BEFORE THE METRO COUNCIL

FOR THE PURPOSE OF AMENDING THE SOUTH/NORTH INTERGOVERNMENTAL AGREEMENT (CONTRACT NO. 903678) WITH THE TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON	)))))	RESOLUTION NO. 96-2320 Introduced by: Councilor Washington

WHEREAS, Metro and the Tri-County Metropolitan Transportation District of Oregon ("Tri-Met") have executed an Intergovernmental Agreement (Contract No. 903678) for assistance in funding the South/North Light Rail Project; and

WHEREAS, Contract No. 903678 requires Metro to reimburse Tri-Met for the expenses of the specified tasks related to the South/North Light Rail Project; and

WHEREAS, Metro has amended the South/North Scope of Work to include Preliminary Engineering activities needed to advance the project to the 30% design level, to incorporate environmental impact mitigation plans and to provide capital cost estimates for the Full Funding Grant Agreement, as described in the South/North Environmental Impact Statement and Preliminary Engineering Work Plan, dated March 4, 1997; and

WHEREAS, Metro has amended the project expenditure and funding budget to reflect the revised Scope of Work; and

WHEREAS, The amendments made to the project expenditure and funding budget reflecting the revised Scope of Work require certain modifications to the Original Contract; now therefore;

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\\\\\

BE IT RESOLVED,

That the Metro Council authorizes the execution of Amendment No. 5 to Contract No. 903678 between Metro and Tri-Met, in a form substantially similar to the attached Exhibit A.

ADOPTED by the Metro Council this 28th day of March, 1997.

Jon Kvistad, Presiding Officer

Approved as to Form:

Daniel B. Cooper, General Counsel

MDF:kaj
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3/6/97

EXHIBIT A
to Resolution No. 96-2320

CHANGE ORDER NO. 5
METRO CONTRACT NO. 903678

MODIFICATION TO AN INTERGOVERNMENTAL AGREEMENT
FOR SOUTH/NORTH TRANSIT CORRIDOR STUDY ALTERNATIVES
ANALYSIS/ DRAFT ENVIRONMENTAL IMPACT STATEMENT

This Agreement hereby amends the above-titled contract (the "Original Agreement") between Metro, a metropolitan service district organized under the laws of the State of Oregon and the 1992 Metro Charter ("Metro"), and the Tri-County Metropolitan Transportation District of Oregon ("Tri-Met").

A. Purpose. The purpose of this Change Order is to replace certain terms and conditions contained in the Original Agreement, as set forth herein.

B. Terms of Change Order.

1. Section 1, Scope of Work, of the Original Agreement, including all previous change orders to the provision of section 1, is hereby superseded and amended to read as follows:

> Tri-Met shall perform the responsibilities and deliver the products indicated and described in the South/North Environmental Impact Statement and Preliminary Engineering Work Plan, dated March 4, 1997 (the "Work Plan"), attached hereto as Exhibit A and incorporated by this reference as if set forth in full.

2. Section 2, Term of Agreement, is hereby superseded and amended to read as follows:

> The term of the Agreement shall commence on January 1, 1994 and terminate on June 30, 1999 unless terminated earlier under the provision of the Agreement.

3. Paragraphs A and D of Section 5, Compensation to Tri-Met, are hereby superseded and amended to read as follows:

> A. The total amount of this contract shall not exceed $15,591,459.

D. The Expenditure Budget, attached hereto as Exhibit B and incorporated by this reference as if set forth in full, states the amounts Tri-Met shall be reimbursed for its work under the Work Plan. The parties acknowledge that Exhibit B states the budget for work performed under the existing DEIS IGA for the period January 1, 1994 through March 31, 1996, and the amounts of reimbursement under this Agreement for the period following April 1, 1996.

4. Section 18 is hereby amended to add the following additional provision:

The parties acknowledge and hereby agree that Tri-Met is a sub-recipient of federal funds received through this Intergovernmental Agreement, in accordance with applicable laws and regulations described in OMB Circular A-128.

C. Effect of Amendments. Except as modified or superseded herein, all other terms and conditions of the Original Agreement and all previous change orders shall remain in full force and effect.

METRO	TRI-MET
_____	_____
By: _____	By: _____
Title: _____	Title: _____
Date: _____	Date: _____

MDF:kaj
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3/6/97

EXHIBIT A

South North
Transit Corridor Study

Environmental Impact Statement and Preliminary Engineering Work Plan

Due to the length and size of this document, it has not been reproduced with this agenda packet but is available by calling Lois at 797-1755.

March 4, 1997

METRO

EXHIBIT B

TRI-MET Non-Consultant Contract Expenses			
Work Element/Task	DEIS IGA 1/1/94 - 3/31/96	EIS/PE 4/1/96 - 2/28/99	TOTAL 7/1/93 - 2/28/99
DEIS - Tier I			
Management	65,425		65,425
Public Involvement			
Description of Alternatives	178,148		178,148
SEE Analysis	40,687		40,687
Transportation Analysis	39,515		39,515
Financial Analysis	17,277		17,277
Evaluation	133,465		133,465
Tier I Total	474,517	0	474,517
DEIS - Tier II			
Management	124,216	54,573	178,790
Public Involvement	0	124,075	124,075
Description of Alternatives	262,917	1,578,301	1,841,218
SEE Analysis	38,525	30,128	68,653
Transportation Analysis	6,495	5,564	12,059
Financial Analysis	31,854	14,313	46,166
Evaluation	128,885	54,375	183,261
Tier II Total	592,892	1,861,329	2,454,221
PE Step One			
Administration		361,217	361,217
Alignment Design		1,349,877	1,349,877
Systems Engineering		138,611	138,611
Station Analysis		249,291	249,291
PE Step One Total		2,098,997	2,098,997
FEIS - Tier II			
Management		148,830	148,830
Public Involvement		223,245	223,245
Description of Alternatives		89,298	89,298
SEE Analysis		29,766	29,766
Transportation Analysis		104,181	104,181
Financial Analysis		104,181	104,181
Evaluation		148,830	148,830
FEIS - Tier II Total		848,333	848,333
PE Step Two			
Administration		386,959	386,959
Alignment Design		1,339,473	1,339,473
Systems Engineering		.297,661	297,661
Station Analysis		104,181	104,181
PE Step Two Total		2,128,273	2,128,273
TOTAL	1,067,409	6,936,932	8,004,341

Consultant Contract Expenses			
Work Element/Task	DEIS IGA 1/1/94 - 3/31/96	EIS/PE 4/1/96 - 2/28/99	TOTAL 7/1/93 - 2/28/99
Non-Priority Corridor			
DEIS - Tier I			
Description of Alternatives	539,042		539,042
Tier I Total	539,042		539,042
DEIS - Tier II			
Description of Alternatives	1,110,497		1,110,497
Tier II Total	1,110,497		1,110,497
PE Step One			
Administration		375,912	375,912
Alignment Design		2,711,638	2,711,638
Systems Engineering		100,596	100,596
Station Analysis		259,432	259,432
PE Step One Total		3,447,578	3,447,578
PE Step Two			
Administration		298,128	298,128
Alignment Design		1,906,341	1,906,341
Systems Engineering		79,781	79,781
Station Analysis		205,750	205,750
PE Step Two Total		2,490,000	2,490,000
TOTAL	1,649,540	5,937,578	7,587,118
GRAND TOTAL	2,716,949	12,874,510	15,591,459

STAFF REPORT

CONSIDERATION OF RESOLUTION NO. 96-2320 FOR THE PURPOSE OF AMENDING THE SOUTH/NORTH INTERGOVERNMENTAL AGREEMENT (CONTRACT NO: 903678) WITH THE TRI-COUNTY METROPOLITAN TRANSPORTATION DISTRICT OF OREGON

Date: March 4, 1997 Presented by: Andrew Cotugno

PROPOSED ACTION

This resolution would amend the South/North Intergovernmental Agreement (IGA) between Metro and the Tri-County Metropolitan Transportation District (Tri-Met). Generally, the amendment would extend the term of the contract, amend Tri-Met's scope of work and amend the IGA budget as described in Exhibit A of the resolution.

FACTUAL BACKGROUND AND ANALYSIS

In June 1994, Metro and Tri-Met executed an Intergovernmental Agreement (Contract No. 903678) for the South/North Transit Corridor Study. That agreement included a scope of work and budget for Tri-Met as an element of the Tier I South/North Transit Corridor Study. The scope of work for the IGA was generally for the provision of conceptual engineering services to support the preparation of the Draft Environmental Impact Statement (DEIS). The IGA also provided for Tri-Met to contribute $100,000 to help fund the South/North Study.

Subsequent amendments to Contract No. 903678 have:

- Increased the IGA not-to-exceed budget by $500,000 for engineering consultant services sub-contracted under Tri-Met;
- Amended the IGA Scope of Work to include Preliminary Engineering Step One activities and to increase Tri-Met's contribution to the study budget by $4 million; and
- Extended the term of the contract to December 31, 1997.

In April 1996, the Federal Transit Administration (FTA) approved Metro's request to advance the South/North Corridor into Preliminary Engineering. In consultation with FTA, Metro and Tri-Met have developed a Work Plan which includes the preparation of the Draft and Final Environmental Impact Statements (DEIS/FEIS) and Steps One and Two of Preliminary Engineering. This phase of the study extends from April 1996 to early 1999 with the publication of the FEIS, completion of Preliminary Engineering and FTA's issuance of a Record of Decision.

The *South/North Finance Plan*, adopted by the Metro Council (Resolution No. 96-2460), forms

the region's request for capital funding for the South/North Light Rail Project within the current federal Intermodal Surface Transportation Efficiency Act (ISTEA) reauthorization bill. The *Finance Plan* and the capital cost estimates included within the Plan are based upon the schedule for completion of the FEIS and PE in early 1999, leading to initiation of Final Design and construction in mid-1999 and initiation of service within the first construction segment in 2005.

As described in more detail within Exhibit A of Resolution No. 96-2320, this amendment of the IGA between Metro and Tri-Met would:

- Amend Tri-Met's scope of work to include extensive Preliminary Engineering activities (including sub-contracts with engineering consultants) needed to advance the project design to the 30% design level, to incorporate environmental impact mitigation plans into the project design and to provide capital cost estimates for the Full-Funding Grant Agreement between Tri-Met and FTA, which is required to initiate Final Design and construction.;

- Extend the term of the IGA to June 30, 1999 to reflect the project's EIS/PE schedule; and

- Increase the IGA's not-to-exceed budget by approximately $12.5 million.

Funding for this contract amendment is within the overall South/North Transit Corridor Study EIS/PE budget as summarized below:

Source	Amount
Capital Assistance Funds (5309)	$5,958,137
Interstate Transfer Funds 103(e)(4) (Grant No. OR-29-9023)	$13,061,695
Tri-Met	$3,586,337
Clackamas County	$2,000,000
C-TRAN	$138,443
Total	**$24,744,612**

BUDGET

This contract amendment and total study budget are consistent with the Transportation Department's proposed Fiscal Year 1997/98 Budget.

EXHIBIT A

South North
Transit Corridor Study

Environmental Impact Statement and Preliminary Engineering Work Plan

March 4, 1997

METRO

EXHIBIT A

South North Transit Corridor Study

Environmental Impact Statement and Preliminary Engineering Work Plan

March 4, 1997

METRO

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Appendix I Letter of Authorization from the Federal Transit Administration Approving Metro's Request To Advance the South/North Corridor into Preliminary Engineering.

Appendix II FY 97 Unified Work Program South/North Work Elements.

Appendix III Draft FY 98 Unified Work Program South/North Work Element.

1. Introduction

1.1 Study Background and Purpose

The South/North Transit Corridor Study has been structured into two tiers. The purpose of Tier I was to select the locally preferred high capacity transit (HCT) mode, termini and range of alignment alternatives. Light rail transit (LRT) the locally preferred alternative mode advanced into Tier II to be studied further in the Draft Environmental Impact Statement (DEIS). Tier I was concluded by meeting the requirements of a Major Investment Study (MIS), documented in the *South/North MIS Final Report* (Metro: November 1995).

The purpose of Tier II of the South/North Transit Corridor Study is to prepare the environmental analysis and Environmental Impact Statement (EIS), select the locally preferred strategy (LPS) for the chosen LRT alternative and complete Preliminary Engineering (PE). These actions will lead to a Record of Decision from the Federal Transit Administration (FTA) and allow the locally selected project to advance into final design and construction.

Tier II has been divided into two steps. The first step includes the preparation of the DEIS, selection of the Locally Preferred Strategy (LPS) and the initiation of PE. The second step will include preparation of the FEIS and mitigation plans, and completion of PE. Station planning activities will be included within both steps.

The South/North Transit Corridor Study was initiated following the conclusion of the I-205/Milwaukie and the I-5/I-205 Portland/Vancouver Preliminary Alternatives Analysis (AA) in May 1993. Within the Metro Joint Resolution No. 93-1784, the Milwaukie Corridor and the I-5 North Corridor were selected to be combined into the single South/North Corridor as the region's priority for HCT following the Westside extension of light rail to downtown Hillsboro. The FTA approved the initiation of AA and in October 1993 issued notification in the *Federal Register* of their intent to publish a DEIS for the South/North Corridor.

The South/North Transit Corridor AA/DEIS program was developed as the next (second) step in FTA's five-step planning process for major transit facilities. Subsequently, FTA modified its procedural requirements for a major transit investment replacing the AA with the MIS regulations. These are multi-modal regulations, issued jointly with Federal Highway Administration (FHWA), and are an element of the Metropolitan Planning Rule. A consultation was held in December 1994 between Metro, C-TRAN, Tri-Met, the Southwest Washington Regional Transportation Council (RTC), the FHWA and the FTA to determine whether modifications should be made to the South/North Study to comply with the new federal regulations. It was concluded through that consultation that Tier I would conclude by meeting the MIS requirements and by submittal of the *South/North MIS Final Report* to FTA. The region would then seek authorization to advance the corridor into the Tier II EIS/PE phase. In April 1996, the Federal Transit Administration concurred that Metro had met the MIS requirements for the South/North corridor and approved Metro's request to advance the

South/North Corridor into preliminary engineering (Appendix I). FTA subsequently approved the *South/North DEIS/PE Step One Work Plan* (Metro: August 1996).

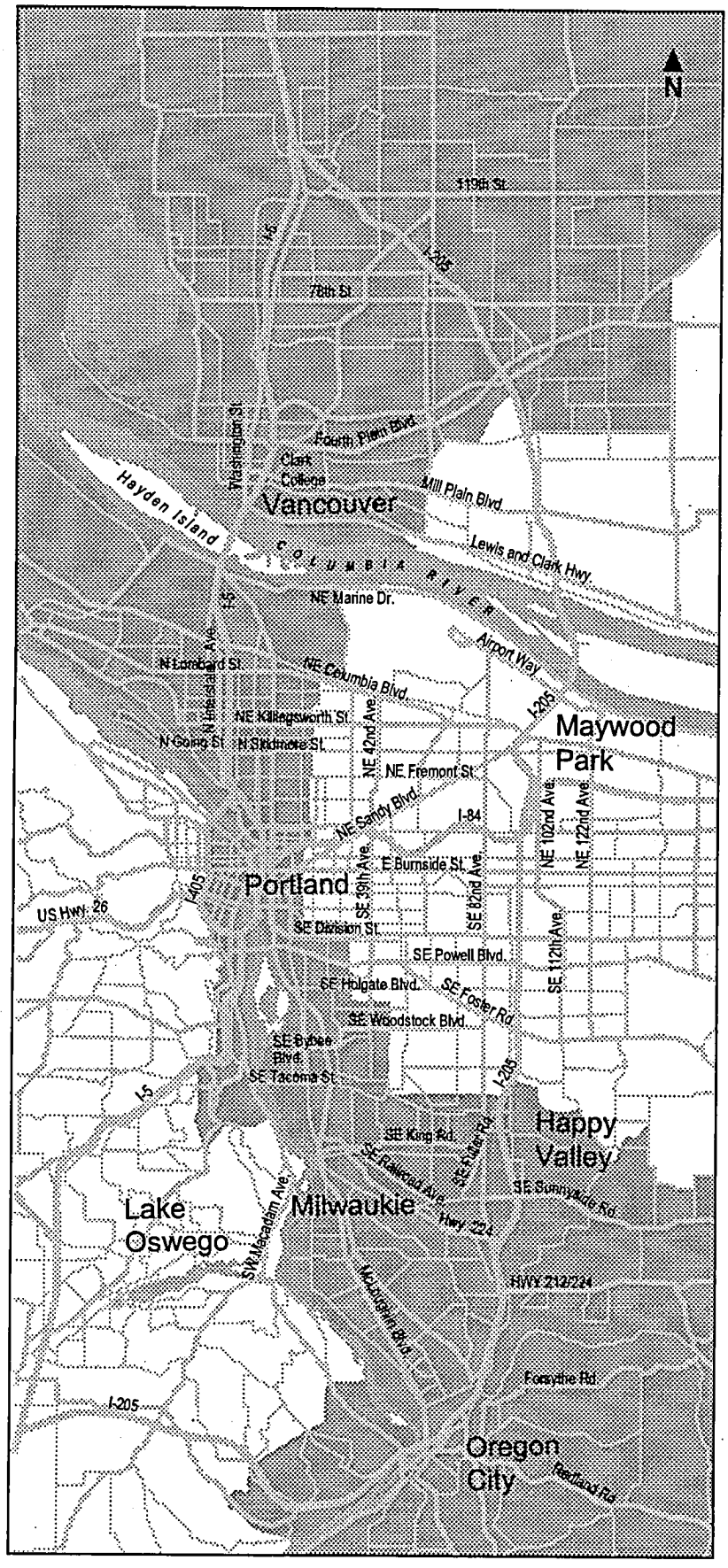
Following is a summary of the primary objectives or work elements of the DEIS/FEIS/PE steps for the South/North Transit Corridor Study. The primary objectives are to prepare and publish the DEIS (and supportive documentation), LPS Report and FEIS, complete PE and secure a Record of Decision (ROD). The major work elements are:

- Complete work on the DEIS;
- To initiate PE concurrent with preparation of the DEIS;
- To respond to comments on the DEIS made during the 45-day public comment period;
- To adopt an LPS report and Land Use Final Order (LUFO);
- To prepare mitigation plans and integrate mitigation measures into the project design;
- To prepare and publish an FEIS;
- To complete PE, including the refinement of capital cost estimates, for the selected LPS length alternative (minimum operable segment);
- To continue initial planning for the Phase II extension to Oregon City;
- To work with the FTA to issue a Record of Decision and to negotiate and execute a Full Funding Grant Agreement;
- To coordinate with state, regional and local jurisdictions to conduct station area planning for the selected length alternative; and
- To implement a public involvement program.

1.2 Description of the Corridor

The South/North travel corridor, shown on Figure 1.2-1, is part of the Portland, Oregon/Vancouver, Washington metropolitan region which consists of Clackamas, Multnomah and Washington Counties in Oregon and Clark County in Washington state. The South/North Corridor encompasses a south/north oriented travel shed between Clackamas County, the Portland CBD and Clark County.

Figure 1.2-2 is a map illustrating the length and alignment alternatives that are currently being examined within the South/North DEIS. Figure 1.2-3 is a schematic drawing representing

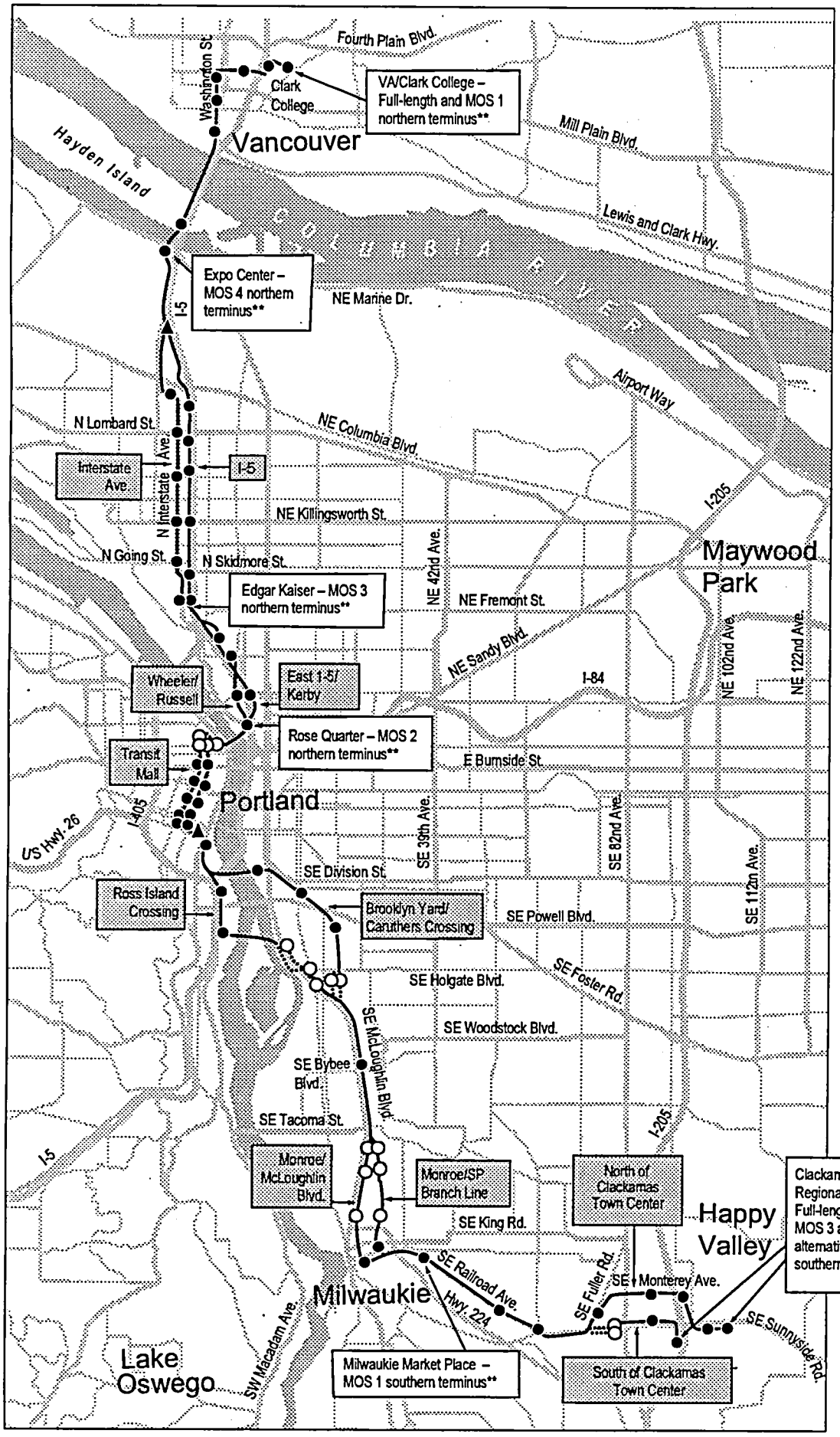


South North Transit Corridor Study

METRO

Figure 1.2-1

South/North Transit Corridor Study
Corridor Map



South North Transit Corridor Study

METRO

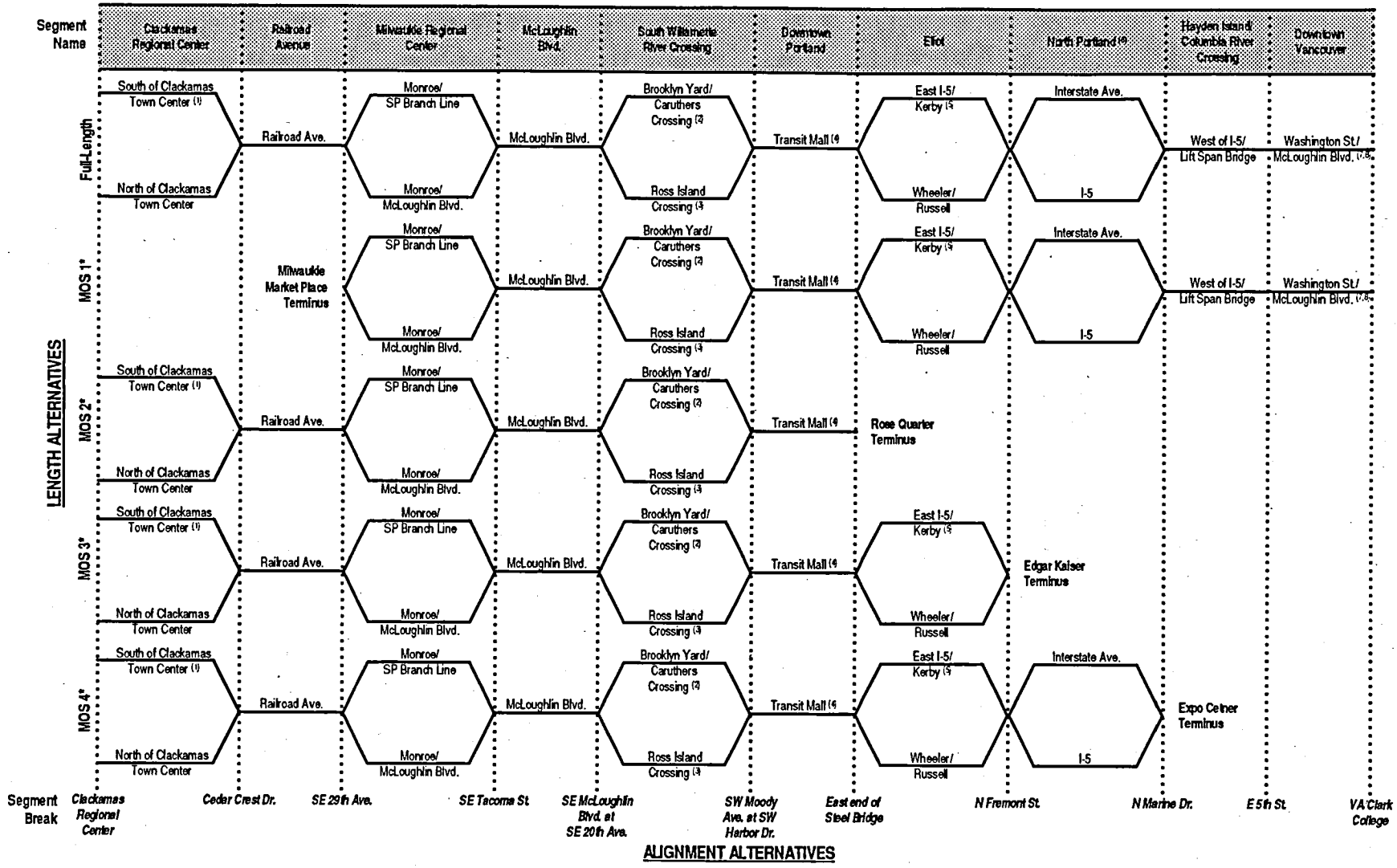
Figure 1.2-2
Light Rail Alignment Alternatives

Note: Alignment and station locations are currently under study and may change.

**MOS refers to a segment of the full-length alternative called a Minimum Operable Segment.

- LRT Alignment Alternative
- LRT Design Option
- Station
- Station Options
- Station Access Under Study

Figure 1.2-3
South/North DEIS LRT Alternatives



South North Transit Corridor Study

Design Options

(1) South of CTC Alignment
- South of OIT/CCC Design Option
- North of OIT/CCC Design Option

(2) Brooklyn Yard/Caruthers Crossing
- 11th/12th Ave. At-Grade Design Option
- 11th/12th Ave. Grade Separated Des. Opt.

(3) Ross Island Crossing
- East of McLoughlin Blvd. Design Option
- West of McLoughlin Blvd. Design Option

(4) North Entry Downtown Alignment
- Glisan St. Design Option
- Irving St. Design Option

(5) East I-5/Kerby Alignment
- Broadway/Weidler At-Grade Design Option
- Broadway/Weidler Grade-Separated Design Option

(6) A crossover option warranting further study will be determined after technical data for the DEIS is available.

(7) Downtown Vancouver Alignment
- West side of Washington St. Design Option
- East side of Washington St. Design Option

(8) North Terminus Park-and-Ride
- Surface VA Park-and-Ride Design Option
- Structured VA Park-and-Ride Design Option

Notes

* *MOS refers to a segment of the Full-Length alternative called a minimum operable segment.*

Schematic is not to scale.

