3.6 Public Services and Utilities

Public services such as schools, emergency response services, government offices, and hospitals are vital to the health of a community and can be affected by large construction projects and changes to the transportation network. Similarly, utilities such as electricity, water, sewer, natural gas, telephone, data, fiber optic, and other communications services can be temporarily disrupted by construction activities. This section identifies the public services and utilities in the primary study area and evaluates the potential long-term and temporary reasonably foreseeable effects of the proposed Modified LPA on these resources. The information presented in this section is based on the Public Services Technical Report and the Utilities Technical Report (as listed in Appendix H).

The assessment of reasonably foreseeable effects in this section is based upon the geographic and temporal proximity parameters detailed in the Chapter 3 introduction.

3.6.1 Changes or New Information Since 2013

The Columbia River Crossing (CRC) Selected Alternative identified in the 2011 Record of Decision (ROD), as revised by the 2012 and 2013 re-evaluations, is referred to as the CRC Locally Preferred Alternative (LPA). Over the past 10+ years since the CRC LPA was identified, the physical environment near the Interstate Bridge, community priorities, and regulations have changed, which necessitated design revisions and resulted in the proposed IBR Program Modified LPA (see Section 2.5.2). Evaluation of potential impacts associated with public services and utilities has been updated in this Final SEIS to include:

- Changes in development, population and employment, transportation, demographics, and other aspects of the built environment and urban setting.
- Changes in land uses such as development at the Vancouver Waterfront, planned uses on Hayden Island, and recently constructed, altered, or removed buildings.
- Changes in the project footprint necessitated by changed conditions resulted in shifting the light-rail transit alignment and modifying interchange designs.
- Changes in transportation modeling and analysis.

3.6.2 Existing Conditions

Public Services

There are several medical centers, schools, solid waste management facilities, and other public service facilities in the primary study area, as shown on Figure 3.6-1 and Figure 3.6-2. Table 3.6-1 lists the types of services and the providers in the primary study area.

Both Portland and Vancouver operate fire and police stations in the primary study area. In addition, Portland, Clark County, and the U.S. Coast Guard have rescue and emergency services stations with watercraft and response teams serving the Columbia River. The Washington State Patrol and the Oregon State Police have jurisdiction over interstate and other state highways. There are mutual response agreements in place with emergency service providers outside of the primary study area to provide additional support when necessary, particularly for incidents on the Columbia River (Leek 2023; White 2021).

