

## EXECUTIVE SUMMARY

### A. BACKGROUND

A southern arterial link between I-15 and US 87/89 has been under consideration by Great Falls and Cascade County officials, as well as other local public and private entities, for many years. In 1994, a local working group was assembled to support development of the arterial. The working group prepared a "Strategy Plan" which identified steps to make the arterial a reality. An initial step was to incorporate the arterial into the *2000 Great Falls Area Transportation Plan* for further study. In 2004, a *Great Falls Arterial Feasibility Study* evaluated northern and southern arterial corridors. The study found that the southern arterial was feasible, in that it would provide a variety of benefits to the transportation system. Under the 2005 Federal Transportation Bill (SAFETEA-LU), Great Falls and Cascade County received a \$4.5 million earmark to conduct a location study and environmental analysis for the South Arterial.

### B. PURPOSE OF THE STUDY

This Alignment Study builds on analysis from the *Feasibility Study*. It provides an examination of the opportunities and constraints in the study area (Figure A) and includes cost estimates of proposed alignments. This study identifies a recommended alignment, which, if projects are forwarded with federal and state funding, will need to be reviewed under a future National Environmental Policy Act/Montana Environmental Policy Act (NEPA/MEPA) process to ensure that the proposed roadway design would minimize impacts to the surrounding built and natural environments.

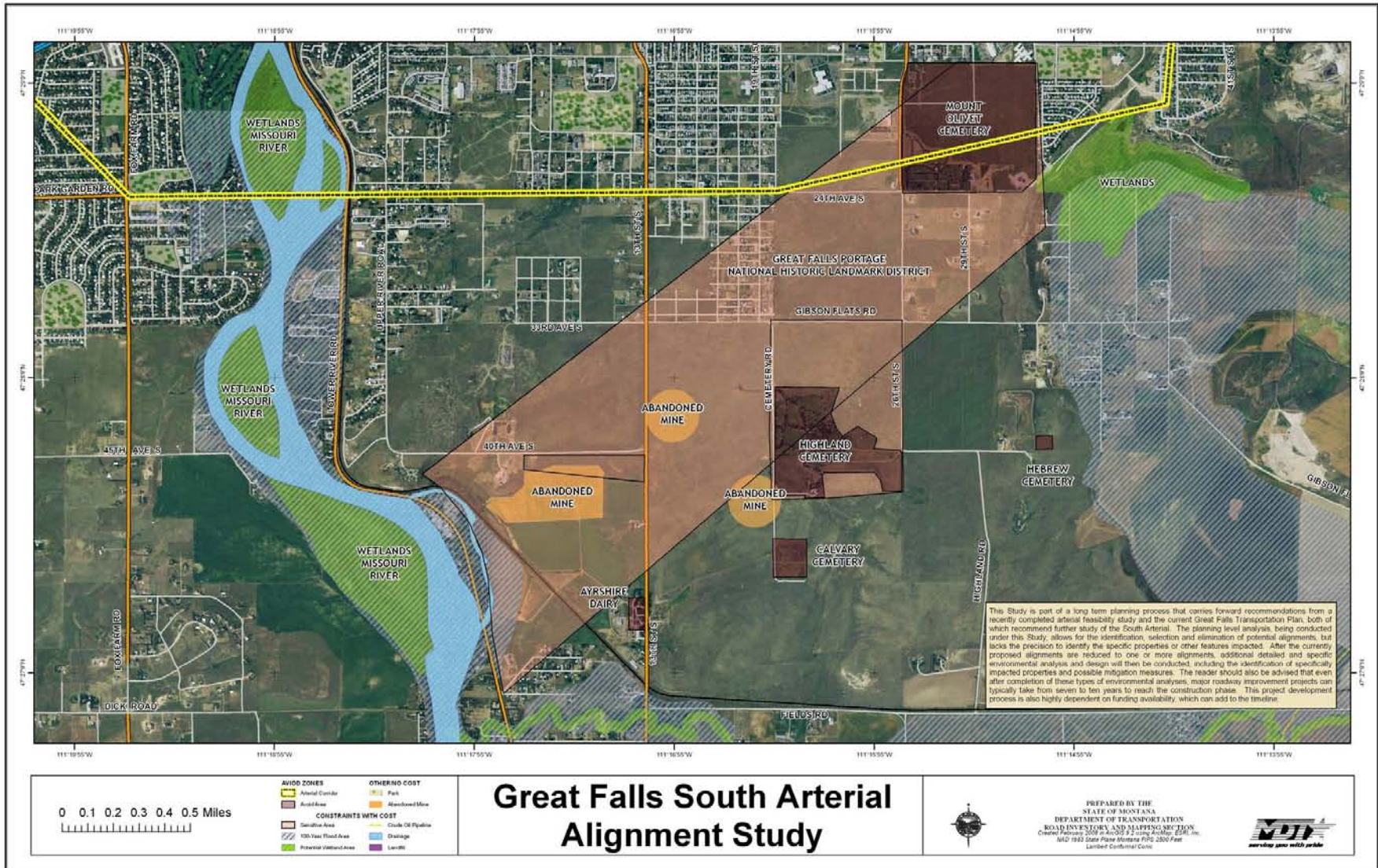
The primary purposes of this study are to:

