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SUMMARY

The Washington State Department of Transportation (WSDOT) is proposing to construct the Interstate 405 (I-405), NE 8th Street to State Route 520 (SR 520) Improvement Project to improve safety and reduce congestion in the vicinity of the I-405 and SR 520 interchange within the City of Bellevue. This Ecosystems Discipline Report assesses the project's construction and operation effects on the ecosystem elements of wetlands, aquatic resources, and wildlife habitat. This report evaluates two alternatives, the Build Alternative and the No Build Alternative.

Study Approach

The I-405 Team gathered existing information on wetlands, aquatic resources, wildlife, and vegetation for the study area through literature, geographic information system (GIS) research, and internet research. Additional wetland delineations, stream habitat surveys, and field studies were conducted to verify wildlife presence and wildlife habitat.

The information collected was then compared to the project footprint to assess potential temporary and permanent effects resulting from the project.

Existing Conditions

The existing conditions of wetlands, aquatic resources, and wildlife habitat in the study area are typical of urbanized areas in the Puget Sound area and are generally degraded. There are 12 wetlands totaling approximately 7.29 acres within or adjacent to the study area. All 12 wetlands have been affected by development to some extent.

Seven streams are present in the study area and vary from small spring-fed channels to large perennial streams. In general, the streams in the I-405, NE 8th Street to SR 520 Improvement Project study area have been highly altered from their natural states to accommodate residential, commercial, and industrial land uses. However, many fish species use the streams, including both resident and anadromous fish. The primary resident fish are cutthroat trout, sculpin, stickleback, and longnose dace. Coho salmon is the principal anadromous fish using some of these water bodies. Stream and wetland

buffers are typical of urban environments and generally consist of immature trees, shrubs, or grasses intermixed with non-native, invasive plant species.

The study area is made up of four land cover types: three vegetated, including forests (2.6 percent), shrubs and grasses (1.5 percent), and maintained vegetation (27.8 percent); and impervious surfaces (68.1 percent). The vegetated land cover types may be important to wildlife for feeding, migrating, resting, and breeding. Wildlife habitats are fragmented throughout the study area, and much of the existing wildlife habitat is located along the roadside in areas where vegetation is regularly mowed or maintained.

Project Effects

The Build Alternative (the project) will result in temporary and permanent effects to wetlands, aquatic resources, and wildlife habitat. The project will affect one wetland (6.95R) as well as that wetland's buffer. Additionally, another wetland's buffer will be filled. Only one stream and its associated buffer (the unnamed tributary to Sturtevant Creek) will be directly affected by the project. Approximately 4.40 acres of potential habitat will be permanently lost and will affect wildlife species in the study area. However, the 4.40 acres is comprised of approximately 4.34 acres of maintained vegetation that provides low habitat value. The project will add additional impervious surfaces to the study area, which will reduce the associated available wildlife habitat. A summary of these effects is detailed in Exhibit S-1.

Exhibit S-1: Summary of Ecosystem Element Effects

Ecosystem Element	Temporary Effects	Permanent Effects
Wetlands (acres)	0.05	0.30
Wetland buffers (acres)	0.07	0.47
Aquatic resources below ordinary high water mark (square feet)	0	1,610
Aquatic resources buffers (square feet)	2,000	6,640
Wildlife habitat (acres)	30.2	4.40

Measures to Avoid or Minimize Effects

The I-405, NE 8th Street to SR 520 Improvement Project was designed to avoid effects to wetlands, aquatic resources, and wildlife habitat to the extent practicable. Approaches such as locating project features away from ecosystem elements or installing retaining walls were incorporated throughout the design of the project to avoid and minimize effects. During construction, WSDOT will require that appropriate best management practices and conservation measures be implemented to reduce potential effects to ecosystem elements. Mitigation activities to offset project effects will be performed in accordance with applicable local, state, and federal regulations that govern wetlands, aquatic resources, and wildlife habitat. To compensate for the permanent effects to wetlands, WSDOT will provide mitigation at a wetland mitigation site located in Kelsey Creek Park. Stream mitigation will occur at Sturtevant Creek and is designated to meet certain goals. Mitigation goals include:

- Increased hydrologic connectivity with two small riparian wetlands
- Increased fish rearing habitat
- Improved riparian buffer conditions
- Increased organic input, slight increase in floodplain storage

Unavoidable Adverse Effects

Construction of the I-405, NE 8th Street to SR 520 Improvement Project will result in temporary and permanent effects to ecosystem resources including wetlands, aquatic resources, and wildlife habitat. All project effects to ecosystem elements will be mitigated for and as a result, there are no unavoidable adverse effects to ecosystem elements that will occur as a result of the project.