10/22/96

those same alternatives and the smaller scale design options also under consideration in the DEIS and illustrates the comparisons between MOS's (or length alternatives), Alignment Alternatives and Design Options. A more detailed description of the corridor, length alternatives, alignment alternatives and design options can be found in the *South/North Definition of Alternatives Compendium* (Metro: October 1996).

The project is currently considering modifications to the alternatives being considered within the DEIS. Potential changes are being evaluated as a way to reduce project costs in response to the defeat of Ballot Measure 32 in November 1996, which would have provided $350. million in state funding for the South/North Project.

The alignment and length alternative(s) to be documented in the FEIS/PE Step Two will be determined by the LPS, which is scheduled to be adopted by Metro Council and the C-TRAN Board of Directors in the Fall of 1997. The scope of work for the FEIS/PE step two phase described in this work plan is applicable to any of the LPS options currently under consideration.

1.3 Previous HCT Studies

Following is a summary of previous HCT studies that have been performed in the Portland/Vancouver region over the past 20 years.

Banfield LRT. In 1986, construction was completed on Portland's first high capacity transit facility, an LRT line, connecting downtown Portland to Gresham. Completed with Interstate Transfer and Section 3 funds, the line crosses the Willamette River on the Steel Bridge, parallels I-84 across I-205 to the Gateway Transit Center, and parallels Burnside Road to Gresham.

Westside Project. In 1983, the region completed the Westside Corridor Project Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS) study. The locally preferred alternative includes light rail transit from the Portland CBD via Highways 26 and 217 to downtown Beaverton, and on to 185th and Baseline via the Burlington Northern Railroad (BNRR). The region completed a Supplemental DEIS (SDEIS) in January 1991, and a FEIS in August 1991 for the Westside Corridor. It affirmed the selection of LRT as the preferred mode and refined alignment choices along Highway 26, through downtown Beaverton and in the vicinity of 185th Avenue. Tri-Met and FTA signed a Full Funding Grant Agreement for the Westside Project . Final design has been completed and most construction contracts and the rail car purchase contract have been executed. Construction on the project began in July 1993, and opening of the line for passenger service is expected in September 1998.

Bi-State Corridor: Regional LRT System Plan. In 1986, Metro completed the Bi-State Corridor LRT Feasibility Study for the purpose of implementing light rail transit as compared to expanding existing bus service to meet future travel needs between Clark County and the

Portland metropolitan area. The analysis was also intended to help determine if LRT is feasible, which river crossing makes the most sense and which alignment options could have severe impacts or "fatal flaws" which would eliminate them from further consideration. The study resulted in findings that recommended the inclusion of I-5 LRT into the regional LRT system as a long-term option. Secondarily, the study recommended the elimination of the I-205 LRT link between the Vancouver Mall and Gateway from further consideration at this time.

I-205 Corridor Phase I AA. In 1987, Metro completed the Phase I Alternatives Analysis in the I-205 Corridor from the Portland International Airport to the Clackamas Town Center. As a result of that study, it was determined that there should be further consideration of LRT in the corridor. The region formally requested withdrawal of the I-205 bus lanes from the Interstate system and transfer of this funding toward an alternate HCT purpose. Concurrently, at the direction of FTA, Metro submitted a grant application to initiate an Alternatives Analysis / Draft Environmental Impact Statement in the I-205 Corridor. The U.S. Department of Transportation approved the bus lane withdrawal in September, 1989. Subsequently, the region decided to conduct the I-205/Milwaukie Preliminary AA Study to determine a Southeast Priority Corridor, rather than proceeding directly with the I-205 AA.

Milwaukie Corridor Phase I AA. In 1984, Metro completed a Phase I Alternatives Analysis in the corridor from Portland to Milwaukie. Through that study, it was determined that high capacity transit (HCT) improvements appeared to be potentially cost effective in working to solve the corridor's transportation problems and that HCT, including LRT, alternatives should be studied further. In addition, the interrelationship of transit to the need for and timing of highway improvements in the McLoughlin Boulevard corridor was established. Adoption of the McLoughlin Boulevard Improvement Program included the recommendation that the Milwaukie Corridor be the next priority corridor for use of Section 3 funding after the Westside Corridor for initiation of Alternatives Analysis. This has been reconfirmed several times through subsequent actions of the Joint Policy Advisory Committee on Transportation (JPACT) and the Metro Council.

Hillsboro Corridor. In 1990, the Hillsboro Corridor AA/DEIS study was initiated to determine whether the Westside LRT line should be extended west past 185th into downtown Hillsboro. In April 1993, a DEIS for the Hillsboro Corridor was completed, and in March 1994, the FEIS was completed. LRT was selected as the locally preferred alternative. The alignment would generally follow the partially abandoned BNRR alignment, except in downtown Hillsboro where it would use surface streets. The Hillsboro extension was amended into the Westside Project's Full-Funding Agreement in December 1994, allowing concurrent construction with the Westside Project. Opening of the extension is planned for September 1998.

Bi-State Transportation Study. The Intergovernmental Resource Center (IRC) and Metro jointly conducted the Bi-State Transportation Study. The study analyzed existing and forecast

bi-state transportation conditions, identified existing and forecast transportation needs, and identified a methodology to assess the impacts of bi-state accessibility on economic development. Preliminary findings of the study indicate the I-5 Bridge is the single most congested link in the study. The findings also show that because of the congestion on the I-5 Bridge, traffic backups will occur north to the downtown Vancouver segments of I-5 and south through Hayden Island. Other significant capacity deficiencies were found to occur on the following segments:

- I-5, SR-14 to SR-500 in Vancouver;
- I-5, Lombard to Denver in Portland; and,
- I-205, I-84 to Columbia Boulevard in Portland.

Clark County HCT Studies. In October 1991, the Intergovernmental Resource Center (IRC) in Clark County completed two interrelated HCT system planning studies for the C-TRAN Board of Directors. The study entitled *I-205 Bridge LRT Retrofit Study* examined the feasibility of retrofitting either LRT or exclusive busway operations onto the existing I-205 Bridge. It was found that it is feasible both geometrically and structurally to retrofit the bridge with either LRT or exclusive busway. The study also addressed such issues as traffic impacts, rail electrification, and transit operations. The study entitled *Internal Clark County HCT Analysis* examined a wide range of HCT options for the I-5 corridor, the I-205 corridor, and a cross-county corridor. The study findings resulted in a decision to not pursue further HCT analysis at this time in the Fourth Plain Boulevard cross-county corridor. Study findings also resulted in a decision to pursue a locally funded pre-alternatives analysis for all HCT options in the I-5 corridor and to pursue pre-alternatives analysis for all HCT options up to an exclusive busway in the I-205 corridor.

Portland North/Northeast Portland and Regional Rail Studies. Between 1990 and 1993, the City of Portland conducted several studies focusing on North/Northeast Portland and the future of light rail in the corridor.

1. *North/Northeast Portland Light Rail Alignment Analysis.* With the completion of Metro's Bi-State Corridor Regional System Plan in 1986, several alignments through North/Northeast Portland were recommended for further study. The City's North/Northeast Portland Light Rail Alignment Analysis was undertaken in 1990 to consider the potential of two additional alignments: 1) Martin Luther King Jr. Boulevard; and 2) Vancouver/Williams Avenue couplet to Killingsworth Avenue to Interstate Avenue or I-5. These two proposed additional alignments were also analyzed in the Albina Community Plan, a comprehensive City-district project studying issues including land use, transportation, social services, education, employment and housing.

   Because of a variety of potential negative impacts with these two alignments, the Portland Department of Transportation staff recommended that the Albina Community Plan and Metro no longer consider these as LRT alignments.

2. *Light Rail Transit Corridor Development Feasibility Study.* The City's LRT Corridor Development Feasibility Study examined the vicinity of the four proposed LRT alignments for North/Northeast Portland to identify the potential for economic development related to the implementation of an LRT line. The results did not favor the Martin Luther King Jr. Boulevard, I-5, or Vancouver/Williams to Killingsworth Avenue alignments. The results did highlight the development potential of an alignment which could serve both Emanuel and Kaiser Hospitals and Interstate Avenue. Follow up alignment analysis has identified an alignment which could serve these employment sites, as well as the future Blazer Arena complex. This alignment proposal has been recommended by the Portland Department of Transportation staff for inclusion in the Albina Community Plan and to Metro for inclusion in future HCT planning studies for this corridor.

3. *North Corridor Light Rail Study East-West Alternative Alignment Analysis.* The purpose of the City of Portland's North Corridor Light Rail Study East-West Alternative Alignment Analysis was to identify two feasible LRT alignments that could connect Emanuel Medical Center to the Kaiser Medical Center. After reviewing several alternatives, two were chosen by the City for further study: the Russell Street Alignment and the Fremont Street alignment. An objective of the study was to determine if an engineering "fatal flaw" existed with either of the two selected alignments. The study report documents that from the data collected, reviewed and analyzed, neither alignment has a fatal flaw. However, the report also documents that both alignments have unique design and construction challenges.

4. *Transportation Element of the Comprehensive Plan for the City of Portland.* The Transportation Element of the Comprehensive Plan for the City of Portland, together with the Albina Community Plan form the City of Portland's policy framework that guides transportation planning in North/Northeast Portland.

5. *Portland CBD Rail Studies.* In 1983, when the Portland City Council adopted alignments for the Westside Light Rail project there were to be tracks on both Morrison/Yamhill and the Transit Mall. This was based on growth forecasts from the 1970's. However more recent projections indicated lower overall growth and it is now assumed ridership will demand only the Morrison/Yamhill alignment for the Westside project. Previously, the Downtown Plan had made the following policy commitment: "Modify the Fifth and Sixth Avenue Transit Mall for light rail transit when and if a second regional light rail corridor is constructed to form a light rail system with potential of becoming the major mode of access to and through the downtown." In 1989 the City of Portland conducted a downtown rail alignment study, followed in 1991 by a light rail tunnel evaluation study. In light of the Westside alignment decision, Commissioner Blumenauer created the Downtown Rail Advisory Committee (DRAC) to evaluate the timing for the future conversion of the Transit Mall for light rail operations. The findings of the Committee included a confirmation that the next light rail project after

the Westside will require a north/south alignment in downtown, and that an underground alignment should be examined further. As directed by the DRAC, the City of Portland Regional Rail Program also completed a study of the "urban form" issues related to the possible development of an underground alignment for future light rail downtown. The process for this study was the development of empirical data on the impacts/benefits of such a project and review of this information by members of the downtown community to gain their insights, concerns, and comments.

Washington State Growth Management and Commute Trip Reduction Act Activities. Clark County, the City of Vancouver, RTC and C-TRAN are currently involved in regional and local efforts to respond to the Washington State Growth Management and Commute Trip Reduction Acts. One product of these efforts is Clark County's Community Framework Plan which serves as a 50-year vision to guide the development of the 20-year comprehensive plans required by the Growth Management Act. A fundamental policy of the Framework Plan is to reduce reliance on the single occupancy vehicle and to support high capacity transit connections between urban centers and Portland. The entire South/North Corridor north of the Columbia River lies within the Vancouver Urban Area and will receive a new 20-year comprehensive plan. A key component of this plan calls for the concentration of development in downtown Vancouver, the Vancouver Mall area, the proposed Washington State University campus area, and in the I-5 and SR-500 corridors.

North/South Transit Corridor Study. The North/South Transit Corridor Study is the combination of the I-205/Milwaukie and the I-5/I-205 Portland/Vancouver Preliminary Alternatives Analyses. These studies were initiated in early 1992 and concluded in early 1993 with the selection of a priority corridor. In the South, the Priority Corridor selected was the Milwaukie Corridor, and in the North the I-5 North Corridor was selected as the priority corridor. In addition, the region decided to add an extension from I-5 to the Vancouver Mall, parallel to SR-500, to the North Priority Corridor for further study in Alternatives Analysis. Finally, the study concluded with the decision to unify the South and the North Corridors into a single Priority Corridor, called the South/North Corridor.

Regional High Capacity Transit Study - Portland Central Business District Element. In 1992, Metro and participating jurisdictions initiated the Regional High Capacity Transit Study which included a Portland Central Business District Element. The purpose of the CBD element was to narrow the range of alignment alternatives to be evaluated within a South/North Alternatives Analysis. The Portland CBD element concluded with the recommendation from the Project Management Group that 5th Avenue and 6th Avenue for a surface alignment, and 4th, 5th, 6th and Broadway for a tunnel alignment be evaluated further in Tier I of the South/North Alternatives Analysis.

1.4 Study Process

The preparation of the Environmental Impact Statement and Preliminary Engineering for the South/North Transit Corridor has been divided into two steps for two reasons. First, under adopted regional policy, Metro has lead agency responsibility for all high capacity transit Major Investment Studies through to the conclusion of the DEIS, when lead agency responsibility shifts to Tri-Met, continuing from the FEIS through to final design and construction.

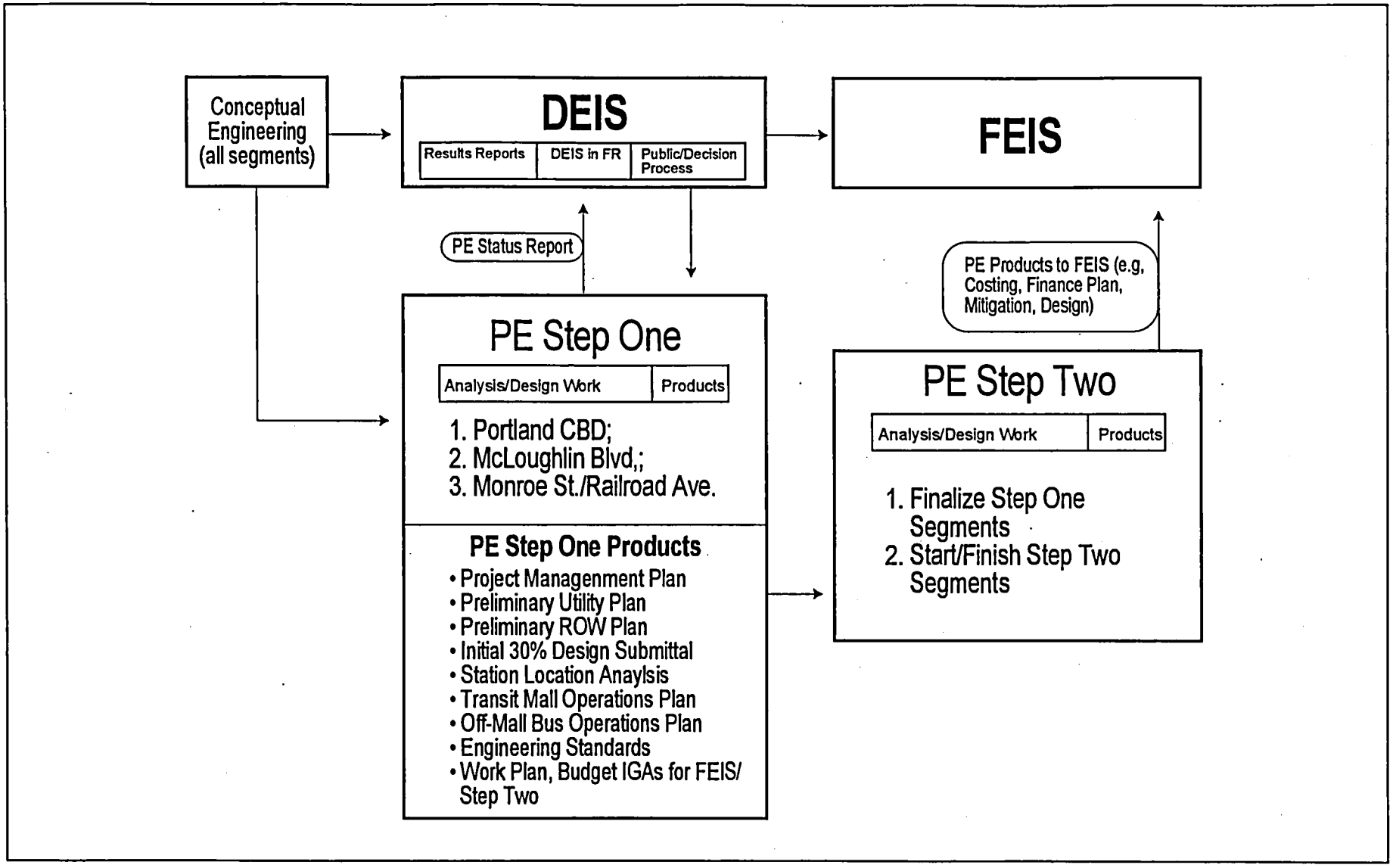
Second, the scope of work for the FEIS/PE Step Two remains uncertain until the conclusion of the DEIS when the region will select the minimum operable segment (MOS) and alignment alternative to advance into the FEIS/PE Step Two. The MOS that is ultimately selected will effect the scope of work, budget and funding plan for the FEIS/PE Step Two. The length and complexity (e.g. the number of major bridges) of the selected MOS will also effect the work plan, budget and funding plan for the FEIS/PE Step Two.

Figure 1.4-1 illustrates the DEIS/PE Step One and FEIS/PE Step Two study process. Following is a description of the general study objectives for the two steps and a description of the segments and alternatives advancing into DEIS/PE Step One. The segments and alternatives described below were current prior to the development of the cost-cutting measures and the process that will lead to amending the list of alternatives currently under consideration. The results of the amendment process will be reflected in the study work plan and may effect the list of segments that are being developed in PE Step One. Generally, PE Step One activities that are alignment specific are being postponed until the conclusion of that process.

1.4.1 Draft Environmental Impact Statement/Preliminary Engineering Step One (DEIS/PE Step One) Objectives

The South/North Draft Environmental Impact Statement/Preliminary Engineering Step One (DEIS/PE Step One) will lead to refinement of the design concept and scope for the LRT alternative through the selection of the locally preferred strategy (LPS). The study will be structured in two parts; the Draft Environmental Impact Statement and Preliminary Engineering Step One. While these two study elements will be conducted simultaneously they have distinct objectives.

In general, all segments and promising alternatives within the corridor will be studied and documented within the DEIS. All segments and alternatives north of the Oregon Arena Transit Center and all segments within the corridor with more than one promising alternative advancing into the DEIS will receive engineering definition to the level of detail necessary to narrow to one locally preferred alignment following publication of the DEIS. All segments south of the Oregon Arena Transit Center with only one identified promising alternative will receive Preliminary Engineering to approximately 30% design level. Those segments include



South North Transit Corridor Study

METRO

Figure 1.4 -1

South/North EIS/PE Study Process

Downtown Portland, McLoughlin Boulevard generally south of Holgate Boulevard and north of Tacoma Street, and Railroad Avenue generally between Highway 224 and 82nd Avenue. A Preliminary Engineering Status Report will be prepared and issued simultaneously with the DEIS. The PE Status Report will document the PE work and its possible effects on the DEIS findings.

1.4.1.1 Draft Environmental Impact Statement Objectives

Purpose: To develop and publish a DEIS and to select LRT alignment and station locations as the locally preferred strategy.

Objectives:

1. Prepare the Definition of Alternatives, including LRT station locations, other transit facilities and fixed guideway and bus operations plans;

2. Develop and implement a public involvement program;

3. Prepare the Analysis and Refinement of the Alternatives Including:

    a. Definition of the Alternatives and Conceptual Engineering
    b. Costing
    c. Social, Environmental and Land Use Impacts
    d. Travel Demand
    e. Transportation Impacts

4. Prepare a Financial Plan and Analysis

5. Prepare and Publish a Draft Environmental Impact Statement; and,

6. Select a locally preferred strategy;

1.4.1.2 Preliminary Engineering Step One Objectives

Purpose: To initiate Preliminary Engineering for the preferred light rail alternative within the South/North Corridor.

Objectives:

1. Develop the project management plan (PMP);

2. Develop a preliminary utility plan;

3. Develop a preliminary right-of-way plan;

4. Prepare for the initial 30% design submittal;

5. Prepare a station location analysis report;

6. Develop a transit mall operations plan;

7. Develop an off-mall operations plan;

8. Define the engineering Standards;

9. Prepare a PE Status Report (in conjunction with publication of the DEIS); and,

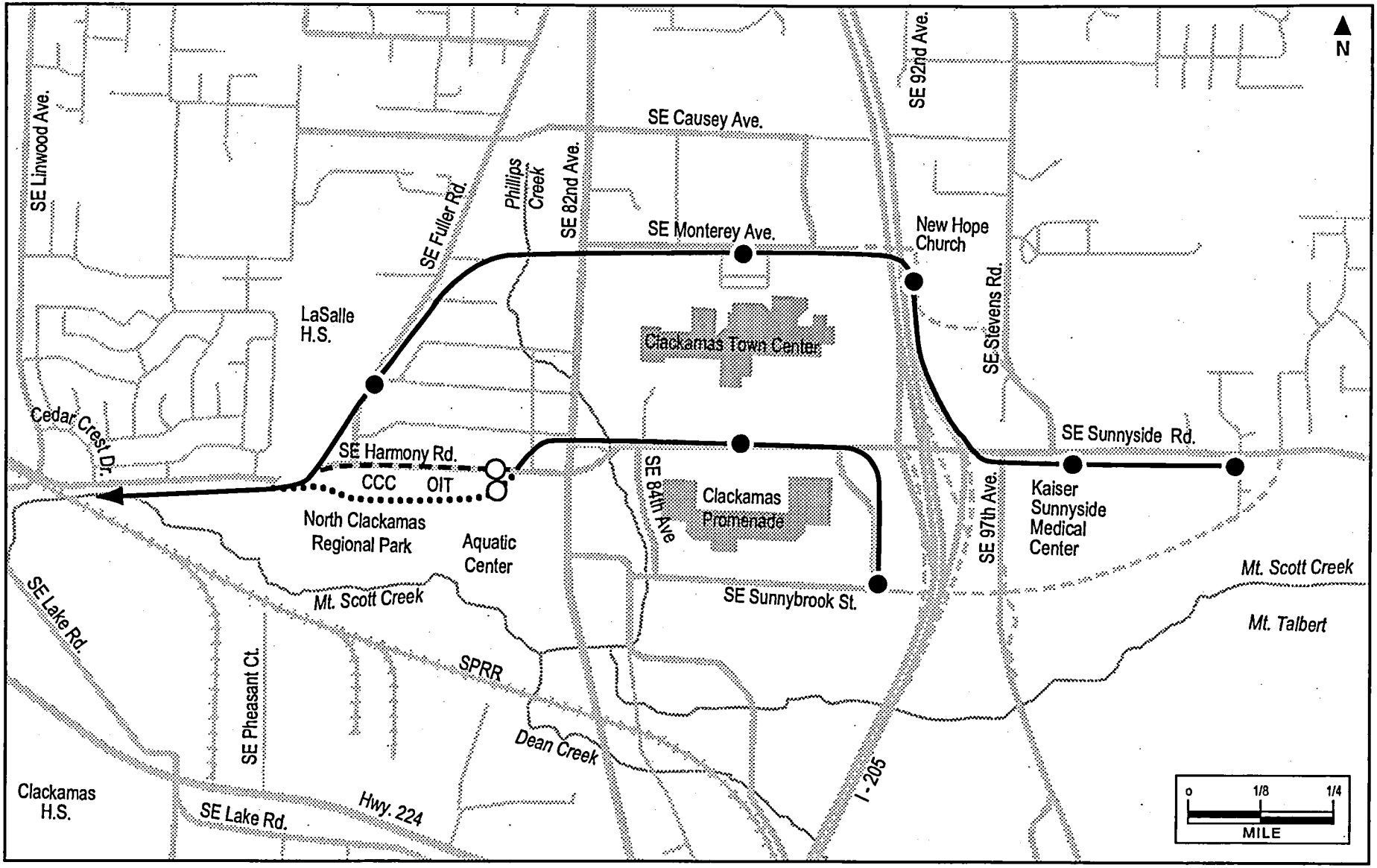
8. Prepare the detailed work plan, budget and IGAs for FEIS/PE Step Two.

1.4.2 Segments and Alternatives Advancing into DEIS/PE Step One

Following is a description of the South/North Transit Corridor segments and promising alternatives that will be studied in the DEIS/PE Step One process. As noted above, depending on the outcome of the cost-cutting process, PE to the approximate 30% level of design will be prepared in the segments south of the Arena Transit Center that have been narrowed to a single promising alignment alternative through the Major Investment Study and Design Option Narrowing processes. Those segments include Downtown Portland, McLoughlin Boulevard generally south of Holgate Boulevard and north of Tacoma Street, and Railroad Avenue generally between Highway 224 and 82nd Avenue. All other segments will receive engineering definition during the DEIS/PE Step One to the level of detail necessary to provide the information to make a narrowing decision following the publication of the DEIS. Figures 1.4-2 through 1.4-11 illustrate the segments and promising alternatives, and delineate the segments where PE will be developed to approximately the 30% design level.

1.4.2.1 Clackamas Regional Center Segment

The Clackamas Regional Center represents the southern terminus of the Full-Length Alternative, MOS 2 and MOS 3. The segment extends from the vicinity of I-205 east of the Clackamas Town Center, to approximately SE Harmony and Cedar Crest Drive. Two alignment alternatives (one with design options) are being examined in this segment (see Figure 14-2).