Figure 3.6-1. Public Services in North Portland and Hayden Island

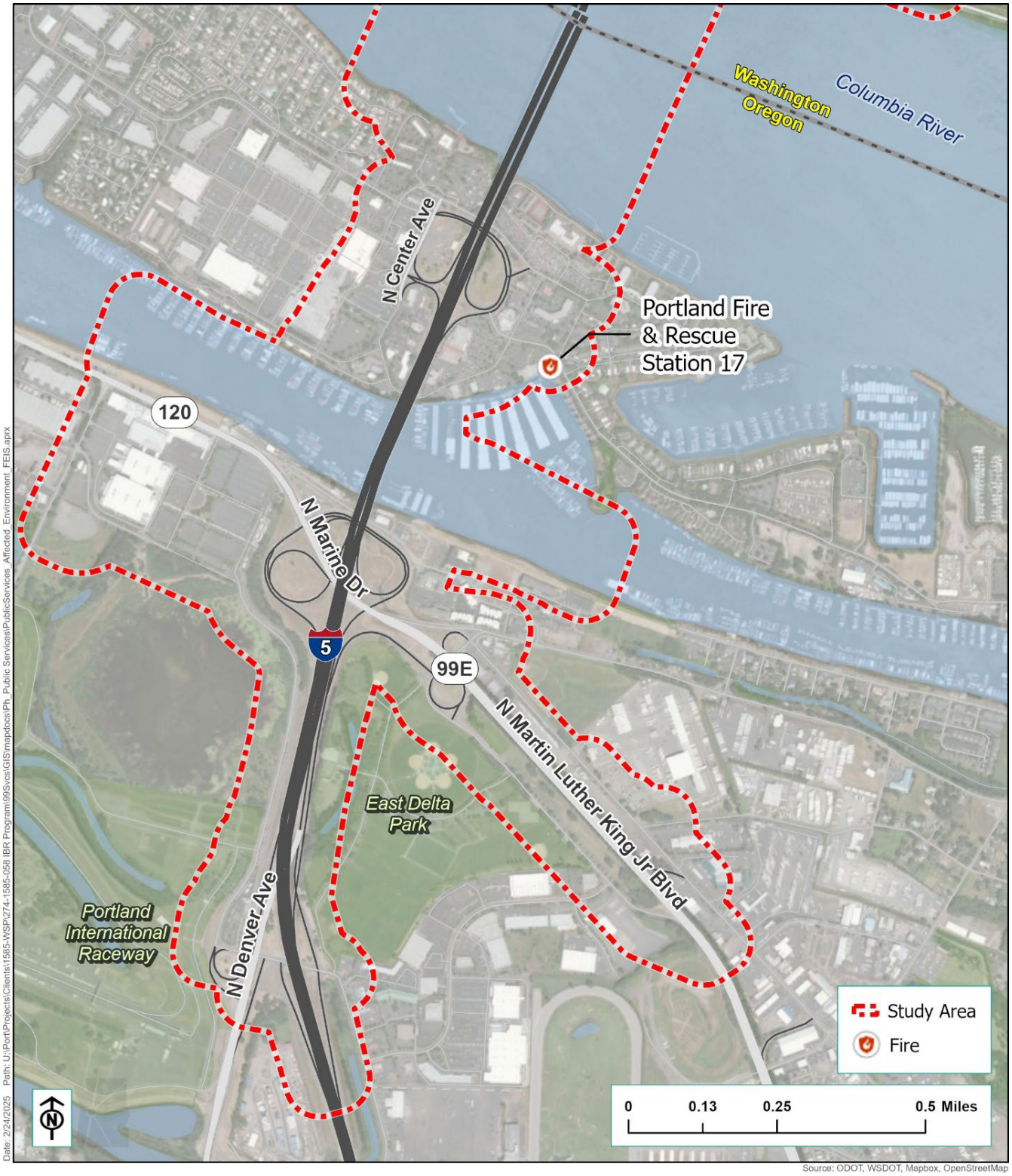

Figure 3.6-2. Public Services in Downtown and Upper Vancouver

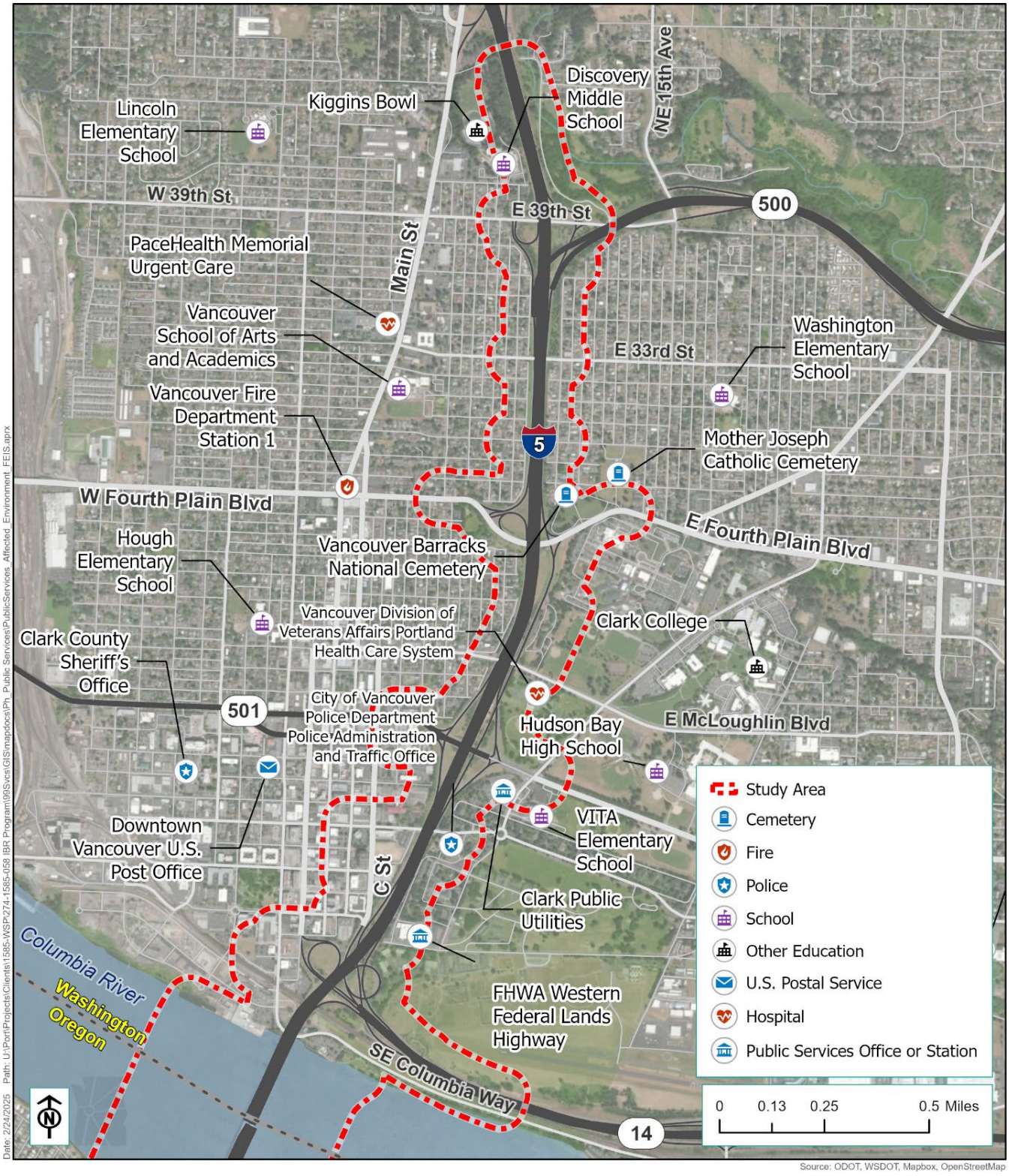

Table 3.6-1. Public Service Providers in the Primary Study Area

Public Service	Providers
Fire and Life Safety	Portland Fire & Rescue Vancouver Fire Department Clark County Fire Marshal U.S. Coast Guard
Law Enforcement	Portland Police Multnomah County Sheriff TriMet (Transit Police Division) Oregon State Police Vancouver Police Department Clark County Sheriff Washington State Patrol
Medical Centers	Legacy Emanuel Hospital and Health Center Kaiser Permanente Vancouver Division of Veterans Affairs Portland Health Care System PeaceHealth Memorial Urgent Care Southwest Washington Medical Center Legacy Salmon Creek Southwest Washington Memorial Hospital and Urgent Care Center
Public Schools	Portland Public Schools Vancouver Public Schools and Colleges Washington State-funded Schools for the Blind and the Deaf Ridgefield School District
Cemeteries	Vancouver Barracks National Cemetery Mother Joseph Catholic Cemetery City of Vancouver Old City Cemetery City of Vancouver Park Hill Cemetery Clark County Poor Farm Cemetery Salmon Creek United Methodist Cemetery St. John Lutheran Cemetery Manor Wilson Bridge Cemetery Memory Memorial Cemetery

