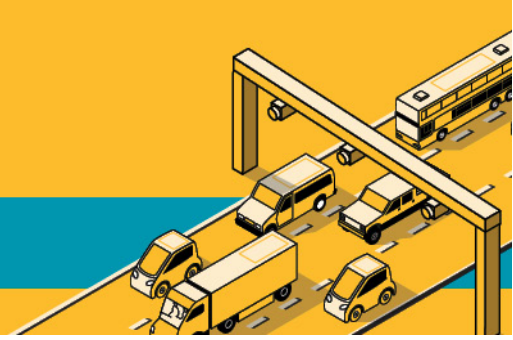
I-205 Toll Project

MEMORANDUM



Date	September 1, 2021
To	Lucinda Broussard, Jeff Jones, Michael Zimmerman, and Carol Snead (ODOT)
From	Elizabeth Lundquist and Cole Bales, WSP
Subject	Geology and Soils Methodology Memorandum
CC	

INTRODUCTION

This memorandum describes the methods that will be used in the I-205 Toll Project (Project) Environmental Assessment (EA) analysis to evaluate geology and soils impacts of the Project alternatives. The analysis and results will be documented in the EA that will be developed to comply with federal guidelines and regulations, including the National Environmental Policy Act (NEPA) and local and state policies, standards, and regulations.

The geology and soils analysis will evaluate impacts from the construction, operations, and maintenance of the Project and will identify mitigation measures as needed.

LEGAL REGULATIONS AND STANDARDS

Laws, Plans, Policies, Regulations, and Guidance

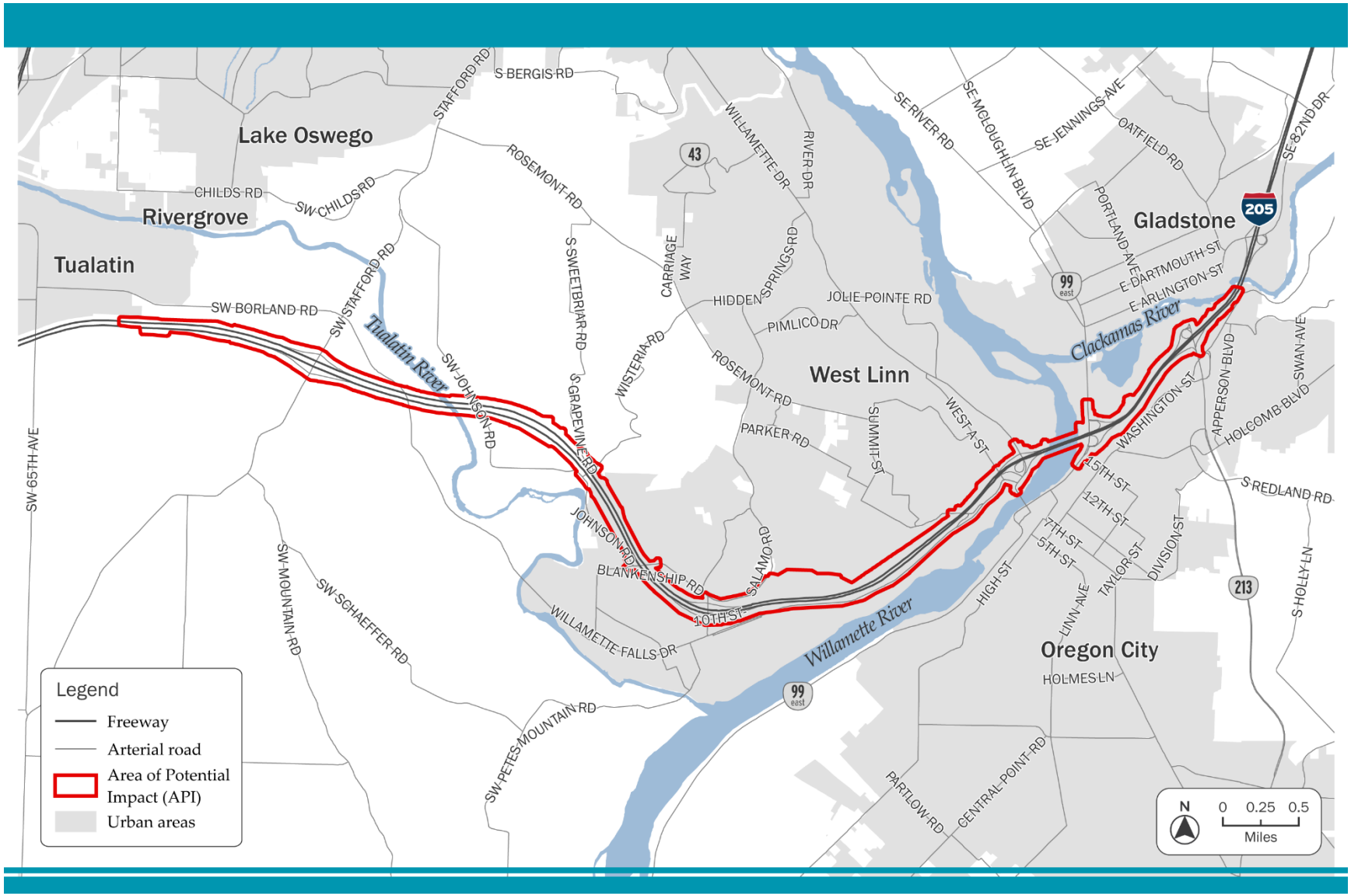
The analysis will consider NEPA, Council on Environmental Quality (CEQ) and Federal Highway Administration (FHWA) guidance on preparing NEPA documents.

