *NCHRP Report 466: Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects* (NCHRP, 2002) and the NCHRP Project 25-25 Task 22 report entitled *Forecasting Indirect Land Use Effects of Transportation Projects* (NCHRP, 2007).

5.2 Scoping and Area of Influence

The techniques used for this analysis are primarily Planning Judgment, for which data was acquired by administering questionnaires and conducting phone interviews with planning professionals in the project vicinity; Cartographic Techniques; and expert technical analysis consistent with the methods described in NCHRP Report 466 and NCHRP Report 25-25.

In October 2016, the project team held a scoping meeting for the indirect and cumulative impacts analyses. Project team attendees at this meeting included representatives from the TxDOT Austin District, the TxDOT Environmental Affairs Division, and consultant representatives. The project team decided to use major roadways and political boundaries to identify the AOI and recommended development of an AOI that would include the cities of Austin, Bee Cave, Dripping Springs, and Sunset Valley. The physical boundaries of the AOI are bordered by Loop 360, RM 2244/Bee Cave Road, SH 71, RM 3238/Hamilton Pool Road, Crumley Ranch Road, FM 101/Fitzhugh Road, RM 12, RM 150, RM 1826, Slaughter Lane, and Brodie Lane. The AOI encompasses an area of approximately 85,281 acres. This AOI was based on the following factors: the neighborhoods and areas best served by the proposed roadway improvements; the areas most likely to be potentially opened for development following construction of the roadway; the natural resources that could be potentially indirectly

impacted; and discussions with local planning experts in the municipalities and counties in, adjacent to, and near the project area. The AOI includes some or all of the cities of Austin, Bee Cave, Bear Creek, Dripping Springs, and Sunset Valley. During the investigation process, questionnaires were submitted to these entities; none of those interviewed had questions or raised concerns about the proposed boundaries of the AOI, so no changes were made to the AOI as a result of the interview process. See **Figure 5-1** for a map illustrating the boundary of the AOI.