Emergency service providers designate critical emergency access routes for providing rapid response. I-5 is an important north-south access route through the area, and it is the only access route to and from Hayden Island. In Portland, other critical north-south access routes include N Interstate, N Vancouver, and N Williams Avenues and NE Martin Luther King Jr. Boulevard. In Vancouver, additional critical north-south access routes include NW Hazel Dell Avenue and SR 99. Table 3.6-2 describes the critical emergency access routes used by public service providers in the primary study area.

Table 3.6-2. Mobile Public Service Critical Emergency Access Routes

Mobile Public Service	Critical Emergency Access Routes
North Precinct Portland Police	N Interstate Avenue, N Denver Avenue, NE Martin Luther King Jr. Boulevard, and N Greeley Avenue. I-5 is the only critical access route to/from Hayden Island.
Portland Fire & Rescue Station 17	N Interstate Avenue, N Denver Avenue, NE Marine Drive, NE Martin Luther King Jr. Boulevard, N Tomahawk Island Drive, N Hayden Island Drive, N Jantzen Drive, and N Center Avenue
Vancouver Fire Department Downtown Station (1)	Main Street/SR 99, W Fourth Plain Boulevard, Kauffman Avenue, 39th Street, 15th Street, St. Johns Boulevard, McLoughlin Boulevard, Mill Plain Boulevard, Evergreen Boulevard
Vancouver Fire Department Westside Station (2)	E Fourth Plain Boulevard, E 18th Street, Grand Boulevard.
Clark County Fire Marshal (District 6)	I-205, SR 99, and NW Hazel Dell Avenue
West Precinct City of Vancouver Police	Main Street/SR 99, Fort Vancouver Way, P Street, SR 500 to I-205
Clark County Sheriff's Office	NW Fruit Valley Road, NE Hazel Dell Road, NE St. Johns Boulevard, and NE Andresen Road (SR 500)

Sources: Lawson 2021; Leek 2023
I-5 = Interstate 5; I-205 = Interstate 205; SR = State Route

Four Portland schools serve students within the primary study area. Seven Vancouver School District schools and three other district facilities are located within or serve the primary study area. Two specialty schools that require special consideration in the design of transportation facilities, the Washington State School for the Blind and the Washington State School for the Deaf, are located outside of the primary study area but serve communities within the primary study area. While the main campus of Clark College, a private two-year junior college, is located outside of the primary study area, the Clark College Athletic Annex building is in the primary study area. Clark College athletic facilities at this location include tennis courts, a softball diamond, and a baseball diamond. The students, faculty, and staff that attend and support these schools rely on safe and efficient transportation facilities and services.

No other public services or facilities were identified outside the primary study area that would require special transportation considerations for service within the primary study area. See Section 3.2 of the Public Services Technical Report (as listed in Appendix H) for further discussion.

Utilities

Utility providers in the primary study area are identified in Table 3.6-3.

Table 3.6-3. Utility Providers in the Primary Study Area

Utility Owner	Type of Utility
Astound	Communications (internet service provider)
AT&T Local	Communications (local network services; cellular telecommunications antennae)
Clark Public Utilities	Power (area north of the Columbia River)
Comcast	Communications (cable and fiber optic network)
Lumen Local	Communications (internet service provider)
Lumen (National) Long Haul	Communications (fiber optic cables)
NW Natural	Natural gas
Pacific Power & Light	Power (area east of I-5 and south of North Portland Harbor)
Portland, City of	Water, sewer, stormwater, and communications
Portland General Electric	Power (Hayden Island and the area west of I-5 and south of North Portland Harbor)
Verizon Wireless	Communications
Vancouver, City of	Water, sewer, stormwater, and communications
Zayo	Communications (internet service provider)

Note: The list of utility owners was initially based on CRC project information. Updates are based upon current proposed Modified LPA design information and coordination with utility providers as of spring 2025.
CRC = Columbia River Crossing; I-5 = Interstate 5; LPA = Locally Preferred Alternative

Several important utility lines cross the Columbia River and North Portland Harbor to provide service to Hayden Island. The presence of bridges across these two water bodies, combined with the narrow 2,200-foot width of Hayden Island at this location, results in a concentration of utilities along the I-5 right of way. Utilities in Portland and on the North Portland Harbor and Columbia River bridges include:

- Portland Water Bureau water transmission main in North Portland that crosses the North Portland Harbor bridge.
- A Portland Bureau of Environmental Services sewer main from North Portland to Hayden Island with a pump and storage station located on Hayden Island.
- ODOT storm sewers along the east side of I-5 from the I-5 off-ramp underpass at the Marine Drive interchange to an outfall into a drainage channel along Delta Park.
- Two storm sewer systems on Hayden Island that convey transportation-related runoff to outfalls under the existing North Portland Harbor bridge.
- A NW Natural main natural gas feed line across the North Portland Harbor bridge.