South North Transit Corridor Study

METRO

Figure 1.4-2

Clackamas Regional Center

- **North of Clackamas Town Center**
- **South of Clackamas Town Center**

LRT Alignment Alternatives

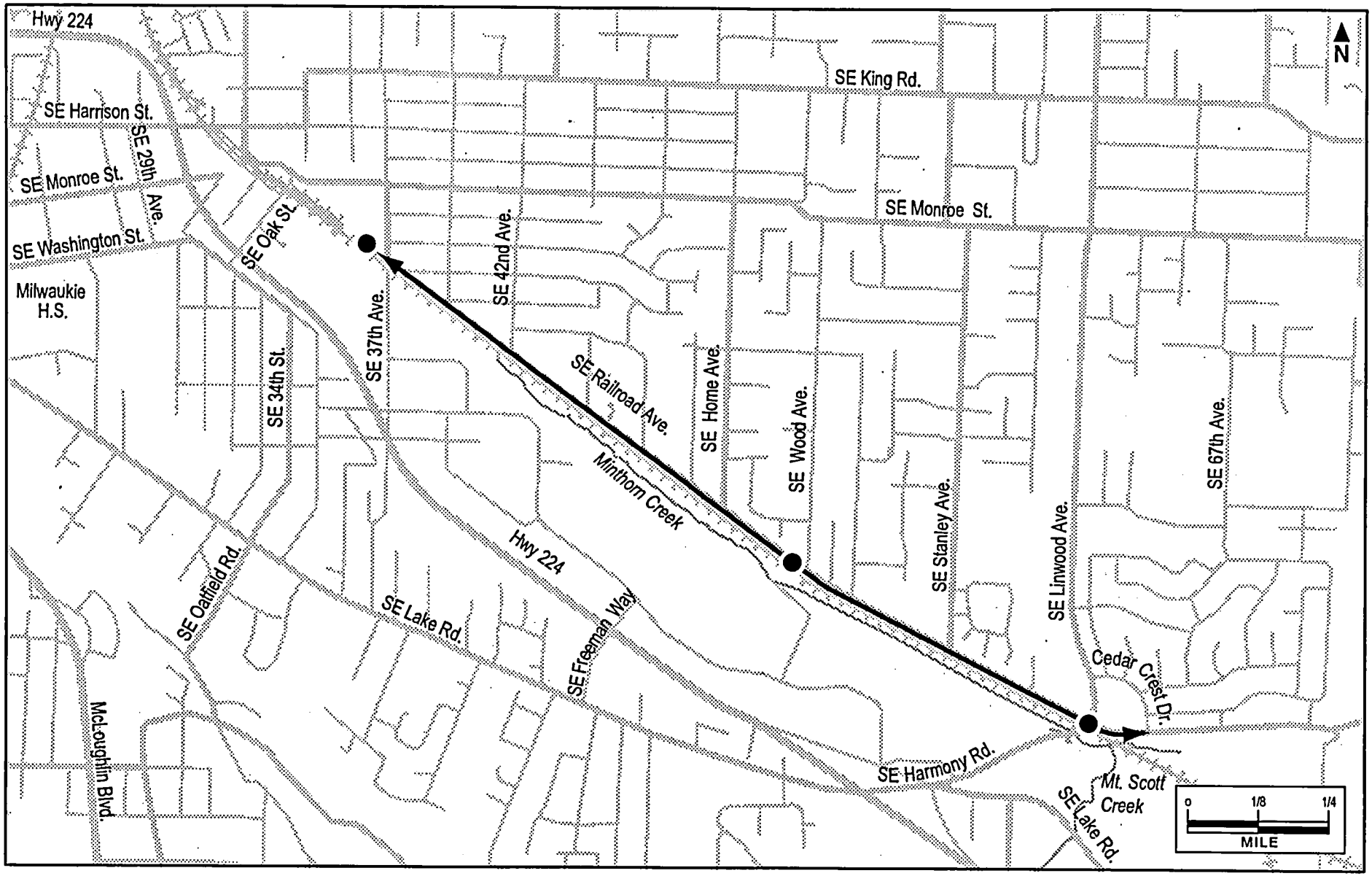
LRT Design Options

Station

Station Options

Proposed ODOT/ Clackamas County Roadway

Existing Railroad



South North Transit Corridor Study

METRO

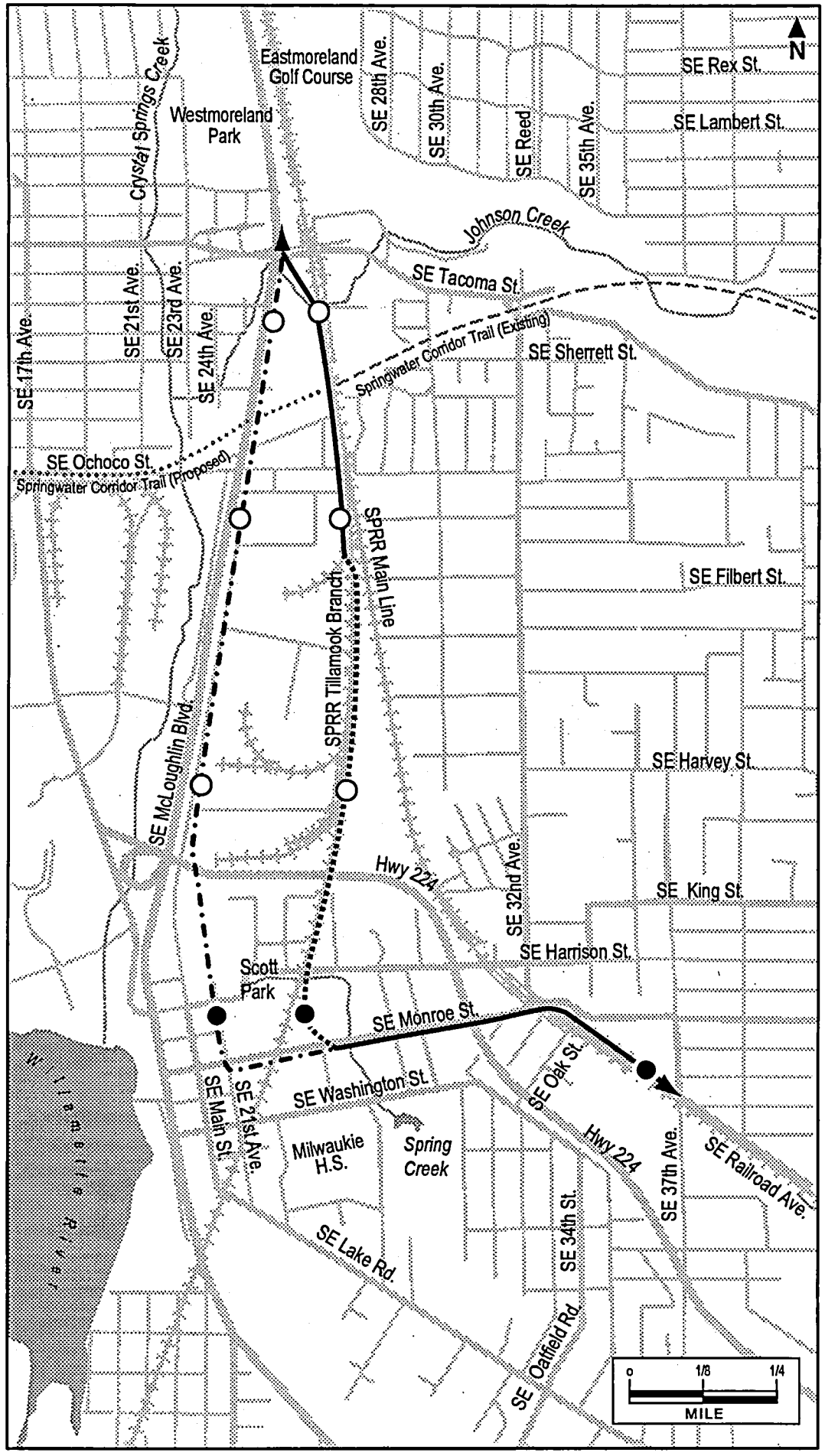
Figure 1.4-3

Railroad Avenue

LRT Alignment Alternatives

Station

Existing Railroad



South North Transit Corridor Study

METRO

Figure 1.4-4

Milwaukie Regional Center

- **Monroe/SP Branch Line**
- **Monroe/McLoughlin Blvd.**

Monroe/SP Branch Line Alignment

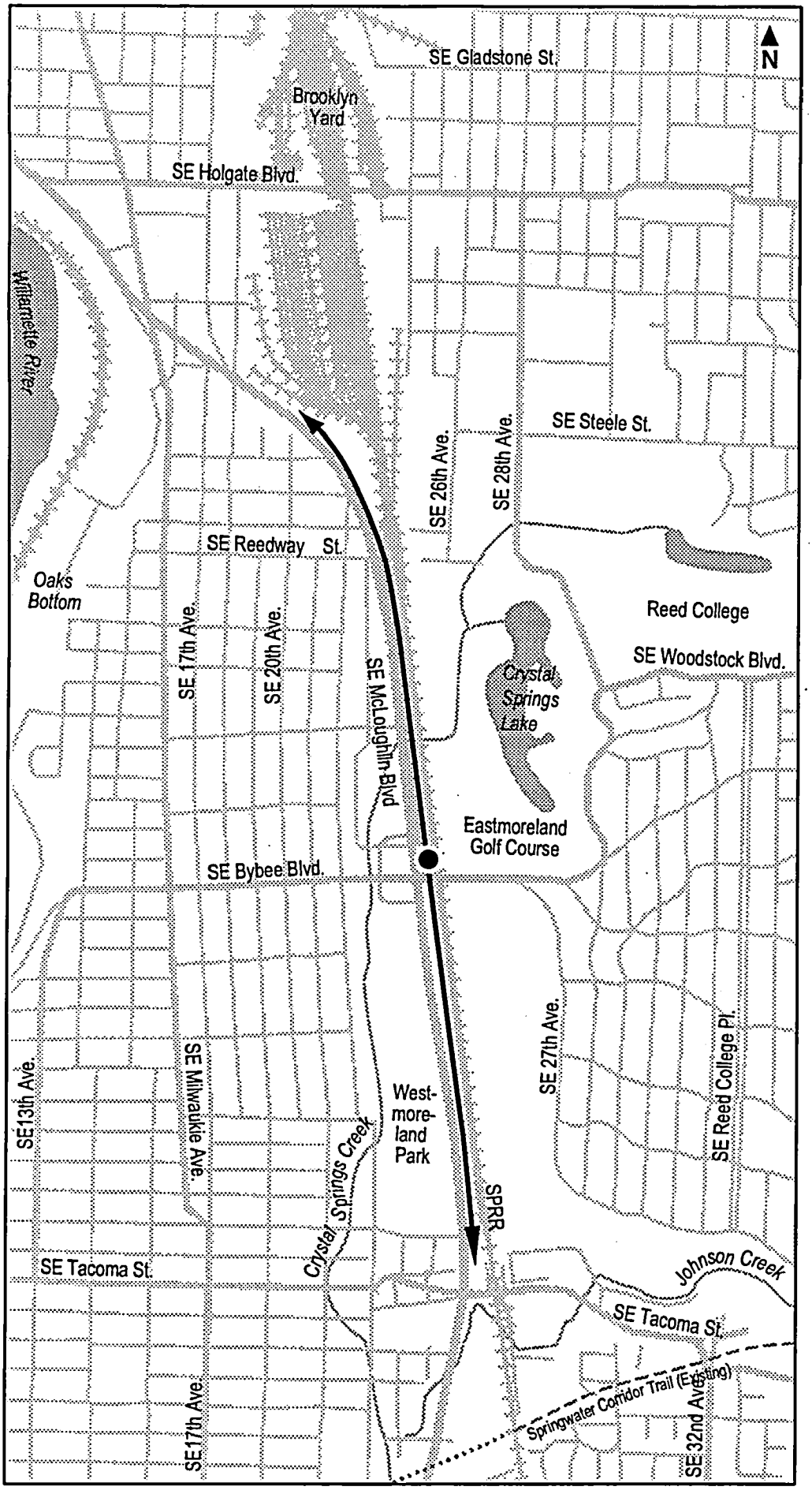
Monroe/McLoughlin Blvd Alignment

Common Alignment

Station

Station Options

Existing Railroad



South North Transit Corridor Study

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Figure 1.4-5

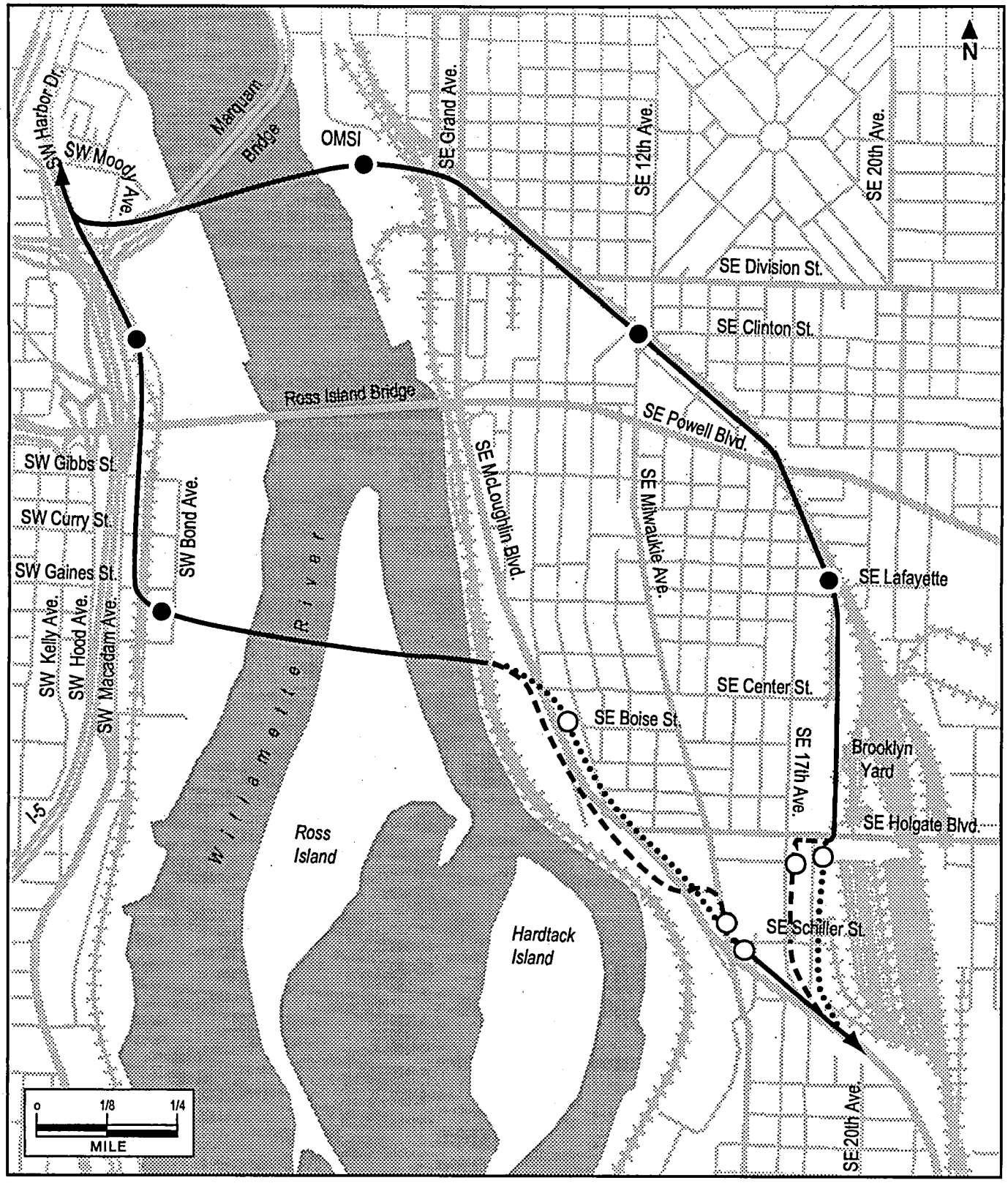
McLoughlin Boulevard

LRT Alignment Alternatives

Station

Existing Railroad

0 1/8 1/4 MILE



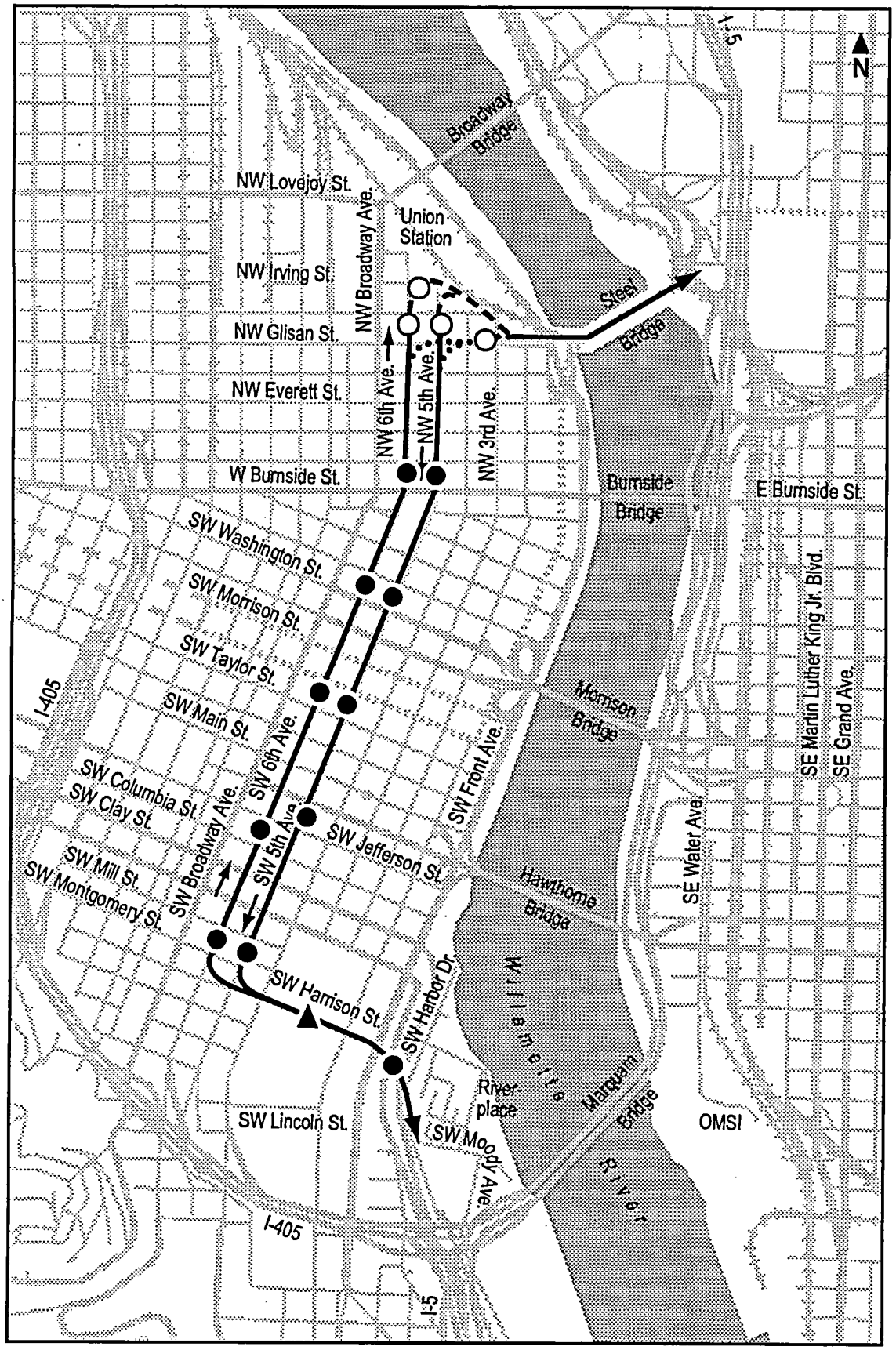
South North Transit Corridor Study

METRO

Figure 1.4-6

South Willamette River Crossing

- **Brooklyn Yard/Caruthers Crossing**
- **Ross Island Crossing**



South North Transit Corridor Study

METRO

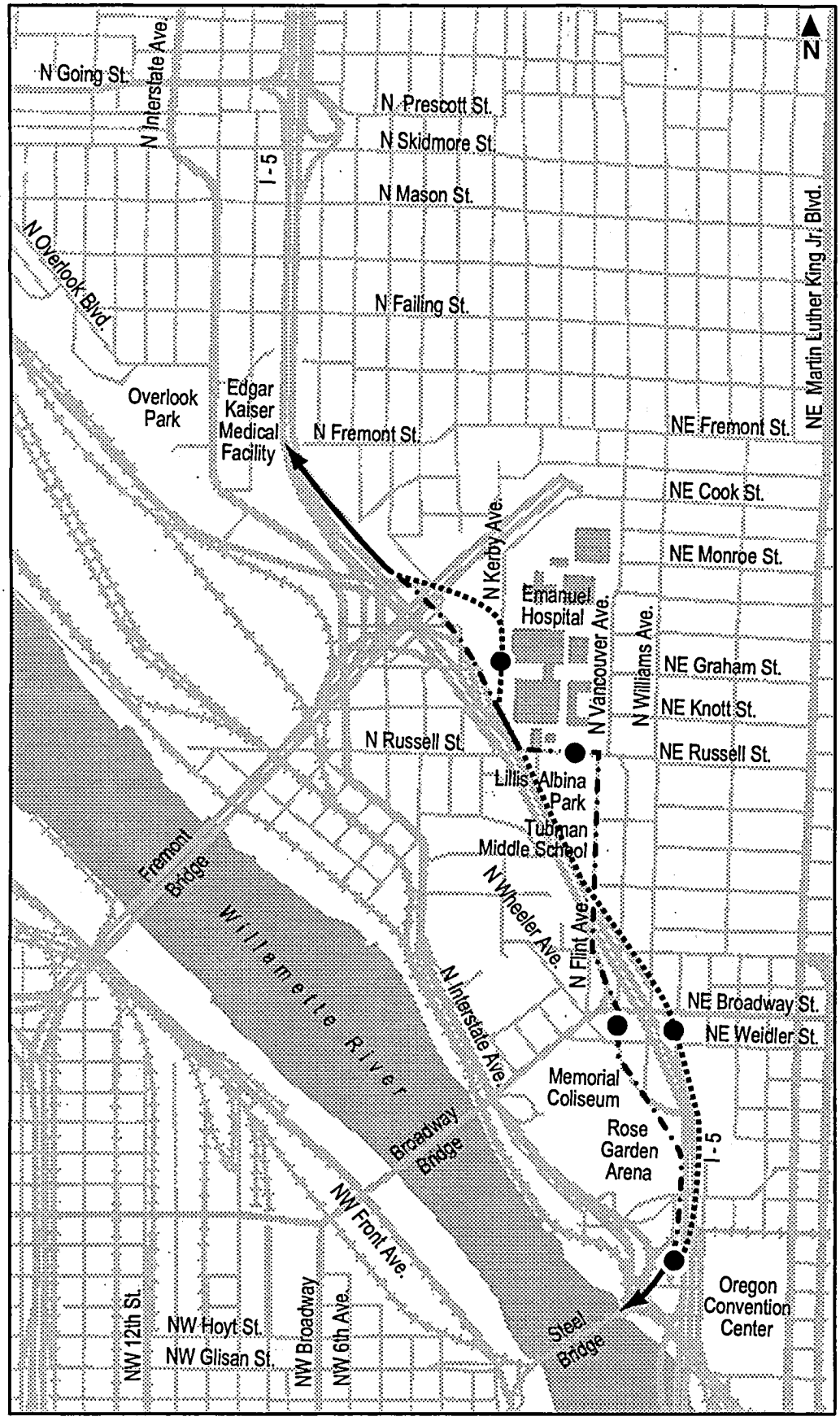
Figure 1.4-7

Downtown Portland

• Transit Mall

- LRT Alignment Alternatives
- LRT Design Options
- Station
- Station Options
- Station Access Under Study
- MAX
- Westside LRT
- Existing Railroad

0 1/8 1/4 MILE



South North Transit Corridor Study

METRO

Figure 1.4-8

Eliot

- **Wheeler/Russell**
- **East I-5/Kerby**

Wheeler/Russell LRT Alignment Alternative

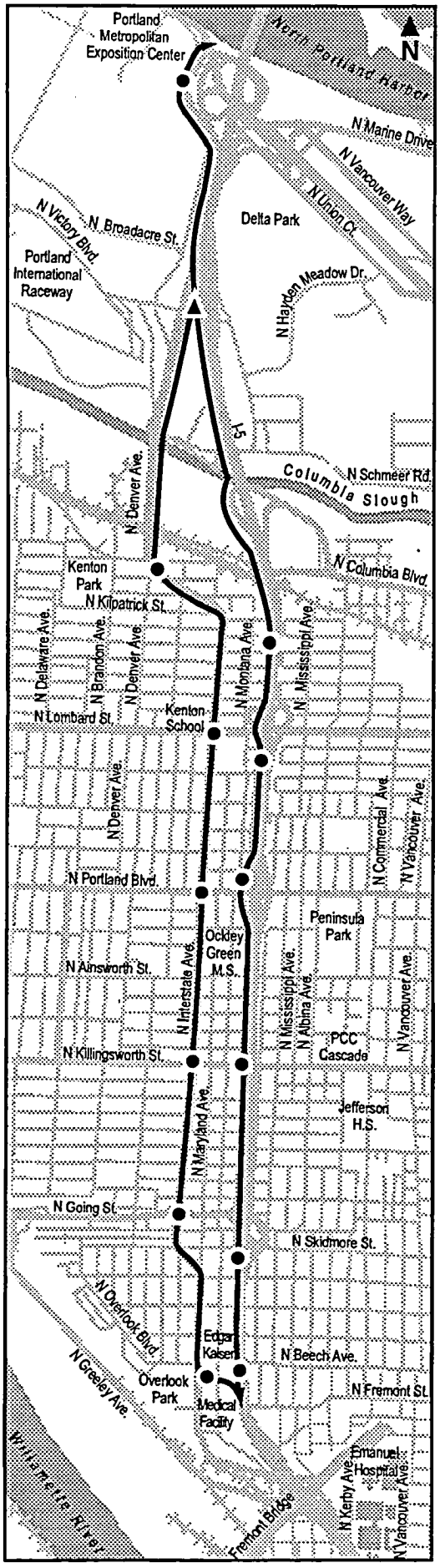
East I-5/Kerby LRT Alignment Alternative

Common Alignment

Station

Existing Railroad

0 1/8 1/4 MILE



South North Transit Corridor Study

METRO

Figure 1.4-9

North Portland

- **Interstate Ave.**
- **I-5**

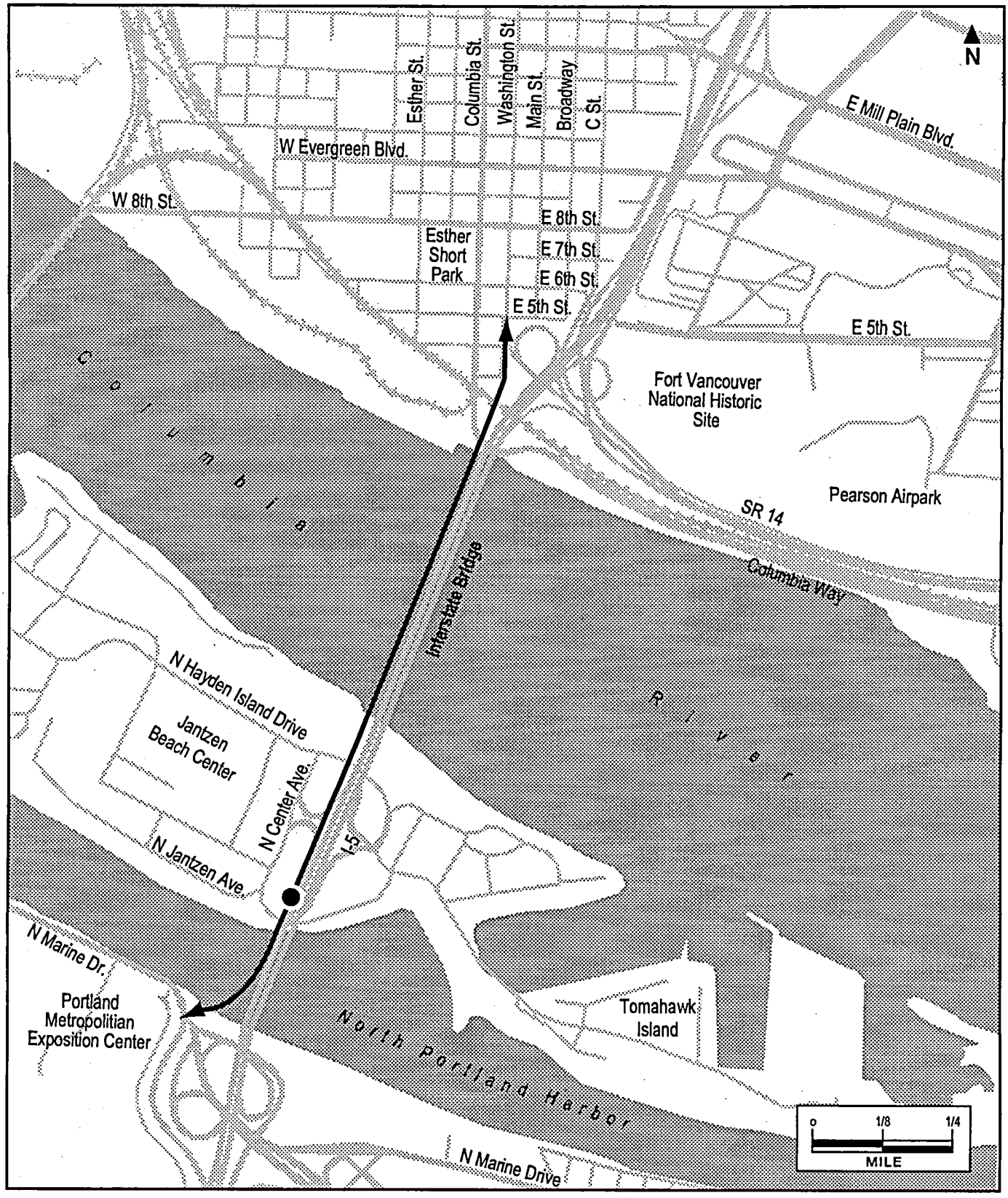
LRT Alignment Alternatives

Station

Station Access Under Study

Existing Railroad

0 1/4 1/2 MILE



South North Transit Corridor Study

METRO

Figure 1.4-10

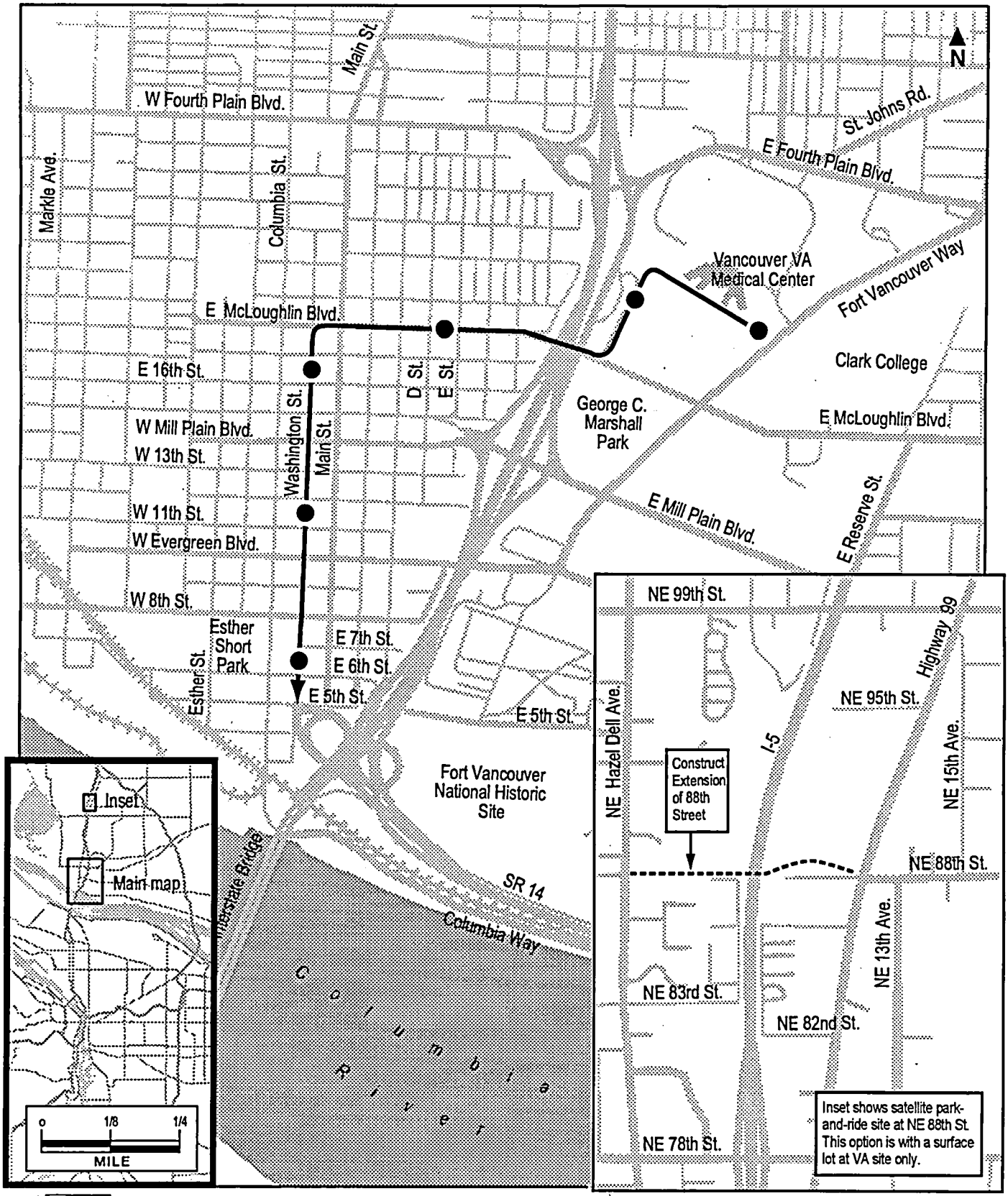
Hayden Island/Columbia River Crossing

• West of I-5/Lift Span Bridge

LRT Alignment Alternatives

Station

Existing Railroad



South North Transit Corridor Study

METRO

Figure 1.4-11

Downtown Vancouver

- **Washington Street/ McLoughlin Blvd.**

North of Clackamas Town Center Alignment Alternative

This alignment would begin with a terminus station at SE Sunnyside Road and SE 105th Street which would be co-located with a structured park-and-ride lot (approximately 900 spaces). It would then proceed west on the south side of SE Sunnyside Road past the Edgar Kaiser Medical Facility. The alignment would then turn north, crossing SE Sunnyside Road on a grade-separated over crossing, and then run parallel to the east side of I-205 to a station and park-and-ride lot (approximately 600 spaces) at the New Hope Church. From the church, the alignment would turn west, crossing over I-205 on structure, and then follow along the south side of SE Monterey Avenue to a reconfigured transit center on the north side of the Clackamas Town Center. The alignment would continue west crossing over SE 82nd Avenue on a grade-separated structure and then curve to the southwest along the east side of SE Fuller Road with a station located near LaSalle High School. From there, the alignment would continue southwest and cross SE Harmony Road at grade prior to turning west. The alignment would then follow along the south side of SE Harmony Road to Cedar Crest Drive.