There are no regulations and laws pertaining to soils or geology that are specifically applicable to the Project. However, the NEPA Manual published by Oregon Department of Transportation (ODOT 2020) and the ODOT Geotechnical Design Manual (GDM) establishes generally accepted industry practice for transportation projects and geotechnical design.

AREA OF POTENTIAL IMPACT

The area of potential impact (API) is the geographic boundary within which impacts to the environment could occur with the Project alternatives. The API for direct and indirect long-term and short-term impacts to geology and soils is defined as 100 feet from the edge of the I-205 right-of-way between SW Stafford Road and Oregon Route 213 to capture areas of permanent project improvements, construction staging areas, and any other areas where ground disturbance may occur as part of project construction, as shown in Figure 1.

Figure 1. Geology and Soils API



DESCRIBING THE AFFECTED ENVIRONMENT

Published Sources and Databases

Data used in the 2018 Documented Categorical Exclusion (DCE) prepared for the I-205 Improvements Project will be reviewed to confirm its relevancy and applicability to this study. The data required for evaluating how Project construction may be impacted by geologic properties and how the construction may impact geology will be obtained from existing technical reports, maps, and other public information. A desktop assessment will be conducted to document the existing geologic conditions within the API. Existing maps and technical reports published by the U.S. Geological Survey (USGS), Oregon Department of Geology and Mineral Industries (DOGAMI), local and state agencies with past or current projects in the Project vicinity, and the Natural Resources Conservation Service will be reviewed for pertinent geologic, hydrogeologic, seismic, and soil property information.

Contacts and Coordination

The following agencies may be contacted for the collection of data to evaluate potential impacts of the Project:

- DOGAMI
- Oregon Department of Environmental Quality
- Local county, city, and regional agencies
- USGS

Field Surveys or Testing

No testing of soils or geologic conditions is proposed to be conducted as part of the preparation of the EA. When the design is advanced, and the specific locations of toll gantries are identified, it may be necessary to conduct a field survey to confirm soil conditions in the locations of any proposed ground disturbing activities.

IMPACT ASSESSMENT METHODS

The impacts analysis will address the long-term and short-term impacts upon geology and soils for each of the Project alternatives.