- A Portland General Electric underwater power cable and Lumen telephone lines located under the bed of North Portland Harbor, immediately west of North Portland Harbor bridge.
- Communication cables that cross the Columbia River on the North Portland Harbor bridge and the Interstate Bridge.
- An additional trunk line that crosses the Columbia River 500 feet east of the Interstate Bridge. The trunk line includes telephone, television, data, and fiber optic from multiple utility providers.
- Underground communication cables throughout the primary study area within North Portland and Hayden Island.

Utility lines or structures in the Vancouver portion of the primary study area, include the following:

- Water transmission and distribution mains crossing I-5 at SE Columbia Way, E 5th Street, Mill Plain Boulevard, McLoughlin Boulevard, E 27th Street, E 29th Street, E 32nd Street, E 39th Street, and E 40th Street.
- Water lines running parallel to I-5 along the western right of way line between McLoughlin Boulevard and E 16th Street and between Evergreen Boulevard and E 8th Street.
- A City of Vancouver sanitary sewer pump station located west of I-5 at N Columbia Street.
- A major WSDOT storm sewer trunk system that extends from north of E 33rd Street to an outfall to the Columbia River, a WSDOT storm sewer trunk extending north from E 39th Street, and City of Vancouver stormwater conveyance pipes adjacent to I-5 that discharge to the Columbia River.
- Four sewer mains that cross the primary study area, including a large-diameter gravity sanitary interceptor that crosses near E 5th and E 6th Streets.
- Clark Public Utilities high-voltage transmission lines that cross I-5 near E 7th Street and E 33rd Street.
- Low-to-medium pressure main gas lines (NW Natural).
- A gas line under the Interstate Bridge along the Columbia Way right of way, which supplies properties between the BNSF Railway rail line and the river.
- A trunk of communication cables disembarking from the existing Interstate Bridge (telephone, television, data, and fiber optic multiple utility providers) that splits into separate trunks running parallel to and crossing the primary study area. Communication trunks cross the I-5 corridor at the following locations: E 33rd Street, south of Fourth Plain Boulevard, E 12th Street/Officers Row, McLoughlin Boulevard, Evergreen Boulevard, and between the riverfront and Columbia Way/Columbia Street.

ODOT, WSDOT, and TriMet maintain infrastructure in the primary study area for their agencies' uses, but do not provide direct service to the public. These utilities include power, stormwater, water, and sanitary sewer. These agencies also maintain signal and communication systems for transportation management and transit operations.

See Chapter 3 of the Utilities Technical Report (as listed in Appendix H) for further discussion.

3.6.3 Long-Term Benefits and Reasonably Foreseeable Effects

Long-term reasonably foreseeable effects on public services are defined as physical changes to public service facilities such as medical facilities, police and fire facilities, or schools, as well as changes in traffic operations that could affect critical access routes or disrupt emergency vehicle response. Long-term reasonably foreseeable effects on utilities are defined as permanent changes in utility service or availability. The

geographic proximity and temporal scope described in the Chapter 3 introduction are used to assess long-term benefits and reasonably foreseeable effects to public services and utilities.

Table 3.6-4 summarizes the effects of the Recommended Design Options (Modified LPA with single-level fixed-span bridge configuration, one auxiliary lane, C Street ramps, and centered I-5 design options), the other design options, and the No-Build Alternative on public services and utilities. The design option combinations shown in columns 2 through 5 are those that would have differing effects on public services and utilities; other combinations of design options would have the same effects as those described in columns 2 through 5. Additional information is provided in the sections that follow.

No-Build Alternative

With the No-Build Alternative, no physical impacts to public services (including medical centers and school sites) are anticipated. There would be no change in intersection operations on critical access routes in Portland during either the AM or PM peak periods. In Vancouver, three intersections would not meet level of service standards during the AM peak period, and seven intersections would not meet level of service standards during the PM peak period, which could slow response times for emergency vehicles (see Section 3.1, Transportation, for further discussion). In addition, bridge openings to allow ship passage would continue to disrupt traffic and cause potential delays for emergency vehicles.

The No-Build Alternative would not involve any changes to existing utilities in the primary study area. However, damage to the Interstate Bridge from a seismic event could have adverse impacts to utilities located on or near the bridge and could hinder the provision of emergency services.

Table 3.6-4. Long-Term Public Services and Utilities Benefits and Effects

1	2: IBR Program Recommended Design Options	3	4	5	6
No-Build Alternative	Modified LPA with Single-Level Fixed-Span Bridge Configuration, [a] One Auxiliary Lane, with C Street Ramps, Centered I-5, and All Five Park and Rides	Modified LPA with Double-Deck Fixed-Span Bridge Configuration, One Auxiliary Lane, with C Street Ramps, Centered I-5, and All Five Park and Rides	Modified LPA with Single-Level Fixed-Span Bridge Configuration, Two Auxiliary Lanes, with C Street Ramps, Centered I-5, and All Five Park and Rides	Modified LPA with Single-Level Fixed-Span Bridge Configurations, One Auxiliary Lanes, Centered I-5, Without C Street Ramps, and All Five Park and Rides	Modified LPA with Single-Level Movable-Span Bridge Configuration, One Auxiliary Lane, with C Street Ramps, Centered I-5, and All Five Park and Rides
• Increased congestion on I-5 would increase delays in emergency response. • No change to utilities.	• Emergency service response times would be improved compared to the No-Build Alternative on I-5 and at some intersections along critical access routes due to reduced congestion. • Utilities would be relocated or protected in place during construction and restored to full service following construction.	• Emergency service response improvements for the double-deck fixed-span bridge configuration design option would be similar to those for the single-level fixed-span bridge configuration design option listed in Column 2, but response to transit and shared-use path incidents could be slower than the single-level fixed-span bridge configuration design option because emergency vehicles would have reduced access to transit and active transportation facilities.	• Emergency service response improvements for the two auxiliary lane design option would be similar to those for the one auxiliary lane design option listed in Column 2, but further reductions in congestion on I-5 due to the second auxiliary lane would lead to further improved response times. • Utilities would be relocated or protected in place during construction and restored to full service following construction.	• Effects on emergency service response times in Portland for the without C Street ramps design option would be similar to those for the with C Street ramps design option listed in Column 2; however, without C Street ramps, 7 additional intersections in Downtown Vancouver would not meet performance standards, potentially resulting in delays for emergency vehicles.	• Effects on emergency service response times at critical intersections for the single-level movable-span bridge configuration design option would be similar to those for the single-level fixed-span bridge configuration design option listed in Column 2; delays and disruptions to emergency response due to bridge openings would continue, but with less frequency than the No-Build Alternative.