- Confirm the goals and objectives and develop a purpose and need statement for the South Arterial;
- Select a single or limited number of alignments for an arterial along the south edge of Great Falls;
- Identify sections with independent utility along the selected alignment;
- Identify the approximate recommended footprint for future build-out of the alignment including; access points, lane configuration, and design speed; and,
- Identify areas along the alignment that may require mitigation due to impacts.

### C. METHODOLOGY AND FRAMEWORK

The study was advanced through the Great Falls Metropolitan Planning Organization (MPO) which includes representatives from the City of Great Falls, Cascade County, Great Falls Transit District, Montana Department of Transportation (MDT), and Federal Highway Administration (FHWA). A project management team with representatives from these agencies developed the study for review and acceptance through the MPO.

**Figure A - Study Area Opportunities and Constraints**



Key elements of the study included:

- Involvement of the public, resource agencies, local governments and community leaders;
- An environmental scan that considered the geographic setting for physical, biological, and cultural resources to identify opportunities and constraints within the study area;
- An alignment analysis utilizing a route optimization software tool called “Quantm” that considered engineering design standards as well as built and natural constraints in the area to develop and screen new roadway alignment options. The system simultaneously weighed factors such as impacts to homes and businesses, historic and cultural sites, and wetlands, as well as construction costs associated with topography and earthwork, structures, and paving to identify optimal alignments for the South Arterial;
- Analysis of travel demand for a South Arterial utilizing the travel demand model developed for the 2003 *Great Falls Area Transportation Plan* and based on land use assumptions developed as part of that plan. Forecasts were generated for the 2035 study horizon year;
- Development of a purpose and need statement for the South Arterial; and,
- Financial analysis considering currently available funding sources and potential future federal, state, and local funding sources.

## **D. KEY FINDINGS**

### **Purpose and Need**

The purpose and need identified in this study are consistent with the goals, objectives, and policies set forth in the Great Falls Growth Policy and Great Falls Area Transportation Plan. It will be used as part of the overall project development process consistent with NEPA/MEPA.

Based on the information contained in previous studies and plans, as well as information gathered from the public and stakeholders, the following purpose statement was derived from the South Arterial Alignment Study: ***The purpose of the proposed project is to reduce congestion and improve safety on the 10<sup>th</sup> Avenue South corridor, improve street network mobility, and provide an additional Missouri River bridge crossing, south of 10<sup>th</sup> Avenue South.***

Additional benefits expected if the entire arterial is developed include:

- Improved air quality by reducing congestion and stopping and idling times;
- Improved international and regional trade corridors and reduced travel time between the area’s two military operations; and,
- Reduced emergency response times to and from the southwest Great Falls area and an additional emergency egress in case of disaster.

### **Alignment Analysis**

After general beginning and end points were identified near the Gore Hill Interchange on the west end and the intersection of 57<sup>th</sup> Street South and 10<sup>th</sup> Avenue South on the east, thousands of alignments were generated through a defined corridor which was consistent with the corridor identified in the 2004 *Great Falls Arterial Feasibility Study*. The alignments were narrowed to the 50 lowest cost alignments, and presented in a “spaghetti map” (Figure B).