Long-Term Impact Assessment Methods

The analysis of direct long-term geology and soils impacts resulting from the Project will consider potential seismic hazards, such as liquefaction, lateral spreading, etc., and soil hazards, such as soft or weak soils, and how Project construction could be affected by those conditions.

Most potential long-term impacts to geology and soils would result from the direct disturbance associated with the installation of toll gantries and associated utilities. It is anticipated that the final locations of toll gantries and utilities would be chosen to, as much as possible, limit

required earthwork and minimize the direct impacts to any areas with identified seismic hazards.

The seismic hazards review will evaluate the prevalence and severity of any mapped hazards in and immediately adjacent to the API. This evaluation will be based on current standards of practice, design codes, and levels of risk developed specifically for this Project. Direct long-term impacts will be assessed by evaluating the relative earthquake hazard of the API.

The soil hazards review will evaluate how the impacted soils in the API may behave when subject to construction activities as well as the potential built Project configurations. The direct long-term impacts will be assessed by evaluating what soils underlie each of the Project alternatives and identifying the characteristic adverse behaviors of those soils.

Since the final locations of toll gantries and utilities may not be determined for the EA, the assessment of long-term impacts to geology and soils will be qualitative in nature, and will rely on information collected during the desktop analysis.

Short-Term Impact Assessment Methods

The analysis of direct short-term impacts to geology and soils that would occur during Project construction will consider:

- Seismic hazards
- Soil hazards

Most potential short-term impacts to geology and soil would result from temporary disturbance during installation of toll gantries and associated utilities. As noted for long-term impacts, it is anticipated that the final location of toll gantries and utilities would be chosen as much as possible to limit the direct impacts to any areas with seismic hazards.

Since the final locations of toll gantries and utilities may not be determined for the EA, the assessment of short-term impacts to geology and soils will be qualitative in nature, and will rely on information collected during the desktop analysis.

Indirect Impacts Assessment Methods

Indirect impacts occur later in time (after Project completion) or are farther removed in distance, but are still reasonably foreseeable in the future. Potential indirect impacts from the Project would likely be related to erosion-caused damage to the tolling infrastructure. This assessment will be qualitative in nature and will rely in part on the findings in the land use section of the EA regarding the potential for induced changes in traffic and/or development patterns within the API that could potentially affect geology and soils.

Cumulative Impacts Assessment Methods

In accordance with ODOT guidance (ODOT 2010), the cumulative impacts assessment will consist of an eight-step process to identify and evaluate cumulative impacts. The long-term, short-term, and indirect impacts identified for geology and soils will be used in Step 1 to identify whether the Project has the potential to contribute to cumulative impacts on geology and soils when considered in combination with other past, present, and future actions. For those resources studied in the cumulative impact assessment, the direct and indirect impacts identified in the respective technical analysis will also be used in Step 4: "Identify direct and indirect impacts that may contribute to a cumulative impact." See the I-205 Toll Project Cumulative Impacts Methodology Memorandum for additional details on the eight-step process and cumulative impacts methodology.

PERFORMANCE MEASURES

Table 1 presents a preliminary list of performance measures identified to evaluate how the alternatives compare in terms of impacts and benefits to geology and soils.

Table 1. Preliminary Geology and Soils Performance Measures

Performance Measure	How	Tool and/or Data Source used for Assessment of Measure
Area of ground disturbance for project construction	Quantitative	Approximate locations of direct impacts from construction of toll gantries and relocated utilities will be determined from Project drawings. Additional information will be obtained from the APIs of land use and utilities and any changes that may occur.

Additional performance measures may be identified during the course of analysis.

REFERENCES

Oregon Department of Transportation (ODOT). 2020. National Environmental Policy Act Manual. https://www.oregon.gov/ODOT/GeoEnvironmental/Pages/NEPA-Manual.aspx Accessed June 15, 2020.

Oregon Department of Transportation (ODOT). 2010. Environmental Impact Statement Annotated Template, Chapter 4: Cumulative Impacts.