1	2: IBR Program Recommended Design Options	3	4	5	6
No-Build Alternative	Modified LPA with Single-Level Fixed-Span Bridge Configuration, [a] One Auxiliary Lane, with C Street Ramps, Centered I-5, and All Five Park and Rides	Modified LPA with Double-Deck Fixed-Span Bridge Configuration, One Auxiliary Lane, with C Street Ramps, Centered I-5, and All Five Park and Rides	Modified LPA with Single-Level Fixed-Span Bridge Configuration, Two Auxiliary Lanes, with C Street Ramps, Centered I-5, and All Five Park and Rides	Modified LPA with Single-Level Fixed-Span Bridge Configurations, One Auxiliary Lanes, Centered I-5, Without C Street Ramps, and All Five Park and Rides	Modified LPA with Single-Level Movable-Span Bridge Configuration, One Auxiliary Lane, with C Street Ramps, Centered I-5, and All Five Park and Rides
		• Utilities would be relocated or protected in place during construction and restored to full service following construction.		• Utilities would be relocated or protected in place during construction and restored to full service following construction.	• Utilities would be relocated or protected in place during construction and restored to full service following construction.

Note: The underlined design options shown in columns 3 through 6 identify the specific effects on public services and utilities for that particular design option compared to the Modified LPA with Recommended Design Options (column 2). For example, the effects of two auxiliary lanes (column 4) would occur with any other combination of the C Street ramps, I-5 alignment, bridge configuration, and park and ride design options.

a The effects on public services and utilities associated with the single-level fixed-span bridge configuration design option would be the same for all bridge type options.

IBR = Interstate Bridge Replacement; I-5 = Interstate 5; LPA = Locally Preferred Alternative

Modified LPA

Most long-term reasonably foreseeable effects on public services and utilities would not differ among the Modified LPA design options. Where differences would occur, they are described in the subsections below.

Public Services

Effects on Public Service Facilities

Most public services would not experience long-term effects to facilities as a result of the Modified LPA, including:

- Solid waste management
- Postal service
- Cemeteries

The Modified LPA with C Street ramps at the SR 14 interchange (included in the Recommended Design Options) would partially acquire the parcel that contains the FHWA Western Federal Lands office, north of 5th Street and immediately east of I-5. This would affect six marked parking stalls, adjacent asphalt and curbing, landscaping, parking area illumination, and an electronic swing gate. The Modified LPA without C Street ramps would move building access to the south from E 5th Street.

None of Portland Public Schools' facilities are near areas that would be directly affected by the Modified LPA. In Vancouver, the Modified LPA would directly affect Discovery Middle School, located at the northern end of the primary study area in the Lincoln neighborhood, with a minor acquisition of part of the southeastern portion of the parcel for a retaining wall. The retaining wall would require a permanent subsurface easement with some long-term surface use restrictions. No structures would be displaced, and the long-term use of the site would not be changed.

Local roadway improvements on N Tomahawk Island Drive east of the existing I-5 roadway would require a permanent partial acquisition of approximately 2,200 square feet of land from the edge of the Portland Fire and Rescue Station 17 property at 900 N Tomahawk Island Drive. This acquisition would not affect any buildings, parking, access, or operations at the fire station. Most of the area that would be acquired consists of vegetated planters/road separators between the parking lot and N Tomahawk Island Dr/N Jantzen Drive.

The property housing the Vancouver Police Department administrative offices, located east of I-5 and south of E Evergreen Boulevard, is planned for partial acquisition to accommodate I-5 and sidewalk improvements to E Evergreen Boulevard. No impacts to the building on the property are anticipated.

The proposed improvements to the existing Ruby Junction-Light Rail Operations and Maintenance Facility in Gresham, Oregon, would not have any impacts on public services or associated facilities.

Traffic Effects on Public Services

Traffic congestion along critical emergency routes can cause delays for emergency service providers. As described in Chapter 4 of the Transportation Technical Report (as listed in Appendix H) evaluated 2045 levels of service at a total of 80 intersections for the No-Build Alternative and 86 intersections for the Modified LPA; these totals included 64 local street intersections along critical emergency access routes (45 in Vancouver and 19 in Portland), comparing the results of the No-Build Alternative to the Modified LPA for both the AM and PM peaks. Under the No-Build Alternative, six intersections along critical emergency access routes would not meet the intersection performance standards of their respective agencies (ODOT, WSDOT, Portland, and Vancouver), meaning that traffic would be congested along portions of these routes. Under the Modified LPA with the Recommended Design Options, only two of these intersections—one in Portland and one in

Vancouver—would fail to meet the performance standards. Thus, the Modified LPA with the Recommended Design Options would benefit emergency response by reducing congestion along emergency access routes.