South of Clackamas Town Center Alignment Alternative with Design Options

This alignment would begin with a terminus station near SE 93rd Avenue and SE Sunnybrook Street co-located with a park-and-ride lot (approximately 600 spaces). From there, the alignment would run north to a grade-separated over crossing of SE Sunnyside Road, and then turn west and run parallel to SE Sunnyside Road to a new transit center south of the Clackamas Town Center. This alignment would continue west along the north side of SE Sunnyside Road and cross over SE 82nd Avenue on a new grade-separated structure. Proceeding west from SE 82nd Avenue there are two design options.

The northern design option would cross SE Harmony Road at grade, and then proceed west to SE Fuller Road in the existing right-of-way currently used by SE Harmony Road. SE Harmony Road would be relocated to the north of the LRT alignment. A station and park-and-ride lot (approximately 900 spaces) would be located between Oregon Institute of Technology (OIT) and SE 82nd Avenue, south of the LRT alignment. The alignment would then continue on the south side of Harmony Road to Cedar Crest Drive.

The southern design option would cross SE Harmony Road at grade, and then enter a station and park-and-ride lot (approximately 900 spaces) south of SE Harmony Road and west of SE 82nd Avenue. The LRT alignment would then proceed west, south of the OIT and Clackamas Community College (CCC) buildings, staying north of the Clackamas Regional Park in a reserved transportation right-of-way, south of SE Harmony Road. From the intersection of SE Harmony Road and SE Fuller Road, the alignment would then continue on the south side of SE Harmony Road to Cedar Crest Drive.

1.4.2.2 Railroad Avenue Segment

From Cedar Crest Drive and SE Harmony Road, the alignment in this segment would parallel Railroad Avenue, to SE 37th Avenue in southeast Milwaukie, ending just east of the Milwaukie Market Place station. One alignment alternative is examined in this segment (see Figure 1.4-3) and is currently under study in PE.

Note that in this segment the initial cost-cutting process has identified possible refinements to the LRT Alignment Alternative. If the process concludes with only one alignment in this segment, PE Step One activities would proceed. If the amendment process concludes with two or more alternatives in this segment, then PE Step One work would not proceed until after selection of the locally preferred strategy. Generally PE Step One activities have been postponed in this segment until after conclusion of the amendment process.

Railroad Avenue Alignment

From Cedar Crest Drive and SE Harmony Road, the light rail alignment would continue along the south side of SE Harmony Road to a station and park-and-ride lot (approximately 1,300 spaces) located near SE Harmony Road and SE Linwood Avenue. The alignment would proceed west on the south side of a relocated SE Railroad Avenue in the public right-of-way adjacent to the Southern Pacific (SP) main line. SE Railroad Avenue would be reconstructed just north of, and adjacent to the LRT alignment. A second station would be located near SE Wood Avenue to serve the residential area to the north and the industrial area to the south. The alignment would continue adjacent to the SP main line to SE 37th Avenue.

1.4.2.3 Milwaukie Regional Center Segment

This segment extends from SE 37th Avenue in the city of Milwaukie to SE Tacoma Street in the city of Portland. The Milwaukie Market Place in this segment represents the southern terminus for MOS 1. One alignment alternative is examined in this segment (see Figure 1.4-4). In order to compare alignment and length alternatives, a 900 space park-and-ride lot is located near SE Tacoma Street in the North Milwaukie industrial area. An operations and maintenance facility is assumed to be located at Brooklyn Yard in the South Willamette River Crossing segment. Various Operations and Maintenance Facility locations and North Milwaukie Park-and-Ride locations are under study in this segment.

Main Street/SP Branch Line Alignment Alternative

Starting from the east, this alignment would include a Milwaukie Market Place station and park-and-ride lot (approximately 400 spaces) just west of SE 37th Avenue. The alignment would continue northwest, crossing SE Monroe Street and SE Harrison Street at grade.

North of SE Harrison Street, the alignment would begin to gain in elevation and would cross over the SP Main Line and Highway 224 on an elevated structure, staying south of Highway 224. The alignment would then continue west, parallel to and south of Highway 224, generally at the same grade on an extension of the Highway 224 berm and structure crossing the SP Branch Line. The alignment would descend to an at-grade crossing of SE Main Street and would turn south, parallel to and east of SE McLoughlin Boulevard.

The alignment would then turn east and cross Main Street at grade, leading to a transit center located around the perimeter of a new block and possible plaza formed by SE Harrison Street, SE Main Street and extensions of Scott Street and SE 21st Avenue.

From the transit center, the alignment would curve north to the east of Kellogg Bowl. It would then curve northeast and cross under Highway 224 and the light rail alignment using a new underpass. North of Highway 224, the alignment would make a wide curve through the southeast corner of the Hanna-Harvester site, before extending north, parallel to and west of the SP Branch Line. A new connection of freight spur tracks to the SP Branch Line would be constructed just north of Highway 224 and would cross the light rail alignment above grade. North of SE Ochoco Street, the alignment would be similar to the Monroe/SP Branch Line alignment.

1.4.2.4 McLoughlin Boulevard Segment

This segment extends from SE Tacoma Street to SE McLoughlin Boulevard at SE 20th Avenue. One alignment is examined in this segment (see Figure 1.4-5) and is currently under study in PE.

McLoughlin Boulevard Alignment

From Tacoma Street, the alignment would proceed north along the east side of SE McLoughlin Boulevard (between the roadway and the SP railroad) past the Eastmoreland golf course. It would underpass SE Bybee Boulevard and include an LRT station just north of SE Bybee Boulevard. The alignment would then proceed north to SE McLoughlin and SE 20th in the vicinity of the Brooklyn rail yard.

1.4.2.5 South Willamette River Crossing Segment

This segment extends from McLoughlin Boulevard at SE 20th Avenue to SW Moody Avenue at SW Harbor Drive. Two alignment alternatives are examined in this segment (Figure 1.4-6), one with design options. In order to compare alignment and length alternatives, an operations and maintenance facility is assumed at Brooklyn Yard in this segment.

Brooklyn Yard/Caruthers Crossing Alignment Alternative with Design Options

This alignment would separate from SE McLoughlin Boulevard near SE 17th Avenue turning north and following the western boundary of Brooklyn Yard. A station would be located near SE Holgate Boulevard. From there the alignment would continue to follow the west side of the Yard to a station in the vicinity of SE Lafayette Street with pedestrian access across the SP Main Line to the East Brooklyn neighborhood.

The alignment would continue north, crossing over SE Powell Boulevard on an elevated structure, paralleling the existing railroad tracks. From Powell Boulevard to OMSI there are two design options, one on structure crossing over SE 11th/12th Avenues and another crossing SE 11th/12th Avenues at grade. Both design options would include a station at SE 11th/12th Avenues. From SE 11th/12th Avenues, the alignment would continue, parallel to the existing railroad tracks to an elevated station just south of OMSI.

From the OMSI station, there are two additional design options. In the first design option, the Caruthers River Crossing would leave the east bank of the Willamette River in the vicinity of Water Avenue and continue on a new bridge across the Willamette River. The alignment would continue to the west side of SW Moody Avenue and then weave between the columns supporting the Marquam Bridge. In the second design option, the alignment would be on a new structure starting at approximately SE 14th Avenue. It would continue on structure over a new bridge across the Willamette River and would land near the I-405 and I-5 ramps on the west side of the river. Both design options would end at SW Moody Avenue and Harbor Drive.

Ross Island Crossing Alignment Alternative with Design Options

From the southwest side of Brooklyn Yard this alignment would continue parallel to the east side of SE McLoughlin Boulevard to a station in the vicinity of SE Schiller Street. From this location west to the river crossing there are two design options.

The East of McLoughlin Boulevard Design Option would follow the east side of McLoughlin Boulevard with a station near SE Center Street. From the Center Street station, the alignment would cross under SE McLoughlin Boulevard and cross the Willamette River on a new bridge in the vicinity of the northern portion of Ross Island.

From the Schiller Street station the West of McLoughlin Boulevard Design Option would continue north paralleling SE Milwaukie Avenue for a short distance and then turn west crossing over McLoughlin Boulevard on a new grade-separated structure. The alignment would then proceed along the west side of McLoughlin to the river crossing (identical in the two design options).

The new light rail bridge would land on the west side of the Willamette River near SW Moody Avenue with a station in the vicinity of SW Gaines Street. The alignment would then follow the west side of SW Moody Avenue to a SW Porter Street station and proceed north to SW Moody Avenue and SW Harbor Drive.

1.4.2.6 Downtown Portland Segment

This segment extends from SW Moody Avenue and SW Harbor Drive to the east end of the Steel Bridge. One alignment is being examined in this segment (Figure 1.4-7) and is currently under study in PE Step One. The cost cutting process has identified possible changes at 1) PSU, and 2) the MAX Connector. PE Step One activities will be reevaluated after conclusion of the amendment process, to determine what portion, if any, of the CBD will continue in PE Step One.

Downtown Portland Alignment

South Entry: This portion of the downtown Portland alignment extends from just north of SW Moody Avenue to SW Harrison Street. From a station at RiverPlace, the alignment would continue west in the median of Harrison Street between SW 1st and 4th Avenues. Beyond SW 4th Avenue, the alignment would split and continue north along the transit mall with the southbound track located on SW 5th Avenue and the northbound track located on SW 6th Avenue.

South Mall: This portion of the downtown Portland alignment extends from SW Montgomery Street to SW Madison Street. Light rail would be placed in the left lane on SW 5th and 6th Avenues in the South Mall area with autos and buses sharing two general purpose lanes on the right of the LRT alignment. SW 5th and 6th Avenues would be reconstructed between Madison and Harrison Streets with improvements similar to those used on the Central Mall. Two pairs of auto-accessible stations would occur in this portion of the alignment. The first pair would be located at SW Montgomery and SW 5th and SW 6th Avenues. The second pair would be located at SW Columbia Street and SW 6th Avenue, and SW Jefferson and SW 5th Avenue.

Central Mall: This portion of the downtown Portland alignment extends from SW Main Street to W Burnside Street. Light rail in this area would be located in the center lane of SW 5th and 6th Avenues in the Central Mall portion. Two pairs of non auto-accessible stations would occur in this portion of the alignment. The first pair of stations would be located at SW Taylor Street and SW 5th and 6th Avenues and the second pair would be located at SW Washington Street and SW 5th and 6th Avenues.

North Mall: This portion of the downtown Portland alignment extends from north of W Burnside Street to just south of NW Glisan Street. Light rail would be located in the left lane on SW 5th and SW 6th Avenues in the North Mall with buses and autos sharing the right lane.

North Entry: This portion of the downtown Portland alignment extends from NW Glisan Street to the Steel Bridge and across the bridge to Northeast Portland. There are two design options for the north entry connection to the Steel Bridge from SW 5th and 6th Avenues. The alignment for the Glisan Street Design Option would turn from SW 5th and 6th Avenues onto NW Glisan Street with a proposed station on Glisan Street between NW 3rd and 4th Avenues. From the station, the alignment would continue over the Steel Bridge. The alignment for the Irving Street/Union Station Design Option would continue two blocks further north than the NW Glisan Street option with a southbound station on NW 5th Avenue between NW Glisan and Hoyt Streets and a northbound station on either NW Irving Street between NW 5th and 6th Avenues or on NW 6th Avenue between NW Glisan and Hoyt Streets. From the NW Irving Street area the alignment would curve and travel diagonally to NW Glisan Street and then continue over the Steel Bridge.

On the Steel Bridge the alignment would continue east using the existing MAX tracks. Motor vehicles would be excluded from the center lanes of the Steel Bridge.

1.4.2.7 Eliot Segment

This segment extends from the east end of the Steel Bridge to the Edgar Kaiser Medical Facility. Two alignment alternatives are examined in this segment (see Figure 1.4-8). The Rose Quarter transit center in this segment represents the northern terminus for MOS 2.

East I-5/Kerby Avenue Alignment Alternative with Design Options

This alignment would proceed east from a slightly relocated Rose Quarter transit center, under the I-5 freeway, and turn north along the eastern edge of I-5. There are two design options in this vicinity. One design option would cross N Weidler and N Broadway Streets at grade with a transit station serving the NE Broadway Street area, adjacent to the Eliot neighborhood. A second design option would grade separate the crossings of N Broadway and N Weidler Streets. The alignment would continue along the east edge of I-5, behind the Harriet Tubman Middle School, crossing over N Russell Street on structure, to a station on N Kerby Avenue between N Graham and N Stanton Streets, west of Emanuel Hospital. The alignment would curve west, passing over I-5 on structure to a location just west of the freeway, near the Edgar Kaiser Medical Facility.

Wheeler Avenue/Russell Street Alignment Alternative

This alignment would proceed north from the Rose Quarter transit center and would pass along the eastern edge of the Rose Garden Arena with a station north of the arena between N Weidler and N Broadway. It would cross N Broadway and N Weidler at grade and proceed north along the east side of N Flint Avenue. The alignment would turn west at N Russell Street with a station on N Russell Street at the south end of the Emanuel Hospital campus. The alignment would be elevated on a structure, and pass over N Kerby Avenue, Stanton

Yard and N Mississippi Avenue. The alignment would then curve to the west, passing over I-5 on structure to a location just west of the freeway, near the Edgar Kaiser Medical Facility.

1.4.2.8 North Portland Segment

This segment extends from the Edgar Kaiser Medical Facility to N Marine Drive. Two alignment alternatives are examined (Figure 1.4-9). A crossover option warranting further study may be determined after some of the technical data for the DEIS is available. The crossover option would connect an I-5 alignment in the south to an Interstate Avenue alignment in the north.

I-5 Alignment Alternative

From the station at the Edgar Kaiser Medical Facility, the light rail alignment would proceed north along the top of the western bank of the I-5 freeway to a station south of N Skidmore Street.

It would then continue north, passing beneath N Going Street in a box structure, then run adjacent to I-5 at the same general elevation as N Minnesota Avenue (west of the freeway ramps) from N Going Street to a station at N Killingsworth Street. It would then proceed along the top of the freeway bank and then curve west along the freeway ramps to a N Portland Boulevard street level station and continue north along the west bank of the freeway to a station on the south side of N Lombard Street. It would then cross over N Lombard and the adjacent freeway ramps on a grade-separated (elevated) structure and proceed north to a Kenton station near N Watts Street.

From the Kenton station, the alignment would proceed north along the west side of the I-5 freeway. It would cross over the Union Pacific Railroad, N Columbia Boulevard and the Columbia Slough on a bridge, and then come down to ground level. It would then pass east of Delta Park and begin to climb for about ½ mile, crossing over Highway 99 adjacent to Expo Road. An elevated station would be located near the Expo Center parking lot.

Interstate Avenue Alignment Alternative

This alignment would cross over I-5 on structure near N Fremont Street and then proceed across the Kaiser campus with a diagonal street level station near the existing Town Hall building. The alignment would then turn onto N Interstate Avenue near N Overlook Boulevard and proceed north in the center of N Interstate Avenue. One lane of auto traffic in each direction would be provided except at the approaches to N Going Street and N Lombard Street where two lanes of traffic in each direction would be provided with turn lanes. Major intersections would have signalized at grade crossings. Stations would be located at N Going Street, N Killingsworth Street, N Portland Boulevard, N Lombard Street and N Denver Avenue in the Kenton commercial district.

From the Kenton station, the alignment would parallel the east side of the N Denver Avenue viaduct. It would proceed on an elevated structure across N Columbia Boulevard and the Columbia Slough. Near West Delta Park, the track would climb for approximately ½ mile and cross over Highway 99 adjacent to Expo Road. An elevated station would be located near the Expo Center parking lot.

1.4.2.9 Hayden Island/Columbia River Crossing Segment

This segment extends from N Marine Drive north of the Expo Center to East 5th Street in Vancouver, Washington. In this segment, one alignment is examined (see Figure 1.4-10).

Hayden Island/Columbia River Crossing Alignment

Traveling north from the Expo Center, the alignment would cross over N Marine Drive, North Portland Harbor and N Jantzen Avenue on a bridge structure. A station would be located near N Jantzen Avenue. The alignment would pass under the I-5 ramps, then continue north along the west side of the freeway to a new lift span bridge crossing the Columbia River. The light rail bridge would parallel the west side of the existing I-5 southbound bridge and would be approximately the same height above the river. The alignment would pass over Columbia Way in Vancouver and then would cross under the Southern Pacific railroad berm before connecting with the southern end of Washington Street.

1.4.2.10 Downtown Vancouver Segment

This segment extends from West 5th Street to the vicinity of Clark College. The VA Medical Center/Clark College area in Vancouver represents the northern terminus for the Full-Length Alternative and MOS 1. In this segment, one alignment is examined with design options in two different locations (see Figure 1.4-11).

Downtown Vancouver Alignment with Design Options

From the southern end of Washington Street, the light rail alignment would proceed north, operating in a two-way configuration with two design options. The first design option would be on the east side of Washington Street between W 5th and 8th Streets. The second design option would be on the west side of Washington Street. The stations in this segment would be located at W 7th Street (transit center), between W 11th and 12th Streets and between W 16th and 17th Streets. At McLoughlin Boulevard, the alignment would turn east, proceeding in the center of E McLoughlin Boulevard to the east side of I-5. A station would be located on E McLoughlin Boulevard between "D" and "E" Streets.

The alignment would then cross under I-5, turn north and proceed along the east side of I-5. In this vicinity there are two additional design options. One includes a station and structured

park-and-ride lot (approximately 3,900 spaces) in the vicinity of the Veterans Administration Medical Center. The second design option would include a surface park-and-ride lot (approximately 1,000 spaces) at this site instead of structured parking. With the surface park-and-ride lot design option, an additional satellite park-and-ride lot (approximately 1,500 spaces) would be developed at 88th Street, linked to the LRT by bus.

From the VA Medical Center park-and-ride lot and station, the alignment would then turn east, proceeding to the terminus station west of Fort Vancouver Way and across the street from Clark College.

1.4.3 Final Environmental Impact Statement/Preliminary Engineering (FEIS/PE Step Two) Objectives

Purpose: To develop and publish an FEIS and to finalize Preliminary Engineering including the integration of committed mitigation into the project design for the selected MOS and alignment alternative.

When an MOS and LPS are selected following publication of the DEIS and the DEIS public comment period, the MOS and preferred alignment will advance into the FEIS/PE Step Two process. Preliminary PE prepared for the three segments within PE Step One will be reviewed and refined as needed. PE will also be prepared for those segments of the MOS that were not designed to the 30% level during PE Step One.

Objectives:

1. To document comments received at the DEIS public hearing and to prepare and document responses to those comments.

2. To develop and implement a public involvement program.

3. To refine and fix the number and location of stations and park-and-ride lots.

4. To prepare approximate 30% preliminary engineering design.

5. To complete Value Engineering.

6. To prepare mitigation plans and to incorporate committed mitigation into the designs.

7. To prepare capital cost estimates based upon the PE design.

8. To prepare and adopt a financing plan.

9. To publish a Final Environmental Impact Statement.

10. To seek a record of decision (ROD), initiate a full funding grant agreement (FFGA) and to request advancement of the corridor into Final Design.

1.5 Study Organization

Metro and the Region have adopted an organizational structure for HCT studies which will provide the basis for oversight of the South/North Transit Corridor Study. Metro will be the lead agency for the South/North EIS/PE Step One and Tri-Met will be the lead agency for South/North EIS/PE Step Two. Participating agencies and jurisdictions, which could change following adoption of the LPS, currently include C-TRAN, Oregon and Washington Departments of Transportation, Clackamas, Multnomah and Clark Counties, and the cities of Oregon City, Gladstone, Milwaukie, Portland and Vancouver, and the Southwest Washington Regional Transportation Council (RTC).

Figure 1.5-1 illustrates the organizational structure for the South/North Transit Corridor Study. Study oversight will be provided as follows:

Metro. Metro is the regional government and Metropolitan Planning Organization in the Portland metropolitan area. Metro's council is elected by and represents districts within its jurisdictional boundaries that includes all of Multnomah County and generally the urban portions of Clackamas and Washington Counties. It is responsible for the preparation of the Regional Transportation Plan, the planning of regional transportation projects and the establishment and maintenance of the Urban Growth boundary.

Tri-Met. Tri-Met is the local public transportation provider within the Tri-County Portland Metropolitan area. Its seven-member Board of Directors is appointed by the Governor of Oregon. The Board appoints a General Manager who also serves on JPACT (described below). Tri-Met is responsible for the operations and maintenance of the region's bus and light rail service. It is also responsible for the design and construction of bus and light rail facilities.

Joint Policy Advisory Committee on Transportation (JPACT). JPACT is composed of elected officials, appointed officials and citizens representing agencies and jurisdictions from throughout the area. JPACT is housed within Metro and makes recommendations on transportation policy issues directly to the Metro Council. JPACT will provide policy oversight for the study. All policy decisions will be forwarded to and made by JPACT. Quarterly status reports will be presented to JPACT, with action items presented as required.

Joint Regional Policy Committee (JRPC). In 1990, the Washington State Legislature established the High Capacity Transit Act (HB 1825) and passed subsequent amendments (HB 1677 and HB 2125) in 1991. The Act set aside funds in the High Capacity Transit Account (HCTA) to support the planning of HCT systems. In order to access HCTA funds and exercise local option taxes, it is necessary that this planning process adhere to the

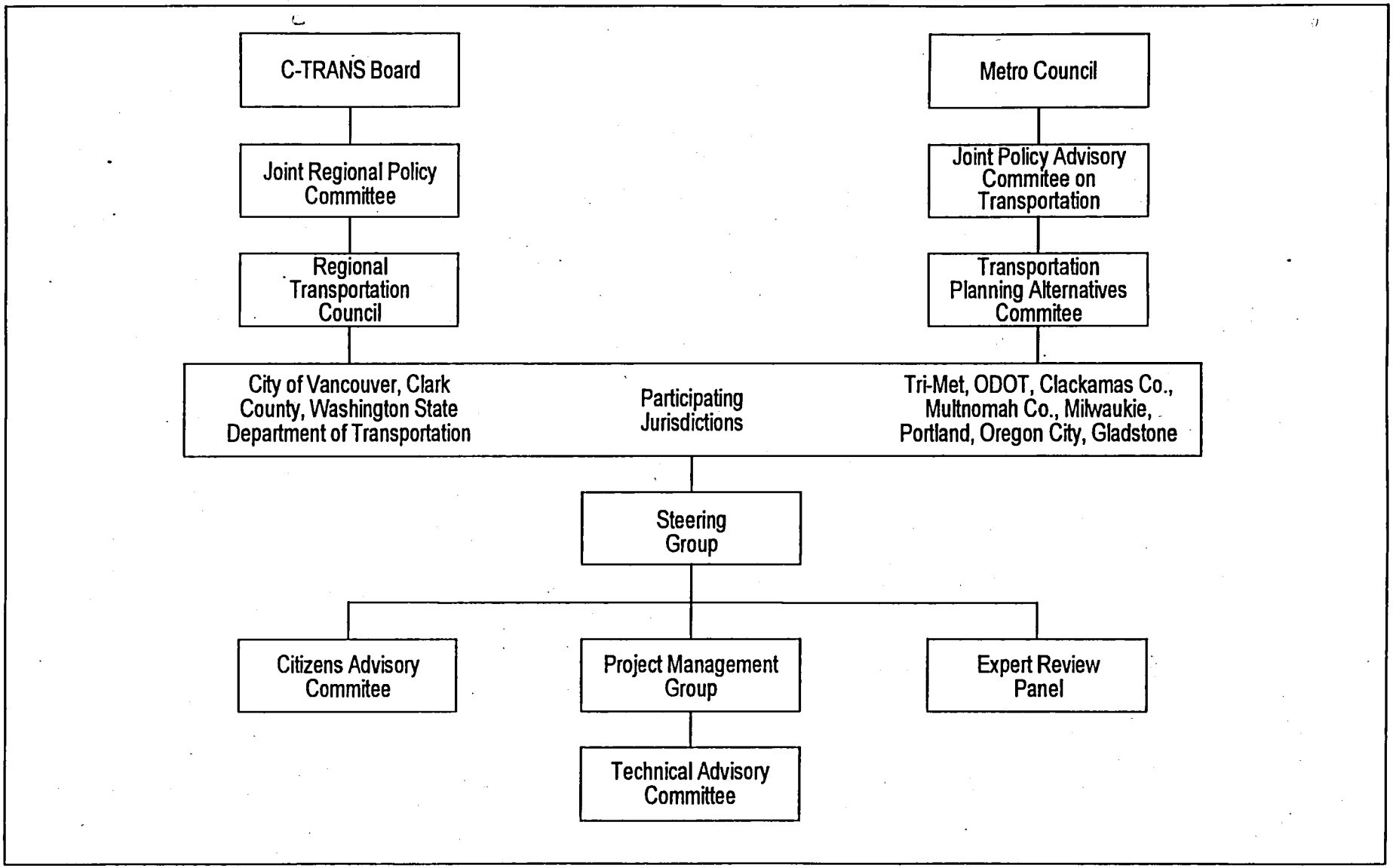


Figure 1.5-1

South/North DEIS/PE Organizational Structure

requirements in the HCT Act of 1990 as amended. The Act requires that a policy forum, or Joint Regional Policy Committee (JRPC), be formed by the C-TRAN board of directors with proportional representation using population distribution within the designated service area and a representative from the Washington State Department of Transportation (WSDOT). On September 10, 1991, C-TRAN established itself and a WSDOT member as the JRPC. In general, the purpose of the JRPC is to oversee HCT planning activities in Clark County and to ensure that the planning be conducted in a manner consistent with RCW 81.104.100 and all applicable federal requirements in order to ensure that potential future projects remain eligible for federal funding.

