Bigelow Gulch Corridor Safety and Mobility Project

Spokane County

RAISE FY 2021

July 12, 2021

Spokane County
WASHINGTON

https://www.spokanecounty.org

Project Information Form

Project Name	Bigelow Gulch Corridor Safety and Mobility Project
Project Description	The project involves design and construction activities along Bigelow Gulch and Forker Roads to widen unimproved segments of the corridor from two to four lanes, realign portions of the corridor, improve intersections, and install intelligent transportation systems (ITS) that will tie into existing City of Spokane and WSDOT traffic management systems.
Urban/Rural	Rural
Urbanized Area	Not located in an Urbanized Area
Capital or Planning	Capital
Project Type	Road - New Capacity
Primary Project Location Zip Code	99217
Project Previously Submitted?	Yes - FY20 INFRA, FY20 BUILD, FY21 INFRA
Prior BUILD/TIGER Funds Awarded to Project?	No
FY20 INFRA or PIDP Applications?	Yes – FY20 INFRA, FY20 BUILD, FY21 INFRA
Amount Requested	$9,855,000
Total Project Cost	$37,101,782
Total Federal Funding	$14,816,000
Total Non-Federal Funding	$12,053,815
Tribal Government?	No
Tribal Benefits?	N/A
Private Corporation Involvement	No
Private Corporation Name(s)	
TIFIA/RRIF?	No
Department Financing Program?	No
Designated Opportunity Zone?	The project is partially located within an Opportunity Zone

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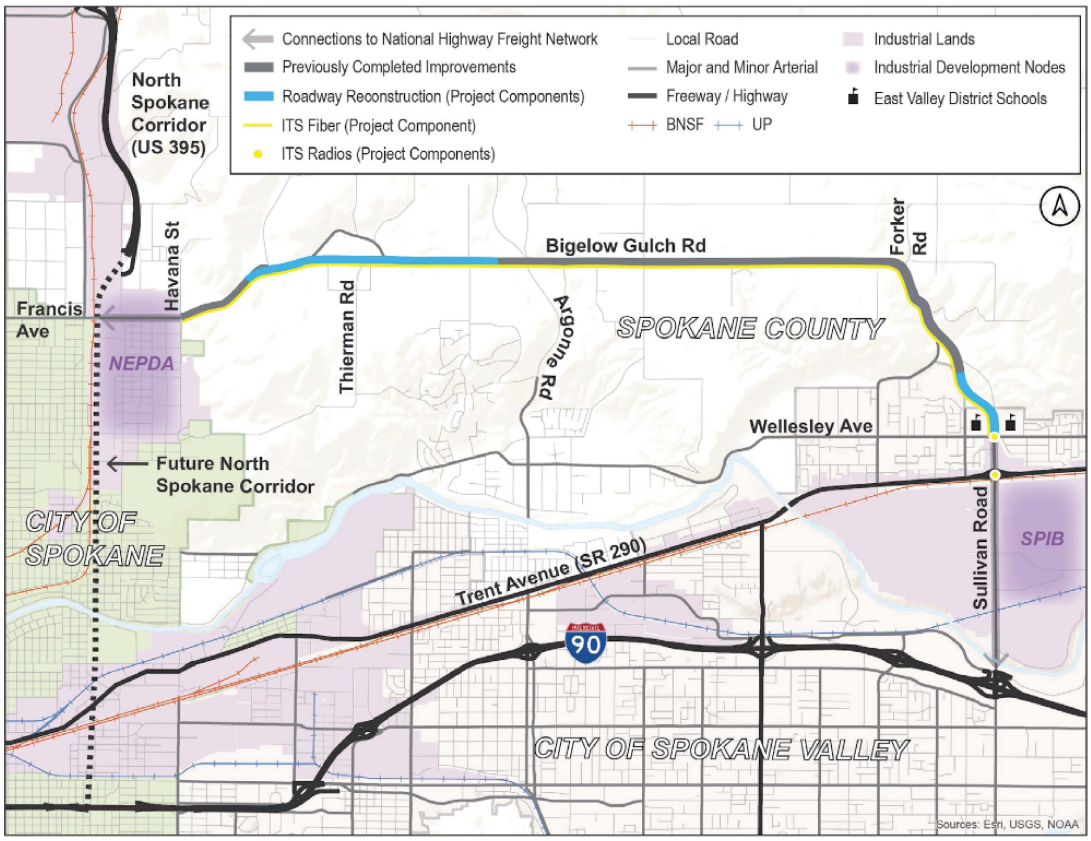
Executive Summary

The Bigelow Gulch Corridor is located in rural Spokane County and provides a vital connection for regional goods and agricultural and commercial freight movement. The Bigelow Gulch Corridor links key industrial areas, intermodal facilities, and commercial centers on the east side of the City of Spokane to industrial and business hubs in the City of Spokane Valley. The corridor is often used as a direct route to bypass congestion on Interstate 90 (I-90) and United States Highway 395 (US-395). At the west end of the corridor, Bigelow Gulch Road provides a direct connection to the North Spokane Corridor (US 2 and US 395). At the east end of the corridor, the road intersects with State Route 290 (Trent Avenue) and I-90 via Sullivan Road. The figure below illustrates the project limits and components.



Spokane County is requesting $9.855 million dollars in RAISE funding to complete the transformation of the remaining two-lane sections of Bigelow Gulch Road. The remaining sections are planned to be upgraded to a divided four-lane roadway. Along steeper sections, auxiliary truck climb/crawl lanes will be added for slow moving vehicles. Lighting and center turn lanes will be constructed at intersections where needed. The project will realign the corridor tying in at a new signalized intersection at Wellesley and Sullivan Road and in the City of Spokane Valley.

Intelligent Transportation Systems (ITS) fiber will be installed along the length of the corridor, connecting the Spokane Regional Traffic Management Center (SRTMC), the City of Spokane Valley ITS system, Washington State Department of Transportation (WSDOT) ITS fiber, and the City of Spokane ITS system. Other ITS components to be installed include one variable message sign (VMS), four pan-tilt-zoom (PTZ) cameras, and two permanent count stations. These ITS components will be linked to the SRTMC to provide real-time data and alerts of congestion or incidents to the travelers along the Bigelow Gulch Corridor. This will also enable a redundant loop to support the I-90 ITS backbone in the region.

Considering all monetized benefits and costs, the **$25.6 million investment** would realize **$70.5 million in total benefits** and a **benefit-cost ratio of 2.75** (both the total benefits and benefit-cost ratio account for discount rates in accordance with the latest US Department of Transportation guidance).

1 Project Description

The Bigelow Gulch Corridor is an 8.2-mile rural road in Spokane County that connects into the City of Spokane with City of Spokane Valley.

The corridor is a heavily used truck route that carries 4.6 million tons of freight annually[1] . The Washington State Department of Transportation (WSDOT) Freight & Goods Transportation System (FGTS) classifies Bigelow Gulch Road as a Tier-2 truck route. The majority of these trucks are involved in moving freight to and from, local major facilities, including the Northeast Planning Development Authority (NEPDA), Spokane Industrial Park, URM, Safeway, Food Services of America, Tosco Tank Farm, the Spokane Valley Mall, and further eastern regional destinations like the Spokane Business and Industrial Park (SPIB) and the Amazon fulfillment center currently under construction in Spokane Valley. The route is key for various businesses in the City of Spokane's northeast industrial area as well as the Sullivan Road industrial area in the City Spokane Valley, where several thousand people from around the region are employed.

> "Spokane-area manufacturers, agricultural producers, forestry and mining companies export $800 million worth of goods annually. Quality infrastructure is key to getting those products to market. Freight congestion on Washington highways costs shippers more than $3 billion per year."
>
> *- Eric Schinfeld, President of the Washington Council on International Trade, taken from GreaterSpokaneInc.com*

The corridor is often used as a direct route to bypass congestion on I-90 and US-395 in the Spokane and Spokane Valley metropolitan areas and provides a direct connection to the North Spokane Corridor (US 2 and US 395). To the east, the Bigelow Gulch Corridor intersects with SR-290 (Trent Avenue) and its extension into north Idaho as Idaho State Route 53. Both ends of the Bigelow Gulch Corridor provide access to significant transloading facilities with both Burlington Northern Santa-Fe (BNSF) and Union Pacific (UP) railroads, including those located in the Spokane Industrial Park (SBIP) connected to the east end of the corridor.

1 https://www.wsdot.wa.gov/Freight/FGTS/

Bigelow Gulch Road is currently a two-lane rural minor arterial[2] and has a deadly crash history due to the absence of passing lanes, poor sightlines, steep grades, and sharp curves. An analysis of current traffic volumes shows that most of the corridor is operating at capacity today. Even small disruptions significantly effect traffic flow and travel times. Traffic volumes are anticipated to increase, causing further congestion and delays along the corridor.