For ease of analysis and to obtain effective, meaningful and specific public and stakeholder comment, the project management team further refined the Quantm-produced alignments into five possible alignments. The five alignments were selected based on feasibility and general alignment trends. In addition, one other alignment (the “Purple Alignment,” Figure C) was added based on resource agency input as an option that would totally avoid the Great Falls Portage National Historic Landmark, a Section 4(f)<sup>1</sup> property. Prior to approving a project that uses Section 4(f) property, the Federal Highway Administration (FHWA) must find that there is no prudent or feasible alternative that completely avoids 4(f) resources.

These six alignments were carried forward for review under this planning-level analysis. To focus the review and establish measurable comparison criteria, four main areas of concern under NEPA/MEPA were considered, including Section 4(f) properties, wetlands, floodplains, and rights-of-way (this includes both private-land impacts and possible relocations) as summarized in Table A. Cost was also an analysis factor. For consistent comparison, the analysis was based on a four-lane, rural principal arterial with limited access control, turning lanes at access points, and a general design speed of 60 mph. In addition, travel forecasts for the 2035 horizon year were generated using the Great Falls area travel demand model. Based on future travel demand, traffic volumes in the range of 10,000 to 17,000 vehicles per day (vpd) between I-15 and 13<sup>th</sup> Street South demonstrate the need for a four-lane. However, for the horizon year, a two-lane roadway would be adequate to accommodate the projected 7,000 to 8,000 vpd east of 13<sup>th</sup> Street South with sufficient right-of-way preserved for an eventual four-lane.

Table A. Alignment Analysis Summary

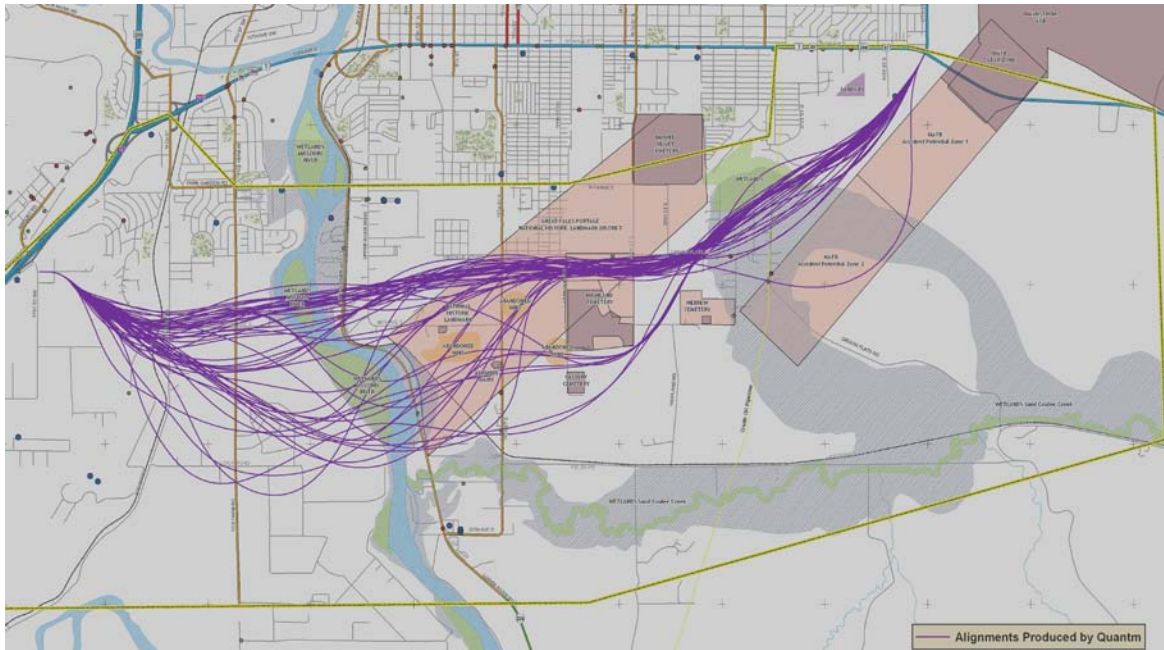
Alignment Identifier	4(f) Acres Impacted 0-63 Acres	Wetland Acres Impacted 9-16 Acres	Floodplain Acres Impacted 46-91 Acres	Parcels with Structures 26-56 Parcels	RW Acres Impacted 214-282 Acres	Cost (in millions) \$275-\$540
Purple	*	▲▲	▲▲	▲▲	▲▲	▲▲
Aqua	▶	▲▲	▶	▲▲	▶	▲▲
Blue	▶	▲▲	▶	▲▲	▲▲	▲▲
Green	▲▲	▲▲	▼	▼	▼	▶
Red	▼	▲▲	▶	▶	▶	▼
Yellow	▲▲	▼	▲▲	▶	▶	▲▲
* No Impacts ▼ Least Impactive ▶ Impacts within 20% of least impactful alignment ▲▲ Greatest Impact - beyond 20% of least impactful alignment						