C-TRAN. C-TRAN is the local transit operating district within Clark County, Washington. The C-TRAN Board of Directors is made up of representatives from the Clark County Board of Commissioners and the Vancouver City Council.

Transportation Policy Alternatives Committee (TPAC). TPAC is a senior staff level policy committee which reports to JPACT. TPAC will make recommendations for policy decisions to JPACT.

South/North Steering Committee. The South/North Steering Committee is made up of one elected or appointed official from each of the participating jurisdictions and agencies including Metro and Tri-Met. The Steering Committee will provide policy direction to the study and will forward recommendations to the participating jurisdictions and the decision-making bodies. The role of the Steering Committee in the adoption and implementation of the project's Land Use Final Order is defined in Oregon State law and its specific membership and manner of function will be determined by intergovernmental agreement between Metro, Tri-Met, the Oregon Department of Transportation and the affected local governments.

Project Management Group (PMG). The South/North PMG is made up of senior management staff from the agencies participating in the study. The PMG will oversee the general management of the study, concentrating on schedule, scope, budget and policy recommendations to be forwarded to the Steering Committee and the Citizens Advisory Committee. The project director from Tri-Met and other technical staff will report every two to four weeks to the PMG.

Technical Advisory Committee (TAC). The South/North TAC is made up of technical staff from the participating agencies. The committee will develop, monitor and review technical aspects of the study, concentrating on the development of methodologies, analysis, alignment and operations assumptions and evaluation of the alternatives. The TAC will meet every two to four weeks, and various subcommittees of the TAC will be formed as necessary to address specific functional or geographic issues.

Citizens Advisory Committee (CAC). The CAC is made up of a variety of citizens from throughout the corridor. The CAC will receive all material forwarded to the Steering

Committee, and will be asked to prepare independent recommendations to the Steering Committee on all policy decisions or recommendations requested of the Steering Committee. The CAC will meet approximately monthly and will receive regular reports from the project manager and other technical staff. The CAC will provide opportunities for public testimony at all of its regular meetings, and the public will be encouraged to attend and use the CAC meetings as a key point of citizen access into the study process.

Expert Review Panel (ERP). The intent of incorporating an expert review panel into the South/North Transit Corridor Study is to provide independent review of project assumptions, methods and products to ensure that adequate and appropriate information is available to local decision-makers when they screen alternatives and select a Locally Preferred Alternative. By seeking outside review in the fixed guideway planning process, Metro can ensure that the products and decisions made by local officials at the end of the process are optimal, cost-effective and efficient. The ERP will continue in its role through the selection of the LPS.

The South/North ERP includes eight outside experts, some located locally, and some brought in from across the country. They represent a range of disciplines in order to provide broad oversight in areas such as the development of alternatives, financial analysis, environmental review, economics, geography, architecture and urban design, engineering, public opinion, travel demand forecasting techniques and costing. Representatives on the panel come from within the transit industry, from academia, and from non-transit disciplines.

The ERP will meet at least three times throughout the study. Those meetings will generally coincide with the following milestones:

1. The development of study's methods and guidelines to be used in Tier II and the Definition of Alternatives Compendium in Tier II;
2. Review of the data and results reports in Tier II; and
3. The preliminary Draft Environmental Impact Statement forwarded to FTA for Approval.

The ERP will be forwarded all of the study reports, but will concentrate on methodological issues, the development, screening and evaluation of alternatives, costs, patronage, financing and project evaluation. The ERP will be jointly staffed by and independent consultant.

Federal Transit Administration (FTA). It is intended that Metro, Tri-Met and the participating jurisdictions will work closely with FTA during the progress of the project. The culmination of this phase of the project will result in the publication of a Draft Environmental Impact Statement (DEIS), a Final Environmental Impact Statement (FEIS) and issuance of a Record of Decision by FTA. Metro will produce the DEIS and FEIS based upon the technical analysis performed through the course of the study. Because the DEIS and FEIS are published by FTA, the DEIS and FEIS will require approval by FTA before notification of their publication and availability is issued in the *Federal Register*.

Regional FTA staff serve as the focal point for contacts between local agencies and FTA. They review unified planning work programs, and for planning projects receiving federal funds they process grant applications and, once a grant has been approved, monitor projects for budget and schedule adherence. They also perform a technical monitoring and assistance function. Metro and Tri-Met staff will work closely with FTA's appointed Project Management Oversight (PMO) consultant to respond to questions and issues as they arise.

Washington State Department of Transportation's High Capacity Transportation Branch. It is intended that C-TRAN and Metro will work closely with WSDOT's High Capacity Transportation office. The responsibilities of the HCT office are to:

1. Administer state grants for regional HCT planning;
2. Provide liaison and support in creating and operating Expert Review Panels;
3. Provide support and representation to Joint Policy Review Committees overseeing regional HCT planning efforts;
4. Provide technical assistance and administrative guidance to agencies conducting; HCT planning; and,
5. Evaluate adequacy of the State's HCT program.

The work program has been developed to both involve the WSDOT HCT office and to meet their planning and procedural requirements.

1.6 Schedule

The South/North DEIS/FEIS/PE is expected to continue over approximately thirty-five months. The schedule for the project is illustrated generally in Figure 1.6-1.

Management of each task in the study is either the responsibility of Metro or Tri-Met. The other participating agencies will be called upon by the lead agency to assist in the development of products.

1.7 Budget

Responsibilities for project work are divided among Metro, Tri-Met and the participating jurisdictions. Intergovernmental agreements (IGA's) between Metro and each of the other participating agencies have been developed and incorporate a more detailed version of the work plan as the scope of work. The budgets for each of the elements of the South/North EIS/PE expenditures are summarized in Tables 1.7-1 through 1.7-5.

A significant portion of the work will be performed by consultants. In particular, consultant services will be sought for the preparation of technical analyses, presentation materials, financial analysis, engineering, transit operations analysis, traffic analysis, capital and O&M costing, environmental and land use analysis.

Figure 1.6-1
South/North EIS/PE

ID	Task Name	Start	Finish
1	**DEIS**	4/1/96	2/27/98
2	Management	4/1/96	2/27/98
3	Public Involvement	4/1/96	2/27/98
4	Description of Alternatives	4/1/96	4/30/97
5	Travel Demand Forecasting	4/1/96	6/30/97
6	Traffic Analysis	8/1/96	8/29/97
7	Environmental Impacts	4/1/96	8/29/97
8	Capital Costs	8/1/96	8/29/97
9	O&M Costs	8/1/96	8/29/97
10	Financial Plan	12/2/96	2/27/98
11	Evaluation	8/1/97	2/27/98
12	**PE Step One**	4/1/96	2/27/98
13	PE Administration	4/1/96	2/27/98
14	Station Analysis	4/1/96	2/27/98
15	Civil Design	4/1/96	2/27/98
16	Systems Engineering	4/1/96	2/27/98
17	PE Status Report	6/2/97	8/29/97
18	**FEIS**	3/2/98	2/26/99
19	Management	3/2/98	2/26/99
20	Public Involvement	3/2/98	2/26/99
21	Description of Alternatives	3/2/98	9/28/98
22	Travel Demand Forecasting	3/2/98	6/12/98
23	Traffic Analysis	4/1/98	1/5/99
24	Environmental Impacts	3/2/98	1/8/99
25	Capital Costs	5/1/98	12/31/98
26	O&M Costs	7/1/98	12/29/98
27	Financial Plan	3/2/98	2/26/99
28	FEIS Preparation	6/1/98	2/26/99
29	**PE Step Two**	3/2/98	2/26/99
30	PE Administration	3/2/98	2/26/99
31	Station Analysis	3/2/98	7/10/98
32	Civil Design	3/2/98	2/26/99
33	Systems Engineering	3/2/98	1/8/99
34	**Oregon City Extension**	2/3/97	2/26/99

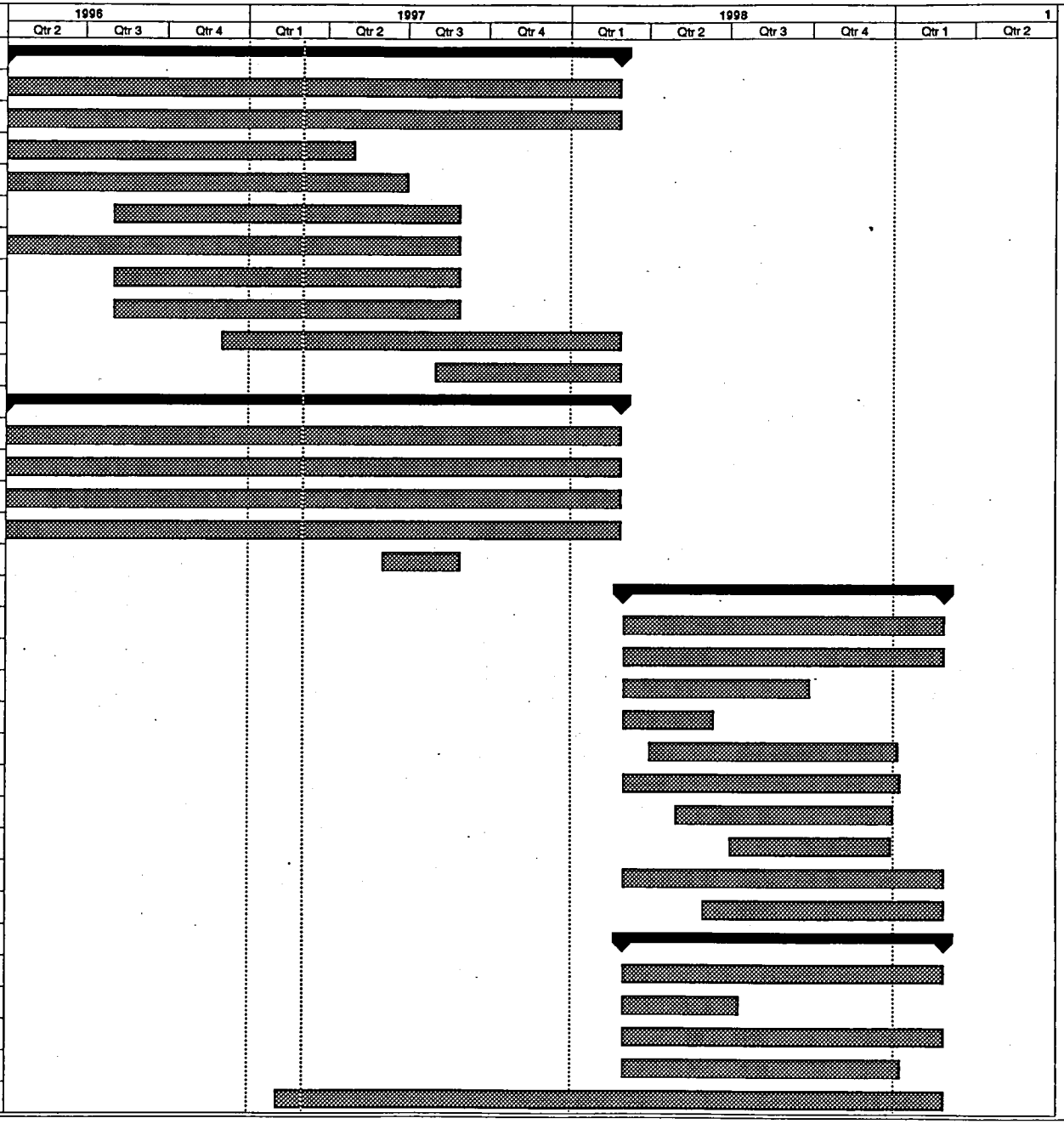


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Table 1.7-1
DEIS Expenditure Budget

Work Element	Budget
Management • Administration • Expert Review Panel	$841,781
Public Involvement • Public Involvement	$609,511
Alternatives Description • Definition of Alternatives Compendium • Cost-Cutting Measures • Capital Costs • Operation and Maintenance Costs	$3,760,014
Social, Economic & Environmental Analysis • Methods Reports • Assess Environmental Impacts	$1,181,185
Transportation Analysis • Travel Demand Forecasts • Assess Transportation Impacts	$672,186
Financial Analysis • Financial Analysis	$196,691
Evaluation • Evaluate Alternatives • DEIS Publication • Select Locally Preferred Strategy • Adopt Land Use Final Order	$659,981
Total	**$7,921,349**

Table 1.7-2
Preliminary Engineering Step One Expenditure Budget

Work Element	Budget
Administration	$892,970
Alignment Design • Civil Design • Preliminary Engineering Status Report	$4,644,593
Systems Engineering	$299,002
Station Analysis	$617,163
Total	**$6,453,728**

Table 1.7-3
FEIS Expenditure Budget

Work Element	Budget
Management • Administration	$663,840
Public Involvement • Public Involvement	$619,559
Alternatives Description	$1,278,417
Social, Economic & Environmental Analysis • Environmental Impacts • Mitigation Plans	$823,435
Transportation Analysis • Travel Demand Forecasts • Transportation Impacts	$659,371
Financial Analysis • Financial Analysis	$223,279
Evaluation • FEIS Preparation	$544,907
Total	**$4,812,808**

Table 1.7-4
Preliminary Engineering Step Two Expenditure Budget

Work Element	Budget
Administration	$838,072
Alignment Design • Civil Design • Capital Cost Estimates	$3,772,412
Systems Engineering	$495,123
Station Analysis	$351,120
Total	**$5,456,727**

Table 1.7-5
South/North EIS/PE Summary Expenditure Budget

Work Element	Budget
DEIS	$7,921,349
PE Step One	$6,453,728
FEIS	$4,812,808
PE Step Two	$5,456,727
Oregon City Extension	$100,000
Total	**$24,744,612**

The work required to complete each task will be specifically defined by Metro, Tri-Met and the various participating agencies and consultants, and articulated later through the completion of more detailed work plans, IGA's and consultant contracts. Consultant teams led by the consultant project managers will perform the bulk of the consultant tasks. In some instances, to meet specific needs, local jurisdictions may wish to allocate some of their funding to consultants to aid in completion of tasks assigned to their agency.

Table 1.7-6 summarizes the revenue budget for the South/North DEIS/FEIS/PE analysis.

Table 1.7-6
South/North EIS/PE Funding Sources

Source	Total
FTA Grant OR-29-9023 e(4)	$13,061,695
FTA Grant Amendment (5309)	5,958,137
Clackamas County	2,000,000
C-TRAN	138,443
Tri-Met	$3,586,337
Total	**$24,744,612**

1.8 Relationship to the Unified Work Program

This work plan further defines the South/North elements which are included in Metro's and RTC's Unified Work Programs. A copy of the adopted South/North element of the FY 97 UWP is included in Appendix II. Adoption of the FY98 UWP is scheduled for the Spring 1997 and will include some of the tasks described within this work plan. The proposed FY 98 UWP is also attached as Appendix III.

2. WORK ELEMENTS

Following is a description of the work elements and tasks that make up the *South/North Environmental Impact Statement/Preliminary Engineering Work Plan* (March 1997). There are four major work elements comprising the work plan (i.e. DEIS, PE Step One, FEIS and PE Step Two), each with distinct tasks. The Administration and Public Involvement tasks are described first because they are common among all four major work elements.

2.1 Administration

Task Objective: The purpose of the administration task during the DEIS/PE Step One period is to ensure that the study results in the publication of the DEIS and the selection of a Locally Preferred Strategy. The purpose of the administration task during the FEIS/PE Step Two period is to ensure that the study results in the publication of the FEIS and PE products.

More specifically, the purpose of the administration is to ensure that the on-going work of the study continues to appropriately address the study goals; that tasks are performed on time, with adequate quality; and that fiscal controls are applied which ensure that the study is completed within the budget. Successful administration of the project will channel decisions to their appropriate levels, ensure smooth and accurate communication and ensure that all participants in the project have consistent expectations of each other.

For more detailed information on the PE administrative activities, refer to the *Project Management Plan for the South/North Light Rail Project* (Tri-Met, October 1996).

Methods:

1. *Definition, Scheduling and Contracting for Performance of Work.* The Project Manager will report to and consult with the Project Management Group, Steering Group, TPAC, the RTC Board of Directors, JPACT and JRPC, C-TRAN Board, and Metro Council, as appropriate, to define the work necessary to reach the study goals and objectives. Work will proceed in accordance with the adopted Work Plan and Intergovernmental Agreements developed during Tier I and revised as appropriate in Tier II. Task Managers will report to and consult with the Project Manager and the TAC to further define work products. The Task Managers will be responsible for coordinating and overseeing the progress on individual tasks, including providing timely information about sub-tasks, decision points, data requirements, schedules, staff responsibilities and graphic requirements. All participants in the study are responsible for adhering to the adopted schedule.

   Regular meetings will be held with project staff to communicate necessary information about the project and will include all regional participants who participate in the decision-making processes. Project participants operating through Intergovernmental

Agreements will be responsible for providing information that will be used to prepare quarterly progress reports by the Project Manager. Quarterly meetings will be held with FTA staff and monthly meetings will be held with the Project Management Oversight (PMO) Consultant, where issues, progress and reports will be discussed.

The Project Manager and Task Managers will oversee all work performed by consultants through regular consultation, meetings and summary reports. All work to be performed by consultants will be approved by the Project and Task Managers, and approval of products and authorization for payment shall be received from the Project and Task Managers. Some specific tasks are defined more below:

2. *Project Staffing*. Develop organization charts and staffing needs and hire staff required to accomplish the project.

3. *Work Plans*. Develop wok plans for internal staff, interagency coordination and consultant work, including methods and sequencing of work orders.

4. *Intergovernmental Agreements*. Develop work scopes to adopt and modify as necessary the intergovernmental agreements governing the participation of each of the jurisdictions involved in the study.

5. *FTA and PMO Coordination*. Coordination with, developing progress reports for, and providing for ongoing review of project materials as necessary to assist FTA and the PMO consultant.

6. *PE Step One Consultant*. A major portion of the PE work will be assigned to an engineering consultant. In this task Tri-Met will define the consultant work scope and organizational structure.

7. *Quality Assurance /Quality Control*. Implementation of the Project's QA/QC plan to ensure that all engineering drawings, project documents and other products conform to project standards. Ensure that all QA/QC procedures are followed.

8. *Fiscal Controls*. The Project Budget will be updated as necessary and adopted by the PMG. Project participants operating through Intergovernmental Agreements will be responsible for preparing monthly reports and invoices for work completed to the Project Manager.

Data Requirements:

1. Approved Work Plan;
2. Project Budget;
3. Detailed Project Schedule;

4. Intergovernmental Agreements;
5. Tri-Met Quality Assurance/Quality Control (QA/QC) Plan; and,
6. Personal Services Agreements with Consultant Scopes of Work.

Products:

1. Meeting Minutes;
2. Work Plans and Schedules
3. Personal Service Agreements;
4. Intergovernmental Agreements;
5. Project Management Plan;
6. Quarterly Reports;
7. Other Reports; and,
8. Adopted Budget, Regular Invoices, Progress Reports and Payments.

Relationship to Other Activities: Administration of meetings, the project work plan, budget, schedule and all of the reporting documents are fundamental management tools that will be used throughout the project. Coordination with other related transportation and land use studies will be achieved through administration.

Organizational Responsibilities: Metro is the lead agency for the administration of this study including the preparation of the DEIS and FEIS. Tri-Met will lead the PE and Design work. Other agencies and consultants will be responsible for assisting in the development and updating of contracts, providing periodic reports, and submitting regular invoices.

C-TRAN will have responsibility for contracts, invoicing and reporting to the State of Washington in relationship to the High Capacity Transit Development Account funds used to partially fund this study.

2.2 Public Involvement

Task Objective: The public involvement process during EIS/PE has two primary objectives:

1. To provide the public with information on all aspects of the study to ensure adequate preparation to fully participate in a decision making process aimed at narrowing options, selecting a locally preferred strategy and developing effective mitigation plans for inclusion in the FEIS.

2. To provide an opportunity to express concerns about the selected alignments and to present additional ideas to improve the alternatives or mitigate their impacts.

Methods: This task will cover public involvement activities associated with the DEIS, FEIS and PE. A comprehensive public involvement effort will support the preparation of the DEIS and the selection of a locally preferred alternative. It will be followed by another comprehensive public involvement effort to support the preparation of the FEIS and identification of mitigation measures. Preliminary engineering activity will increase the level of contact with parties along the selected alignment.

The public involvement plan will support the ability of the Project to carefully examine and communicate information to businesses, residents, building owners, public entities, and others who might be affected by the development of an LRT build alternative along any of the alignments studied or selected. The plan will also support the adoption of particular mitigation measures and plans, such as displacement and relocation. The organizational structure established during Tier I will continue throughout Tier II, with Metro leading public involvement activities. Tri-Met will also provide support for all project public involvement activities along with other participating jurisdiction staff.

Innovative methods will be employed to reach a greater percentage of the affected population and to help the public better visualize light rail in their neighborhoods. Public opinion will be monitored to assure thorough comprehension of the study in all areas. Workshops, community meetings, open houses, home meetings or other Public Involvement methods will be employed to keep the public informed. The Study newsletter, *The South/North News* will support the analysis. Additional informational materials and advertisements will be developed by Metro and Tri-Met in tandem with local jurisdictions as needed. The study will maintain an active mailing list and will seek to expand the distribution of study materials through libraries, schools, and other key public destinations.

Data Requirements: Identification and assessment of businesses, residences, and other properties potentially affected by study mode and alignments; Attitude and Awareness statistics as they relate to regional transportation and in particular the South/North study.

Products:

1. Project informational materials: newsletters, project brochure, segment specific community (jurisdictional) brochures, fact sheets, special issues white papers;
2. Study mailing list;
3. Alternative specific slide presentation;
4. Presentation materials/fact sheets;
5. Interactive video display;
6. Maps/Photos;
7. CAC meeting packets, materials and minutes;
8. Media/PR materials;
9. Summaries of meetings; and
10. Public Opinion Research.

Relationship to Other Activities: Each task will be evaluated to determine how the public should be involved in the completion of that task. The public participation process will take into account local jurisdictional needs and/or requirements or special conditions. The level and method of information dissemination will vary by task and will be designed to ensure study credibility, broad based involvement, education and consensus building.

Organizational Responsibilities: Metro will be responsible for overall management of the public participation program. Tri-Met will be responsible for overall management of the public participation program for PE, and Tri-Met participation will increase as the preliminary engineering tasks get underway. Metro and Tri-Met in cooperation with participating agencies, will design a core public involvement/communications plan which will be supplemented by activities from participating agencies.

In general, participating agencies are responsible for participating and staffing public meetings and presentations, providing creative broad-based outreach within their jurisdictions, coordinating these activities with Metro staff, providing related summary reports, producing support materials for supplemental activities as needed, assisting with the development/procurement of community data, working with jurisdiction appointees to the CAC, identifying key stakeholders within their communities and assisting with the development of segment community based meetings as needed.

For Oregon segments of the project, Metro and Tri-Met will conduct public opinion research as needed, design, implement and manage the media and public relations activities, and coordinate the DEIS/FEIS public process. C-TRAN will play the lead role in designing, coordinating, and executing public involvement activities in Clark County, in cooperation with Metro's public participation program.

For Washington segments of the project, C-TRAN, in cooperation with Metro, will conduct public opinion research as needed, design, implement and manage the media and public

relations activities, and oversee the Clark County DEIS/FEIS and SEPA public process. Metro will work with each of the jurisdictions to help ensure consistency of message and approach for public information materials.

In general, participating agencies are responsible for participating and staffing public meetings and presentations, providing creative broad-based outreach within their jurisdictions, coordinating these activities with Metro staff, providing related summary reports, producing support materials for supplemental activities as needed, assisting with the development/procurement of community data, working with jurisdiction appointees to the CAC, identifying key stakeholders within their communities and assisting with the development of segment community based meetings as needed.

2.3 Draft Environmental Impact Statement (DEIS) Tasks

The purpose of the DEIS Tasks are to evaluate alternatives leading to the preparation of a series of Results Reports which will be summarized in the DEIS document. Notice of availability of the DEIS will be published in the Federal Register, and lead to the selection of a locally preferred strategy which will be documented in the LPS Report.

2.3.1 Expert Review Panel

Task Objective: The Expert Review Panel (ERP) will provide an independent review of project assumptions, methods and products to ensure that adequate and appropriate information is available to local decision-makers.

The panels members provide reports regarding adequacy of the study's methods and technical analysis to help inform decision making. Should members need to be replaced, it will be done by the method used for the original appointments.

Methods: The Panel will meet three to four times throughout the study. These meetings will generally coincide with the following milestones:

1. Initiation of Tier II and completion of the DEIS Methods Reports;
2. Completion of the data analysis and Results Reports; and
3. Completion of the Draft Environmental Impact Statement.

Data Requirements: Various study methods, results and reports as they are produced.

Products:

1. ERP meeting packets and presentation material; and
2. Minutes of ERP meetings and recommendations.

Relationship to Other Activities: The Panel provides its recommendations regarding technical adequacy of the study to all policy bodies involved in the project including Metro and Washington State Department of Transportation staff.

Organizational Responsibilities: Metro is responsible for coordinating and staffing the ERP in cooperation with the Washington State Department of Transportation, or their designate. Metro, participating agencies and consultants are responsible for producing written material, presentation material and information needed by the ERP.

2.3.2 Methods Reports

Task Objectives: The purpose of this task is to describe study methods that describe the specific technical methods and assumptions to be used in developing the various Results Reports and the Draft Environmental Impact Statement.

Methods: A series of technical methods reports will be prepared to address the following topic areas:

1. Evaluation Methods and Criteria;
2. Social, Economic and Environmental Assessment (NEPA and SEPA);
3. Capital Costs;
4. Operation and Maintenance Costs;
5. Service and Patronage Impacts; and,
6. Financial Analysis.

Data Requirements:

1. Preliminary definition of the alternatives to be evaluated in Tier II;
2. Local, regional, state and federal guidelines.

Products:

1. Draft methods reports for local review;
2. Draft methods reports for review by the ERP and FTA; and
3. Final Methods Reports for use in developing the technical analysis for Tier II and for inclusion in, and use in preparation of the series of Results Reports to be produced in support of the DEIS.

Relationship To Other Activities: These methods will be reviewed by the ERP. They will provide the basis for the technical analysis in Tier II, leading to the selection of a locally preferred strategy.

Organizational Responsibilities: Metro will be responsible for the development of methods reports for the Tier II analysis. Tri-Met will have responsibility for preparing methods for Capital Costs and Operating and Maintenance Costs. Tri-Met, C-TRAN and RTC and a consultant will provide assistance in the preparation of all methods reports.

2.3.3 Definition of Alternatives Compendium

Task Objectives: The purpose of this task is to provide a detailed description of the study alternatives which come out of the Tier I, Design Option Narrowing and cost cutting decision-making processes. The alternatives to be studied in the DEIS will include a single HCT alternative (LRT) with a range of Minimum Operating Segments (MOS's), Alignment Alternatives and Design Options along with a No-Build Alternative. This task will describe these alternatives at a level of detail which is sufficient to provide a basis to do the technical analyses required for work on the Results Reports and the DEIS. The products from this task will be compiled in the Definition of Alternatives Compendium.

Methods: The Definition of Alternatives Compendium will define specific information on all of the alternatives which will be studied in the DEIS. This information will include adequate detail to allow for coding and modeling of highway and transit networks and to provide a basis for cost estimates and the evaluation of impacts.