Figure 1: Narrow two-lane section of Bigelow Gulch Road carrrying significant truck traffic

1.1 Project Overview

Improvements will transform the remaining unimproved segments of Bigelow Gulch Road into a divided four lane roadway with 12-foot lanes in each direction, a 12-foot median, and 8-foot shoulders (as shown in Figure 2 on the next page). Where there are sections of excessively steep grades, currently some sections are as steep as 10%, improvements will reduce grades to a maximum of 6%. Along steep sections the four-lane roadway will provide auxiliary truck climb/crawl lanes for slow moving vehicles. Other improvements include center turn lanes at intersections and realigning the roadway, where needed, to improve horizontal and vertical curves.

Wider paved shoulders will provide greater roadside safety for vehicles to pull over. The roadside safety along the corridor will be improved to provide adequate clear zone adhering to the American Association of State Highway and Transportation Officials (AASHTO) standards.

2 https://www.spokanecounty.org/DocumentCenter/View/107/Arterial-Road-Plan-Map-PDF?bidId=

Multi-modal improvements include widening shoulders to 8 feet, which will allow for improved bicycle access along the length of the corridor. At the east end, where Bigelow Gulch Road approaches the City of Spokane Valley urban area, a sidewalk and multi-use pathway are proposed to improve bicycle and pedestrian access to the East Valley School area on either side of the corridor. In addition, a pedestrian tunnel under Bigelow Gulch will be constructed between the East Valley High School and East Valley Middle School, thereby removing conflicts between pedestrians and vehicles for student access. The project will also reconstruct the intersection of Wellesley Avenue and Sullivan Road by installing a traffic signal and ADA accessible facilities to improve traffic flow and enhance safety.

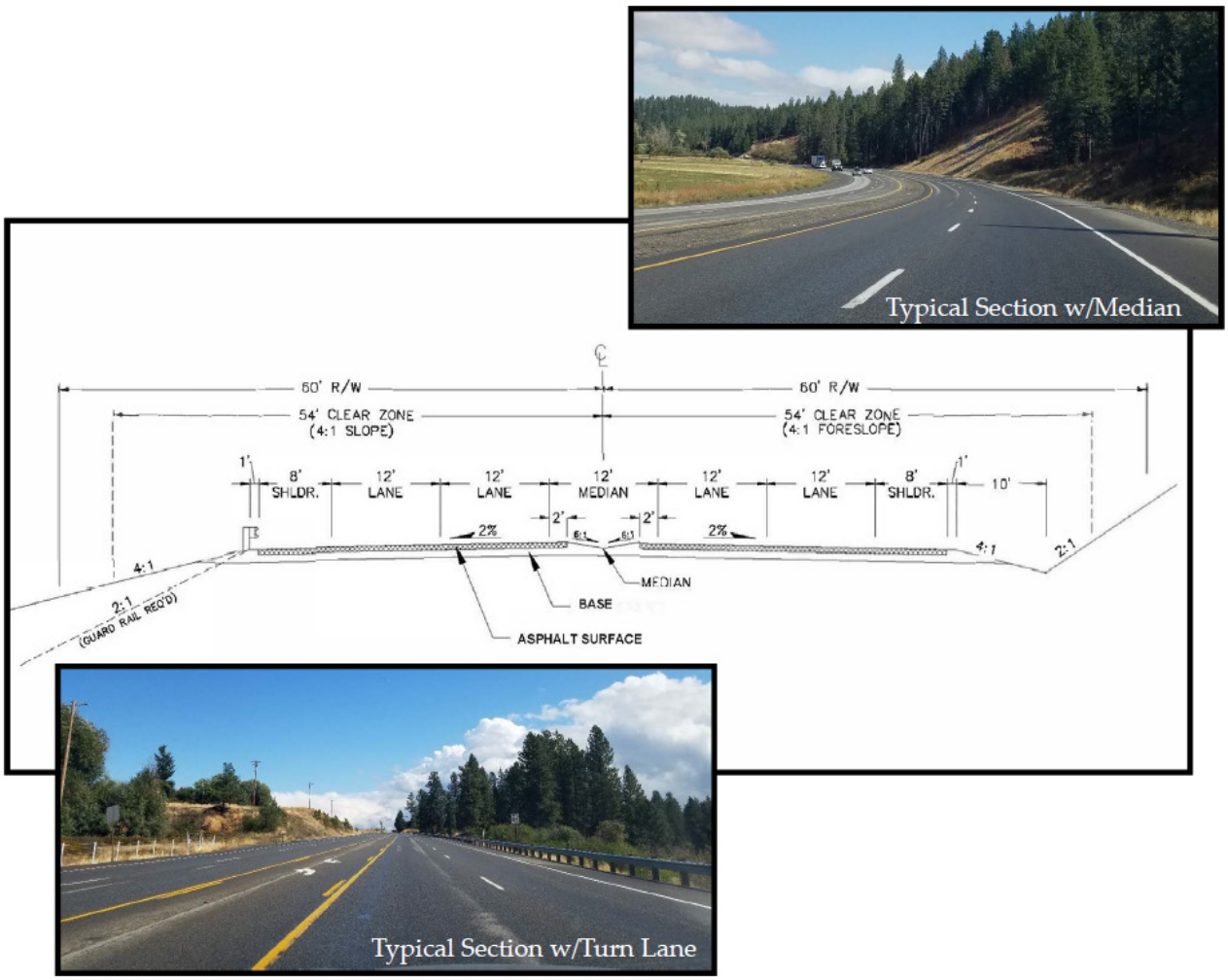


Figure 2: Bigelow Gulch Road arterial upgrade cross-section

The project includes installation of Intelligent Transportation Systems (ITS) fiber along the length of the Bigelow Gulch corridor, from the US 395 North Spokane Corridor vault at Freya Street & Francis Avenue/Bigelow Gulch Road to the Wellesley Avenue & Sullivan Road intersection. To connect to the WSDOT I-90 ITS regional backbone system south of Wellesley Avenue, two ITS radios will be installed, one at Wellesley Avenue and one at the SR 290/Trent Avenue Interchange. In addition, one variable message sign (VMS), four PTZ cameras, and two permanent count stations will be installed along the corridor to aid in disseminating real time data to travelers along the corridor.

Together, these improvements will transform the existing narrow, winding, and steep two-lane road into a four-lane freight corridor that meets current design and safety standards. In anticipation of the upgrades to the Bigelow Gulch Corridor, Spokane County upgraded the Federal Functional Classification (FFC) to a minor arterial, achieving the vision for this roadway in the Spokane County Comprehensive Plan.

1.2 Project History

Bigelow Gulch Road improvements were first identified in 1998, through a lengthy state-funded public process known as the *Connecting our Community - A Regional Study of Urban Connectors*. Since then, Bigelow Gulch Road improvements remain a high priority in both local and state planning. Bigelow Gulch Road improvements are listed as a priority in the Spokane Regional Transportation Council *Horizon 2040: Spokane Regional Metropolitan Transportation Plan*, WSDOT's 2017 *State Freight System Plan*[3] and Washington State Freight Mobility Strategic Investment Board's *2019 Mobility Activities and Recommendations Report*[4].

Over the last 16 years, Spokane County has been implementing improvements along the Bigelow Gulch Corridor. Several corridor segments have been brought up to a four-lane divided rural arterial standard, totaling $42 million in previously completed components. Examples of previously completed components include a new grade separated intersection at the Bigelow Gulch / Forker Road intersection[5] ($9.4 million), as shown in Figure 3.

Figure 3: Completion of the grade separated intersection at Bigelow Gulch Road and Forker Road in 2019 (top) and reconstruction of a section of Bigelow Gulch Road between Argonne Road and Forker Road in 2019 (bottom)

1.3 Project Components

As shown in Figure 4, the remaining Bigelow Gulch Road project components are scheduled for construction in the next three years. From west to east the project components are:

- Reconstruction and realignment of 1.3 miles of Bigelow Gulch Road between west of Palmer Road and Weile Avenue;
- Reconstruction of 0.9 miles of Bigelow Gulch Road between Weile Avenue and Argonne Road;
- Realignment and construction of 0.5 miles of Sullivan Road (Forker Road) between Progress Road and Wellesley Avenue. This section will include paved shoulders as well as a multi-use pathway on the west side and a sidewalk on the east side to facilitate connections to the East Valley Middle School and East Valley High School. A pedestrian and multi-use tunnel will also be constructed under Sullivan Road to allow students direct access to play fields;
- Signalization and reconstruction of the Wellesley Avenue intersection at Sullivan Road; and
- Installation of ITS fiber along the length of the corridor and radios at the Sullivan & Wellesley and Sullivan & Trent Avenue / SR-290 intersections. One variable message sign (VMS), four pan-tilt-zoom cameras, and two permanent traffic recorder stations will also be installed along the corridor.