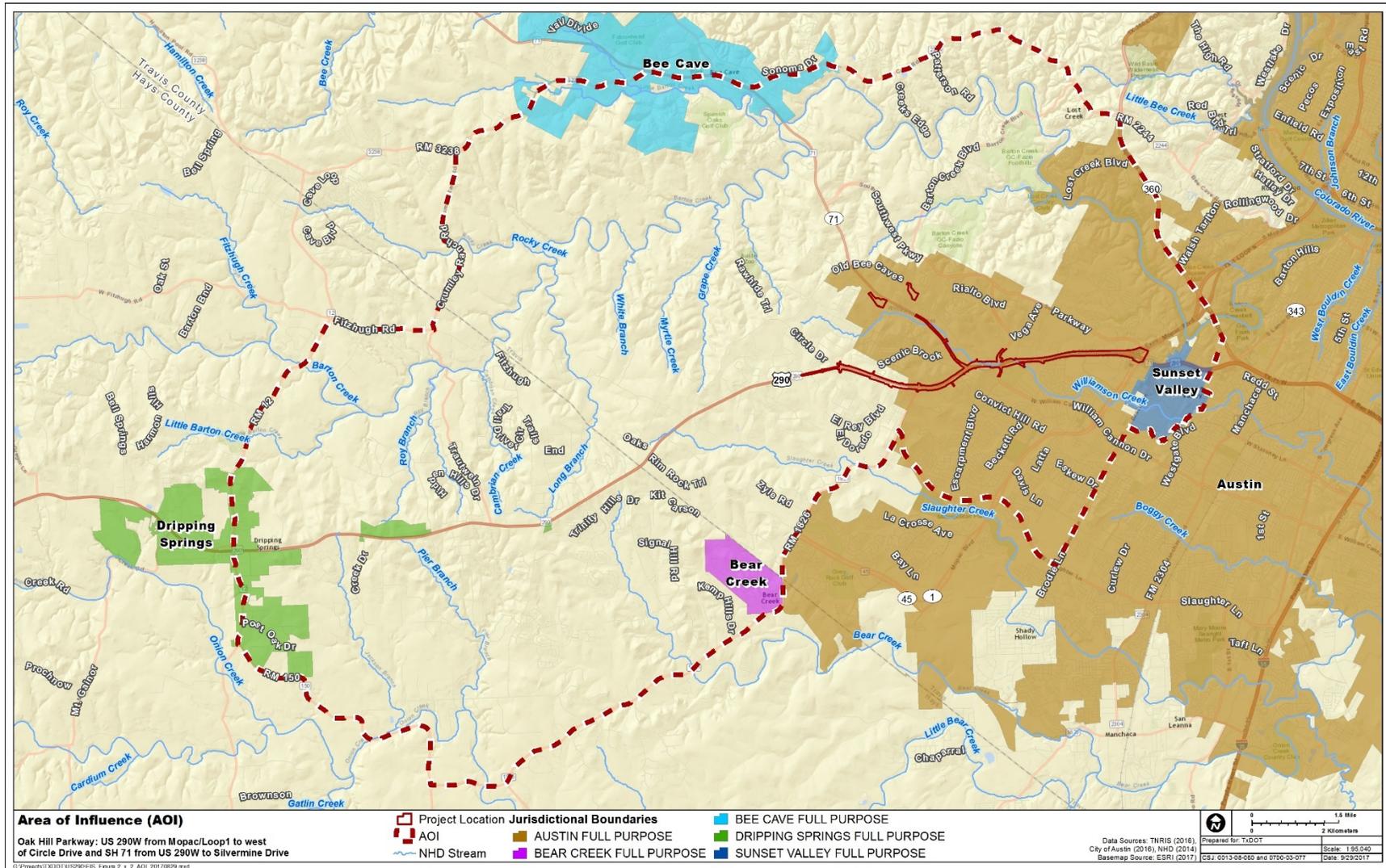


Figure 5-1. Area of influence and the OHP Project area.

A temporal frame of reference is necessary when analyzing the range of impacts that may be caused by the proposed project in the future. The analysis considers indirect induced growth impacts that may occur between the time of project construction (2019) and 2040. This time frame captures the 2037 horizon year for the Our Bee Cave 2037 Comprehensive Plan, the 2039 horizon year for the COA's *Imagine Austin Comprehensive Plan*, and the 2040 horizon year for CAMPO's 2040 Plan.

The goals of the various communities in the AOI (the study area for the indirect impact analysis) are discussed in the technical report, including community planning goals, demographic and development trends, factors influencing growth, and areas of environmental or social sensitivity. Data for population and housing development are discussed to identify trends. For example, the COA and Travis County are expected to grow by 68 percent and 69 percent, respectively, between 2010 and 2040, while Hays County is expected to grow more than 150 percent according to the TWDB (TWDB, 2016).

5.3 Analysis Results

Based on the amount of developable land within the AOI, the pace of development being documented in the municipalities represented in the AOI, and the response of local planning experts, the proposed project is not anticipated to generate significant induced development. Factors such as the large amount of land protected from development and local regulations that limit impervious cover would constrain the amount of induced growth possible in the AOI. The degree to which that development is specifically attributable to construction of the proposed project is limited for several reasons: there is a high growth rate in the area in general, there is limited development potential nearby due to undevelopable lands, and the area is surrounded by developments that are already underway.

A questionnaire regarding the potential of the project to induce development in the AOI was disseminated to various local planning experts in the area, including the Cities of Austin, Bee Cave, and Dripping Springs, and other municipalities, in addition to multiple agencies, organizations, and water supply corporations within the project's AOI. Based on the responses to the questionnaire, several respondents indicated that much of the planned development in the area would occur regardless of whether or not the proposed project is constructed. Detailed summaries of questionnaire responses are documented in **Appendix P: Indirect Impacts Analysis Technical Report**.