For all alternatives the compendium will include a description of the transit network, including feeder service, routing, transit centers, park and ride lots, peak and off-peak head ways and peak and off-peak speeds. Also a description of the highway network assumptions including planned capacity improvements. The report will also include a description of the operating policies which provide a basis for the modeling inputs, these include; fare policy, loading standards, Transportation Demand Management (TDM) programs, parking policies and land use assumptions.

This will also include; station locations, transit center locations, park and ride locations, typical sections, typical stations and vehicle loading standards and specifications.

Definition of Major Facility Components. (Transit Centers, Station Locations, Park/Ride lots, etc.) Analysis will be done to evaluate and define possible LRT facilities such as transit centers, park and ride lot locations and stations locations to determine which facilities and locations should be studied in the DEIS. Three levels of system components will be evaluated.

1. The first level includes facilities that are significant at the regional and corridor level (i.e. transit centers, stations serving regionally significant locations and major intercept park and ride lots).

2. The second level includes facilities that are significant at the more local transit system level (i.e. stations at transfer locations of 3 or 4 bus lines and park and ride lots that have larger system level capacities), and

3. The third level includes facilities that are significant at the local or neighborhood level (i.e. stations that primarily serve neighborhood walk on access or have 1 feeder bus line and may include a neighborhood level park and ride lot).

Criteria for evaluating the major facility components include: 1) effect on travel to the Portland CBD; 2) effect on travel through the CBD; 3) effect on local travel 4) cost effectiveness; and 5) effect on existing and future development.

Evaluation of possible Station Locations. A large number of possible station locations have been identified. An evaluation of population, employment, existing land use, comprehensive plans, developable and redevelopable lands within 1/2 mile of each potential location will be done. This will provide for a comparative evaluation of the possible locations, and assist in defining which locations will be studied further in the DEIS.

Data Requirements:

1. Description of existing transit service in corridor;
2. Description of existing and planned highway improvements;
3. LRT design standards;
4. Tri-Met and C-TRAN service standards;
5. Tri-Met and C-TRAN fare policies;
6. Regional parking cost assumptions;
7. Existing and forecast regional population, employment and land use assumptions; and,
8. Results of cost-cutting measures/amendments to the DEIS description of alternatives.

Products:

1. Highway network maps;
2. Transit network maps;
3. Plan and Profile maps for all alternatives to be evaluated in the DEIS; and
4. Definition of alternatives compendium

Relationship to Other Activities: The Definition of Alternatives Compendium provides a basis for analysis of impacts of the various alternatives and their assumed components for the DEIS. In addition, the Definition of Alternatives Compendium provides the basis for preparing the patronage estimates in the Travel Demand Forecasting task.

Organizational Responsibilities: Metro, with the assistance of Tri-Met, is responsible for the management of this task. Metro and Tri-Met will work with RTC and C-TRAN to describe each agencies policies and coordinate with WSDOT and ODOT and local and regional agencies on highway network assumptions. Metro, Tri-Met and C-TRAN will work with the applicable jurisdictions to complete the analysis and reports.

2.3.4 Cost-Cutting Measures/Amendments to DEIS Alternatives

Task Objective: The purpose of this task is to review all of the alternatives, methods and assumptions for the alternatives identified for study in the DEIS and identify possible cost-cutting measures to significantly reduce the overall cost of developing LRT in the South/North Corridor.

Methods: Metro and Tri-Met in cooperation with the other project participants will undertake a significant effort to investigate all realistic options for reducing the cost of the Project. The basic principle to be used by the project in developing cost-cutting measures is to design the most cost-effective LRT project that achieves liveability and transportation goals within available funding.

Cost-cutting measures that will be undertaken include:

- Changes in project scope - Deferrals;
- Changes in project scope - Permanent;
- Changes in management approach;
- Changes in financial responsibility; and
- Changes in costing assumptions.

Proposed amendments to DEIS alternatives which address cost-cutting measures will be available for public comment prior to adoption and incorporation into the Definition of Alternatives Compendium.

Data Requirements:

1. Preliminary Definition of Alternatives Compendium;
2. Capital Cost Estimates prepared to date;
3. All Methods Reports;
4. O & M Cost Estimates prepared to date,
5. Preliminary Financial Analysis;
6. Adopted Financial Plan;
7. Environmental Analysis preformed to date;
8. Travel Demand Forecasts prepared to date; and
9. Public comments to date.

Products:

1. Cost-cutting briefing document and related public summary material;
2. Potential identification of lower cost MOSs, and alternatives;
3. Revisions to the Definition of Alternatives Compendium;
4. Revisions to the Segments being evaluated in PE Step One; and

5. Revisions to appropriate Methods Reports.

Relationship to Other Activities: Completion of the Definition of Alternatives Compendium, Results Reports and DEIS are dependent upon completion of this task. Further work on PE Step One is dependent upon completion of this task.

Organizational Responsibilities: Metro is responsible for overall management of this task. Extensive coordination with Tri-Met and the Local Jurisdictions will be required.

2.3.5 Travel Demand Forecasts

Task Objective: This task will result in traffic and transit passenger volumes forecast for each alternative for the year 2015 and an opening year for the LRT alternatives. Results will be developed for p.m. peak hour and by average weekday.

Methods: Metro maintains a regional travel demand forecasting model that will be used to forecast public transit patronage and roadway traffic volumes. In general, the same process and same models used for the Westside and Hillsboro studies will be used for the South/North study. The South/North study will use a much more detailed zone system than was previously available and will use regionally adopted 2015 land use assumptions.

Data Requirements:

1. Definition of Alternatives Compendium;
2. Travel Demand Forecasting Methodology Report;
3. Year 2015 and opening year population, employment and land use forecasts for the Metro and Clark County areas;
4. List of committed street and highway improvements;
5. List of bus routes for opening and year 2015 alternatives; and,
6. Transit patronage and traffic counts for calibration.

Products:

1. Traffic forecast for streets and highways in the corridor for each alternative;
2. Transit patronage forecasts for each alternative; and,
3. Model outputs to be used in the various results reports which include for example, VMT, VHT, peak hour buses, rail ridership, etc.

Relationship to Other Activities: The patronage forecasts are dependent upon the alternatives defined in the Definition of Alternatives Compendium. The traffic and patronage forecasts are necessary for many of the results reports that document the impacts in built and natural environments, including noise and vibration, neighborhood impacts, air quality, energy and traffic impacts.

Organization Responsibilities: Metro will be the lead agency on this tasks. Tri-Met, C-TRAN and RTC will assist in network definition.

2.3.6 Assess Transportation Impacts

Task Objective: This task will identify the transportation systems impacts of each alternative and how well each alternative relieves the transportation problems identified in the purpose and need statement. A variety of impacts will be assessed, including travel time savings, street and highway levels of service, and system speeds. The task will generate data for use in project evaluation. This task will document existing conditions of the highway and transit system as a basis of comparison of the alternatives, and compare the impacts and benefits of each alternative on the transportation systems and their users.

Methods: This task will make use of the service and patronage impact methodology and the evaluation methodology developed through the task described in section 2.3.2 Methods Reports, and the highway and transit demand resulting from the patronage forecasting task. The highway system will also be examined with respect to level of service, and to determine if system degradations can be attributed to the transit alternatives. Mitigation measures will be examined to determine if any of the impacts could be offset.

The current transportation system will be documented and assessed in terms of the following factors:

1. Existing street and highway facilities;
2. Existing transit services;
3. Other transportation facilities; and,
4. Planned Improvements.

Transit impacts will be determined in relationship to system performance measures. Highway impacts will be analyzed in terms of congestion, access to stations, and parking. Based on the transportation impact assessment, potential mitigation measures will be identified and documented.

Data Requirements:

1. Vehicle and patronage forecasts;
2. Service and patronage impact methodology;
3. Definition of Alternatives Compendium; and,
4. Existing service levels in the corridor.

Products:

1. *Transit and Travel Demand Forecasting Impacts Results Report*;
2. Identification of traffic impacts in the corridor; and,
3. Performance measures for each of the alternatives.

Relationship to Other Activities: The transportation impact assessment is a principal product of this work plan. It indicates the extent of benefits and impacts of build alternatives compared to the No-Build Alternative. The assessment cannot be finished until the traffic and patronage forecasts are complete. The impact assessment results are documented in the DEIS and utilized extensively in the project evaluation or the selection of the locally preferred strategy.

Organizational Responsibilities: Metro will be the lead agency in conducting the transportation impact assessment. Consultant assistance will be utilized.

2.3.7 Assess Impacts on the Physical and Social Environment

Task Objectives: Based on the alternatives defined in the Definition of Alternatives Compendium, evaluate the potential impacts on the Physical and Social Environment of each of the alternatives. The analysis will be developed to comply with both the National Environmental Policy Act (NEPA) and the state of Washington Environmental Policy Act (SEPA), where it is applicable. Analysis will also be done to evaluate compliance with Oregon and Washington state and local land use planning requirements. Where possible, potential mitigation measures will be identified.

Methods: The assessment element of this task will be conducted in accordance with the *Social, Economic and Environmental Methods Report* as defined in section 2.3.2. Potential mitigation measures will be identified on a topic-by-topic basis. Field work will be required. Impacts of the alternatives on the physical and social environment which will be examined include:

1. Ecosystem impacts;
2. Water quality and hydrology impacts;
3. Energy impacts;
4. Geology and soils impacts;
5. Hazardous materials impacts;
6. Air quality impacts;
7. Noise and vibration impacts;
8. Land use and economic impacts;
9. Displacement and relocation impacts;
10. Community and neighborhood impacts;
11. Visual quality and aesthetic impacts;
12. Historic, cultural and archaeological impacts (section 106); and,
13. Parklands impacts (section 4(f)).

Adopted comprehensive plans and adopted regional forecasts will be used as the basis for the land use and travel demand forecasting analysis in the DEIS. The land use analysis will evaluate possible local jurisdiction comprehensive land use plan amendments that could create more transit supportive land use patterns in the corridor as defined in the Region 2040 plan. The revised transit oriented land use patterns could be more supportive of a possible high capacity transit investment than some of the existing adopted land use plans.

Data Requirements:

1. Definition of Alternatives Compendium;
2. Local traffic and transit impacts data;
3. Noise and vibration data;
4. Ecosystem data;

5. Hydrology and water quality data;
6. Energy data; and,
7. Hazardous materials data.
8. Land use and economic data;
9. Displacement and relocation data;
10. Community and neighborhood data;
11. Visual and aesthetic data;
12. Historic, cultural and archaeological data; and,
13. Public park, recreation area, wildlife and waterfowl refuge data
14. Geology and Soils data; and,
15. Air quality data.

Products:

1. Draft and final *Noise and Vibration Impacts Results Report*;
2. Draft and final *Ecosystem Impacts Results Report*;
3. Draft and final *Hydrology and Water Quality Impacts Results Report*;
4. Draft and final *Energy Impacts Results Report*;
5. Draft and final *Geology and Soils Impacts Results Report*;
6. Draft and final *Hazardous Materials Impacts Results Report*;
7. Draft and final *Air Quality Impacts Results Report*;
8. Draft and final *Land Use and Economic Activity Impacts Results Report*;
9. Draft and final *Displacement and Relocation Impacts Results Report*;
10. Draft and final *Social and Neighborhood Impacts Results Report*;
11. Draft and final *Visual Quality and Aesthetic Impacts Results Report*;
12. Draft and final *Historic, Archaeological and Cultural Impacts Results Report*; and,
13. Draft Section 4(f) Documentation in the *Parklands, Recreation Areas Wildlife and Waterfowl Refuges Impacts Results Report.*

Relationship To Other Activities: This task requires completion of the methods reports task, and the Definition of Alternatives Compendium. This task must be completed before the DEIS can be drafted. The Citizen Involvement effort will be closely coordinated with this task.

Organizational Responsibilities: Metro with assistance from C-TRAN will assume the lead for drafting the DEIS and will be assisted by a consultant. Metro will manage and approve the consultant's scope of work and any amendments thereto. Metro will have primary responsibility for developing the substantive portions of the DEIS applicable to Oregon, while C-TRAN will have primary responsibility for developing the substantive portions of the DEIS applicable to Washington. C-TRAN will be responsible for ensuring compliance with the Washington State Environmental Policy Act (SEPA).

The draft results reports will be circulated to participating local jurisdictions for comments and to FTA for comments and final approval. All local agencies will participate in the review; Metro will revise the documents in response to comments received. Metro will coordinate review with FTA and will be assisted by a consultant incorporating revisions to the draft reports. Metro will be responsible for printing and distributing the reports.

2.3.8 Develop Capital Cost Estimates

Task Objective: This task will develop refined capital costs for the alternatives defined in the Definition of Alternatives Compendium.

Methods: The Capital Costs will be developed for the alternatives being evaluated in the DEIS, as defined in the Scoping Process, Design Option Narrowing Process and Cost-Cutting analysis and further refined in the Definition of Alternatives Compendium. The estimating method will use the cost elements described in the Capital Cost Methods Report applied to the alternatives as defined. Particular attention will be required to identify all project elements, and to define the limits of the project where other work may be prepared in association with it (i.e. ODOT and WSDOT sponsored improvements). The methodology will be reviewed and updated if necessary in the light of new data from the Westside construction contracts and cost cutting efforts.

Data Requirements:

1. Definition of Alternatives Compendium;
2. Capital Cost Methods Report and Unit Cost Data;
3. Completion of engineering definition of alternatives (plan/profile set of drawings for alternatives); and
4. Equilibrated operating plan.

Products:

1. *Capital Cost Results Report*, evaluating alternatives; and
2. Capital cost estimates for ancillary improvements.

Relationship to Other Activities: Capital costing cannot be completed until the alternatives have been adequately defined. Capital costs are required for the evaluation of alternatives and the financial analysis.

Organizational Responsibilities: Tri-Met will be the lead agency on this task, and will utilize consultant assistance.

2.3.9 Develop Operating and Maintenance (O&M) Cost Estimates

Task Objective: Based on the Definition of Alternatives Compendium, the O&M costs for each alternative will be computed. The resulting cost figures will be used in financial analysis and project evaluation.

Methods: Based on the operating plan described in the Definitions of Alternatives Compendium, and results of the travel demand forecasting, operating and maintenances costs will be estimated for each alternative. The *Operating and Maintenance Cost Methods Report* completed for the South/North incorporating experience on the Banfield and Westside/Hillsboro projects and will be used for this analysis.

Data Requirements:

1. Definition of Alternatives Compendium;
2. Equilibrated operating plan for each alternative;
3. Unit costs for operations and maintenance; and
4. Ancillary operating and maintenance costs.

Products:

1. O&M cost estimates for each alternative;
2. O&M cost estimates for ancillary project elements; and,
3. *Operating and Maintenance Costs Results Report.*

Relationship to Other Activities: O&M cost estimates require completion of the Definition of Alternatives Compendium, the *Operations and Maintenance Cost Methods Report*, conceptual engineering and identification of any ancillary costs. The preparation of the results report also relies heavily on the travel demand forecasting model outputs for peak hour buses and daily service hours for buses and LRT. The results of this task are used in the financial analysis, in project evaluation and in the estimation of energy impacts.

Organizational Responsibilities: Tri-Met will be lead agency on this task. Consultant assistance will be utilized.

2.3.10 Financial Analysis

Task Objective: The purpose of this task is to determine the financial implications of the alternatives considered. This task will test the financial viability of the various alternatives, as well as the financial capacity of the region to develop each LRT alternative. It will also provide decision-makers with information on the risks and uncertainties associated with funding the various alternatives. A key purpose of this task is to ensure consistency with and incorporate results from the systemwide financial plan, which will assist local decision-makers in determining how best to raise capital for the investments being considered.

Methods: The methods used to conduct the final Financial Analysis for the South/North study will be consistent with the description of the Financial Analysis for fixed guideway investments fount in Part II Chapter 8 of the *Procedures and Technical Methods for Transit Project Planning* (FTA, revised February 1993) and will be documented in the *Financial Analysis Methods Report.* The first step in the financial analysis will be to review and establish, where necessary, the quantifiable indicators that will be used to assess the financial condition of the transit districts and the region to undertake the proposed investment. General indicators will include liquidity, the capital base and projected capital requirements, long-term recurring obligations, operating ratios, local economic trends and the local burden. Second, a detailed cash flow analysis will be conducted and documented. The cash flow analysis will focus on the Base Year, the Year of Initial Operation, the Year of System Completion and the Financial Planning Horizon Year. The cash flow analysis will integrate the capital costs, O&M costs, revenue estimates and inflation projections for the proposed investment. The financial analysis will include an evaluation of financing alternatives and a risk assessment associated with them. Finally, an assessment of the financial capability of Tri-Met and C-TRAN to fund the future operating and capital financing for the proposed investment will be prepared.

Other tasks related to the financial dimension of the analysis will also be undertaken. These tasks could include the assessment of joint development opportunities, localized funding opportunities, and the assessment of innovative financing techniques for the proposed investment.

Data Requirements:

1. Financial Analysis results from the Tier I study, the Westside and Hillsboro AA's, and the Preliminary AA's;
2. Capital cost estimates for each alternative, including expected expenditure rates and assumed inflation rates;
3. Patronage forecasts for each alternative;
4. Operating plans for each alternative;
5. O&M costs for each alternative;
6. Detailed mapping and definition of alternatives;

7. Financial information from Tri-Met and C-TRAN for capital and O&M expenditures (historic and projected); and,
8. Local financial and economic trend and forecasts data from a variety of sources.

Products:

1. *Financial Analysis Results Report*; and,
2. Financing Plan for inclusion in the DEIS.

Relationship to Other Activities: Cost estimates and defined alternatives will significantly affect the outcome of the financial analysis. The results from this task will be used to prepare the financial analysis section of the DEIS. This task will also provide input in to local jurisdictional activities that are undertaken to secure funding sources for the proposed investment. A preliminary financial plan was adopted by the Steering Committee in February 1997.

Organizational Responsibilities: Metro will manage this task with assistance from Tri-Met and C-TRAN through the Transportation Management Advisory Committee (TMAC) and the Finance Sub-Committee of JPACT. Participating Jurisdictions will contribute to this task through those committees and through review of the products and assumptions of this task.

2.3.11 Evaluate Alternatives

Task Objectives: The purpose of this task is to evaluate the alternatives defined for the study.

Methods: Evaluation criteria will be defined during the period of developing analysis methods. The *Evaluation Methods Report* will document the criteria to be used in selecting the locally preferred strategy. The evaluation will take into account a wide range of transportation, environmental, land use and other factors.

Data Requirements:

1. Definition of Alternatives Compendium;
2. Travel Demand and Transit Patronage Forecasts;
3. Transportation impacts analysis;
4. Social, Environmental and Economic impacts analysis;
5. Capital cost estimates for all alternatives
6. Operations and Maintenance cost estimates for all alternatives;
7. Cost effectiveness calculations; and
8. Land use analysis.

Products:

1. Preliminary draft of DEIS chapter 7, Evaluation of Alternatives; and,
2. Final draft of chapter 7, to be included in the DEIS.

Relationship to Other Activities: The development of the evaluation of alternatives will provide the technical analysis which sorts through the vast analysis conducted in this study. The evaluation of alternatives will provide the technical basis that pulls together the diverse areas of analysis, defines the significant differences between the alternatives and will lead to the selection of a Locally Preferred Strategy.

Organizational Responsibilities: Metro will be responsible for managing the evaluation of Alternatives. A consultant will assist in drafting the analysis and preparing the draft DEIS chapter. The various jurisdictions and agencies involved in the study will review and comment on the draft evaluation. The evaluation will assist significantly in selection of a locally preferred strategy.

2.3.12 DEIS Preparation and Publication

Task Objectives: The purpose of this task is to prepare and publish a Draft Environmental Impact Statement that complies with the National Environmental Policy Act, and the state of Washington Environmental Policy Act (SEPA) for the portions of the corridor that are within the state of Washington.

Methods: The DEIS will be produced primarily through summarizing significant portions of Results Reports produced in the various tasks defined above. The DEIS will contain summary information with references to specific results reports and other studies where appropriate. The DEIS will contain seven chapters, including :

1. Purpose and Need;
2. Alternatives Considered;
3. Affected Environment;
4. Transportation Impacts;
5. Environmental Consequences;
6. Historic, Cultural, Archaeological and Parkland Resources; and,
7. Financial Analysis and Evaluation of Alternatives.

The various chapters will address Federal Transit Administration mandated evaluations, such as cost effectiveness. Each chapter will be circulated to participating local jurisdiction for review and comment as they are drafted. The chapters will then be sent to FTA for review. Based on the comments received, the DEIS chapters will be revised as necessary. A consultant will assist in drafting the DEIS document.

Upon FTA approval of the DEIS chapters, copies of the completed document will be forwarded to FTA for processing and authorization to publish. Copies will be printed and distributed to interested persons, local, state and federal agencies and governments upon notice of availability in the *Federal Register*.

Data Requirements:

1. Project Purpose and Need Statement:
2. Definition of Alternatives Compendium;
3. Social, economic and environmental impact assessments included in the various Results Reports;
4. Transportation impact assessment;
5. Cost estimates for each alternative; and,
6. PE Status Report.

Products:

1. Preliminary drafts of each of the chapters of the DEIS;
2. A final Draft Environmental Impact Statement;
3. A signed DEIS cover sheet; and
4. Copies of the final DEIS for distribution.

Relationship to Other Activities: The preparation of the DEIS is the principal product of the first part of this study, almost all of the other work tasks described earlier in this work plan must be completed in order to complete the DEIS. The publishing of the DEIS, along with the PE Status Report, initiates the beginning of the formal 45 day comment period, and will provide, along with public comments, the basis for selection of a locally preferred strategy for the study corridor. After the selection of the LPS, the DEIS (along with public comments) will form the basis for the drafting of the Final Environmental Impact Statement.

Organizational Responsibilities: Metro will be the lead agency for drafting the DEIS and will be assisted by a consultant. Metro will have primary responsibility for developing all chapters in the DEIS.

C-TRAN will prepare documents required by the Washington State Environmental Policy Act. Metro/C-TRAN will work to ensure consistency between documents prepared in response to state and federal requests.

The preliminary DEIS chapters and the Draft PE Status Report will be circulated to participating jurisdictions for comments and to FTA for comments and final approval. All participating local agencies will contribute to the review and Metro will revise the document in response to comments received. Metro will coordinate review with FTA and will be assisted by a consultant in incorporating revisions to the draft chapters. Metro will be responsible for printing and distributing the DEIS.

2.3.13 Select the Locally Preferred Strategy (LPS) and adopt the Land Use Final Order (LUFO)

Task Objective: The DEIS and supplemental materials will be used by decision makers to evaluate the alternatives and to select a locally preferred strategy. The LPS Report will be prepared to document the selection and present the justification for the selection. The LUFO will be prepared and adopted according to the provisions of HB 3478.

Methods: The DEIS will pass through a series of local, regional, Oregon and Washington State, and federal reviews. At least one public hearing will be held and public testimony will be received. Based on the technical analysis, and comments from the public, a locally preferred strategy will be selected and an LPS report and LUFO will be prepared. The DEIS, draft LPS Report and draft LUFO will be reviewed by the South/North PMG, CAC, Steering Committee, TPAC, JPACT, Tri-Met Board, C-TRAN Board and various participating jurisdictional bodies. Recommendations will be made by all these groups to the Metro Council and C-TRAN Board. Metro and C-TRAN will select a locally preferred strategy, adopt the LPS Report and transmit the report to FTA. The Tri-Met Board will recommend the LUFO (after receiving a recommendation from the Steering Committee) and the Metro Council is responsible for final adoption of the LUFO.

Data Requirements: The DEIS, its supporting reference material, including the PE Status Report, and comments received on the DEIS during the comment period.

Products:

1. Public comments received during the DEIS comment period
2. Draft and Final Locally Preferred Strategy Report;
3. Recommendations from participating agencies and governments;
4. Adopted Locally Preferred Strategy Report;
5. Land use findings in support of the selected alternative and the Land Use Final Order (LUFO).

Relationship to Other Activities: The LPS Report represents the conclusion of the DEIS process. All other DEIS tasks and reviews must be completed prior to adoption of the LPS Report.

Organization Responsibilities: Metro will be the lead agency on this task and will manage the Public Hearing (s), compile comments and prepare the draft LPS Report and draft LUFO. Local jurisdictional staff and participating agency staff will assist in organizing local government reviews and agency reviews. Tri-Met is responsible for recommendation of the LUFO (following the Steering Committee's recommendation) and Metro is responsible for adoption.

2.4 Preliminary Engineering Step One (PE Step One)

The initial phase of preliminary engineering (Step One) is confined to systemwide work elements, and to those alignment segments between Clackamas Town Center and the Rose Quarter Arena in Portland where only one LRT alignment is being studied in the DEIS. Following the LPS decision, Step Two of Preliminary Engineering will address the entire project, as then defined, and complete all Preliminary Engineering products.

Under current FTA regulations, preliminary engineering may begin concurrent with the DEIS. Because the DEIS may affect the details of the alignment, only certain tasks, and segments of alignment not likely to be significantly altered by subsequent decisions or mitigation requirements, will proceed into PE during the DEIS. Nevertheless, the ability to make an early start of these PE tasks provides the project with a major schedule and cost benefit.

The engineering work program provides a description of all of the engineering work anticipated through the DEIS and PE phases of the South/North Project by Tri-Met, Metro, other agencies and consultants. It describes what engineering tasks are planned, when and how they will be accomplished, how they relate to each other, and what products are anticipated.

The engineering work program contains three elements: DEIS support, PE Step One, and PE Step Two. The DEIS support tasks and PE Step One proceed simultaneously, while PE Step Two follows the completion of the DEIS and the adoption of a Locally Preferred Strategy. All components involve work by both Tri-Met Engineering staff and the PE Services Consultant as described in more detail under the following various tasks.

The DEIS support effort will provide engineering services to the DEIS effort, which is being managed by Metro with close support by Tri-Met and other participating agencies. This work will include providing additional engineering definition of the existing conceptual engineering design, providing updated base mapping and survey services, refinement of structures, investigating alignment changes, and cost estimating. Assistance will also be required in developing alternative designs to respond to mitigation needs, and in developing data and reviewing DEIS technical documents and results reports.

PE Step One consists of work that can be accomplished prior to the LPS. It will include setting up and staffing Tri-Met's engineering team, hiring the PE Services consultant, and getting an early start on project wide tasks, such as design standards, mapping, utilities, right-of-way etc. It will also include start of PE design on those segments of the project where there is only alignment alternative.

The PE Status Report will be completed and published concurrently with the DEIS. The PE Status Report will provide findings on Preliminary Engineering issues that are relevant to the DEIS and selection of the LPS.

2.4.1 Civil Design

Task Objective: The overall purpose of this task is to create the base for the design effort and move the project as far along toward the 30% design level as possible. PE Step One will focus on those activities that form the policy and procedural basis for Civil Design, including updating of design standards, mapping, surveying, estimating right-of-way requirements etc. Design will proceed on the segments that contain only one alignment. Initial planning for impact mitigation will begin during this civil design effort in PE Step One, however the development of mitigation plans will follow the completion of the DEIS and the selection of the LPS, in PE Step Two.

Methods: The PE Step One civil design elements include the following:

1. *Review and update design standards.* This task will review existing Tri-Met policies and design standards for LRT, and develop updates for adoption by Tri-Met for South/North. Some elements, such as the development of design guidelines for ancillary improvements, or for safety and security, will largely require new work. It is also planned to examine the current design criteria from a cost effectiveness perspective, to determine whether economies can be made. In addition, it may be necessary to develop new track standards for conditions not found on the present LRT system, such as track suitable for use on the mall, shared with heavy bus traffic, and a less costly design of track suitable for locations where a paved track design is desired for aesthetic rather than functional reasons (covered track).

2. *Survey and Mapping.* During the recently completed conceptual design phase, work was done for new project mapping, including new aerial photography (March 1995) and associated ground control. New base mapping will be completed, as well as updating maps used for all future DEIS and PE alignment work. Some pieces of the new mapping will be needed on a priority basis to replace outdated portions of the base maps used for the Conceptual Alignment Plans, where the existing mapping is inadequate for impact evaluation. Survey services may also be required to support the DEIS (e.g. wetlands delineation) or the PE (e.g. updating base maps, measuring critical grades or dimensions, etc.). During Step One, segments of the alignment in the CBD and elsewhere will need to be field surveyed to determine the limits of construction, which will significantly affect the capital cost and construction impacts of certain segments. Survey and mapping services will be required throughout the PE, with most of the effort during the start-up and closing phases of PE.