3 https://www.wsdot.wa.gov/publications/fulltext/freight/Freight-Plan-2017SystemPlan.pdf

4 http://www.fmsib.wa.gov/dcs/annuals/20200121-FMSIB2019_AnnualReport_ElectronicCopy.pdf

5 https://www.spokanecounty.org/2724/Bigelow-GulchForker-Rd-Urban-Connector

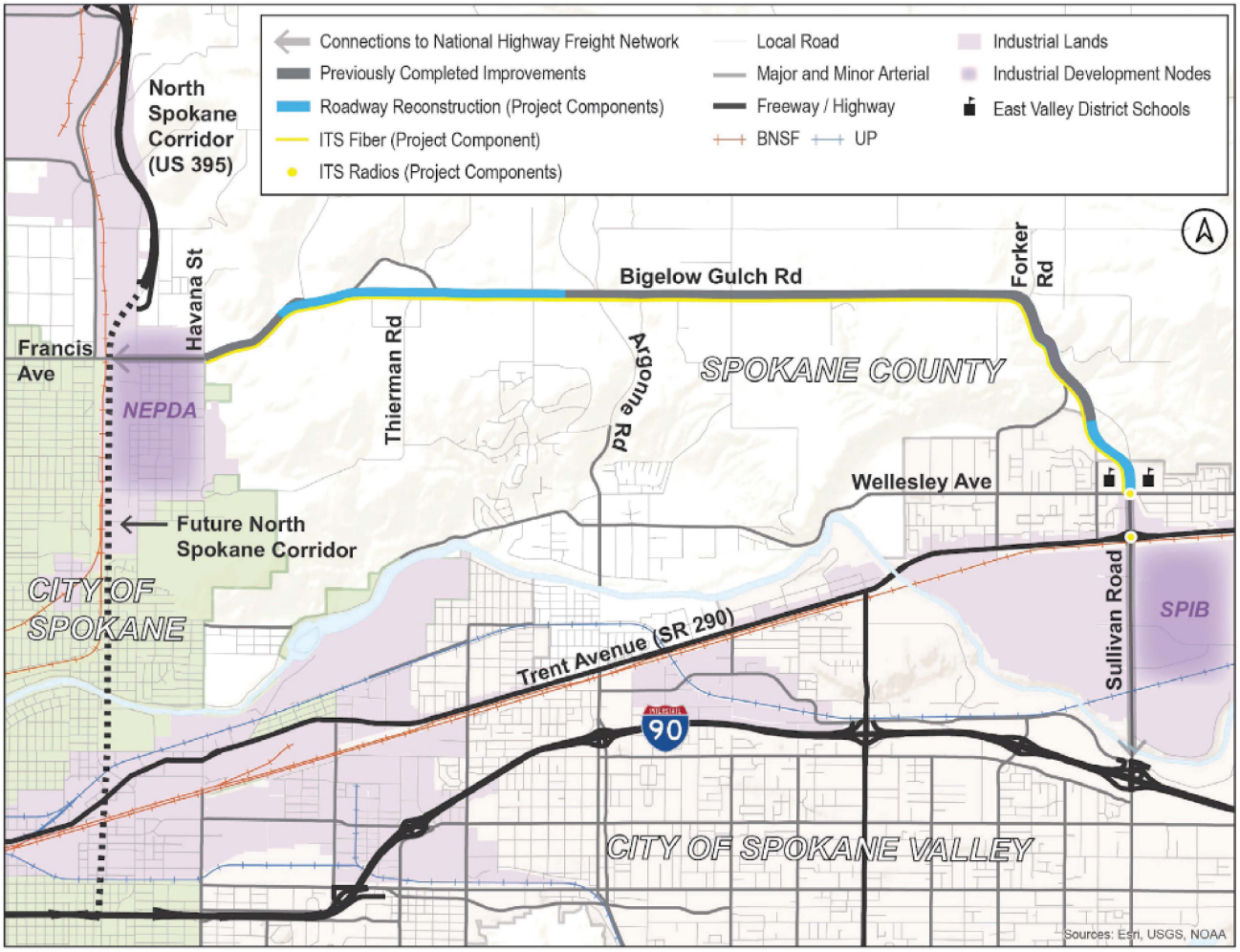


Figure 4: Bigelow Gulch Road Project Components

1.4 Project Benefits for Rural Areas

As mentioned in the U.S. DOT's Rural Opportunities to Use Transportation for Economic Success (ROUTES) Initiative, corridors like Bigelow Gulch Road "are critically important for domestic production and export of agriculture, mining, and energy commodities, as well as the quality of life for all Americans.[6]" Improvements along the Bigelow Gulch corridor will generate significant benefits for rural communities along the corridor by:

- Improving access to jobs through greater connectivity to growing commercial and industrial employment centers at either end of the corridor;
- Improving travel times and travel time reliability for residents, freight, and commodities (such as agricultural freight regularly traveling through the area);
- Increasing the potential and attractiveness of inland port areas and intermodal facilities located at either end of the corridor;
- Improving safety for all roadway users by eliminating sub-standard roadway curves; and
- Encouraging mode shift for school trips at the east end of the corridor through the implementation of attractive and safe bicycle and pedestrian infrastructure.

6 https://www.transportation.gov/rural

2 Project Location

The Bigelow Gulch Corridor is a rural roadway located in eastern Washington, connecting agricultural lands and rural residential areas to urban centers to the east and west via the regional road network (see Figure 5).

Bigelow Gulch connects to National Highway System (NHS) route I-90. The project lies on both a National Highway Freight Network Critical Rural Freight Corridor and Critical Urban Freight Corridor[7]. It also connects to two National Highway System MAP-21 Principal Arterials[8]. The corridor is anchored at each end by Class I Railroads, transloading facilities and the region's largest industrial parks.

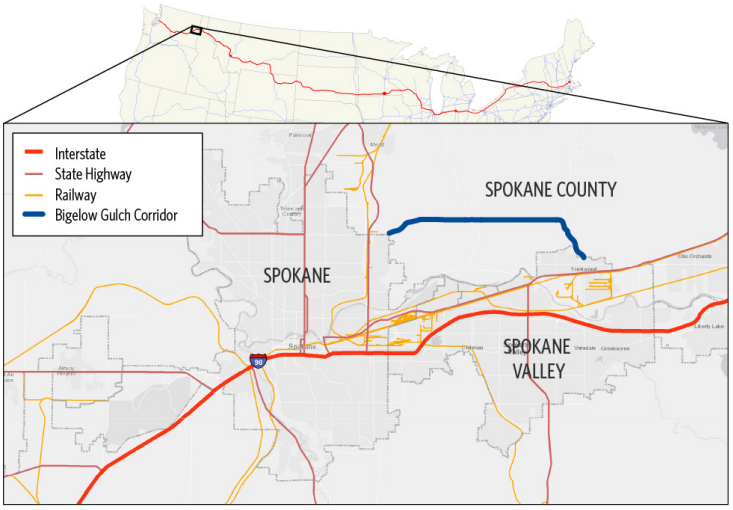


Figure 5: Project Location in the Region

West of Argonne Road, Bigelow Gulch Road is within the New Markets Tax Credits (NMTC) zone 53063011202 and connects directly into Opportunity Zone 53053014400 at Havana Street, where Bigelow Gulch turns into Francis Avenue in the City of Spokane. As shown in Figure 6, Bigelow Gulch Road connects into Spokane County and the City of Spokane's industrial area and a focal industrial development promoted by the Northeast Public Development Authority. Four blocks west of Havana Street, Francis Avenue connects to the US 395 and US 2 via the North Spokane Corridor (NSC). The NSC is a new 10.5-mile freeway facility that will link I-90 (to the south of Bigelow Gulch Road) with the existing US 395 and US 2 north of Bigelow Gulch Road. The NSC is currently under construction by WSDOT and partially completed at this time. The US 395 is a National Highway System route, as well as a designated North American Free Trade Agreement (NAFTA) corridor, and has seen a significant increase in freight traffic since designation.

At the east end, Bigelow Gulch Road currently connects into the City of Spokane Valley at Forker Road and Progress Road. As shown in Figure 6, this project proposes to shift the alignment east connecting directly to Sullivan Road at Wellesley Avenue to avoid a series of turns to enter the urban area and provide a more direct connection into the Spokane Business and Industrial Park, Trent Avenue (SR 290) and the I-90.