ACRONYMS AND ABBREVIATIONS

Term	Meaning
BMP	best management practice
CAD	computer-aided design
CAO	critical areas ordinance
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
Ecology	Washington State Department of Ecology
ESA	Endangered Species Act
ESU	evolutionarily significant unit
GIS	geographic information system
GMA	Growth Management Act
HRM	Highway Runoff Manual
IDT	interdisciplinary team
I-405	Interstate 405
LWD	large woody debris
MP	milepost
NHP	Natural Heritage Program
NMFS	National Marine Fisheries Service
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
PAB	palustrine aquatic bed
PCE	primary constituent element
PEM	palustrine emergent
PFO	palustrine forested
PHS	priority habitat species
PSS	palustrine scrub-shrub
RCW	Revised Code of Washington
SMA	Washington State Shoreline Management Act
SPCC	Spill Prevention, Control, and Countermeasures
SR 520	State Route 520

Term	Meaning
USFWS	U.S. Fish and Wildlife Service
WAC	Washington Administrative Code
WDFW	Washington State Department of Fish and Wildlife
WDNR	Washington State Department of Natural Resources
WRIA	Water Resource Inventory Area
WSDOT	Washington State Department of Transportation

GLOSSARY

Term	Meaning
amphibians	A group of vertebrate animals that spend part of their time on land and part in the water. Amphibians must return to the water to breed and they have distinct larval and adult forms.
anadromous fish	A fish species that spends a part of its life cycle in the sea and returns to freshwater streams to reproduce (for example, salmon, steelhead, and trout).
bank	The slope of land adjoining a body of water, such as a river, lake, wetland, or drainage channel. With respect to flowing waters, banks are either right or left as viewed facing in the direction of the flow.
base flow	The volume of flow in a stream or river during dry conditions, as opposed to conditions influenced by storm runoff. Base flows discharge groundwater and water from upstream channels, wetlands, lakes, and ponds.
basin	An area of land that drains to a specific water body.
best management practice (BMP)	Environmental protection tools, practices, and methods that have been determined to be the most effective, practical means of avoiding or reducing environmental effects.
buffer	A designated area along and adjacent to a stream or wetland that may be regulated to control the negative effects of adjacent development on the aquatic resource.
confluence	The convergence of two streams of comparable size into a single channel, or the junction where two rivers, streams, etc. flow together.
construction footprint	The physical area affected by project construction activities.
corridor	Within the context of a visual analysis, the road or highway and the adjacent area that is visible from and extending along the highway. The distance the corridor extends out from the highway may vary depending on different factors, such as land use and topography, or the corridor may be defined as a set width, such as one-quarter or one-half mile.

critical areas	These include aquifer recharge areas, fish and wildlife habitat conservation areas, flood hazard areas, geologic hazard areas, and wetlands. Critical area functions and values are protected by ordinances that require development to avoid or compensate for adverse effects on critical areas.
critical habitat	Under the Endangered Species Act: (1) the specific areas within the geographic area occupied by a federally-listed species on which are found physical or biological features essential to conserving the species, and that may require special protection or management considerations; and (2) specific areas outside the geographic area occupied by a federally-listed species when it is determined that such areas are essential for the conservation of the species.
culvert	A pipe or box structure that drains open channels, swales, or ditches under a roadway or embankment.
deciduous	Trees that shed their leaves annually.
delineation	Establishing the boundaries of a wetland by applying adopted jurisdictional methods.
direct effect	An effect caused by an action or alternative and occurring at the same time and location. Effects may be ecological, aesthetic, historic, cultural, economic, social, or health-related.
dominant species	A plant species that exerts a controlling influence on or defines the character of a vegetative community.
downstream	Referring to the direction of the flow of a stream or river.
drainage ditch	An open channel designed and constructed to convey water. This may include modifications of natural drainages or man-made historic channels incorporated in a system design.
ecosystem	A community of organisms interacting with each other, and the environment in which they live.
effect	Something brought about by a cause or agent; a result. This may include ecological, aesthetic, historic, cultural, economic, social, health, or other effects, whether direct, indirect, or cumulative. Effects may include those resulting from actions that may have both beneficial and detrimental effects.

electrofishing	A fish sampling method that involves capturing fish using an electric shock technique.
emergent wetlands	Wetlands comprised of plants that are rooted in shallow water or saturated soil but have foliage that extends out of the water or above the ground surface.
encroachment	Any action, including the placement of fill and the construction of piers and bridge abutments, that will occur within the limits of the regulatory floodplain; intrusion by roads or development into habitat areas that reduces the area available to wildlife or reduces the functions of the habitat area.
endangered species	Any species that is in danger of extinction throughout all or a substantial portion of its range.
Endangered Species Act (ESA)	Federal legislation adopted to prevent the extinction of plants and animals.
erosion	The wearing away of soil or rock by the action of running water, wind, ice, or geologic agents. For this analysis, erosion relates primarily to stormwater runoff.
Evolutionarily Significant Unit (ESU)	The term used by the National Marine Fisheries Service for a fish species population protected by a listing under the Endangered Species Act.
federally-listed species	Any species of fish, wildlife, or plant that has been determined by the U.S. Fish and Wildlife Service or National Marine Fisheries Service to be endangered or threatened under Section 4 of the Endangered Species Act.
fill	Any material placed in an area to increase surface elevation.
flood	An overflow or inundation that comes from a river, stream, tide, wave action, storm drain, or excess rainfall; any relatively high streamflow overtopping the natural or artificial banks in any reach of a stream.
forbs	Broad-leaved flowering plants.
forested wetland	A wetland characterized by woody vegetation that is 20 feet tall or taller.
geographic information system (GIS)	A digital computer mapping system that can overlay a wide variety of data such as land use, utilities, and vegetative cover, and provide a spatial analysis.