Of the Modified LPA design options, only one—the design option without the C Street ramps—would have different results for intersection operations. If the C Street ramps were removed, an additional seven intersections along critical emergency access routes would operate below performance standards compared to the Modified LPA with other design option combinations. The removal of the C Street ramps would redirect all trips between downtown Vancouver and I-5 to the Mill Plain Boulevard interchange. In addition to the intersection-level impacts, the elimination of the C Street ramps would increase queuing through the Mill Plain Boulevard and 15th Street couplet, adversely affecting eastbound and westbound flows and intersection turning movements through the 15th Street and Mill Plain Boulevard couplet. Table 3.6-5 shows the intersections that would and would not meet performance standards under No-Build, the Modified LPA with the Recommended Design Options, and the Modified LPA Without C Street Ramps.

Table 3.6-5. Intersection Performance along Critical Emergency Access Routes

Intersection Number	Location	Meets Performance Standard under No-Build (AM/PM)	Meets Performance Standard under Modified LPA with Recommended Design Options (AM/PM)	Meets Performance Standard under Modified LPA Design Option Without C Street Ramps (AM/PM)
3	39th St. and Main St.	No (PM)	Yes	Yes
5	39th St. and I-5 southbound ramps	No (AM/PM)	Yes	Yes
11	Fourth Plain Blvd. and Mill St.	No (AM)	No (AM)	No (AM)
22	Franklin St. and Mill Plain Blvd.	Yes	Yes	No (PM)
24	Washington St. and 15th St.	Yes	Yes	No (AM)
25	Main St. and 15th St.	Yes	Yes	No (AM)
28	Columbia St. and Mill Plain Blvd.	Yes	Yes	No (PM)
31	Mill Plain Blvd. and Broadway St.	Yes	Yes	No (PM)
33	Mill Plain Blvd. and southbound I-5 ramps	Yes	Yes	No (AM)
34	Mill Plain Blvd. and northbound I-5 ramps	Yes	Yes	No (PM)
66	Marine Dr. and OR 120	No (PM)	Yes	Yes
67	Marine Dr. and Force Ave.	No (PM)	Yes	Yes
68	Marine Dr./Martin Luther King, Jr. Blvd./southbound I-5 ramps	No (AM/PM)	No (AM/PM)	No (AM/PM)

Source: Transportation Technical Report
Ave. = Avenue; Blvd. = Boulevard; Dr = Drive; I-5 = Interstate 5; LPA = Locally Preferred Alternative; OR 120 = Oregon State Highway 120; St. = Street

All design options of the Modified LPA would provide full-width shoulders on the new Columbia River bridges, which could improve response times by allowing emergency providers using I-5 to bypass congestion while crossing the Columbia River or accessing Hayden Island. The addition of one auxiliary lane (Recommended Design Option) would also reduce congestion and facilitate emergency response by improving traffic flow on I-5 through the primary study area. A second auxiliary lane would further reduce congestion and improve multimodal operations on I-5. This would lead to a decrease in response times for emergency vehicles using I-5 as an emergency route.

The single-level fixed-span bridge configuration design option (Recommended Design Option) would improve emergency response times to transit and shared-use path incidents compared to the double-deck fixed-span bridge configuration design option because all the facilities being located on a single level would allow response teams to access the incidents directly from the highway lanes. Incidents affecting transit vehicles and passengers or active transportation users on the lower deck of the double-deck bridge configuration design option would require rescue trains or other emergency vehicles to access the LRT tracks on the southbound bridge via the Hayden Island or Vancouver Waterfront stations. Emergency access to the shared-use path on the northbound bridge would be via the elevated pathway from the North Portland Harbor arterial bridge or the ramp connecting the shared-use path to Main Street in Vancouver. The single-level movable-span bridge configuration design option would cause delays and disruptions to emergency response due to bridge openings, but with less frequency than under the No-Build Alternative.

Traffic generated by the five park and rides (at three sites for the Waterfront LRT station and at two sites for the Evergreen LRT station) was evaluated in Chapter 4 of the Transportation Technical Report (as listed in Appendix H). These vehicle trips were factored into the traffic operations results for the other proposed Modified LPA design options and are reflected in the analysis above. For more information, refer to Section 4.6.3.2 of the Transportation Technical Report.

As listed in Appendix H, see Section 4.3 of the Public Services Technical Report for further discussion of traffic effects on public services and Chapter 4 of the Transportation Technical Report for a full description of the traffic analysis.

Utilities

The Modified LPA would cross or be in proximity to a number of critical utility lines in Portland, on and near the existing Interstate Bridge, and in Vancouver. These include water supply, natural gas, sewer mains, communications cables and infrastructure, a high-voltage electrical transmission line, a cellular antenna array, and, potentially, a wastewater lift station. Utility infrastructure on the North Portland Harbor bridge is particularly sensitive because in several cases these facilities are the only link between Hayden Island and the mainland.

Utilities affected by construction of the Modified LPA would either be protected in place or relocated. Relocated utilities would be repaired or replaced as necessary and would therefore be more robust and reliable. The effects would generally be similar across the design options. No long-term adverse impacts to utilities are expected. See Chapter 4 of the Utilities Technical Report for additional information.