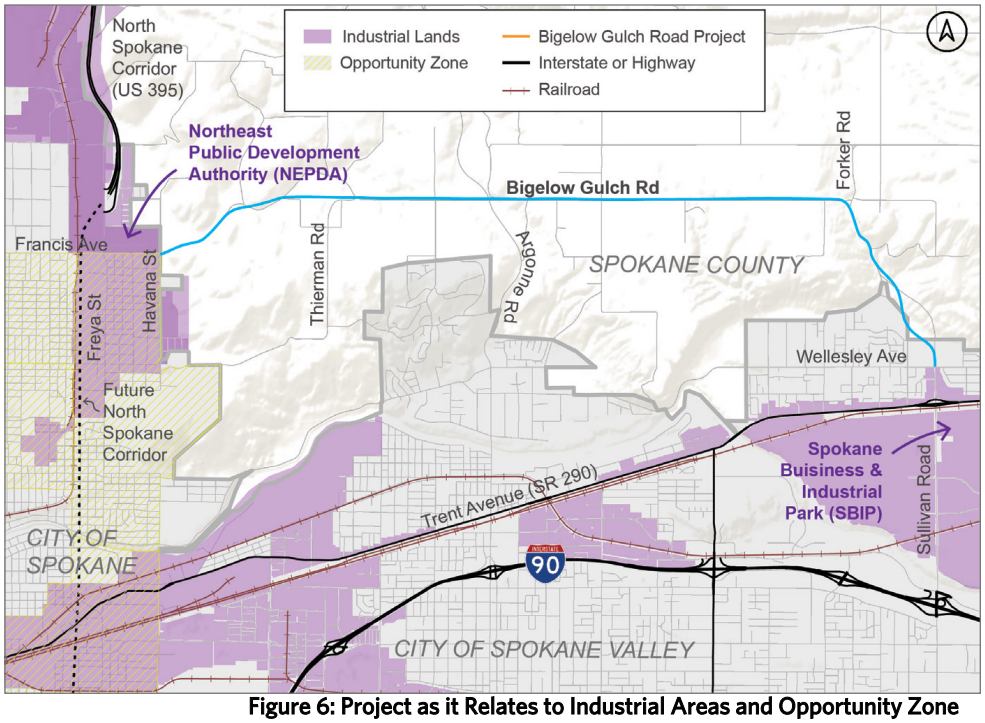


Figure 6: Project as it Relates to Industrial Areas and Opportunity Zone

7 See *Appendix A: Washington State Freight Investment Plan* https://www.wsdot.wa.gov/freight/publications

8 https://www.fhwa.dot.gov/planning/national_highway_system/nhs_maps/washington/spokane_wa.pdf

3 Grants, Funds, Sources and Uses of all Project Funding

3.1 Project Costs

The total estimated project cost to reconstruct 4.4 miles of Bigelow Gulch Road as well as install ITS fiber from Freya Street to the Wellesley Avenue intersection is $37.1 million. Funding is drawn from local, state, and federal programs.

Previously incurred expenses total $10.2 million. Previously incurred expenses include activities such as: engineering, environmental permitting, and administrative costs associated with project activities. A summary of project costs is shown in Table 1.

Table 1: Summary of Previously Incurred Expenses and Future Eligible Costs

Previously Incurred Expenses (millions)	Total Future Eligible Costs (millions)	Total Project Cost (millions)
$10.23	$26.87	$37.10

3.2 Source and Amounts of Funds

For all future eligible project costs, 63.3% ($17.0 million) have been secured from non-RAISE sources. Spokane County is requesting at total of $9.855 million dollars in RAISE grant funding, which accounts for 36.7% of the total future project costs. A breakdown of all future eligible project costs by source and amount is shown in Table 2.

Table 2: Breakdown of the Sources of Funds for the Project

Category (Federal, Non-Federal, RAISE)	Source Name	Status (Secured or Requested)	Total (millions)	Share of Total
Non-Federal	Freight Mobility Strategic Investment Board (FMSIB)	Secured	$6.04	22.5%
Non-Federal	County Road Arterial Program (RAP)	Secured	$3.26	12.1%
Non-Federal	Transportation Improvement Board (TIB)	Secured	$2.07	7.7%
Non-Federal	County Road Fund	Secured	$0.68	2.5%
Non-Federal	Northeast Planning and Development Authority	Secured	$0.02	0.1%
Federal	FWHA's Surface Transportation Program Grant (STPGR)	Secured	$3.70	13.8%
Federal	FWHA's Highway Infrastructure Program (HIP)	Secured	$1.27	7%
RAISE	FY 20201	Requested	$9.855	36.7%
Total			**$26.87**	**100%**

Funding commitments are documented in **Appendix A**.

3.4 Uses of Funds

The majority of the project funds will be spent on project components as shown in Table 3. With the exception of the ITS component, the majority of engineering, design, and property acquisition activities have been completed.

Table 3: Uses of Project Funds

Project Component	Secured Non-Federal Funds (millions)	Secured Other Federal Funds (millions)	RAISE Funds (millions)	Total Future Project Costs (millions)
Reconstruction and realignment of 1.3 miles of Bigelow Gulch Road from Palmer Road to Weile Avenue	$3.14	$2.43	$4.98	$10.55
Reconstruction of 0.3 miles of Bigelow Gulch Road (Forker Road) south of the recently completed interchange and East Jacobs Road	$4.13	-	-	$4.13
Realignment and construction of 0.5 miles of Bigelow Gulch Road (Forker Road) from Progress Road to Wellesley Avenue and intersection improvements at Wellesley	$4.18	$2.54	$0	$6.72
Installation of ITS fiber and integrated ITS infrastructure (i.e. VMS sign and cameras)	$0.60	-	$4.87	$5.47
Total	**$12.05**	**$4.97**	**$9.85**	**$26.87**

3.5 Funding Conditions

Several existing grants awards have funding conditions which are summarized in Table 4. Funds awarded under the RAISE grant will not impact the conditions or terms of previous project awards.

Table 4: Existing Project Grant Funds, Conditions and Controls

Source of Funds	Conditions	Controls
Freight Mobility Strategic Investment Board (FMSIB)	Funds scheduled for 2019 - 2023 and the FMSIB board can defer projects not progressing per schedule.	Projects are on schedule and regular communication and updates are provided to the Board to show progress.
Rural Arterial Program (RAP)	County must be in compliance with WAC 136-150.	County is in compliance and maintained a Certificate of Good Practice as required.
Transportation Improvement Board (TIB)	Funds can only be used for highways or roads and agreement is not to exceed 10 years without approval.	Funds are programed for road project construction items in 2021.
Highway Safety Improvement Program (HSIP)	Limited to safety improvement elements for specific intersections along Bigelow Gulch Road.	Agreement already in place with WSDOT the project administrator for utilization of funds.
Highway Improvement Program (HIP)	Must be obligated by September 30, 2022.	Bigelow Gulch Corridor Safety and Mobility Project construction scheduled for Fall 2021.

4 Selection Criteria

It is anticipated that Bigelow Gulch will be substantially completed by December 2023 with project closeout continuing into 2024. Construction sequencing is expected to provide benefits prior to the complete construction of the full project as sections of the Project will be opened to the traveling public. The benefits and costs associated with the Project are summarized in Table 5.

Table 5: Benefit Cost Analysis Summary

Project Evaluation Metric	Constant $	Discounted
Total Benefits	$159.2	$70.5
Total Costs	$29.9	$25.6
Net Present Value	$129.3	$44.9
Benefit-Cost Ratio	5.32	2.75
Return on Investment	452%	175%
Payback Period (years)	3.50	3.90
Internal Rate of Return (%)	20.9%	

The Bigelow Gulch Corridor project is predicted to generate $70.5 million in benefits from a $25.6 million investment, resulting in a net present value of $44.9 million and a benefit-cost ratio of 2.75, discounted.

The BCA captures benefits and costs over a 20-year period. The benefits and costs are calculated over the life-cycle of the Project, following the latest U.S. Department of Transportation (DOT) guidance. All benefits are monetized using U.S. DOT guidance or industry best practices to present a rigorous and conservative analysis.

The benefits and benefactors of the Bigelow Gulch Corridor Project include:

- **Safety:** Reducing anticipated collisions for the traveling public by 29%, equaling $13.6 million at 7%discount.
- **Incremental Operations and Maintenance Savings:** Reducing the operations and maintenance costs by bringing poor infrastructure to a state of good repair, resulting in $1.7 million at 7% discount.
- **Travel Time Savings:** Improved travel time for movement of goods (agricultural freight and commercial trucking) and travelers (passenger automobiles) by saving 5.4 million person hours of travel time, equaling $44.1 million at 7% discount.
- **Environmental Improvements:** Reducing emissions by 30,987 tons resulting in $2.2 million in discounted benefits.