gradient	The rate at which a physical quantity, such as temperature or pressure, changes relative to change in a given variable, especially distance.
groundwater	That portion of the water below the ground surface that is free flowing within the soil particles. Groundwater typically moves slowly, generally at a downward angle because of gravity, and eventually enters into streams, lakes, and oceans.
groundwater recharge	The process where natural sources (infiltrating rain, snowmelt, or surface water) or pumped water enters and replenishes the ground water supply.
Growth Management Act (GMA)	Washington State legislation adopted in 1990, and subsequently amended, that requires all cities and counties in the state to conduct long-range comprehensive planning, and which has more extensive requirements for the largest and fastest-growing counties and cities in the state. Such comprehensive plans must address several required topics, including but not limited to land use, transportation, capital facilities, utilities, and housing. The GMA requirements also include guaranteeing the consistency of transportation and capital facilities plans with land use plans.
grub	An action where roots or stumps are cleared by digging.
habitat	The environment or specific surroundings where a plant or animal grows or lives.
habitat fragmentation	The separation of a habitat into pieces that are no longer physically connected to each other as a result of human development.
hazardous materials	Any material that may pose a threat to human health or the environment because of its quantity, concentration, or physical or chemical characteristics.
herbaceous	A plant with no persistent woody stem above the ground.
high-occupancy vehicle (HOV)	High-occupancy vehicle is a special designation for a bus, carpool, or vanpool, provided as an encouragement to increase ride-sharing. Specially designated HOV lanes and parking are among the incentives for persons to pool trips, use fewer vehicles, and make the transportation system more efficient. HOV lanes are generally inside

	(left-side) lanes, and are identified by signs and a diamond on the pavement. Currently, two or more (2+) occupants are required to use the I-405 HOV lanes. Motorcycles are allowed to use freeway HOV lanes as well.
hydric soil	Soils formed under conditions of saturation, flooding, or ponding long enough to develop anaerobic conditions (absence of oxygen) in the upper part.
hydrologically connected	Linked to or associated with the water source of another system either through surface water, a stream, groundwater, etc.
hydrology	Within the context of a wetland, permanent or periodic inundation or prolonged soil saturation sufficient to create anaerobic conditions in the soil.
hydroseed	A mixture of grass seed, fertilizer, lime, and wood fiber mulch designed to rapidly revegetate cleared areas.
impervious surface	Pavement, roofs, and other compacted or hardened areas that do not allow the passage of rainfall or runoff into the ground.
indirect effect	An effect that occurs later in time or is removed in distance from the proposed action, but is 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, water, and other natural systems.
infiltration	The passage of water through the soil surface into the subsoil.
invasive species	Non-native species that disrupt and displace native species.
jurisdiction	A municipal government agency, such as a city or county, and as appropriate, federal and state agencies and federally recognized tribes. The term also can mean "to have authority over."
land use	The type of activity (i.e., residential, commercial, or industrial) that occurs on property.
large woody debris (LWD)	Logs, limbs, or root wads that are waterward of the ordinary high water line. To qualify as large woody debris, it must be of sufficient size to be resistant to

	erosion, provide bank stability, or help maintain or create habitat features important to fish life.
macroinvertebrate	Small animals that are visible with the naked eye, yet have no backbone (insects, worms, larvae, etc.).
meandering	Following a winding and turning course.
minimization	Taking measures to reduce potential effects to the smallest practical amount, extent, size, or degree. Minimization could include alignment shifts, a commitment to seasonal construction windows, replacement of land or facilities, restoration or landscaping, or payment of fair market value for affected lands.
mitigation	An effort to: (1) avoid the effect altogether by not taking a certain action or parts of an action; (2) minimize the effect by limiting the magnitude of the action and its implementation, by using technology or by taking affirmative steps; (3) rectify the effect by repairing, rehabilitating, or restoring the affected environment; (4) reduce or eliminate the effect over time by preservation and maintenance operations; (5) compensate for the effect by replacing, enhancing, or providing substitute resources or environments; and/or (6) monitor the effect and take appropriate corrective measures.
ordinary high water mark (OHWM)	The elevation marking the highest water level, which is so common and maintained for a sufficient time in all ordinary years that it leaves evidence upon the landscape, such as a clear, natural line impressed on the bank, changes in soil character, destruction of or change in vegetation, or the presence of litter and debris. Generally, it is the point where the natural vegetation changes from predominately aquatic to upland species. Where the ordinary high water mark cannot be found, it is the line of mean annual flood – the highest the water gets in an average year, but not the highest it gets during extreme flooding.
palustrine	Tidal or non-tidal freshwater areas dominated by trees, shrubs, persistent emergents, mosses, or lichens. Palustrine also includes wetlands lacking this vegetation but having the following characteristics: area less than 20 acres, no active wave-formed or bedrock shoreline, and water depth in the deepest part is less than 6.6 feet at