3. *Alignment Design.* This task covers the general development of the LRT alignment through the 30% design level. Many specific design issues (stations, traffic, etc.) are covered in tasks that focus on these areas of effort. This task covers the resolution of outstanding alignment issues, the incorporation of value engineering and mitigation

recommendations into the alignment designs, and the development of engineering plans to the 30% design level. The primary results of this design are:

- Revised Conceptual Engineering Plan and Profile drawings for inclusion in the Definition of Alternatives Compendium.

- Plan and Profile drawings, cross sections and other drawings in progress for PE segments. Some may be at or near the 30% design level. Others may need significant work during Step Two. The complete 30% design package will not be finalized until the end of Step Two when mitigation design can be incorporated.

4. *DEIS Conceptual Engineering Support.* In general, DEIS support work may be required on any segment of the project upon request by Metro. Only segments between Clackamas Town Center and the Steel Bridge/Arena are eligible for Step One PE, and then only where a single alignment has been selected for the DEIS. Which segments are to be included in Step Two is subject to the LPS decision.

5. *Park and Ride Facilities.* This task is closely associated with the station design. It will include the development of initial plans for the park and ride facilities, including layouts, accesses, runoff and water quality control. This work will be initiated in Step One and computed during Step Two of the PE.

6. *Traffic.* Traffic expertise will be needed to develop various aspects of the PE design. This work will be coordinated with the DEIS consultant, who is responsible for all traffic work in the DEIS. Tasks will include safety and capacity analysis of intersections and grade crossings, the determination of street lanes required at various locations, station access requirements for vehicles, bicycles, pedestrians, and the analysis of park and ride access needs. During Step Two traffic mitigation measures will need to be designed. Traffic expertise will be required throughout the project, particularly during Step Two. A number of technical work papers will be produced during Step One.

7. *Street Design.* This task will develop designs for street improvements not necessarily directly associated with the LRT alignment. This might include the design of future street improvements that may follow LRT but whose conceptual layout is necessary for the LRT design, the design of improvements for bus facilities, particularly in the Portland CBD, and coordination with ODOT to better determine what provision is needed for future ODOT facilities that are planned, but not yet designed. In some cases this work will develop the basis for IGAs for work to be funded in part or fully by others. This task is expected to be divided evenly between steps One and Two of the PE.

8. *General Structures.* This refers to all structures except the major river crossings across the Willamette and Columbia. The conceptual alignment plans have identified the

general location, profile and size of all of the structures currently required on the line. An initial task will be to develop design standards for typical line structures. These may be similar to those used on the Westside, or may reflect updates to those designs, if applicable. Working with Tri-Met staff, the PE consultant will then develop the basic parameters for each structure, including the resolution of the key dimensions, geometrics, and probable footing design in sufficient detail that reliable cost estimates may be developed, and the information is readily available for the start of final design effort. Some of the more complicated structures on the Step One segments may not be completed until work has begun on Step Two segments. The major river crossings will not be decided until the LPS decision, therefore the majority of the project's structural design will be accomplished in Step Two.

9. *Major River Crossings.* The project will include two and possibly three major LRT river crossings. These are the South Willamette Crossing, the Steel Bridge and the Columbia Bridge. Some initial work has been performed on all of these crossings, to the extent that the general dimensions and possible bridge types have been identified. Additional information will be developed to facilitate the evaluation of impacts and coordination with impacted parties such as the resource agencies and navigation interests etc., and to refine costs. Following the LPS decision, PE will begin on the bridges on the selected segments. The PE for major river crossings will include development of a single bridge design for each site, including cost efficiency analysis, pier placement and span lengths, definition of the structure type, preliminary geotechnical explorations, and cost estimates.

   Additional bridge information is expected to be needed to support the DEIS effort. In addition, the PE for the Steel Bridge rehabilitation can proceed in Step One. There are currently two options for the South Willamette Crossing, which are not expected to be resolved until the LPS. Similarly, a determination of the north terminus of the project will not be made until the LPS, and may or may not include a crossing of the Columbia River. Thus, work on the Willamette and possibly Columbia Crossings will predominantly occur during Step Two. Step One products will include updated conceptual designs and cost estimates for the bridge options.

10. *Geotechnical Studies.* The consultant will assemble and review the existing geotechnical information for the corridor and compile a preliminary soils report with particular emphasis on locations where the soil conditions may be critical to the design of the project. This task will be coordinated with Metro's DEIS consultant to avoid duplicate effort. Preliminary recommendations will be made concerning structure foundations and trackway foundation design sufficient for the purpose of estimating construction costs. Preliminary soil borings will be made at major river crossings and the sites of other major structures. A scope of work for a soils investigation program to support final design will be developed during Step Two, and upon approval by Tri-Met, work may start of elements critical to completing PE, or to a timely start to final design.

Some initial geotechnical work will occur during the DEIS, with the bulk of the work during Step Two.

11. *Mitigation.* This covers the development of mitigation plans, and their incorporation into the project. Elements will include the following:

    - *Construction Mitigation.* Develop a construction mitigation plan responding to the construction impacts identified in the DEIS.

    - *Mitigation Coordination.* Work with the local jurisdictions and DEIS consultant to incorporate the agreed mitigation recommendations into the project design.

    - *Mitigation Report.* Prepare a report documenting the PE design response to the impacts identified in the DEIS process. These mitigation responses will be incorporated into the project design and this report will form part of the FEIS/ROD documentation.

12. *Right-of-Way.* It is anticipated that Tri-Met's right-of-way section will be responsible for the acquisition of the right-of-way needed for the project. During PE, details of the project right-of-way requirements will be developed on a parcel-by-parcel basis so that accurate cost estimates can be developed, and acquisition begin early in final design. This task will include supplying displacement information to the DEIS. Related work may include performing Level 1 and level 2 Hazardous Waste analysis on parcels identified in the DEIS where such analysis may be called for. This task will begin during Step One but be predominately included in Step Two of the PE effort.

13. *Utilities.* Tri-Met intends to assign a full-time senior utility engineer responsible for developing utility plans for the project concurrent with the alignment design work. Using staff and consultant resources, and working with the utility owners, Tri-Met's utility engineer will acquire utility information along the alignments and compile utility composite plans and relocation designs. The primary objectives of this task are to begin work on utility coordination early, to involve the utility owners in the project design, and to develop realistic cost estimates for utility work. Some initial utility information may be required to support the DEIS effort. Utilities will play a significant role in the extent and duration of construction in the CBD, on which PE work will start during Step One. However, the majority of the utility work will likely be completed during Step Two.

14. *Cost Estimating.* Cost estimating services are anticipated to be required throughout the PE project. Cost estimates will be needed intermittently to assist the DEIS process, reflecting design revisions, etc. Updated cost estimates may be needed to revise the DEIS capital cost estimate report, using the current DEIS methodology. Towards the end of Step Two, a new project wide cost estimate will be developed based on a unit price/quantity take-off methodology applied to the 30% level of project design.

Products will include cost reports on various alternatives to be resolved during the DEIS. At the end of Step Two, an entirely new Capital Cost estimate will be produced as a basis for the Full Funding Grant application.

15. *Value Engineering.* The concepts of value engineering (VE) will be applied throughout the duration of PE and used to evaluate elements of the design and design standards, as well as a cost-control tool. Toward the end of Step Two, and possibly at other times, an VE independent consultant will be hired by Tri-Met to perform a VE analysis of the project. The PE consultant will assist Tri-Met through this process and help evaluate the recommendations and make any changes. A VE report is anticipated toward the end of Step Two.

16. *PE Status Report.* As the DEIS nears completion, a status report will be prepared which identifies the status and findings of the PE efforts during PE Step One. For more detail on the PE Status Report, refer to Section 2.4.3.

Data Requirements:

1. Base maps;
2. *Definition of Alternatives Compendium*;
3. Conceptual design plans and profiles;
4. *Capital Cost Methods Report*; and
5. Tri-Met design standards.

Products (final products to be produced during PE Step Two):

1. 30% design plans and profiles;
2. *Project Management Plan*;
3. Administrative Procedures Manual;
4. Technical Procedures Manual;
5. Preliminary Utilities Plan;
6. Preliminary Right-of-way Plan;
7. Transit Mall Operations Plan;
8. Off-Mall Bus Operations Plan:
9. Engineering Standards;
2. PE Status Report; and,
2. Capital cost estimate.

Relationship to Other Activities: This task requires completion of the detailed base maps. As described above, the civil design element of the PE Step One effort will not be completed until PE Step Two. The PE Status Report is closely tied to the publication of the DEIS. The

PE Status Report will report on the PE activities to date, that would be relevant to the selection of the LPS.

Organizational Responsibilities: Tri-Met will be the local lead agency for this task. Other agencies and jurisdictions will provide review and comment on the details of the civil design elements.

2.4.2 Systems Engineering

Task Objective: The objective of systems engineering task is to define and design the system elements of the South/North LRT Project. This task will define all elements of the engineering components necessary to support train operations including traction electrification, signals, communications, operating plan and maintenance facility. The systems engineering task will generally follow the work plans that were completed on the Westside and Hillsboro corridors. As with the Civil Design task, this task will not reach completion during PE Step One but will be completed in PE Step Two.

Methods: Limited systems engineering will be performed in PE Step One. Primary tasks will include development of the operating plan and the design program for the maintenance facility. Step Two will finish the Systems Engineering for the project once the scope of the project is fully understood. Systems Engineering contains the following elements:

1. *Operating Plan.* This will be performed by Tri-Met with assistance from the consultant. An operating plan for bus and rail in the South/North Study area will be developed. It will define such features as vehicle requirements, station facility requirements, maintenance needs and operating staff projections. The operating plan document will include a compilation of all the basic operating data required for the PE and final design effort. It will begin during PE Step One and be finalized in PE Step Two after the LPS has been selected. Step One products will include a draft Operating Plan.

2. *Light Rail Vehicles.* This task will include a brief review of the physical and operating features and parameters of the Tri-Met low floor light rail vehicle (LFLRV) and the development of a working paper describing the applicability of such to the South/North Project. Tri-Met, with consultant assistance will address compatibility issues relating to specific locational constraints or designs. Performance simulation runs on the various South/North alternatives will be made as input to other tasks. A brief survey of recent vehicle procurements will be conducted as a basis for preparation of the PE cost estimate. A schedule for the procurement will be drafted. This task will extend through PE steps One and Two.

3. *Maintenance Facility.* Evaluating the need for an LRV service facility is part of the South/North project. This analysis will consider a combined Banfield/Westside and South/North LRT system with various South/North configurations. The following sub-tasks will be undertaken:

    - Analyze and document existing maintenance practices and facility utilizations.

    - Survey facilities and usages of other light rail facilities and compare with South/North projections.

- Anticipate additional facility requirements which would be necessary with expansion in the future beyond the preferred South/North alignment alternative.

- Verify the ability of Ruby Junction and Elmonica to accommodate certain of the South/North fleet's needs, and determine the most appropriate role and scale of any South/North facility.

- Based on these maintenance/transportation requirements, determine the approximate size and footprint of the building necessary and develop a conceptual layout of the storage yard and related yard space.

- Determine approximate size and location of the site necessary, taking into account the building and yard concepts, availability and cost of land, access to the mainline, operational and physical constraints, etc.

- Work with Metro and the DEIS consultant to investigate alternative sites and phased development options for the yard and shop facilities.

- Develop a preliminary design and cost estimate for the preferred South/North service facility. Basic justification and analysis will take place in PE Step One and preliminary design in PE Step Two.

4. *Traction Electrification System.* Review and verify the Westside Traction Electrification specifications as appropriate for the South/North line and recommend changes that should be made for the South/North line. Determine the approximate number, spacing and location of substations, taking into account estimated operations, electrical loads and losses, availability of land, etc., and assuming similar performance to Westside substations. Perform preliminary load flow study or other technical analysis necessary to confirm system capacity with particular emphasis in the downtown Portland section where traffic density may dictate special requirements. Coordinate the basic types of overhead treatment (trolley wire vs. catenary), and pole placement with the alignment designers and local jurisdictions. Estimate costs. Preliminary work on all of these tasks will be done in PE Step One, but the majority of this task will be performed in PE Step Two.

5. *Signals System.* The signals system defines the needs of the LRT system to provide safe train separation and grade-crossing protection. Additionally it will cover reviewing the Westside Signals Specifications to determine appropriate requirements for the South/North, including value engineering of components and determining the extent of signalized territory and reviewing initial assumptions concerning speed limits, grade-crossing protection, and intersections requiring Train-to-Wayside Communications (TWC). Based on the Westside parameters (or as appropriately modified), it will make a rough determination of the ABS segmentation and the extent and (generic) type of

switches and interlockings, plus investigate microprocessor control of interlockings. It will also develop a concept plan for the Steel Bridge junctions and lift span interlockings, compile a list and preliminary location of estimated signals equipment, and develop a preliminary cost estimate for the Signals system. The majority of this task will be performed in PE Step Two.

6. *Communications System.* Considering the existing Banfield and Westside LRT communication systems, a plan for a combined four-corridor communications system will be developed, taking into account any special requirements related to systems scale, co-linear operation, crossing of lines and river crossings. The analysis will include review of the applicability of the existing Central Control system and the physical space employed on the Banfield and Westside for central control, and determine whether the existing room is sufficient and appropriate for expansion. A preliminary plan for integrating any new control features for the South/North into the existing system will be developed. It will also determine and coordinate needs for communication facilities for public information, security, and remote monitoring of fare collection and other systems. Preliminary plans for the communications system will show the details necessary to describe operations and needed facilities by segment, consider inductive interference, power supply, and aspects of emergency operations, and develop a cost estimate. The majority of this work will be performed in PE Step Two.

7. *Fare Collection System.* The South/North line would continue to use Tri-Met's self-service fare collection system. Tri-Met's experience with the Banfield and Westside fare-collection operation and procurements will be reviewed to develop a procurement plan and cost estimate and the levels of activity predicted in the operating plan. Special attention will be required to evaluate the fare collection needs of the Rose Garden Transit Center. Except as needed to support PE Step One work (e.g. Rose Quarter Station design), work on fare collection will be predominately performed in Step Two.

Data Requirements:

1. Base maps;
2. Definition of Alternatives Compendium;
3. Plan and Profiles for Conceptual design;
4. DEIS transit networks;
5. Results of Travel Demand Forecasting including:
   a. LRT peak load point locations
   b. LRT peak load volumes
   c. Station Activity Profiles
   d. LRT Head ways
   e. LRT Vehicle requirements
6. DEIS estimate of vehicle requirements; and
7. Revised LRT design standards.

Products:

Most final products will be produced in PE Step Two. Some interim products will include:

1. Draft LRT and bus operating plan and schedules;
2. Maintenance facility location and design;
3. Plans for electrification, signals and communication requirements; and
4. Maintenance Facility needs analysis.

Relationship to Other Activities: The systems engineering task will not be completed until the end of PE Step Two.

Organizational Responsibilities: Tri-Met will be the lead agency for this task. The local jurisdictions and state and regional agencies will be involved in the review of the system operating plan and in the determination of a maintenance facility location and design.

2.4.3 Preliminary Engineering Status Report

Task Objective: To ensure that the findings of the PE Step One are made available for the LPS process. Because the PE segments will be taken to a higher level of design, there could be information available to the decision making process that is not necessarily available for the remainder of the alignment. Full disclosure of any new information resulting from the PE Step One work could provide important additional data for the LPS decision making process.

Methods: Starting Preliminary Engineering while the DEIS is still in progress is a new way to structure the light rail development process for Metro, Tri-Met and the Federal Transit Administration. In order to ensure that the public and local decision makers have full access to the most current and detailed information, that has been developed as a consequence of the advancing design in PE segments, significant findings of PE Step One will be published in a *PE Status Report* to be published concurrently with the DEIS. The *PE Status Report* may also identify issues to be studied further in the FEIS. PE Step One activities will continue past the time of publication of the PE Status Report through the selection of the LPS and publishing of the LPS Report. The *PE Status Report* will contain the following sections:

1. Introduction;
2. Status of PE Work;
3. Significant Findings; and
4. Issues for Further Study in the FEIS.

Data Requirements: Results of Cost-Cutting Measures to determine which corridor segments will continue to be evaluated in PE Step One. Findings of PE Step One Alignment Design, Systems Engineering, Station Analysis and other relevant tasks.

Products: Draft and Final PE Status Report. The significant findings of the PE Status Report will be summarized in the DEIS.

Relationship to other Activities: This task will help inform the LPS decision and help determine what appropriate mitigation measures may be for PE Step Two and the DEIS.

Organizational Responsibilities: Tri-Met is the lead for this task with consultant assistance. Tri-Met will coordinate with Metro to determine and document significant changes in environmental impacts due to design changes or findings resulting from PE Step One activities.

2.4.4 Station Analysis

Task Objectives: This task has three main elements:

1. *Station Location Analysis.* Evaluation of the station locations identified in the *Definition of Alternatives Compendium* and identification of possible alternative station locations to determine the optimal number and location of stations in the corridor;

2. *Station Facility Analysis.* Definition and design of the station elements that will be included in, and paid for by the project; and

3. *Station Area Planning.* Reevaluation of the existing comprehensive land use plans for the area approximately 1/2 mile surrounding the station locations that are selected.

Methods:

1. *Station Location Analysis.* The station location analysis be structured to first evaluate which of the stations identified in the DEIS set of alternatives are fixed locations, and which still have potential to move. Stations will be grouped into one of two categories: 1) fixed stations; and 2) stations that merit further locational analysis. This will be done by looking at issues such as level of design, existing land uses, vacant and redevelopable lands, and local jurisdiction issues. The stations in the first category will continue into the Station Design task described below. The stations in the second category will be further evaluated through analysis of existing and planned land uses, vacant and redevelopable lands, walk isochrons, joint development opportunities, market analysis, and other issues specific to individual station locations. The evaluation will result in a series of recommendations to the locally preferred strategy (LPS) and Land Use Final Order adoption processes.

2. *Station Design.* The station design work will evaluate, define and design the specific facilities that will be included in the project at each station location. This work would include a general site layout and description of the facilities, such as shelters, concession facilities, power and signal rooms, fare collection, pedestrian, bicycle and vehicular access, park and ride facilities (where applicable), landscaping, etc.

3. *Station Area Planning.* The station area planning work will be limited in scope prior to the selection of the locally preferred strategy. Early work will include coordination with the implementation of the Region 2040 plan, review of existing local jurisdiction comprehensive land use plans and implementing ordinances, possible adoption of interim land use ordinances to protect key areas, review and comment on significant development proposals in the station areas or corridor, identification of possible joint development opportunities in the corridor. Development of a more detailed work plan

for the FEIS/PE Step Two phase will be started prior to initiation of the FEIS/PE Step Two.

Data Requirements:

1. *Definition of Alternative Compendium* with station locations;
2. Walk isochrons;
3. Existing land uses;
4. Adopted population and employment projections;
5. Existing comprehensive plans and implementing ordinances;
6. Vacant and redevelopable lands;
7. Metro 2040 Plan and Regional Framework Plan; and
8. Westside and Hillsboro Station Area Planning Results.

Products: The station location analysis will produce a series of technical reports including analysis and recommendations for the location and number of LRT stations in the corridor. The station design analysis will provide inputs into the civil engineering task.

Relationship to Other Activities: The station location analysis will be conducted concurrently with the DEIS work and the results will inform the selection of the Locally Preferred Strategy (LPS) and Land Use Final Order (LUFO). The station design will be included in the 30% engineering and design work. The station area planning will be done primarily in the FEIS/PE Step Two phase, except that coordination with existing and ongoing planning processes in the corridor will be ongoing. Interim ordinances, ordinance development and other limited work in some station areas will begin during the DEIS/PE Step One phase.

Organizational Responsibilities: Metro will be responsible for managing the station location analysis. Assistance will be provided by Tri-Met, C-TRAN and the Local Jurisdictions. Tri-Met will be responsible for developing the station design, and will coordinate with Metro, C-TRAN, and the Local Jurisdictions. Station area planning will be managed by Metro, in cooperation with the Local Jurisdictions, with assistance from Tri-Met, C-TRAN and RTC.

2.5 Final Environmental Impact Statement (FEIS) Tasks

The detailed scope of work for the FEIS will be determined after the selection of the Locally Preferred Strategy. The scope may include work on several MOS's as determined by the LPS. The final scope of work will respond to comments received during the DEIS public hearing and reflect a higher level of design, costing and mitigation. A final financing plan for the LPS will be included. The completion of the FEIS will lead to the Record of Decision (ROD) by FTA and form the basis for the Full Funding Grant Agreement (FFGA).

2.5.1 Prepare Travel Demand Forecasts

Task Objective: This task will result in revisions to traffic and transit passenger volumes forecast for the locally preferred strategy for the year 2015 and an opening year for the fixed guideway alternatives. Results will be developed for p.m. peak hour and by average weekday.

Methods: Metro maintains a regional travel demand forecasting model that will be used to forecast public transit patronage and roadway traffic volumes. In general, the same process and same models used for the Westside and Hillsboro studies will be used for the South/North study. This study will use a much more detailed zone system than was previously available and will use adopted 2015 land use, population and employment assumptions.

Data Requirements:

1. *Locally Preferred Strategy Report*;
2. *Travel Demand Forecasting Methodology Report*;
3. Year 2015 and opening year land use projections for the Metro and Clark County areas;
4. List of committed street and highway improvements;
5. List of bus routes for opening and year 2015 alternatives; and,
6. Transit patronage and traffic counts for calibration.

Products

1. Traffic forecast for streets and highways in the corridor for the LPS;
2. Transit patronage for the LPS; and
3. Model outputs to be used in the various results reports (i.e. VMT, VHT, peak hour buses, rail ridership, etc).

Relationship to Other Activities: The traffic and patronage forecasts are necessary for almost all of the results reports that document the impacts in built and natural environments, including noise and vibration, neighborhood impacts, air quality, energy and traffic impacts. The patronage forecasts are dependent upon the alternative defined LPS Report and adopted population and employment levels for the current (1994) and forecast (2015) year.

Organization Responsibilities: Metro will be the lead agency on this tasks. Tri-Met will assist in network development.

2.5.2 Assess Transportation Impacts

Task Objective: This task will identify the transportation system impacts of the adopted LPS alternative. A variety of impacts will be assessed, including travel time savings, street and highway levels of service, and system speeds. The task will generate data for use in FEIS. This task will document existing conditions of the highway and transit system as a basis of comparison of the alternatives, and compare the impacts and benefits of the LPS on the transportation systems and their users.

Methods: This task will make use of the *Travel Demand Forecasting Methods Report* and the Local and Systemwide Traffic Impacts section of the *Social , Economic and Environmental (SEE) Methods Report* developed for the DEIS. The highway system will also be examined with respect to level of service, and to determine if system degradations can be attributed to the transit alternatives. Mitigation measures will be examined to determine if any of the impacts could be reduced.

The current transportation system will be documented and assessed in terms of the following factors:

1. Existing street and highway facilities;
2. Existing transit services;
3. Other transportation facilities; and
4. Planned Improvements.

Transit impacts will be determined in relationship to system performance measures. Highway impacts will be analyzed in terms of congestion, access to stations, and parking. Based on the transportation impact assessment, potential mitigation measures will be identified and evaluated.

Data Requirements:

1. Vehicle and patronage forecasts;
2. Service and patronage impact methodology;
3. Definition of Alternatives Compendium; and
4. Existing service levels in the corridor.

Products:

1. FEIS Transit Impacts and mitigation plan;
2. Identification of traffic impacts in the corridor; and
3. Performance measures for each of the alternatives.

Relationship to Other Activities: The transportation impact assessment and mitigation plan is a principal product of this work plan. It indicates the extent of benefits and impacts of the LPS compared to the No-Build Alternative. It identifies any committed mitigation to address the identified impacts. The assessment cannot begin until the traffic and patronage forecasts are complete. The impact assessment results will be summarized and documented in the FEIS and Transportation Impacts Mitigation Report.

Organizational Responsibilities: Metro will be the lead agency in conducting the transportation impact assessment with assistance from Tri-Met and the participating jurisdictions. Consultant assistance will be utilized.

2.5.3 Assess Impacts on the Physical and Social Environment

Task Objectives: Based on the selected alternative identified in the LPS Report, this task will evaluate the potential impacts on the Physical and Social Environment. The analysis will be developed to comply with the National Environmental Policy Act (NEPA). Analysis will also be done to evaluate compliance with Oregon state and local land use planning requirements. This task will also identify committed mitigation measures which will be included in the FEIS and PE design.

Methods: The assessment element of this task will be conducted in accordance with the *Social, Economic and Environmental (SEE) Methods Report* produced during the DEIS phase, modified as appropriate. Potential mitigation measures will be identified, assessed and committed to on a case-by-case basis. Field work will be required. Impacts of the LPS on the physical and social environment which will be examined include:

1. Ecosystem impacts;
2. Water quality and hydrology impacts;
3. Energy impacts;
4. Geology and soils impacts;
5. Hazardous materials impacts;
6. Air quality impacts;
7. Noise and vibration impacts;
8. Land use and economic impacts;
9. Displacement and relocation impacts;
10. Community and neighborhood impacts;
11. Visual quality and aesthetic impacts;
12. Historic, cultural and archaeological impacts (section 106); and,
13. Parklands impacts (section 4(f)).

Data Requirements:

1. LPS Report;
2. Local traffic and transit impacts data;
3. Noise and vibration data;
4. Ecosystem data;
5. Hydrology and water quality data;
6. Energy data; and,
7. Hazardous materials data.
8. Land use and economic data;
9. Displacement and relocation data;
10. Community and neighborhood data;
11. Visual and aesthetic data;
12. Historic, cultural and archaeological data; and,

13. Public park, recreation area, wildlife and waterfowl refuge data
14. Geology and Soils data; and
15. Air quality data.

Products:

Amendments to the following DEIS Results Reports, as required:

1. Noise and Vibration Impacts Results Report;
2. Ecosystem Impacts Results Report;
3. Hydrology and Water Quality Impacts Results Report;
4. Energy Impacts Results Report;
5. Geology and Soils Results Report;
6. Hazardous Materials Impacts Results Report;
7. Air Quality Impacts Results Report;
8. Land Use and Economic Impacts Results Report;
9. Displacement and Relocation Impacts Results Report;
10. Communities and Neighborhoods Impacts Results Report;
11. Visual Quality and Aesthetic Impacts Results Report;
12. Historic, Cultural and Archaeological (Section 106) Results Report; and
13. Section 4(f) Documentation.

Required mitigation plans, including but not limited to the following:

1. Wetlands, Flood plains, Water Quality and Storm Water Runoff Mitigation Plan;
2. Noise and Vibration Mitigation Plan;
3. Local Traffic Mitigation Plan;
4. Visual Quality and Aesthetics Mitigation Report; and
5. Hazardous Materials Mitigation Report.

Relationship To Other Activities: This task requires close coordination with the preliminary engineering design efforts to ensure that design refinements are accounted for in the environmental impact assessment and that mitigation measures included in the mitigation plans are incorporated into the PE design products and cost estimates. This task must be completed before the FEIS can be completed. The Citizen Involvement effort will be closely coordinated with this task.

Organizational Responsibilities: Metro will be the lead agency for drafting the mitigation plans and will be assisted by a consultant team. Metro will manage and approve the consultant's scope of work and any amendments thereto. Tri-Met will incorporate mitigation design into PE and will assist Metro in the refinement of mitigation plans. Metro will have primary responsibility for developing the substantive portions of the mitigation plans in close coordination with Tri-Met and participating jurisdictions

The preliminary mitigation plans will be circulated to local jurisdictions and appropriate government agencies for comments, and to FTA for comments and final approval. All local Jurisdictions and agencies will contribute to the review; Metro will revise the documents in response to comments received. Metro will coordinate review with FTA and will be assisted by a consultant incorporating revisions into the draft reports and FEIS. Metro will be responsible for printing and distributing the reports and FEIS.

2.5.4 Capital Cost Estimates

Task Objective: This task will develop refined capital costs for the alternative selected as the adopted LPS and documented in the LPS Report. The work on Capital Costing will form the basis for the Final Financing Plan and the Full Funding Grant Agreement.

Methods: New capital costs will be developed for the selected LPS and as further refined in the preparation of PE and the FEIS. The estimating methodology will use the cost elements described in the *PE Capital Cost Methodology Working Paper*. Particular attention will be required to identify all project elements, and to define the limits of the project where other work may be prepared in conjunction. The methodology will be reviewed and updated if necessary in the light of more current data from the Westside construction contracts.