4.1 Safety

This Project is consistent with the ROUTES Initiative as it will improve the condition of the roadway infrastructure serving the national and regional agricultural and industrial economic activity. This Project will improve the safety of the rural corridor by:

Providing Truck Passing Lanes
The Bigelow Gulch corridor is heavily used for hauling regional and intrastate agricultural and commercial freight. Installing the truck passing lanes at key locations along the corridor will help remove slower, heavier truck traffic from the normal traffic stream thereby reducing fatal head-on collisions and rear-end

collisions. These improvements are expected to reduce collisions at steep grade locations by 32% (CMF ID 9108).

Flattening Roadway Vertical and Horizontal Curves
Portions of the Project currently traverse through gulches that have steep vertical grades and sharp horizontal curves. The realignment of Bigelow Gulch will flatten all curves to meet AASHTO and County standards. These improvements are expected to reduce collisions at horizontal curve locations by 68.5% (CMF ID 9525) and reduce collisions at vertical curve locations by 51% (CMF ID 721).

Figure 7: Curves along the eastern section of Bigelow Gulch Road, looking towards the City of Spokane Valley

Providing Wide Paved Shoulders
Unimproved sections of Bigelow Gulch currently have 1′ paved shoulders to accommodate traffic traveling at 45 miles per hour while portions of the Project that have been designed and constructed have 8′ paved outside shoulders. The wide paved shoulders on this rural roadway are needed to accommodate bicycles and pedestrian traffic in absence of dedicated facilities. The shoulders also allow for emergency pull-offs and remove broken down traffic from the traveled way. The project will continue to provide for 8′ paved outside shoulders and is expected to reduce pedestrian, bicycle, and emergency repair collisions by 22.9% (CMF ID 6657).

Separating Travel Lanes by a Gravel Median
Travel lanes in the opposite direction are currently separated by two-4″ yellow stripes in the unimproved sections of the corridor. The Project will install a 12′ gravel median that has recoverable slopes which will separate the travel lanes. This improvement is expected to reduce collisions by 30% (CMF ID 43.)

Figure 8: Improved section with wide shoulders and median

Installing Intersection Lighting
Several intersections along the Project length do not have street lighting, or the street lighting does not meet national illumination standards. The Project will install intersection lighting that meets current standards and is expected to reduce nighttime collisions at these intersections by 38% (CMF ID 433)

Improving Sight Distance at Driveways and Cross-Streets
The current alignment of Bigelow Gulch includes many sharp horizontal curves and steep grades with driveways and cross-streets intersecting at locations that have limited sight distance. The realignment of Bigelow Gulch and the flattening of horizontal and vertical curves will improve sight distance along the corridor. These improvements are expected to reduce angle collisions by 48% (CID 307).

> "At the present time we do not allow our trucks to use Bigelow Gulch/Forker Road in the winter time because of the unsafe conditions. Trucks must use Market Street which causes more congestion and takes longer to get to our Spokane Valley and Idaho/Montana locations."
>
> *- Paul McPherson, URM Stores, Major Freight Movement Center in North Spokane*

Clear Zone Improvements
Sections of Bigelow Gulch have steep drop-offs or slopes coming into the roadway as the current roadway is carved into draws and passes. The proposed alignment improves the clear zone along the corridor by flattening the steep slopes near the roadway to slopes of 1:4 or less. These improvements are expected to reduce run-off the road collisions by 18% (CID 28). The project will also remove fixed objects that are within the clear zone, including large diameter trees and rock outcroppings. These removals will improve the clear zone and are expected to reduce fixed object collisions by 38% (CID 1024).

Improving School Safety
The current vehicle travel patterns from Bigelow Gulch utilize Progress Road, which fronts the East Valley Middle School. The Bigelow Gulch Corridor project is realigning the arterial roadway from Progress Road to Sullivan Road, which will significantly reduce traffic volumes and travel speeds fronting the middle school. These reductions will enhance student walking and biking safety to the middle school. In addition, a pedestrian tunnel connecting the East Valley Middle School to the East Valley High School is proposed as part of this Project, as illustrated in Figure 9. The addition of the pedestrian tunnel enhances student safety by allowing students, and faculty, of both schools to access shared play fields and facilities without crossing the major arterial.

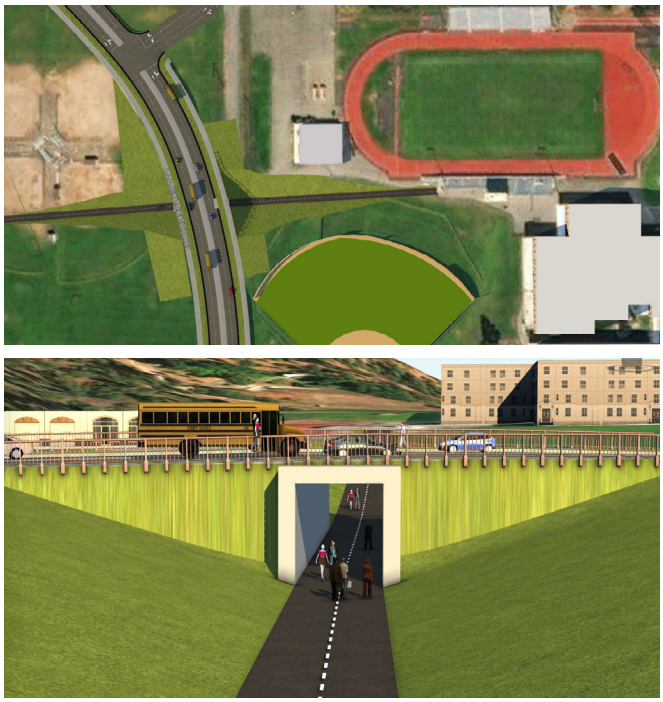


Figure 9: Tunnel Conceptual Renderings

These improvements, in addition to installing ITS infrastructure to alert drivers and enhance incident response activity, are overall expected to reduce collisions along the Project by 33%. The crash reductions expected from the project improvements result in a $19.1 million benefit as described in the BCA.

4.2 State of Good Repair

Portions of Bigelow Gulch Road have pavement failures that require substantial repair or replacement. The pavement structural condition (PSC) rating at the west end of the corridor is an 18 out of 100, and is on the verge of complete failure, as shown in Figure 10. If left unattended, the roadway base would continue to crumble and impact the travel time and vehicle repair costs to the traveling public, more specifically agriculture and commercial freight. The unimproved sections of the corridor are typically weight restricted during the spring due to the freeze-thaw cycle and the inadequate existing road structure, which creates delays for freight movement in the region.

Figure 10: Pavement and shoulder conditions at the west end of Bigelow Gulch Road

The Project proposes to add capacity with the truck climbing lanes, 8' paved shoulders, a 12' gravel median, intersection lighting, and ITS devices along the corridor, which will add to future operations and maintenance costs to maintain a state of good repair. Spokane County maintains a pavement preservation program that prioritizes projects for funding based on several factors, including the pavement condition index, the number of vehicles on the roadway, and the roadway classification.

Compelling research shows that delaying maintenance activities can significantly increase future infrastructure costs and capital expenditures. In addition to cost implications, deferring

maintenance activities contributes to severe safety hazards. For example, the recent overlay on Bigelow Gulch from west of Palmer Road to Weile Avenue was a short term improvement to address immediate safety concerns, but did not address the bigger issue of poor substructure beneath the pavement. This project will improve sections of Bigelow Gulch Road where poor pavement conditions are present, which will overall save public dollars in maintenance costs throughout the life of the roadway.

The County's program utilizes a 'best first' approach, where surface seals such as chip seals and low-cost improvements are used to extend the life of the new pavement. The newly constructed portions of Bigelow Gulch have already been included in the plan as will future segments. Despite slightly higher operations and maintenance costs at full completion, the Bigelow Gulch Corridor Project would result in a combined operations, maintenance and residual benefit.

4.3 Economic Competitiveness

Efficient and Reliable Agricultural and Commercial Freight Movement

The movement of agricultural and commercial freight is vital to regional, national, and international economic competitiveness. The Bigelow Gulch corridor is parallel to, and north of, I-90 and connects the US 395 freeway to SR 290, which is a direct connection into Idaho to US 95 and into Canada. The Inland Pacific HUB Transportation Study identified Bigelow Gulch as an appropriate urban bypass connecting US 395, identified as Trade Corridor #19, and US 95, identified as Trade Corridor #43. Improving the Bigelow Gulch corridor provides an efficient and safe bypass for freight traffic of the urban congestion that occurs along US-95 and I-90 through Coeur d'Alene, I-90 through Post Falls, Liberty Lake, Spokane Valley and Spokane, and along US 395 through the core of Spokane.