<sup>1</sup> “Section 4(f)” of the U.S. Department of Transportation Act of 1966 (49 USC 303) protects the use of land (for transportation purposes) from a significant public owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless the following determinations are made: 1. There is no feasible and prudent alternative to the use of land from the property; and, 2. The action includes all possible planning to minimize harm to the property resulting from such use.

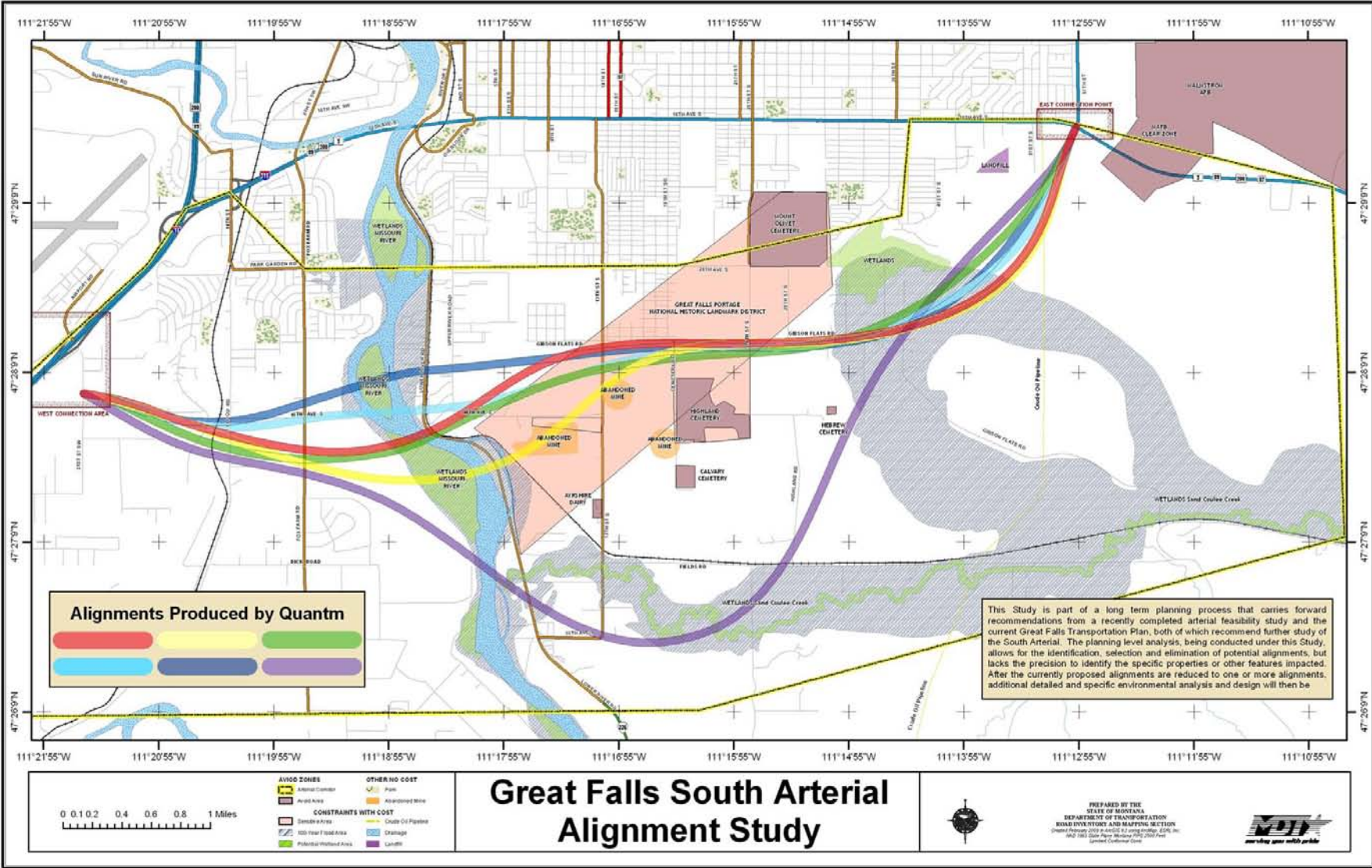
Figure B – Range of Alignment Options

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# Range of Alignment Options



## **Figure C - Analyzed Alignment Options**



Although the “Purple Alignment” (as identified in Figure C) entirely avoids the use of 4(f) resources, the alignment was deemed infeasible and imprudent based on adverse impacts to property and floodplains, extraordinary cost, and inability to meet purpose and need. Compared to the other five alignments, the Purple Alignment:

- Impacts nearly twice as many floodplain acres;
- Impacts 17-30% more right-of-way acres;
- Impacts nearly twice as many parcels with structures;
- Costs 70-95% more;
- Attracts 50-60% less travel between Fox Farm Road and US 87/89 due to its long length, and provides 50% less traffic relief on other key network links<sup>2</sup>; and,
- Impacts the viewshed south from the National Historic Landmark.

It is not considered prudent to carry the Purple Alignment forward based on its failure to best meet the purpose and need, as well as its significantly greater impacts to developed parcels, floodplains, right-of-way acquisition, and cost.

Of the remaining five alignments, impacts are relatively similar, with the exception that the Red Alignment has the least impact upon 4(f) properties and the lowest cost. Although the Green Alignment appears to have similar impacts to the Red Alignment, it impacts over 40% more acres of the National Historic Landmark than the Red Alignment. In addition, the majority of citizens who responded to a survey regarding the five alignments (distributed at the second public meeting) selected the Red Alignment as the most preferred. Based on this analysis, the Red Alignment is the alignment recommended for consideration in the formal NEPA/MEPA level environmental review process.