	low water.
palustrine aquatic bed (PAB)	Surface waters dominated by plants that grow and form a continuous cover principally on or at the surface, including algal mats, detached floating mats, and rooted vascular plant assemblages. Total vegetation cover is greater than 80 percent.
palustrine emergent (PEM)	A wetland characterized by erect, rooted, non-woody plants such as cattails, rushes, and sedges.
palustrine forested (PFO)	A wetland characterized by woody vegetation that is 20 feet tall or taller.
palustrine scrub-shrub (PSS)	Areas dominated by woody vegetation less than 20 feet tall, such as trees, shrubs or young trees that are stunted due to environmental conditions.
peak flow	The maximum instantaneous rate of flow during a storm, usually in reference to a specific design storm event.
piscivorous animal	Animals that rely solely on fish as a food source.
pollutant	Any substance introduced into the environment that contaminates or otherwise adversely affects the usefulness of a resource.
primary constituent elements	Physical and/or biological habitat features needed for the survival and successful reproduction of a species.
priority habitats	Habitat types with unique or substantial value to a diverse group of species.
raptor	A raptor is a carnivorous (meat-eating) bird. All raptors share at least three main characteristics: keen eyesight, eight sharp talons, and a hooked beak. Eagles, hawks, falcons, and owls are all considered raptors.
reconnaissance-level field survey	A qualitative investigation, where the biologist walks the site, photographs key areas, and makes observations of plants and wildlife, to assess overall site conditions.
refugia habitat	An area of a stream that provides shelter or safety for aquatic species.
resident fish	Fish that do not migrate out to the ocean but remain in freshwater.
restoration	To improve a disturbed or altered wetland by returning wetland parameters that may be missing.
retaining wall	A structure used to hold earth in place where the natural

	grade cannot be maintained.
retention/detention pond	A stormwater facility designed to reduce stormwater runoff quantity and quality effects by storing the increased runoff volume that results from development, allowing the suspended particles to settle out, and then slowly releasing it at a controlled runoff rate.
riffle	A shallow area of a stream or river in which water flows rapidly over a rocky or gravelly stream bed.
right-of-way	Land purchased prior to the construction of transportation improvements along with land for sound walls, retaining walls, stormwater facilities, and other project features. This also includes permanent or temporary easements for construction and maintenance. Vacant land may also be set aside for future highway expansion under certain circumstances.
riparian	Pertaining to anything connected with or immediately adjacent to the banks of a stream, river, or other water body.
riparian area	The land and habitat adjacent to streams, lakes, estuaries, or other waterways, comprising the transition area between the aquatic ecosystem and the nearby upland terrestrial ecosystem. Riparian corridors, or zones, identified by soil characteristics or plant communities, include the wet areas in and near streams, ponds, lakes, springs, and other surface waters.
riprap	A manmade armoring, facing layer, or protective mound of rocks placed to prevent erosion or sloughing of a stream bank or structure due to flow of surface and stormwater runoff.
riverine	Freshwater areas that are contained within a channel and are not dominated by trees, shrubs, and persistent emergents; for example, rivers and streams.
runoff	Rainwater or snowmelt that leaves an area as surface drainage.
salmonid	Any member of the family Salmonidae, which includes all species of salmon, trout, and char (including bull trout).
saturated soil conditions	A condition in which all easily drained voids (pores between soil particles) in the root zone are filled with

	water to the soil surface.
scrub-shrub wetland	Wetland dominated by woody vegetation less than 20 feet tall. The vegetation may include shrubs, young trees, and trees or shrubs that may be stunted because of environmental conditions. Scrub-shrub wetlands are flooded for extended periods during the growing season.
sediment	Material that originates from weathering and erosion of rocks, dirt, or unconsolidated deposits and organic material. Sediment is carried and deposited by wind, ice, or water. It is often transported by stormwater runoff and may be suspended within the water.
seep	A spot where water trickles out of the ground to form a pool or wet area.
sensitive species	Any native wildlife species that is vulnerable or declining and is likely to become endangered or threatened throughout a substantial portion of its range without cooperative management or removal of threats.
Shoreline Management Act (SMA)	Washington State legislation adopted in 1971 that requires local jurisdictions to create and implement a Shoreline Master Program (SMP). The purpose of the SMP is to regulate land use and new development within sensitive shoreline areas. Shorelines, according to the SMA, include all areas typically within 200 feet inland from principal bodies of water (rivers and streams with flows of at least 20 cubic feet per second, lakes over 20 acres, and tidal areas) and associated wetlands. The local SMP identifies standards of protection for shoreline areas, and typically contains shoreline policies, shoreline use environments or zones, and specific shoreline regulations. The final SMP is subject to approval by the Washington State Department of Ecology.
Shoreline Master Program	See: Shoreline Management Act.
slope	The change in elevation over a distance, or an inclined land form.
species of concern	Species whose conservation standing is of concern to the U.S. Fish and Wildlife Service, but for which status information is still needed for consideration to list the species under the Endangered Species Act.
Spill Prevention Control and	A plan for minimizing effects to soil, surface water, and groundwater in the event of a spill of contaminated soil,

Countermeasures (SPCC) Plan	petroleum products, contaminated water, or other hazardous substances. The SPCC plan addresses construction procedures, equipment, and materials.
staging area	Locations used during construction to provide room for employee parking, large equipment storage, and material stockpiles.
state-listed species	Species of wildlife that are considered to be at-risk and are protected by Washington State laws.
stormwater	The portion of precipitation that does not naturally percolate into the ground or evaporate, but flows overland, in channels, or in pipes into a defined surface water channel or a constructed stormwater facility.
stormwater detention	The process of storing stormwater in manmade facilities such as ponds or vaults and releasing the stormwater at a controlled rate. This helps control volume and rate at which stormwater enters streams and rivers. Controlling the flow of stormwater helps maintain or improve conditions in the streams and minimizes erosion of stream banks.
study area	The area specifically evaluated for environmental effects.
sub-basin	A smaller portion, or sub-area, of a watershed or catchment area.
substrate	Organic and mineral materials that form the bed of a body of water.
threatened species	Any species that is likely to become endangered within the foreseeable future throughout all or a substantial portion of its range.
topography	The physical features of a geographic area taken collectively; especially, the variations in elevation of the earth's surface.
transportation corridor	Travel routes that routinely experience the heaviest volume of vehicles to and from primary locations within a region.
tributary	A stream or other body of water that contributes its water to another stream or body of water.
understory	The vegetation of a forest that grows in the shade of the canopy (branches and foliage of mature trees meeting overhead). The understory usually consists of smaller