This Project is also consistent with the ROUTES Initiative as it will improve travel time for passenger traffic and agricultural and commercial freight users of the corridor. Spokane Valley's Northeast Industrial Area, as well as the Spokane Business and Industrial Park are fast growing areas in the Spokane region, with industrial businesses like Amazon coming into the region and requiring movement of freight. The west end of Bigelow Gulch is typically weight restricted during the spring due to the freeze-thaw cycle and the inadequate existing road structure, which creates delays for freight movement in the region. The completion of this project will reduce freight travel time and will provide increased freight circulation, add freight network redundancy by providing an additional freight route option to I-90, expedite movement of goods within the region, and improve travel time reliability to major employment centers at either end of the corridor.

Figure 11: Looking south along the NSC/US-395 on the NEPDA area bisected by Bigelow Gulch Road / Francis Avenue

The Project currently serves over 4,500 trucks on a daily basis, accounting for as much as 17% of daily traffic. The corridor is classified as a T-2 route from Havana to Argonne, and currently accommodates 4.6 million tons of freight per year. The corridor accommodates 3.0 million tons of freight per year between Argonne and Forker and 2.7 million tons per year between Forker and Trent and is classified as a T-3 route.

Upon completion, the Bigelow Gulch corridor will tie in with the City of Spokane Valley's Sullivan Road, which is a T-1 route that currently accommodates 17 million tons of freight yearly between Euclid and Interstate 90 where a full movement interchange is present. Freight traffic is expected to continue to grow upon completion of the Project, with expectations of hauling over 19 million tons of freight per year along the Project.

Businesses seek environments where transportation networks allow integrated supply chain strategies, including reliability, fluidity, and redundancy, to succeed and meet expectations of the agricultural, commercial, industrial and retail sectors of economy. The emphasis on reliability and

supply chain management are crucial strategies for businesses who are looking to extract value and competitive advantage through distribution. Efficient local, regional, national, and international goods movement is economically imperative. According to regional business interviews carried out for the Inland Pacific HUB Transportation Study, traffic congestion on highways has been identified by many growth industries nationally as a significant transportation problem affecting economic growth and development. In short, the completion of Bigelow Gulch improves travel time and reduced congestion for freight traffic to foster reliable and cost-effective transportation services in the Spokane Region.

> "The Bigelow Gulch Road is in urgent need for expansion/improvements to handle the existing and future traffic for reasons of safety, environmental and economic vitality. This road is the main corridor between the Spokane Valley and North Spokane. Our company and employees use Bigelow Gulch/Forker Road daily. Please implement the design changes to widen the road to four lanes and straighten the dangerous curves for the safety of our families, friends, and employees."
>
> *- Matthew Ewers, IEDS Logistics*

4.4 Environmental Sustainability

The Bigelow Gulch improvements will realize several environmental benefits, including reduced emissions and improved stormwater drainage. In addition, the construction of the project will utilize recycled asphalt pavement in the HMA mix design.

Reduced Emissions – Active Transportation and Travel Time Improvements
The Project will provide wide 8' paved shoulders along the corridor for bicycle and pedestrian uses and a dedicated multi-use path at the east end of the project between the Forker realignment and Wellesley, thereby connecting into the urban bicycle and pedestrian facilities in Spokane Valley. The shoulders and multi-use pathway encourage the shift of current auto users to walk or use a bicycle by improving the comfort, safety, and separation for active mode travel along Bigelow Gulch.

Bigelow Gulch improvements will contribute to environmental protection in the rural area through avoided emissions. Travel time improvements also contribute to a reduction in emissions produced while vehicles are idling in queues or congested areas along the corridor. Additional emission reductions include improved travel time for agricultural and commercial freight as they use the Bigelow Gulch corridor bypass instead of the congested US 95, US 395, and I-90 routes. The project is estimated to reduce 30,987 tons of emissions over the life of the project, including 30,941 tons of greenhouse gas emissions, and 46.06 tons of criteria air contaminants (including fine particulate matter, sulfur oxides, nitrogen oxides, and volatile organic compounds). These avoided emissions amount to a total of $2.2 million in discounted benefits.

Mitigates Environmental Impacts/Stormwater Runoff Management
Hydraulic analysis was completed for this project addressing stormwater concerns. Drainage systems, swales, stream reconstruction, resizing of culverts were some elements incorporated to mitigate the existing stormwater and erosion concerns. A Stormwater Pollution Prevention Plan (SWPPP) will be prepared and approved by Spokane County prior to construction. The SWPPP will include specific elements to prevent erosion, divert runoff from exposed areas, limit the extent of clearing and maintain natural vegetation as much as possible, phase construction operations, reduce runoff velocities, prevent tracking soil offsite, facilitate implementation of best management practices (BMPs), which are the same as those identified for the Temporary Erosion and Sediment Control (TESC) plan and establish contingency plans per the Stormwater Management Manual for Eastern Washington.

Figure 12: New culvert and stormwater runoff channel along an improved section of Bigelow Gulch Road

Climate Change
The Project includes upgrading the transportation facilities to positively impact climate change by:

• Adding truck climbing lanes on Bigelow Gulch to improve travel time while reducing congestion and emissions by 30,987 tons

• Replacing existing high-pressure sodium (HPS) street lighting with new light-emitting diode (LED) lighting, which will reduce energy consumption. Any new streetlighting added to enhance the safety at intersections will be LED fixtures to aid in lowering the City and County climate impacts.

• Installing sidewalks and a multi-use pathway in the urban sections north of Wellesley Avenue and provides wide shoulders in the rural sections for bicycle and pedestrian uses, thereby encouraging alternate modes of travel to reduce emissions.

• Coordinating bus stop locations with STA at the Sullivan/Wellesley intersection thereby promoting transit opportunities in an effort to reduce emissions.

• Installing ITS devices to alert drivers of upcoming changes, thereby allowing them to make an informed traveling decision to reduce congestion and delay.

• Use of recycled materials will be part of the project

• Fish Lake wetland mitigations are part of the project, as approved through the NEPA, and will benefit the climate and habitats.

Environmental Justice
In 2007, Spokane County examined the potential environmental justice impacts along the project area, which concluded that adverse impacts from the construction and operation would not have a high and disproportionate impact on minority or low-income populations. Therefore, the project complies with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations. The Project has and will continue to provide the following at public engagement events:

• The option for potentially affected community residents to have an appropriate opportunity to participate in decisions about the Project that will affect their environment and/or health.

• The opportunity for the public to contribute towards City and County Project decisions.

• The opportunity for the concerns of all public participants involved to be considered in the decision-making process.

• The federal and state process in seeking out and facilitating involvement by those potentially affected by the Project.

4.5 Quality of Life

Bigelow Gulch improvements will realize greater connectivity to jobs, emergency response times, and allow for greater transportation options and recreational opportunities along the corridor.

Connectivity to Jobs
The City of Spokane's Northeast Public Development Authority (NEPDA) is served by major freight corridors and connectors like Bigelow Gulch Road, US 395 (a NAFTA corridor) and BNSF railway. The NEPDA is home to over 507 acres of industrial land that is home to manufacturing, logistics, aerospace and energy businesses. Spokane Valley's Northeast Industrial Area, as well as the Spokane Business and Industrial Park are fast growing areas in the Spokane region, with industrial businesses like Amazon coming into the region and requiring movement of freight and several hundred employees.

Figure 13: Example of an Industrial Business in the Spokane Business Industrial Park (SPIB)

These employment centers in Spokane Valley are home to 615 acres of industrial space including 70 buildings and over 5 million square feet of building space with access to rail service to both UP and BNSF railways. The completion of Bigelow Gulch will enhance rural community connectivity between these major employment centers and the rural community areas within northeast Spokane County.

Improves Mobility and Emergency Communications for Emergency Services

Spokane Fire Department District 9 Station 94 is located at the intersection of Jensen and Bigelow Gulch, just west of Argonne Road. Improvements to Bigelow Gulch will provide a dedicated left-turn lane at the intersection for improved access to and from the Fire Station. The travel time reductions that are expected with the completion of this project will allow faster response times for emergency vehicles within the area. The improved response times can prevent additional damages that could otherwise be incurred. The Project will also install ITS fiber along the corridor, with the future opportunity to connect the fire station into the regional ITS system thereby enhancing their emergency communications.

Figure 14: Spokane Valley Fire Department Station 9 & Figure 15: Source: East Valley Middle School students traveling to school. Source: the Spokesman Review

Health Benefits of Active Transportation

The Bigelow Gulch project includes a multi-use path along the west side of the roadway from Wellesley to Forker, where it heads west and follows the City limits and the urban boundary. It is anticipated that future residential homes will be constructed in the near future. The families and students living in these homes will benefit from the multi-use pathway, which will be separated from the roadway.

The separated pathway enhances the safety of the users and provides connectivity from the residential areas to the East Valley Middle School and East Valley High School.