Within the 85,281 total acres of the AOI, approximately 49,081 acres (57.6 percent) are already developed (including roadways, state-owned right-of-way, and other developed land). Approximately 17,617 acres (20.7 percent) are undevelopable, including parks, floodplains, and water quality protection lands (WQPLs). Within the AOI, WQPLs (both those owned outright by the COA and those which have conservation easements placed on them) account for 9,563 acres (11.2 percent). WQPLs have been protected from development in perpetuity and the COA notes that water or wastewater service would not be extended to any lands that belong

to the COA or that have conservation easements on them. Floodplains cover 1,130 acres of the vacant land within the AOI and are also considered undevelopable.

There are currently approximately 8,446 acres of land in the AOI that are under construction or are planned or platted for development. This analysis assumes land that is under construction or already planned or platted for development would not be subject to induced development as a result of the proposed project. Development of land that is already planned or platted, regardless of development project status, is considered probable and reasonably foreseeable and not solely dependent on the proposed project.

Based on input from planning professionals and a cartographic assessment, approximately 10,192 acres of land have indirect induced growth potential within the AOI. Land that is already planned or platted for development was not included in this total as it is assumed that land would be developed. The developable land was identified through planner questionnaires and cartographic analysis, and its development is considered possible but not necessarily probable. Cartographic techniques were used to assess the sensitive resources that could be found within that developable land area. The detailed analysis in the technical report discusses the minimization and mitigation tools that would apply to development proposed by others in those areas.

5.4 Identified Resources Subject to Induced Growth Impacts

Induced growth could have some effect on water resources because induced development would result in increased impervious cover, which could in turn have an effect on water quality. However, the proposed project would not have a substantial adverse effect on water quality in the AOI because of the high percentage of managed areas and the implementation of regulations and BMPs.

Approximately 10,192 acres of undeveloped land within the AOI could be subject to development in the foreseeable future. Development projects that do occur within the planning horizons of the municipalities contacted (through 2040) would have to comply with the relevant land development code for projects within city limits and extra-territorial jurisdiction (ETJ) boundaries, where applicable. Areas outside municipal limits would be subject to federal laws such as the ESA, CWA, Clean Air Act, and may also be subject to certain state regulations overseen by the TCEQ (such as the Edwards Aquifer Rules), and TPWD.

Existing regulatory processes would provide controls to avoid potential adverse water quality related impacts to threatened or endangered species. Impacts to individuals or habitat of federally listed species are subject to federal regulations under the ESA of 1973. The COA and Travis County's Balcones Canyonlands Conservation Plan (BCCP), in addition to the Hays County Regional Habitat Conservation Plan (RHCP), are available to developers to facilitate compliance with the ESA in the AOI. In addition, the Save Our Springs ordinance limits impervious cover and requires non-degradation levels of stormwater treatment for development of sites in the Barton Springs Zone.

5.5 Conclusion

With regard to potential indirect effects on water quality resulting from potential development by others in the AOI, regulations are in place and applicable to proposed developments to minimize impacts to the resource. These include TCEQ regulations requiring preparation of SW3Ps and WPAPs, including use of BMPs in addition to the COA drainage/water quality requirements. USACE Section 404 provisions of the CWA govern activities that would affect waters of the U.S. and wetlands, regardless of who proposes the development activity. Individual developers would be responsible for complying with these regulations.

The indirect effects that have been summarized in this section and described in the *Indirect Impacts Analysis Technical Report (Appendix P)* do not conflict with the various goals of planning and conservation entities in the AOI; are not expected to substantially worsen the condition of a sensitive resource; would not delay or interfere with habitat conservation planning efforts or species recovery efforts for sensitive species; would not eliminate a valued, unique, or vulnerable feature; and are not inconsistent with applicable laws. Therefore, additional mitigation is not proposed for the anticipated indirect induced-growth effects potentially caused by construction of the OHP Project.