	herbaceous and shrub species such as ferns, various berries, and ivies.
uplands	An area that is not sufficiently wet to exhibit the vegetation, soils, and/or hydrologic characteristics associated with wetlands.
vegetative community	A unique and defined area of vegetation within an ecosystem that is composed of specific species of plants.
Water Resource Inventory Area (WRIA)	The Washington State Department of Ecology has designated 62 Water Resource Inventory Areas (WRIAs) for water and aquatic resource management issues. The terms WRIA and watershed are frequently used interchangeably, although a WRIA may include more than one watershed.
watershed	The region of land that drains into a specific body of water, such as a river, lake, sea, or ocean. Rain that falls anywhere within a given body of water's watershed will eventually drain into that body of water.
wetland	Areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.
wetland boundary	The point on the ground at which a shift from wetlands to non-wetlands or aquatic habitat occurs. These boundaries often follow topographic contours.
wetland hydrology	The condition where water is present during a portion (between 5 and 12.5 percent) of the annual growing season.

SECTION 1 INTRODUCTION

What are the primary features of the I-405, NE 8th Street to SR 520 Improvement Project?

The proposed I-405, NE 8th Street to SR 520 Improvement Project is part of the overall I-405 corridor program designed to improve safety, reduce congestion, and improve access along the I-405 corridor. The I-405, NE 8th Street to SR 520 Improvement Project extends approximately 1.5 miles north along I-405, from south of NE 8th Street to the SR 520 interchange, and approximately 1.6 miles east along SR 520, from the I-405 interchange to east of 124th Avenue NE.

The primary features of the I-405, NE 8th Street to SR 520 Improvement Project are presented below:

- Construct grade-separated ramps (referred to as braids) on northbound I-405 to separate the I-405 traffic exiting to SR 520 from traffic entering I-405 at NE 8th Street in downtown Bellevue;
- Construct a new three-lane eastbound collector-distributor lane on SR 520 to separate the on- and off-ramp traffic between I-405 and 124th Avenue NE;
- Reconstruct the NE 12th Street bridge over I-405;
- Construct an on-ramp from the NE 10th Street bridge (built prior to this project) to SR 520; and
- Reconfigure the ramps from SR 520 to southbound I-405.

What is the purpose of this report?

The purpose of the I-405, NE 8th Street to SR 520 Improvement Project Ecosystems Discipline Report is to describe existing ecosystems in the study area and evaluate potential effects to these ecosystems from the project. An ecosystem is a system formed by the interaction of organisms within their physical environment. This report identifies the environments, or habitats, that are part of the ecosystem in the study area, as well as the plants and animals living in these environments. This discipline report also identifies the effects that constructing or not constructing the project will have on ecosystems, including effects that will result from any proposed mitigation efforts.

What elements are included in the Ecosystems Discipline Report?

The ecosystem elements that are included in this report are wetlands, aquatic resources, and wildlife habitat. This Ecosystems Discipline Report details the nature and features of these ecosystem elements. It also details the temporary and permanent effects to wetlands, aquatic resources, and wildlife habitat as a result of the project; measures taken to avoid effects; and mitigation activities to offset negative effects to wetlands, aquatic resources, and wildlife habitat from the project.

Wetlands

Wetlands are areas that are inundated or saturated by surface water or groundwater frequently enough, and for long enough periods of time, to support vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Twelve wetlands have been identified in the study area.

Aquatic Resources

Aquatic resources are defined as aquatic environments, such as streams, rivers, and lakes, and the aquatic-dependant organisms that inhabit those environments, but specifically referring only to streams for the purposes of this report. These resources are important elements of the ecosystem in which we live and the significance of these resources for food, livelihood, employment, income, and cultural value is widely recognized. The habitats in which fish and other aquatic organisms live also provide valuable habitat and food sources for various terrestrial species.

There are seven streams that cross or flow in the vicinity of the project footprint:

- Sturtevant Creek
- An unnamed tributary to Sturtevant Creek
- An unnamed tributary to Yarrow Creek
- Yarrow Creek
- West Tributary to Kelsey Creek
- Goff Creek
- Valley Creek

Wildlife Habitat

Wildlife habitat is defined as areas of an animal's habitat that may be important for feeding, watering, resting, and/or breeding. Wildlife habitat in the study area consists of areas dominated by forests, shrubs, grasses, or maintained vegetation such as ornamental landscapes or roadside vegetation maintained for safety purposes.

Why are ecosystem elements important to consider?

Ecosystems are important to consider for many reasons. Wetlands, aquatic resources, and wildlife habitats are integral to the long-term viability and sustainability of the area's ecosystems. These resources provide plants or animals with areas to live, grow, and reproduce. These habitats provide the plants and animals in the study area with adequate food, water, shelter, and living space.