As described in Section 3.4, Land Use and Economics, the Modified LPA would facilitate growth in the primary study area, particularly in new light-rail station areas, in a manner consistent with local and regional land use plans. This, in turn, could result in increased demand for utilities in areas where growth occurred. The increased service needs would be in urbanized areas where public services and utilities are already present; it is not anticipated that any extension of service to new geographic areas would be required.

As noted in Section 3.6.2, the current analysis was based on CRC project information that has been updated based on current design information and coordination with utility providers. As the Modified LPA design advances, coordination with utility providers will continue.

3.6.4 Temporary Reasonably Foreseeable Effects

Reasonably foreseeable temporary effects are defined as those that would occur during construction of IBR Program facilities. The geographic proximity and temporal scope described in the Chapter 3 introduction were used to assess temporary reasonably foreseeable effects to public services and utilities. Construction of the proposed Modified LPA includes the construction of the new bridges and removal of the existing bridges. This could include traffic and access disruptions to public services and short-term service interruptions resulting from utility relocation or protection measures. The duration of these effects would be limited to the active construction period. Aside from minor differences among the park and rides related to utility work in nearby local streets, temporary effects would not differ among the design options.

No-Build Alternative

Under the No-Build Alternative, no temporary effects to public services or facilities (including medical centers and school sites) are anticipated. The No-Build Alternative would not result in temporary utility disruptions from construction.

Modified LPA

Most temporary effects on public services and utilities would not differ among the Modified LPA design options. Where differences would occur, they are described in the subsections below.

Public Services

Traffic Effects on Public Services

Detours, increased delays, and traffic on streets with construction may cause response time delays for mobile public services including police, fire, medical emergency, school transportation, and solid waste services. In Portland, reasonably foreseeable temporary effects on public services include increased delays for the fire services stationed on Hayden Island which must use I-5 when serving North Portland. Other services, such as law enforcement, would also experience delays accessing Hayden Island from North Portland or Vancouver. More information about traffic impacts during construction can be found in Section 3.1, Transportation.

Construction on emergency transportation routes may cause delays in emergency services' response times and must be communicated with those service providers in advance. Construction on school routes could cause delays for school transportation providers and advance coordination with school transportation services would be necessary. Construction noise and vibration may affect Discovery Middle School; Vancouver Innovation, Technology and Arts Elementary School; and the Athletic Annex at Clark College. More information can be found in Section 3.11, Noise and Vibration.

Temporary Construction Easements

Temporary construction easements would be needed from several properties that contain public service facilities. The buildings on these properties would not be affected, and their ongoing functions would not change.

- A temporary construction easement is planned for the northwestern corner of the City of Portland Fire Department property (Portland Fire & Rescue Station 17) on Hayden Island. No modifications to the building, parking lot, or driveway are planned.

- A temporary construction easement and a construction staging area would be needed on the western portion of the Clark College Athletic Annex and recreation fields property. The easement would not interrupt the function or public use of the recreation fields or modify the building on the western portion of the property. Chapter 4, Section 4(f) Evaluation, has more information on this temporary construction easement.

Utilities

Temporary utility service interruptions during construction may result from the need to relocate the utilities or protect them in place to prevent damage from, or conflict with, new IBR infrastructure. The largest of these effects would occur in the area between Marine Drive and the SR 14 interchange. Between these interchanges, utilities are concentrated in a relatively narrow corridor parallel to or under I-5; the utilities would require temporary relocation during construction. Short-term service outages could occur as a result of utilities being relocated or while protective measures are implemented. Throughout the primary study area, utility providers would be contacted during design regarding temporary utility relocations and/or staging and sequencing provisions, many of which could occur in the early phase of construction, prior to heavy civil construction phases.

The following major utilities in Oregon on the North Portland Harbor bridge may be temporarily affected by outages during construction:

- A water main that supplies water to Hayden Island, including for fire flows, would be affected by a new span to accommodate the Jantzen Drive realignment.
- A natural gas feed main serving Hayden Island would be affected by the new North Portland Harbor bridges.
- Communication cables across the North Portland Harbor bridge, Hayden Island, and on the southbound Columbia River bridge, including several trunk lines, would be affected by the new North Portland Harbor bridges and Marine Drive and Hayden Island interchanges.
- Underwater communication and power cables west of the North Portland Harbor bridge would be affected by construction of the new North Portland Harbor bridges and ramps. Sanitary sewer force mains crossing Marine Drive and Jantzen Drive could also be affected.

Other potentially affected utilities include the following:

- Water, power, gas, and communications infrastructure would be affected by Marine Drive interchange reconstruction.
- Electrical feeds and switches and the main gas feed adjacent to I-5 on Hayden Island would be affected by reconstruction of the Hayden Island interchange, construction of light-rail, and roadway realignments.
- The existing cellular antenna array in the vicinity of Jantzen Drive may be affected by reconstruction of the Hayden Island interchange.
- The existing cellular system backup diesel generator in the vicinity of Jantzen Drive may be affected by reconstruction of the Hayden Island interchange and/or realignment of Jantzen Drive and Center Street.

The following major utilities that cross I-5 in Washington would be temporarily affected:

- Communications infrastructure, a sewage lift station and force main, and a high-pressure gas line between the SR 14 interchange and the Columbia River may be affected by bridge construction, improvements to SR 14, and local street improvements.