### **Estimated Cost<sup>3</sup>**

Based on most recently available unit costs, the full arterial (Red Alignment) is estimated to cost \$208,000,000 for a two-lane rural arterial roadway and \$285,000,000 for a four-lane rural arterial roadway in 2035. A partial arterial, from Fox Farm Road to 13<sup>th</sup> Street South, is projected to generate traffic volumes of 10,000 to 13,000 vehicles per day (vpd) and reduce volumes on both 10<sup>th</sup> Avenue South and Fox Farm Road, demonstrating independent utility. The estimated cost for a four-lane partial arterial is \$83,000,000 to \$93,000,000. This is a 2017 cost estimate.

The ability of this project to be funded for continued development (including final design, right-of-way acquisition, and construction) is a function of the availability of existing and future federal, state, local, and private funding sources. Due to the tremendous costs anticipated for right-of-way acquisition and construction of a South Arterial, the project is generally considered to be beyond the ability of the participating agencies to fund through existing traditional funding avenues. As such, special congressional appropriations, coupled with funds from the State of

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<sup>2</sup> Travel demand for the Purple Alignment, which completely avoids 4(f) resources, was up to 7,000 vehicles per day (vpd) between Fox Farm Road and US 87/89 with limited traffic relief to 10<sup>th</sup> Avenue South and other network links, compared to approximately 18,000 vpd for the five alignments that enter the National Historic Landmark and do demonstrate beneficial reductions in traffic and improved level-of-service on the 10th Avenue South corridor and other network links. Travel demand between I-15 and Fox Farm Road is generally the same for all alignments at 9,000 to 11,000 vpd.

<sup>3</sup> Estimated cost includes inflationary factors and indirect costs charged by the Montana Department of Transportation to all Federal Funds it receives. The full arterial estimated cost is for the year 2035, using Global Insight’s Project Cost Inflation Calculator and a 3% annual inflation rate. The partial arterial is for year 2017 for all phases but PE (design) which is 2012, again using Global Insight’s Project Cost Inflation Calculator.