Various local, state, and federal agencies exist to ensure the protection of wetlands, aquatic resources, and wildlife habitats, and their regulations are in place to guide resource-friendly development. Identifying wetlands, aquatic resources, and wildlife habitats that exist in the study area and understanding their functions is critical to protecting these resources.

What studies were completed?

The I-405 Team gathered existing information for the study area through literature and internet research, and interviews with local, state, and federal agency personnel. Additional information on the ecosystem elements in the study area was collected by conducting wetland delineations and stream surveys, and field verifying wildlife habitat data.

The collected information was then compared to the project footprint, including all roadway and drainage improvements, to assess potential effects resulting from the project.

What are the key messages from this report?

The I-405, NE 8th Street to SR 520 Improvement Project study area contains a variety of important wetlands, aquatic resources, and wildlife habitats that are integral to the long-term viability and sustainability of the study area's ecosystem.

The project will directly affect the ecosystem both temporarily and permanently. Some of these effects will be beneficial (e.g., providing stormwater treatment facilities to areas that are currently untreated) and some will be negative (e.g., encroachment into riparian and wetland buffers and filling of certain wetlands and streams).

- The project will maintain 7.05 of the 7.29 acres of wetlands in the study area.
- Key effects to wetlands include the partial filling of two of the 12 wetlands or their buffers in the study area.
- One wetland will incur temporary and permanent wetland and buffer effects, the second wetland will only incur temporary buffer effects.

Filling of wetlands and clearing of wetland buffers could affect the water quality, hydrologic, and habitat functions of the wetlands.

The project will result in effects to only one of the seven aquatic resources in the study area. Key effects to aquatic resources from the project include:

- Overwater and in-stream construction occurring on the unnamed tributary to Sturtevant Creek.
- Additional effect is encroachment into the riparian buffer of the unnamed tributary to Sturtevant Creek.

Key effects to wildlife habitat include adding impervious surfaces within the study area, changing existing types of wildlife habitat, and reducing or fragmenting the available wildlife habitat.

The project also involves construction activities that could temporarily affect ecosystem elements in the study area. These effects are primarily related to construction-related disturbances including upland, wetland, and riparian vegetation removal; stream diversions; in-water work; temporary filling of wetlands and streams; and sedimentation.

Project effects to ecosystem elements will be mitigated in accordance with applicable local, state, and federal laws.

What measures are proposed to avoid or reduce impacts?

The I-405, NE 8th Street to SR 520 Improvement Project was designed to avoid effects to ecosystem elements to the greatest extent practicable. Approaches such as locating project features away from ecosystem elements or installing retaining walls were incorporated throughout the design of the project. During construction, Washington State Department of Transportation (WSDOT) will require that appropriate best management practices (BMPs) and conservation measures are implemented to reduce potential effects to ecosystem elements from construction. Mitigation activities to offset project effects will be performed in accordance with applicable local, state, and federal regulations that govern the ecosystem elements detailed in this discipline report.

In all cases where direct temporary or permanent effects on ecosystem elements are unavoidable, actions will be implemented to mitigate for affected resources. Wetland mitigation related to the project will occur within the Kelsey Creek Park mitigation site. Aquatic resources mitigation will be implemented through the enhancement of Sturtevant Creek. Mitigation measures to offset negative effects to wildlife habitat will include the revegetating of all temporarily disturbed soils resulting from construction activities.

What would happen if we adopt the No Build Alternative?

No effects to wetlands, aquatic resources, or wildlife habitat are anticipated from the No Build Alternative. Thus, measures to avoid or reduce effects to ecosystem elements are not required.

SECTION 2 PROJECT DESCRIPTION

What is the intent of the I-405, NE 8th Street to SR 520 Improvement Project?

WSDOT is proposing to construct the I-405, NE 8th Street to SR 520 Improvement Project to improve safety and reduce congestion in the vicinity of the I-405 and SR 520 interchange within the city of Bellevue. The improvements will benefit the public by:

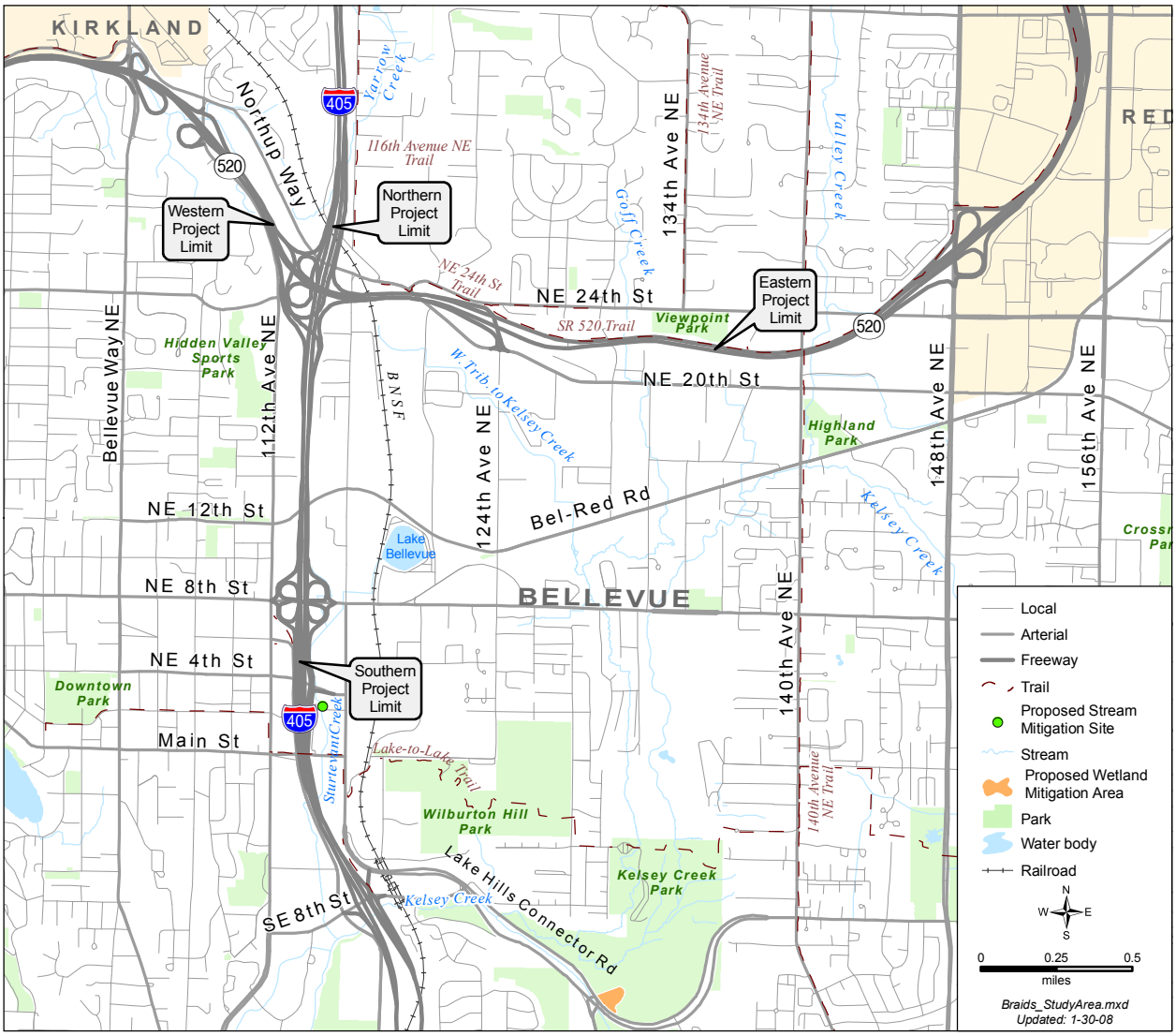
- Reducing congestion for the public and freight vehicles;
- Improving safety;
- Improving access and circulation to and from local streets; and
- Providing opportunities for environmental improvements.

The I-405, NE 8th Street to SR 520 Improvement Project extends approximately 1.5 miles north along I-405, from south of NE 8th Street to the SR 520 interchange, and approximately 1.6 miles east along SR 520, from the I-405 interchange to east of 134th Avenue NE (Exhibit 2-1).

What are the details of the I-405, NE 8th Street to SR 520 Improvement Project?

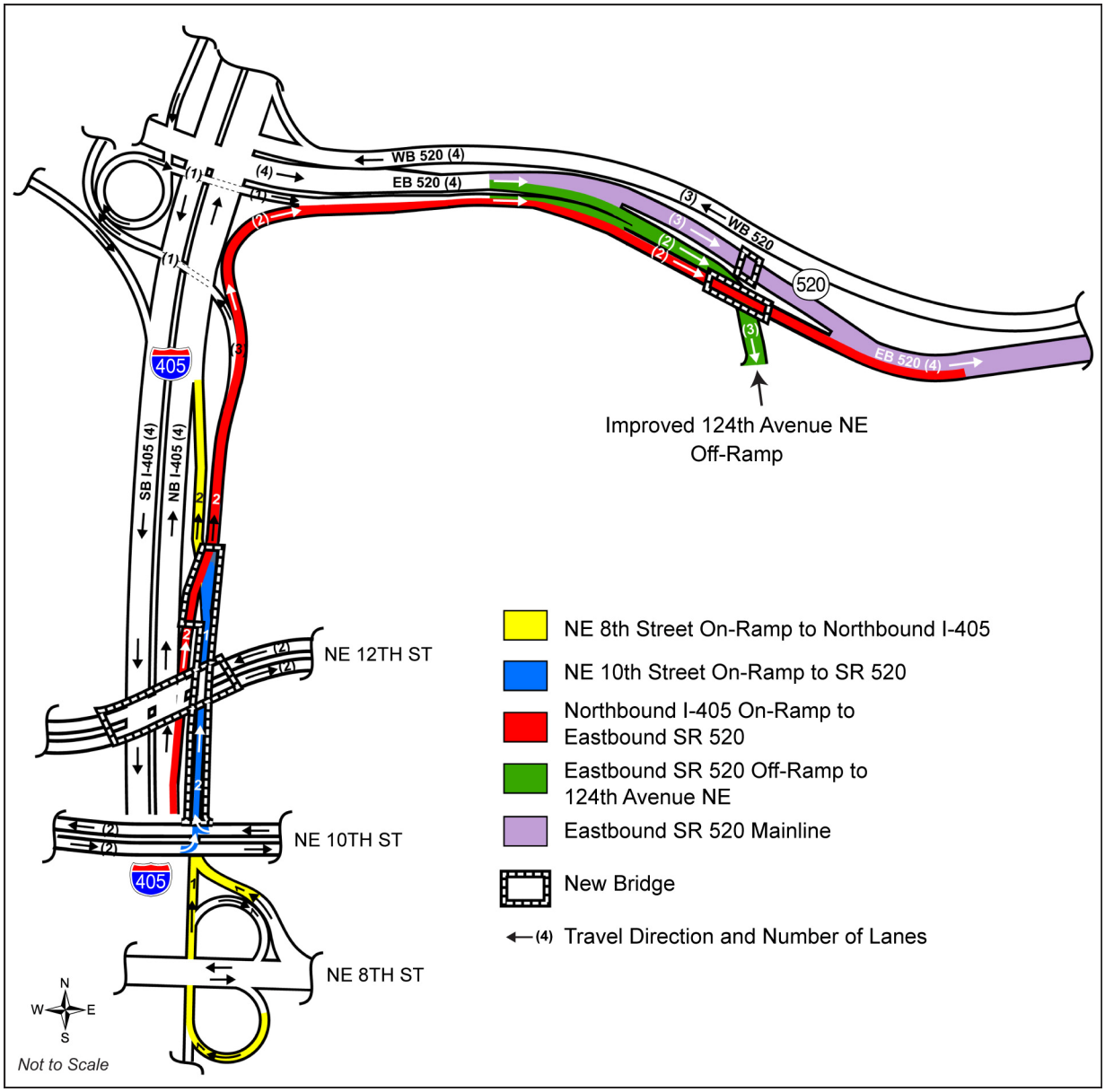
The proposed I-405, NE 8th Street to SR 520 Improvement Project is part of the overall I-405 Corridor Program Master Plan designed to improve safety and reduce congestion along the I-405 corridor. The I-405, NE 8th Street to SR 520 Improvement Project will improve safety and mobility by constructing grade-separated ramps on northbound I-405 to separate the I-405 traffic exiting to SR 520 from traffic entering I-405 at NE 8th Street in downtown Bellevue. On SR 520, a new eastbound collector-distributor lane will also be constructed to separate the on- and off-ramp traffic between I-405 and 124th Avenue NE (Exhibit 2-2). In addition, the ramps from SR 520 to southbound I-405 will be reconfigured to improve traffic flow.