The Project will also construct 8' wide paved shoulders along the extent of the project in the rural area, which will provide for pedestrian and bicycle connectivity in northeast Spokane County. The wide shoulders along the Bigelow Gulch corridor will tie in with the dedicated bike lanes on Francis Avenue, in the City of Spokane, and the proposed multi-use pathway along Sullivan Road in the City of Spokane Valley, thereby connecting the regional bicycle network and promoting active transportation for the region.

Racial Equity and Barriers to Opportunity

The Project borders several locations that include an average of 17% minority populations, as shown in Figure 16, which is higher in comparison to the Spokane County average of 6.8%. The project's consideration of environmental justice impacts revealed that some tracts in the project area also have high levels of poverty. The project provides:

- Equitable infrastructure that allows populations in the area to choose how they would like to get to their destination.

- New sidewalks, a new multi-use pathway in the urban sections north of Wellesley Avenue, and wide shoulders in the rural sections for residents to walk and bike.

- Improved freight access along the corridor to increase and enhance access to goods and job opportunities throughout the community.

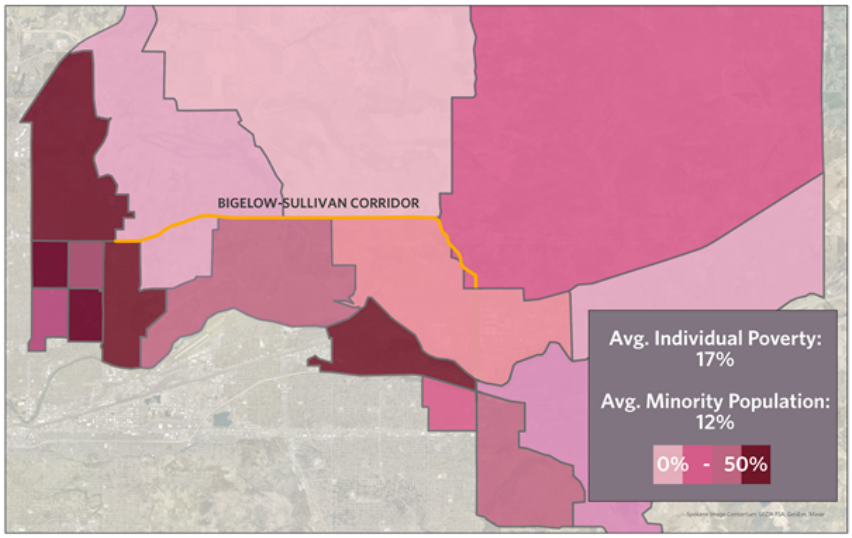


Figure 16: Individual Poverty and Minority Population Levels in the Project Area

4.6 Innovation (Secondary Selection Criteria)

Innovative Technologies
The Spokane region has over 500 route miles of commercial fiber-optic infrastructure. WSDOT, Spokane County, the City of Spokane, and the City of Spokane Valley, are regional partners with the Spokane Regional Transportation Management Center (SRTMC) and will utilize the regions intelligent transportation systems (ITS) infrastructure to clearly and effectively communicate construction activities, anticipated travel delays, and impacts to the general public for this project. The County will also review opportunities during construction to implement smart work-zone ITS technologies, including wireless temporary traffic signals, connected speed management systems, and adaptive radar feedback signs.

The intersection street lighting will be evaluated for adaptive street lighting uses. This allows for street lights to illuminate the roadway at varied levels as the outside lighting conditions change, and reduces the electricity costs by as much as 20%.

Innovative Project Delivery
The preliminary engineering and right-of-way phases for portions of this project have already been started and have been completed in certain sections. This progress helps make the Bigelow Gulch project 'shovel ready' and streamlines the project delivery by reducing risks associated with delays caused by design deviations or right-of-way negotiations.

Figure 17: Spokane Regional Traffic Management Center

The ITS design and construction components of the Bigelow Gulch project can be delivered through Design-Build (SEP-14) processes as the design has not been started yet, and the construction activities will fall within the obtained right-of-way.

Innovative Financing
The Northeast Public Development Authority (NEPDA) was established by an interlocal agreement between the City of Spokane and Spokane County. NEPDA is a legal entity that will act on behalf of the City and County to undertake, assist, and facilitate the acquisition, construction, development, leasing, operation, and maintenance of publicly beneficial projects consistent with local area planning and ultimately improve the economic conditions in and around the City and County of Spokane.

Through a new tax code for the area, 75% of tax increases in property tax, sales and use tax, leasehold tax, and utility taxes are distributed to the public development authority with the remaining 25% to the originating jurisdiction. The NEPDA interlocal agreement provides guidance to use funds towards the acquisition, construction, and development of publicly beneficial projects like Bigelow Gulch.

4.7 Partnership

The Bigelow Gulch project has been strongly supported for 19 years by public partnerships. Spokane County has been and will continue to deliver the project components while coordinating with the City of Spokane, the City of Spokane Valley, and WSDOT. The numerous stakeholders who support this rural improvement project include:

- US Senator Patty Murray
- US Senator Maria Cantwell
- US Representative Cathy McMorris Rodgers
- Washington State Senator Mike Padden
- Washington State Representative Bob McCaslin
- Washington State Department of Transportation
- City of Spokane
- City of Spokane Valley
- City of Millwood
- City of Liberty Lake
- Crown West Realty (Spokane Business & Industrial Park)
- Greater Spokane Valley Chamber of Commerce
- Greater Spokane Incorporated
- Spokane Transit Authority
- West Valley School District
- Mead School District
- East Valley School District
- Spokane Area Good Roads Association
- Inland Empire Distribution Systems (IEDS) Logistics
- Spokane County Fire District 9
- Spokane County Sherriff's Office

The Bigelow Gulch project funding partners include:

- Transportation Improvement Board
- Freight Mobility Strategic Investment Board
- Spokane Regional Transportation Council, via the following FHWA funding:
    - Surface Transportation Program Grant (STPGR)
    - Highway Infrastructure Program (HIP)
    - Highway Safety Improvement Program (HSIP)
- Spokane Northeast Public Development Authority
- County Road Administration Board Rural Arterial Program
- Spokane County Road Fund

Letters of Support will be available to view on the Bigelow Gulch Corridor project webpage here.

5 Demonstrated Project Readiness

5.1 Environmental Risk

All Federal, State, and local environmental approvals will be obtained by Spokane County prior to beginning construction of the project. The Bigelow Gulch Corridor project already has completed the NEPA process.

1.2 Technical Capacity

The technical feasibility of the Bigelow Gulch Corridor project has been thoroughly established through previous planning, preliminary engineering, and construction efforts along the Bigelow Gulch corridor. Portions of the project have already been designed and constructed, including the Bigelow/Argonne intersection improvement, the Bigelow/Forker intersection improvement, and portions of Bigelow Gulch approaching the City of Spokane Valley urban limits. Construction is currently underway on a portion of Bigelow Gulch just west of Argonne Road.

Design plans for the remaining portions will be developed this year and into early 2022 with the remaining right-of-way acquisition and construction to occur thereafter. All portions of the project will be started, with funding obligated prior to September 2024. Spokane County has been very successful with implementing federal transportation grant funds, including USDOT BUILD funds, on roadway improvement projects throughout rural Spokane County.

1.3 Financial Capacity

Spokane County Road Funds are secured and there is no financial risk associated with these funds. The secured non-federal funds, including Transportation Improvement Board, Freight Mobility Strategic Investment Board, and County Road Administration Board Rural Arterial Program funds are attached to each section of Bigelow Gulch, and there is no financial risk associated with these funds. The secured Federal Surface Transportation funds and Highway Improvement Program funds are attached to the corresponding sections of Bigelow Gulch and are not at risk.

The Bigelow Gulch Corridor project will complete design in early 2022 and is expected to obligate all federal funds by mid-2022, well ahead of the September 2024 timeline. Construction is expected to be complete in mid-2026, well ahead of the 2029 deadline associated with RAISE funding.