- A water supply main crossing I-5 at Mill Plain Boulevard would be affected by street reconstruction.
- Two north-south water distribution mains that pass through the right of way of K Street-E 32nd Street and I Street-E 32nd Street could be affected by the widening of I-5 or the addition of a retaining wall. This could temporarily affect water supplies and fire flows.
- Some segments of the major WSDOT- and City-owned storm trunk system are expected to be impacted by the proposed Modified LPA construction. The IBR Program would maintain the functionality of these systems at all times during construction. Connection of off-site drainage systems would also be maintained.
- A high-voltage electrical transmission line crossing I-5 at 33rd Street could be affected by overcrossing reconstruction. The proposed improvements at K Street-33rd Street and I Street-33rd Street could also affect the transmission line power pole.
- A communications cable and duct bank crossing I-5 at Fourth Plain Boulevard could be affected by construction in the interchange area.
- A water supply main crossing I-5 at McLoughlin Boulevard may be affected when the street is modified to allow for the widened highway and transit guideway, and by construction of the guideway S-curve between 17th Street and McLoughlin.
- A sanitary sewer pump station at Columbia Street is located adjacent to an area where new bridge foundations would be constructed. This station would be protected in place while the foundations were being constructed.
- A water supply main crossing I-5 at E 40th Street would be affected by construction of a new ramp at NE 39th Street.
- Communication trunk lines on Washington Street south of W 6th Street would be affected by road reconstruction.

3.6.5 Intentionally Left Blank

3.6.6 Avoidance, Minimization, and Mitigation Measures

Table 3.6-6 lists temporary avoidance and minimization measures for public services. Table 3.6-7 lists temporary mitigation measures for public services. No long-term avoidance and minimization measures or long-term mitigation measures within control of the IBR Program were identified. Avoidance, minimization, and mitigation measures for land use that could potentially affect public utilities are described in Section 3.4 and are not included in the tables below.

Table 3.6-6. Avoidance and Minimization Measures for Public Services

Temporary or Long-Term	Impact Type	Avoidance and Minimization Measure
Temporary	Detours, increased delays, and traffic during construction affecting response times for mobile public services including police, fire, medical emergency, school transportation, and solid waste services	ODOT and WSDOT will develop and implement a preconstruction communication plan, in coordination with affected emergency response groups and other public service agencies, detailing how detour and road closure information will be communicated to public service providers. ODOT and WSDOT will incorporate measures into contract specifications to avoid and minimize interruptions to traffic flow and access during construction.

ODOT = Oregon Department of Transportation; WSDOT = Washington State Department of Transportation

Table 3.6-7. Mitigation Measures for Public Services

Temporary or Long-Term	Impact Type	Mitigation Measure
Temporary	Detours, increased delays, and traffic during construction affecting response times for mobile public services including police, fire, medical emergency, school transportation, and solid waste services	ODOT and WSDOT will conduct outreach before and during construction to communicate construction detours and traffic routing plans to public service providers and the communities they serve. This will include notifying emergency service providers of any planned closures of lanes or detours for fire response and medical transport across the Columbia River, clearly identifying any alternate routes, and providing space for emergency use where feasible.
Temporary	Changes in access to construction zones	ODOT and WSDOT will communicate with emergency service providers about access points to construction zones as needed.

ODOT = Oregon Department of Transportation; WSDOT = Washington State Department of Transportation

Table 3.6-8 lists temporary avoidance and minimization measures and Table 3.6-9 lists temporary and long-term mitigation measures for utilities. No long-term avoidance and minimization measures within control of the IBR program were identified.

Table 3.6-8. Avoidance and Minimization Measures for Utilities

Temporary or Long-Term	Impact Type	Avoidance and Minimization Measure
Temporary	Disruption to broadband/fiber services during construction	ODOT and WSDOT will coordinate with the contractor to comply with current federal Dig Once laws (23 CFR § 645.307) and associated state regulations and guidelines, which require advanced coordination with the broadband/fiber industry to invite these providers to participate in highway improvement projects.

Temporary or Long-Term	Impact Type	Avoidance and Minimization Measure
Temporary	Temporary service disruptions when utilities are relocated or protected in place during construction	ODOT and WSDOT will contact utility providers during design to identify temporary facility needs and staging and sequencing provisions. Utilities will be protected in place where possible; where protection or preservation in place is not possible; the goal will be to relocate facilities only once to reduce service disruptions.
Temporary	Interruption to fire flow during construction	ODOT and WSDOT will sequence construction to avoid interruptions to fire flow (the volume of water needed to control and extinguish a fire) to the extent possible. ODOT and WSDOT will coordinate with the Vancouver Fire Department and Portland Fire and Rescue to develop a plan for ensuring fire flow is maintained throughout construction to the extent possible, using temporary provisions as needed.
Temporary	Disruption to sanitary sewer pump station at Columbia Street and Columbia Way during construction	ODOT and WSDOT will coordinate with the utility providers to protect or preserve in place, to the extent feasible, the sanitary sewer pump station located at Columbia Street and Columbia Way near the Vancouver waterfront.

CFR = Code of Federal Regulations; ODOT = Oregon Department of Transportation; WSDOT = Washington State Department of Transportation

Table 3.6-9. Mitigation Measures for Utilities

Temporary or Long-Term	Impact Type	Mitigation Measure
Temporary	Interruption to fire flow during construction	If temporary interruptions to fire flows are unavoidable, ODOT and WSDOT will provide additional details on the anticipated locations and durations of the disruptions to Vancouver Fire Department and Portland Fire and Rescue as soon as that information is available.
Long-Term	Permanent relocation of utilities	If relocation of utilities is unavoidable, ODOT and WSDOT will develop or modify agreements with affected utility providers to specify the locations of utilities within the right of way, access and maintenance requirements, etc.

ODOT = Oregon Department of Transportation; WSDOT = Washington State Department of Transportation