Exhibit 2-1: Project Location and Vicinity



This discipline report analyzes two alternatives, the Build Alternative and the No Build Alternative. The proposed project improvements for the Build Alternative, from south to north on I-405, and west to east on SR 520, are described below. The No Build Alternative is described at the end of this section.

Exhibit 2-2: Proposed Lane Configuration on Northbound I-405 to Eastbound SR 520



Northbound I-405 to Eastbound SR 520 Improvements

- Reconfigure the existing northbound NE 4th Street on-ramp to become an auxiliary lane that exits to SR 520 and northbound I-405 as part of a two-lane exit ramp. See Exhibit 2-3.

What is an auxiliary lane?

An auxiliary lane is a lane added between interchanges—from one on-ramp to the next off-ramp. It is dedicated to traffic entering and leaving a freeway and provides motorists with more time and extra room to accelerate or decelerate and merge when getting on and off the freeway.

- Reconstruct portions of the NE 8th Street on- and off-ramps to and from northbound I-405. The on-ramp will be reconstructed at a lower grade than the I-405 mainline.
- Reconstruct portions of the NE 8th Street on- and off-ramps to and from northbound I-405. The on-ramp will be reconstructed at a lower grade than the I-405 mainline.
- Rebuild the NE 12th Street bridge crossing over I-405 to accommodate the new ramps.
- Construct a northbound on-ramp to SR 520 from a new NE 10th Street bridge crossing; the bridge crossing will be constructed as part of a separate project prior to constructing the on-ramp.
- Construct grade-separated ramps to divide traffic entering northbound I-405 from NE 8th Street and traffic exiting I-405 to SR 520.
- Construct grade-separated ramps to divide traffic entering eastbound SR 520 from northbound I-405 and traffic exiting eastbound SR 520 to 124th Avenue NE.
- Shift eastbound SR 520 mainline travel lanes toward the median.
- Extend the ramp from northbound I-405 to eastbound SR 520 on a collector-distributor system through the 124th Avenue NE interchange to merge with the existing eastbound SR 520 mainline just east of 134th Avenue NE.
- Reconstruct the 124th Avenue NE interchange off-ramp.
- Relocate an existing noise barrier. The new barrier will be approximately 1,585 feet long and 20 feet high.
- Construct several retaining walls needed to allow for the proposed widening of I-405.

What is a collector-distributor system?

Collector-distributor lanes are freeway lanes serving single or multiple interchanges that are physically separated from general freeway lanes. The purpose of collector-distributor lanes is to separate the traffic entering and exiting the freeway from the through traffic.

In the simplest form, all ramps that would normally touch the freeway are instead shifted outwards to the collector distributor lanes. There is still weaving, but it is no longer on the main lanes.

SR 520 to Southbound I-405 Improvements

- Reconfigure the ramps from SR 520 to southbound I-405 to improve traffic flow. The westbound SR 520 to southbound I-405 ramp will become a dedicated auxiliary lane, and on-ramp traffic will no longer be required to immediately merge with southbound I-405 mainline traffic. The eastbound SR 520 to southbound I-405 ramp will merge with the dedicated auxiliary lane.

Exhibit 2-3: Project Features - Sheet 1 of 6