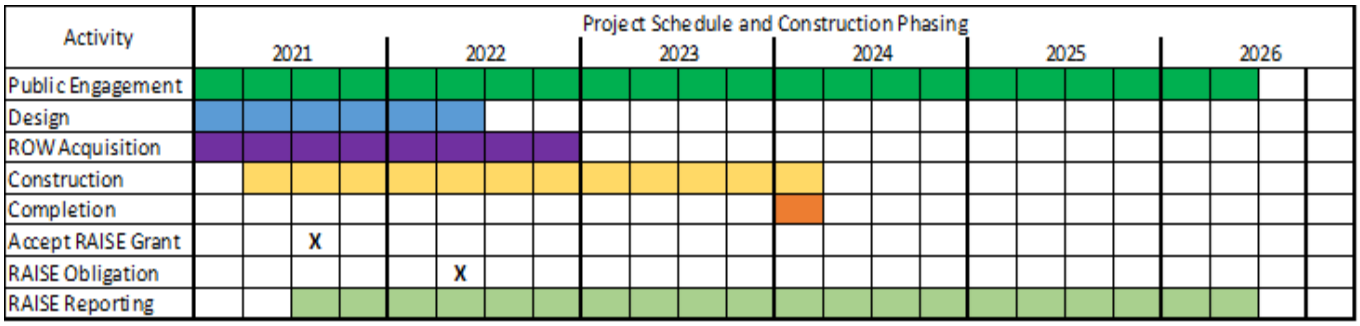
6 Environmental Risk Review

6.1 Project Schedule

Several components of the Bigelow Gulch Corridor project have already been completed or are underway. The County has split the Bigelow Gulch project into several sections, which have been right sized for completion in a single construction season. The added benefit to right-sizing these phases is limiting the impact to the traveling public during construction activities. It should be noted that the project may be bid in different packages, depending on the construction climate of the region, in order to meet the project delivery schedule.

It is estimated that Bigelow Gulch Corridor project will be fully constructed and operational by the end of 2023 with the RAISE funding. The project schedule is shown below and includes the major project milestones for design, right-of-way, and construction. This schedule demonstrates that the Bigelow Gulch Corridor project satisfies the RAISE grant program funding obligation and construction deadlines.

Spokane County has also adapted to the new conditions created by the COVID-19 pandemic and is adhering to all federal and state requirements for construction activities. These have been incorporated into the schedule below.



6.2 Required Approvals

6.2.1 Environmental Permits and Reviews

6.2.1.1 Information About the NEPA Status of the Project

The NEPA process for the project is complete. The Environmental Assessment (EA) for the Bigelow Gulch project was approved on April 10, 2008 by FHWA with a Finding of No Significant Impact (FONSI). The Environmental Assessment Reevaluation was approved on March 17, 2015. The link to these approved documents is here.

6.2.1.2 Information On Reviews, Approvals, And Permits By Other Agencies

The State Environmental Policy Act (SEPA) for the Bigelow Gulch project is tied with the approval of the NEPA, on March 17, 2015, and is considered complete.

It is standard practice that Section 404 Permits will be required with each construction phase and will be completed prior to construction. Spokane County has successfully completed this process on the previously constructed phases of Bigelow Gulch.

6.2.1.3 Environmental Studies Or Other Documents

The approved EA documents for Bigelow Gulch are located here.

6.2.1.4 Dot Discussions

FHWA approvals, including the approved FONSI, are located here.

6.2.1.5 Public Engagement

Public engagement is the cornerstone of every project for the County. Public engagement to date on the project extends back to 1999. Over a dozen public involvement events, from County Commissioner meetings and neighboring City Council meetings to public open houses, have occurred for the project over the last 5 years. These public engagement events have been open to the public and have been well attended. A list of those public meetings is provided in **Appendix C**.

Public engagement and coordination for the Bigelow Gulch project has resulted in several design decisions and considerations for road approaches, driveways, turn lanes, signage, drainage, and median break locations. These improvements meet the needs of the adjacent property owners and stakeholders. In addition, ongoing coordination with the property owners has led to special accommodations during construction to allow for the continuation of hauling agricultural products during harvesting.

The public engagement at the east end of the Project, specifically at the Sullivan/Wellesley intersection, has resulted in the intersection configuration to be a traffic signal instead of a roundabout, and close coordination with the East Valley School District is ongoing to ensure the design provides safe access for the school children.

6.2.2 State and Local Approvals

The Bigelow Gulch project has been included in the Spokane County Comprehensive Plan, the County Transportation Improvement Program (TIP), and the Spokane Region Transportation Council (SRTC TIP), and the Washington State Transportation Improvement Program (STIP) since 1999. Most recent Spokane County TIP is located here. Pertinent excerpts of the Washington STIP are located here. Additional engineering, right-of-way, and construction approvals will be obtained from the County at key milestones through the project. The Bigelow Gulch project has received letters of support from local agencies and entities, including the City of Spokane, City of Spokane Valley, WSDOT, SRTC, and the NEPDA. These letters are included here.

6.2.3 Federal Transportation Requirements Affecting State and Local Planning

Projects utilizing Federal or State funding are required to be listed and approved within the local agency's TIP and the STIP. Spokane County has direct control over their TIP and as a Certified Agency. As such, the Bigelow Gulch Project has been in the County's TIP since 1999 and is currently shown in the 2020-2025 six-year TIP. A link to the Spokane County six-year TIP is here.

In order for the project to be included within the STIP, Spokane County must submit the project through the local Metropolitan Planning Organization, which is SRTC. This project has been included in the STIP, through extensive coordination with SRTC and WSDOT, since 1999, and is currently in the four-year 2020-2023 regional TIP, here, and continues to be included in the WSDOT STIP, here.

6.3 Assessment of Project Risks and Mitigation Strategies

The scope, schedule, and budget risks for this project are moderate to low as the project has been underway for two decades and has been through extensive reviews, public engagement, and portions of the project have been constructed. The level of detailed design for the remaining portions has allowed for an understanding of the issues and design risks, along with the identification of mitigation measures. Spokane County has proven design standards and project delivery procedures in place to successfully deliver the remaining portions of the Bigelow Gulch project. A list of risk and mitigation strategies is shown on the following page.

Table 6: Project Risks and Mitigation Strategies

Risk Category	Risk Name	Description	Impact	Likelihood	Mitigation Measures
Financial	Loss of Federal, State, or Municipal Funding	Loss of funding due to unforeseen circumstances	High	Low	Current federal, state, and municipal funding is secured with grant agreements in place.
Financial	RAISE funding award	Spokane County is unsuccessful with this grant application	High	Moderate	Spokane County will continue to pursue alternate funding sources as it does not currently have the financial capacity to deliver the project.
Contract & Procurement	Coordination	Spokane County will administer the improvements	Low	Low	Spokane County has a track record of working with project partners and has a successful record of delivering USDOT grant funded projects.
Construction	Traffi c Management	Limited detour routes available	Low	Moderate	A comprehensive communications and traffic management plan will need to be developed by the project team and close collaboration with neighboring jurisdictions and WSDOT.
Right of Way	Land Acquisition	Private land acquisition is required	Moderate	Moderate	While Spokane County is working closely with landowners, expropriation of private land may be required and only used as a last resort.
Environmental	NEPA	Historic, archaeological, or cultural resources may be discovered	Moderate	Low	NEPA is approved and inadvertent discovery plans and policies in place.
Financial / Construction	Delivery Schedule	Meeting the obligation date of September 30, 2022.	High	Low	Spokane County is continuing with the design of Bigelow Gulch, as well as the right-of-way acquisition and construction of specific segments. RAISE funds received would be ready for obligation well in advance of the obligation date stated in the NOFO.

7 Benefit Cost Analysis

The overall improvements and public benefits generated by the project were monetized through a Benefit Cost Analysis (BCA). The BCA measures benefits against costs throughout a period of analysis beginning at the start of construction and including 20 years of operations.

The Bigelow Gulch Road Safety and Mobility Improvement Project is predicated to generate a strong benefit cost ratio of 2.75 with a discounting. A summary of the BCA findings are shown in Table 7. The full BCA is included in **Appendix D**.

Table 7: Key BCA Metrics

Metric	Analysis Result with 7% Discount Rate
Total Discounted Benefits	$70.5 milion
Total Discounted Costs	$25.6 million
Benefit Cost Ratio	2.75
Return on Investment	175%
Payback Period	3.90 years
Internal Rate of Return	21%

The largest share of the total discounted benefit estimates are due to reduced travel times, reduced distances traveled, improved safety, and avoided emissions. Highlights of key quantifiable statistics are shown in Table 8.

Table 8: Key Quantifiable Statistics

Key Quantifiable Statistics	Total	Annual Avg.
Person Hours of Travel Time Avoided	5,409,727	270,486
Vehicle Miles Reduced	40,502,618	2,025,131
Fatalities Avoided	1.69	0.08
Injuries Avoided	75.38	3.77
Damaged Vehicles Avoided	191.37	9.57
Tons of Greenhouse Gas (GHG) Avoided	30,941	1,547.1
Tons of Criteria Air Contaminants (CAC) Avoided	46.06	2.30

Improvements along the Bigelow Gulch corridor will generate significant benefits for rural and urban communities along the corridor in the following ways:

- **Saving public dollars:** Reducing the operations and maintenance costs by bringing poor infrastructure to a state of good repair.
- **Getting people and goods to where they need to go faster:** Improved travel time for movement of goods (agricultural freight and commercial trucking) and travelers (passenger automobiles).
- **Improving safety:** by reducing anticipated collisions for the traveling public.
- **Lowering transportation related air pollution:** Reducing emissions by 30,987 tons.