Montana, Cascade County the City of Great Falls, and private development are anticipated to be the best means to further develop the project. In addition, it is critical that local governments take actions within their jurisdictions to preserve the corridor for the future build-out of the South Arterial.

## **E. CONCLUSION AND NEXT STEPS**

The *2004 Great Falls Arterial Feasibility Study* recommended a four-lane arterial serve as the basis for future studies. Both two-lane and four-lane arterial configurations were examined during this Alignment Study. As a result of this analysis, the study proposes the Red Alignment (Figure D) as the recommended alignment, and that it be designed as an undivided four-lane rural principal arterial with limited access control, at-grade intersections including turn lanes and a 60 mile per hour design speed. As this project moves forward these recommendations may be adjusted to further reduce impacts. The arterial should have direct access from:

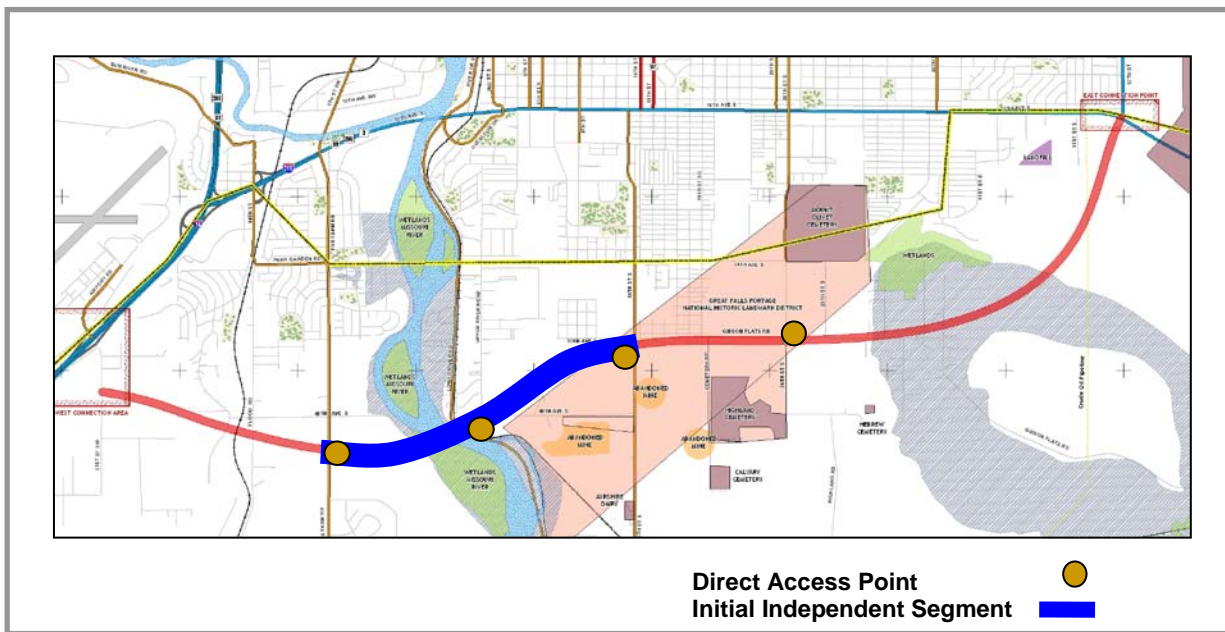
- Fox Farm Road
- Upper River Road
- 13<sup>th</sup> Street South
- 26<sup>th</sup> Street South
- 10<sup>th</sup> Avenue South (US 87/89)

Given federal planning requirements and the high project costs, the ability to advance the South Arterial will be highly dependent on successfully financing and constructing independent segments of the arterial, as reasonably available funding sources are secured.

If the Fox Farm Road to 13<sup>th</sup> Street South segment was pursued as the initial independent segment, the estimated cost in 2017 would be:

Preliminary Engineering	\$ 5,000,000
Right-of-Way	\$14,000,000 to \$17,000,000
Incidental Construction	\$10,000,000
Construction	\$51,000,000 to \$58,000,000
Construction Engineering	<u>\$ 3,000,000</u>
TOTAL	\$83,000,000 to \$93,000,000

**Figure D – Recommended Alignment and Segment of Independent Utility**



Considering the amount of currently available funding (approximately \$4,900,000 of the SAFETEA-LU earmark, plus state match), there are sufficient funds for development of an environmental document, which is part of the Preliminary Engineering phase. However, to achieve federal approval of the environmental document and ensure continued development of the South Arterial, it is critical that the participating agencies continue to work together to secure the remainder of the financing package by conducting the two following steps<sup>4</sup>:

- 1) Demonstrate reasonably available revenues to cover the estimated cost of the initial independent segment from Fox Farm Road to 13<sup>th</sup> Street South and reflect funding for this segment in the *Great Falls Area Transportation Plan*; and,
- 2) Identify available funding for a subsequent phase (i.e., final design<sup>5</sup>) and update the MPO Transportation Improvement Program (TIP) and MDT Statewide Transportation Improvement Program (STIP) to include funding for this project phase.

Until these steps are accomplished, the NEPA/MEPA compliant environmental review should not be advanced.

Additional critical steps in the financing package are:

- 1) Update of the *Great Falls Area Transportation Plan* - This plan update should include improvements as needed to other network links that would experience increased pressure with construction of the full arterial or partial arterial (i.e. 13<sup>th</sup> Street South, Upper River Road, 33<sup>rd</sup> Avenue/Gibson Flat Road, Flood Road, etc). In addition to item one above; and,
- 2) Local governments should take appropriate steps, to the extent allowed by local land use policies and regulations, to preserve the recommended South Arterial corridor as lands are developed and as other opportunities arise.

<sup>4</sup> These steps are necessary if the environmental document identifies a preferred alternative other than the “No-Build”.

<sup>5</sup> Currently, project phases are as follows: Preliminary Engineering (PE), Right-of-Way (RW), Incidental Construction (IC), Construction (CN), and Construction Engineering (CE). Recognizing “final design” as a project phase would require an MDT business process change allowing a two-tier approach to PE. The first tier would be the NEPA/MEPA process and formal definition of the project and the second tier would be final design.

# GREAT FALLS SOUTH ARTERIAL

## History and Background

- The South Arterial has been the subject of numerous plans, studies and news articles since about 1968.
- We were on the verge of buying right of way for the project after completion of a route study in 1981.
- But, the early 1980s weren't good times for Great Falls and Cascade County. The refinery on Smelter Hill was closed with the loss of over 2,000 good paying jobs, the air base was experiencing personnel reductions, and other local economic conditions couldn't have been worse. At the time, Federal and State funds were offered to purchase land for a western portion of the Arterial, but the funds came with strings. The strongest would have bound us to building the Arterial within 5-7 years and repaying the right-of-way funds. Considering the economic slump at the time, our community leaders chose not to burden future leaders by committing them to such unknowns. The funds were reluctantly declined.
- Following this, the scope of the project was "down-sized" to reduce right of way and construction costs. Even with the reduced concept, it was decided to not pursue the Arterial, but to place it on the back burner. It remained there for several years. During this time, the U.S. Department of Defense also studied the possibility of the Arterial serving as an alternate route to 10<sup>th</sup> Avenue South for transporting a proposed missile deployment vehicle dubbed the "Midgetman." The interest in the prototype vehicle, and also the Arterial, were dropped in about 1988.
- However, with passage of the North American Free Trade Agreement in 1993, which was to open markets and trade between the United States, Canada and Mexico, there was significant state and national discussion and interest to facilitate and promote regional and international trade. Locally, there was renewed interest to seriously pursue the Arterial as a connector route between US Highway 87/89 and Interstate 15, as well as to expand its purpose and function.
- In 1994, both the City and County Commissions adopted resolutions supporting a process to solicit commitments to secure funds for the Arterial, and to dovetail it into a broader need for upgrading the highway between Great Falls and Billings. The Great Falls Area Chamber of Commerce also got on board with a support resolution. A "Working Group" representing the City, County, Chamber of Commerce, City-County Planning Board and Great Falls Economic Development Authority was created to secure broad based commitments for the Arterial.
- Working Group representatives held numerous meetings and discussions with various community and statewide groups and organizations, including the Montana Department of Transportation, the Montana Transportation Commission and the Governor. The culmination of its efforts resulted in the development of a "Strategy Plan." The Plan contained the following specific steps for development of the Arterial:
  - 1) Formally incorporate the Arterial into the Great Falls Area Transportation Plan. (This was done in December 2000)
  - 2) Conduct a corridor feasibility study. (This was completed in January 2004 and served as the engineering and economic basis for securing a \$4.5 million federal earmark for the next step (#3).

- 3) Conduct a route location study and environmental impact statement. (This is the current status of the Arterial.)
  - 4) Work with the Montana Department of Transportation to place the route on a Federal-aid system and on its construction priority program.
  - 5) Work with the Montana Department of Transportation, the Montana Congressional Delegation and others to secure funds for final design and right of way acquisition. (This may be the subject of future authorization/appropriation requests.)
  - 6) Continue long term plans for phased project construction. (This would be the subject of future authorization, appropriation requests.)
- During the same time the “Strategy Plan” was being developed, there was a great deal of community discussion regarding the widening of a segment of 10<sup>th</sup> Avenue South from 4 lanes to 6 lanes. Due to the interrelationship of the Arterial and 10<sup>th</sup> Avenue South, this community debate further heightened public awareness and interest for the Arterial. Numerous letters were received from local citizens in support of the Arterial. There were also several news articles in the Great Falls, *Tribune*.
  - After the Arterial project was put back into the Great Falls Area Transportation Plan, funds were secured to hire a consultant to evaluate the engineering and economic feasibility of building a connector route in the Great Falls area. The \$200,000 study was financed with Federal/State Congestion Mitigation & Air Quality Program funds (86.58%) and matched by the City of Great Falls (13.42%). It was conducted in accordance with *FHWA Procedural Guidelines for Highway Feasibility Studies (September 1998)* and met the goals and objectives of the National Corridor Planning and Development Program. Additionally, the study was consistent with the Great Falls Area Transportation Plan, the Great Falls Growth Policy and related public plans.
  - The study included engineering analyses, an environmental resource inventory, traffic analyses (including an origin/destination survey), economic analyses, public involvement, cost estimates, conclusions and recommendations. It evaluated both a northern corridor and a southern corridor. Both corridors were generally 3 miles wide.
  - The conclusions and recommendations were that the northern corridor would not satisfy the Federal Highway Administration’s recommended guidelines for project feasibility because it failed to achieve an economic threshold benefit/cost ratio of 1.0 or better. The analyses considered the malting plant and other related activities planned for the area. As such, it was recommended that no further study of that corridor be done at this time. On the other hand, the study concluded that a four-lane southern arterial would provide a favorable benefit/cost ratio of 3.54, meaning there would be a net return of \$3.54 for each \$1.00 expended to build and maintain the arterial. Therefore, the report recommended the continued development of the southern corridor to include preparation of a route location study and environmental impact statement.
  - The feasibility study was cooperatively conducted by and between the various local, State and Federal participants of the Great Falls Urbanized Area Transportation Planning Process, primarily the City of Great Falls, Cascade County, Great Falls City-County Planning Board (former), Great Falls Transit Board, Montana Department of Transportation and Federal Highway Administration.
  - Additionally, public participation was a significant component of the feasibility study. Public participation included formal public meetings, as well as several newspaper articles and presentations to citizen groups and local agencies. The study includes letters of support from:

- Great Falls Development Authority
- Montana Department of Transportation
- Great Falls International Airport Authority
- Great Falls Area Chamber of Commerce
- City of Great Falls
- Cascade County
- and the former Great Falls City-County Planning Board.

The same above bodies recommended moving forward to the environmental assessment and design phase.

- In 2007, the City and County secured a \$4.5 million dollar congressional earmark to fund an alignment study, environmental assessment and design.
- The Montana of Department of Transportation utilized a route location software to assess potential impacts, to reduce the infinite number of possible alignment to a preferred alignment, with the intent of reducing time and conflict during the environmental phase. This “Alignment Study” was completed in late 2009. Currently, local decision-makers are reviewing the Alignment Study and considering proceeding to the next phase, which would entail a financial plan and environmental process.