Data Requirements:

1. LPS Report;
2. Update of Capital Cost Methodology and Unit Cost Data;
3. Completion of preliminary engineering definition of LPS
4. Mitigation Plans; and
5. Equilibrated operating plan and facility siting.

Products:

1. Capital cost estimates for the adopted LPS alternative; and
2. Capital cost estimates for ancillary improvements;

Relationship to Other Activities: Capital costing will be completed once the adopted LPS alternative has been designed to the PE level and mitigation measures have been incorporated into the project design. Capital costs are required for completion of the FEIS and the financial plan.

Organizational Responsibilities: Tri-Met will be the lead agency on this task.

2.5.5 Operation and Maintenance (O&M) Cost Estimates

Task Objective: Based on the adopted LPS Report, the O&M costs will be calculated. The resulting cost figures will be used in completion of the financial plan.

Methods: Based on the operating plan associated with the adopted LPS and results of the travel demand forecasting, operating and maintenances costs will be estimated. The *Operating and Maintenance Cost Methods Report* completed for the DEIS, incorporating experience on the Banfield and Westside/Hillsboro projects, will be modified as necessary and used.

Data Requirements:

1. LPS Report;
2. Equilibrated operating plan;
3. Mitigation Plans;
4. Unit costs for operations and maintenance; and
5. Ancillary operating and maintenance cost.

Products:

1. O&M cost estimates;
2. O&M cost estimates for ancillary project elements; and
3. O&M Costs.

Relationship to Other Activities: O&M cost estimates requires completion of preliminary engineering and identification of any ancillary costs. The preparation of the report will also rely heavily on the travel demand forecasting model outputs for peak hour buses and daily service hours for buses and LRT. The results of this task will be used in the financial plan.

Organizational Responsibilities: Tri-Met will be lead agency on this task.

2.5.6 Financing Plan

Task Objective: The purpose of this task is to prepare and adopt a financing plan for the LPS. This task will test the financial viability of the various alternative financing strategies, as well as the financial capacity of the region to develop the fixed guideway. It will also provide decision makers with assessments of the risks and uncertainties associated with the various funding alternatives.

Methods: The methodology used to prepare the final Financial Plan for the South/North project will be consistent with the description of the Financial Analysis for fixed guideway investments found in Part II Chapter 8 of the *Procedures and Technical Methods for Transit Project Planning* (FTA, revised February 1993)and the Financial Analysis Methods Report. Building on the work done for the DEIS, the financial analysis will review and establish, where necessary, the quantifiable indicators that will be used to assess the financial condition of the transit districts and the region to undertake the proposed investment. General indicators will include liquidity, the capital base and projected capital requirements, long-term recurring obligations, operating ratios, local economic trends and the local burden. Second, a detailed cash flow analysis will be conducted and documented. The cash flow analysis will focus on the Base Year, the Year of Initial Operation, the Year of System Completion and the Financial Planning Horizon Year. The cash flow analysis will integrate the capital costs, O&M costs, revenue estimates and inflation projections for the proposed investment. The financial analysis will include an evaluation of alternative financing alternatives and a risk assessment associated with them. Finally, an assessment of the financial capability of Tri-Met to fund the future operating and capital financing for the proposed investment will be prepared and will adopt a financing plan for the LPS. The results of the adopted financing plan will be incorporated into the FEIS and will form the basis of drafting a FFGA between Tri-Met and the FTA.

Other tasks related to the financial dimension of the financial planning will also be undertaken. These tasks could include the assessment of joint development opportunities, localized funding opportunities, and the assessment of innovative financing techniques for the proposed investment.

Data Requirements:

1. Financial Analysis results from the DEIS;
2. Financial Analysis Methods Report;
3. LPS Report;
4. Capital cost estimates;
5. Expected expenditure rates and assumed inflation rates;
6. Patronage forecasts;
7. Operating plans;
8. O&M costs;

9. Financial information from Tri-Met and C-TRAN for capital and O&M expenditures (historic and projected); and
10. Local financial and economic trend and forecasts data.

Product: Financing Plan for inclusion in the FEIS.

Relationship to Other Activities: The results from this task will be used to prepare the financial analysis section of the FEIS. This task will also provide input to local jurisdictional activities that are undertaken to secure local funding sources for the proposed investment.

Organizational Responsibilities: Tri-Met will manage this task with consultant assistance and assistance from Metro and the Transportation Management Advisory Committee (TMAC) and the Finance Sub-Committee of JPACT. Participating Jurisdictions will contribute to this task through those committees and through review of the products and assumptions of this task.

2.5.7 FEIS Preparation and Publication

Task Objectives: The purpose of this task is to prepare and publish a Final Environmental Impact Statement that complies with the National Environmental Policy Act and reflects the selected locally preferred strategy (LPS).

Methods: The FEIS will be produced primarily through revisions to the published DEIS reflecting the adopted LPS, further environmental analysis, refinement of the project design through the preparation of PE and incorporation of mitigation into the scope of the project.

The FEIS will contain eight chapters, including :

1. Purpose and Need;
2. Alternatives Considered;
3. Affected Environment;
4. Transportation Impacts;
5. Environmental Consequences;
6. Historic, Cultural, Archaeological and Parkland Resources;
7. Financial Analysis and Evaluation of Alternatives; and
8. Comments and Responses.

The DEIS will form the basis for the FEIS, with substantive changes from the DEIS to the FEIS illustrated through italicized type in the FEIS. The various chapters will address Federal Transit Administration mandated evaluations, such as cost effectiveness. Each chapter will be circulated for local review and comment as they are drafted. The chapters will then be sent to FTA for review. Based on the comments received, the FEIS chapters will be revised as necessary. A consultant will assist in drafting the FEIS document.

Upon FTA approval of the FEIS chapters, copies of the completed document will be forwarded to FTA for processing and authorization to publish. Copies will be printed and distributed to interested persons, local, state and federal agencies and governments. Notification will be issued by FTA in the *Federal Register* when the FEIS is published. Metro will work with FTA to determine a Distribution list and process for responding to requests for copies of the FEIS.

Data Requirements:

1. DEIS and LPS Report:
2. PE products;
3. Social, economic and environmental impact assessments included in the various Results Reports and mitigation plans;
4. Transportation impact assessment;
5. Cost estimates for each alternative;

6. Finance Plan for the LPS: and
7. Documentation of comments made during the 45-day DEIS public comment period.

Products:

1. Preliminary drafts of each of the FEIS chapters;
2. A Final Environmental Impact Statement, including the Executive Summary;
3. A signed FEIS cover sheet;
4. Copies of the FEIS for distribution; and
5. Notification of availability of the FEIS in the *Federal Register*.

Relationship to Other Activities: The preparation of the FEIS is one of the principal products of FEIS/PE Step Two. Almost all of the other work tasks described in this work plan must be completed in order to develop the FEIS. Publishing the FEIS will allow FTA to issue a Record of Decision and to begin negotiations with Tri-Met for a FFGA.

Organizational Responsibilities: Metro will be the lead agency for drafting the FEIS with close coordination by Tri-Met and consultant assistance. Metro will have primary responsibility for developing all chapters in the FEIS.

The preliminary FEIS chapters will be circulated to local jurisdictions for comments and to FTA for comments and final approval. All local agencies will contribute to the review and Metro will revise the document in response to comments received. Metro will coordinate review with FTA and will incorporate revisions to the draft chapters. Metro will be responsible for printing and distributing the FEIS. FTA (Region X Administrator), Tri-Met (General Manager) and Metro (Executive Officer) will be required to approve the FEIS prior to its publication.

2.6 Preliminary Engineering Step Two (PE Step Two)

Preliminary Engineering Step Two will bring to a conclusion all tasks begun in PE Step One. Because the Locally Preferred Strategy will select a single light rail alignment to be carried forward, the LPS will be designed to the 30% level. It is anticipated that the bulk of civil design and systems work will be performed during this phase of PE which is concurrent with the development of the FEIS. In PE Step Two, greater emphasis will be placed on design for mitigation, value engineering, capital costs and systems engineering. PE Step Two will conclude with the PE 30% design submittal and the final PE cost estimate, upon which Tri-Met and the FTA will negotiate a Full-Funding Grant Agreement (FFGA). FTA will also issue a Record of Decision (ROD) concluding the environmental impact statement process. A summary of the PE Step Two Tasks are provided below.

2.6.1 Civil Design

Task Objective: The purpose of this task is to complete the project design to the 30% level, and to prepare a new and independent cost estimate as a basis for the Record of Decision (ROD) and Full Funding Grant Agreement (FFGA). The focus will be on alignment design and design of all related transit facilities including the maintenance facility and stations. Right-of-way requirements will be identified and incorporated into the design of the project and the capital cost estimate. Design will proceed on all segments that are part of the LPS.

Throughout the PE Step Two civil design process the alignment will be refined to reduce impacts identified in the DEIS and public comment processes, particularly noise and vibration, wetlands and potential hazardous waste areas. Initial planning for mitigation, which was begun in PE Step One, will be coordinated with the development of the FEIS and Mitigation Plans, and completed during this civil design effort in PE Step Two.

Methods: The PE Step Two civil design elements include the following:

1. *Review and update of design standards.* This task will have been substantially completed in PE Step One. It may be necessary to develop new track standards for conditions not found on the present LRT system, such as track suitable for use on the mall, shared with heavy bus traffic, and a less costly design of track suitable for locations where a paved track design (covered track) is desired for aesthetic rather than functional reasons.

2. *Survey and Mapping.* Survey and mapping services will be required throughout the PE effort, with most of the effort during the start-up and closing phases of PE. During the conceptual design phase, work was done for new project mapping, including new aerial photography (March 1995) and associated ground control. Substantial amounts of new base mapping would be completed in PE Step One, as well as updating maps used for all future FEIS and PE alignment work. During PE Steps One and Two, segments of the alignment will need to be field surveyed to determine the limits of construction,

which will significantly affect the capital cost and construction impacts of certain segments.

3. *Alignment Design.* This task covers the general development of the LRT alignment through the 30% design level. Many specific design issues (stations, traffic, etc.) are covered that focus on these areas of work. This task will cover resolution of outstanding alignment issues, the incorporation of value engineering and mitigation recommendations into the alignment design, and the development of engineering plans to the 30% design level. Plan and Profile drawings, cross sections and other drawings for the alignment outlined in the Locally Preferred Strategy to the 30% design level.

4. *Park and Ride Facilities.* This task is closely associated with the station design. It will include the development of initial plans for all selected park and ride facilities, including layouts, access, water quality and runoff control. This work will completed during PE Step Two.

5. *Traffic.* Detailed Traffic analysis will be needed to develop various aspects of the PE design. This work will be coordinated with the Metro and the FEIS consultant. Tasks will include safety and capacity analysis of intersections and grade crossings, the determination of street lanes required at various locations, station access requirements for vehicles, bicycles, pedestrians, and the analysis of park and ride access needs. During PE Step Two traffic mitigation measures will need to be identified and designed.

6. *Street Design.* Designs for street improvements not necessarily directly part of the LRT alignment may be required. This might include the design of future street improvements that may follow LRT but whose conceptual layout is necessary for the LRT design, the design of improvements for bus facilities, particularly in the Portland CBD, and coordination with ODOT to better determine what provisions are needed for future ODOT facilities that are planned, but not yet designed. In some cases this work will form the basis for IGAs for work to be funded in part or in whole by others. This task will be completed during PE Step Two.

7. *General Structures.* This refers to all structures except the major crossings of the Willamette and Columbia Rivers. The conceptual engineering plans for the DEIS have identified the general location, profile and size of all of the structures associated with the various alternatives. An initial task will be to develop design standards for typical line structures. These may be similar to those used on the Westside, or may reflect updates to those designs, if applicable. Tri-Met staff with assistance from the PE consultant will develop the basic parameters for each structure, including the resolution of the key dimensions, geometrics, and probable footing design in sufficient detail that reliable cost estimates may be developed, and the information is readily available for the start of final design effort. Some of the more complicated structures begun in PE Step One would

be completed in PE Step Two, along with all other structures that are part of the LPS alignment. The majority of structures work will occur in PE Step Two.

8. *Major River Crossings.* The project could include two and possibly three major LRT river crossings. These include the South Willamette River Crossing, the Steel Bridge River Crossing and the Columbia River Crossing. Following the LPS decision, PE will begin on the river crossings in the selected segments. The PE for major river crossings will include development of a single bridge design for each site, including cost efficiency analysis, pier placement and span lengths, definition of the structure type, preliminary geotechnical explorations, and cost estimates.

9. *Geotechnical Studies.* Tri-Met with consultant assistance will assemble and review the existing geotechnical information for the corridor, and compile a preliminary soils report with particular emphasis on locations where the soil conditions may be critical to the design of the project. This task will be coordinated with Metro's DEIS and FEIS analysis to avoid duplicating efforts. Preliminary recommendations will be made concerning structure foundations and trackway foundation design sufficient for the purpose of estimating construction costs. Preliminary soil borings will be made where appropriate such as major river crossings and the sites of other major structures. A scope of work for a soils investigation program to support final design will be developed during PE Step Two. Tri-Met may will define work elements critical to completing PE, or to a timely initiation of final design. The bulk of the geotechnical work will occur during PE Step Two.

10. *Mitigation.* This covers the development of mitigation plans, and their incorporation into the project design. Work elements will include the following:

    - *Construction Mitigation.* Develop a construction mitigation plan responding to the construction impacts identified in the DEIS for the alternative selected as the Locally Preferred Strategy.

    - *Mitigation Coordination.* Work with the local jurisdictions and Metro to incorporate the mitigation measures into the FEIS and project design.

    - *Mitigation Report.* Prepare a report documenting the PE design response to the impacts identified in the DEIS and LPS. These mitigation responses will be incorporated into the project design and this report will be included in the FEIS/ROD documentation.

11. *Right-of-Way.* It is anticipated that Tri-Met's right-of-way staff will be responsible for the acquisition of the right-of-way needed for the project. During PE details of the project right-of-way requirements will be developed on a parcel-by-parcel basis so that accurate cost estimates can be developed, and acquisition can begin early in final design.

This task will include supplying displacement information to the FEIS. Related work may include performing Level 1 and level 2 Hazardous Waste analysis on parcels identified where such analysis may be necessary. This task will be done predominately included in PE Step Two.

12. *Utilities*. Tri-Met has assigned a full-time senior utility engineer responsibility for developing utility plans for the project concurrent with the alignment design work. Using staff and consultant resources, and working with the utility owners, Tri-Met's utility engineer will compile utility information along the selected alignment and compile utility composite plans and relocation designs. The primary objective of this task is to begin work on utility coordination early, to involve the utility owners in the project design, and to develop realistic cost estimates for utility work. Utilities will play a significant role in the extent and duration of construction in critical areas such as the Portland CBD, on which PE work will start during PE Step One. The majority of the utility work will likely be completed during PE Step Two.

Data Requirements:

1. Base maps;
2. DEIS;
3. Locally Preferred Strategy Report;
4. Mitigation plans defining mitigation commitments;
5. 30% design plans and profiles;
6. *Capital Cost Methods Report*; and
7. Tri-Met design standards.

Products:

1. Project Management Plan for Final Design and Construction;
2. Administrative Procedure Manual updates;
3. Technical Procedure Manual updates;
4. Utility Plan;
5. Right-of-way plan;
6. 30% design submittal;
7. Mitigation plans and design;
8. Value engineering report; and
9. Final capital cost estimate.

Relationship to Other Activities The civil design element of the PE Step Two effort will complete the preliminary engineering for the project as defined through the locally preferred strategy decision and modified by mitigation identified in the FEIS.

Organizational Responsibilities: Tri-Met is the lead agency for this task. Other agencies and jurisdictions will provide review and comment on the details of the civil design elements.

2.6.2 Systems Engineering

Task Objective: The objective of the systems engineering tasks is to define and design the system needs of the South/North LRT project. The systems engineering task will define all elements of the engineering components necessary to support train operations including traction electrification, signals, communications, operation plan and maintenance facility. The work will generally follow the work scopes of the Westside and Hillsboro corridors. As with the Civil Engineering task, this task will begin in PE Step One and will be completed in PE Step Two.

Methods: PE Step Two will complete the 30% Systems Engineering for the Project based on the LPS. The PE Step Two systems engineering elements include the following:

1. *Operating Plan.* This will be performed by Tri-Met with assistance from the PE consultant. It will develop an operating plan for bus and rail in the South/North Corridor, and define such features as vehicle requirements, station facility requirements, maintenance needs and operating staff projections. The operating plan document will compile all the basic operating data required for the PE and final design efforts. It will be finalized in PE Step Two after the LPS has been selected.

2. *Light Rail Vehicles.* This task includes a brief review of the physical and operating features and parameters of the Tri-Met low floor light rail vehicles (LFLRV) and the development of a working paper describing the applicability of these vehicles to the South/North Project. Tri-Met will address any compatibility issues relating to specific locational constraints or designs. Performance simulation runs will be made on the South/North LPS alignment as input to other tasks. A brief survey of recent vehicle procurements will be conducted as a basis for preparation of the PE cost estimate. A schedule for vehicle procurement will be developed. This task will conclude in PE Step Two.

3. *Maintenance Facility.* Considering a combined Banfield/Westside and South/North LRT system with various South/North configurations, evaluating the need for an LRV service facility is part of the South/North project. Building on the work done in PE Step One, the following sub-tasks will be undertaken or completed:

    - Analyze and document existing maintenance practices and facility utilizations;
    - Survey facilities and usages at other light rail properties and compare with South/North projections;
    - Anticipate additional facility requirements which would be necessary with expansion in the future beyond the selected LPS;

- Verify the ability of Ruby Junction and Elmonica to accommodate certain of the South/North fleet's needs, and determine the most appropriate role and scale of any South/North facility;

- Based on these maintenance/transportation requirements, determine the approximate size and footprint of the building necessary and develop a conceptual layout of the storage yard and related yard space;

- Determine approximate size and location of the site necessary, taking into account the building and yard concepts, availability and cost of land, access to the mainline, operational and physical constraints, etc.;

- Work with Metro and the Local Jurisdictions to investigate alternative sites and phased development options for the yard and shop facilities.

- Develop a preliminary design and cost estimate for the preferred South/North service facility. Basic justification and analysis will take place in PE Step One and preliminary design in PE Step Two.

4. *Traction Electrification System.* Review and verify the Westside Traction Electrification specifications as appropriate for the South/North line and recommend changes that should be made for the South/North line. Determine the approximate number, spacing and location of substations, taking into account estimated operations, electrical loads and losses, availability of land, etc., and assuming similar performance to Westside substations. Perform preliminary load flow study or other technical analysis necessary to confirm system capacity with particular emphasis in the downtown Portland section where traffic density may dictate special requirements. Coordinate the basic types of overhead treatment (trolley wire vs. catenary), and pole placement with the alignment designers and local jurisdictions. Estimate costs. The majority of this task will be performed in PE Step Two.

5. *Signals System.* The signal system defines the needs of the signals to provide safe train separation and grade crossing protection. Additionally it will cover reviewing the Westside Signals specification to determine appropriate requirements for the South/North, including value engineering of components and determining the extent of signalized territory and reviewing initial assumptions concerning speed limits, grade-crossing protection, and intersections requiring Train-to-Wayside Communications (TWC). Based on the Westside parameters (or as appropriately modified), it will make a rough determination of the ABS segmentation and the extent and (generic) type of switches and interlockings, plus investigate microprocessor control of interlockings. It will also develop a concept plan for the Steel Bridge junctions and lift span interlockings, compile a list and preliminary location of estimated signals equipment, and

develop a preliminary cost estimate for the Signals system. The majority of this task will be performed in PE Step Two.

6. *Communications System.* Considering the existing Banfield and Westside LRT communications system, a plan for a combined four-corridor communications system will be developed, taking into account any special requirements related to systems scale, co-linear operation, crossing of lines and river crossings. The plan will review the applicability of the existing Central Control system and the physical space employed on the Banfield and Westside for central control, and determine whether the existing room is sufficient and appropriate for expansion. A preliminary plan for integrating any new control features for the South/North into the existing system will be developed that will also determine and coordinate needs for communication facilities for public information, security, and remote monitoring of fare collection and other systems. Preliminary plans for the communications system will show the details necessary to describe operations and needed facilities by segment, consider inductive interference, power supply, and aspects of emergency operations, and develop a cost estimate. The majority of this work will be performed in PE Step Two.

7. *Fare Collection System.* South/North will continue to use Tri-Met's self-service fare collection system. Tri-Met's experience with the Banfield and Westside fare-collection operation and procurements will be reviewed to develop a procurement plan and cost estimate and the levels of activity predicted in the operating plan. Special attention will be required to evaluate the fare collection needs of the Rose Garden Transit Center. Except as needed to support Step One work (e.g. Rose Quarter Station design), work on fare collection will be predominately performed in PE Step Two.

Data Requirements:

1. Base Maps;
2. Locally Preferred Strategy Report;
3. Plan and Profiles for Conceptual Engineering;
4. FEIS transit networks;
5. Results of Travel Demand Forecasting including:
   a. LRT peak load point locations
   b. LRT peak load volumes
   c. Station Activity Profiles
   d. LRT Head ways
   e. LRT Vehicle requirements; and
6. Revised LRT design standards.

Products:

1. LRT and bus operating plan and schedules;
2. Maintenance Facility location and design;
3. Plans for electrification, signals and communication requirements; and,
4. Maintenance facility needs analysis

Relationship to Other Activities: The system design element of the PE Step One effort will be completed during PE Step Two.

Organizational Responsibilities: Tri-Met is the lead agency for this task. The local jurisdictions and state and regional agencies will be very involved in the review of the system operating plan and in the determination of a maintenance facility site and design.

2.6.3 Station Analysis

Task Objectives: This task has three main elements:

1. *Station Location Analysis.* Evaluation of the station locations proposed in the DEIS and Locally Preferred Strategy Report and identification of possible alternative station locations to determine the optimal number and location of stations along the alignment.

2. *Station Design.* Definition of the station by station elements that will be included in and paid for by the project, and

3. *Station Area Planning.* Reevaluation of the existing comprehensive land use plans for the area approximately 1/2 mile surrounding each station.

Methods: The Station Location Analysis will be primarily completed in conjunction with the DEIS/PE Step One. Som station locations may need further locational analysis during the FEIS/PE Step Two phase. The stations requiring further locational analysis will be further evaluated through looking at existing and planned land uses, vacant and redevelopable lands, walk isochrons, joint development opportunities, market analysis, and other issues specific to individual station locations.

The Station Design work will build on the work done in PE Step One. It will evaluate and define the specific facilities that will be included in the project at each station location. Facilities that will be defined include at a minimum station platform locations and configurations, associated park and ride facilities, associated transit center and bus transfer facilities, pedestrian and bike facilities at the stations, and bus/vehicular/bike/ pedestrian connections to surrounding areas. Station Facilities will be defined for some stations before the refinement of a design concept, and others will be after the refinement of design concept decision process.

The Station Area Planning will become a larger focus following the selection of the LPS and LUFO. The majority of the Station Locations would be defined and the opportunity for planning for the areas surrounding the stations will be possible. Early work will include review of existing local jurisdiction comprehensive land use plans and implementing ordinances, possible adoption of interim land use ordinances to protect key areas, review and comment on significant development proposals in the corridor, identification of possible joint development opportunities in the corridor Development of a detailed work plan for Station Area Planning during FEIS/PE Step Two and Final Design and Construction will be completed and the work defined in the plan will get significantly underway. Coordination with implementation of the Region 2040 plan, the Regional Framework Plan, and local jurisdiction efforts related to LCDC's Periodic Review will be incorporated.

Data Requirements:

1. DEIS and Locally Preferred Strategy Report with Station Locations;
2. Walk Isochrons;
3. Existing and Planned Land Uses;
4. Vacant and Developable Lands;
5. Existing Comprehensive Plans and Implementing Ordinances;
6. Regional Framework Plan;
7. Westside and Hillsboro Station Area Planning Results; and
8. Station Analysis Studies completed during DEIS/PE Step One.

Products: The Station Location Analysis will complete definition of the location and number of LRT stations in the corridor. The Station Design will provide inputs into the engineering products, including detailed (30%) designs and cost estimates. The Station Area Planning will make substantial progress toward reevaluating and revising existing Local Jurisdiction Comprehensive Plans, to support the LPS decision and ensure that the future land uses surrounding the selected station locations are transit oriented and supportive of the significant infrastructure investment planned for the corridor.

Relationship to Other Activities: Station location determinations must be completed before the 30% design for PE can be finished. Station Design is also critical to the completion of the 30% design for PE. Station Area Planning cannot be effectively completed prior to station locations are defined, and will continue through the final design and construction phases.

Organizational Responsibilities: Metro will be responsible for developing the work plan and managing the Station Location Analysis. Assistance will be provided by Tri-Met, C-TRAN and the Local Jurisdictions. Tri-Met will be responsible for developing the Station Designs, and will coordinate with Metro, C-TRAN, and the Local Jurisdictions. Station Area Planning will be managed by Metro in cooperation with the local jurisdictions, with assistance from Tri-Met, C-TRAN and RTC.

2.7 South/North Phase II Extension To Oregon City

Task Objective: The purpose of the South/North II Extension to Oregon City is to determine the best LRT route between the proposed South/North LRT extension to Milwaukie and the Clackamas Town Center area as determined by Metro Council and defined in the Phase I Locally Preferred Strategy Report. Two general alternative alignments are under consideration: 1) McLoughlin Boulevard between the Milwaukie Central Business District (CBD) and Oregon City, with possible routing through the Gladstone CBD; and 2) I-205 between the Clackamas Town Center area and Oregon City, with possible routing through the Gladstone CBD. A third identified route using the abandoned Portland Traction Company alignment south of the Milwaukie CBD and west of McLoughlin Boulevard has been removed from further consideration by the Metro Council in December 1994.

The proposed Phase II extension of the South/North Transit Corridor to Oregon City and the evaluation of the McLoughlin Boulevard and I-205 alignment alternatives as the first step in the study of that extension was mandated by action of Metro Council in December 1994 with approval of the *South/North Transit Corridor Study Tier I Final Report.* It states that, "Work on selecting a Phase II alignment (to Oregon City) will begin upon completion of the Phase I *(Definition of Alternatives Compendium)*".

Methods: This task will conclude the development and documentation of data, to complete the public involvement work plan and to conclude the study with the selection of one Phase II alignment to be included within the RTP and Regional Framework Plan and to be studied further within the Phase II environmental analysis.

This task will be initiated during DEIS/PE Step One and will be concluded during FEIS/PE Step Two.

Data Requirements: This task will utilize travel demand forecasts and cost estimates that were prepared during Step One of the South/North Study. This task will also require the development of additional data to be determined following the completion of a detailed workplan.

Products: To be defined in the detailed workplan.

Relationship to Other Activities: This Phase II assessment builds on work completed during Tier I of the South/North Transit Corridor Study. Tier I evaluated various terminus alternatives in Clackamas County, and concluded that, while it was desirable to serve Oregon City in the long term, resources limited the South/North DEIS to a terminus at Clackamas Town Center.

Organizational Responsibilities: Metro is the lead agency for this task. Metro will work closely with Clackamas County and the cities of Milwaukie, Gladstone and Oregon City in developing and executing a work plan.

South North
Transit Corridor Study

Appendix I
Letter of Authorization from the Federal Transit Administration Approving Metro's Request to Advance the South/North Corridor into Preliminary Engineering.

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of Transportation
**Federal Transit
Administration**

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600 N.E. Grand Avenue
Portland, Oregon 97232-2736

Re: South/North Corridor
Project - Initiation of
Preliminary Engineering

Dear Mr. Burton:

The Federal Transit Administration (FTA) has reviewed your request to initiate preliminary engineering (PE) on the South/North Corridor Project. We have reviewed the reports that you submitted documenting the Major Investment Study carried out for the project dated November 28, 1995 and the preliminary engineering scope of work also dated November 28, 1995. Based on our review of all the materials submitted, FTA concurs in the initiation of PE and initiation of the Draft Environmental Impact Statement (DEIS) for the South/North Corridor Project.

We note that the financial strategy for the Washington portion of the project is currently under review and stress the importance of completion of this work and commitment to a complete financial plan for the project. We want to congratulate the Portland region on the strength of it financial commitment to the project to date and the commitment to a 50% local share for the project. We note, however, that the current financial plan does not include financing for the FEIS and Step 2 of PE and ask that you advise as to this component of your financing plan.

We also note that both the Portland area and the Vancouver area have done excellent work in integrating transportation planning and land use planning and look forward to working with you as you continue this integration as you move forward into PE and the DEIS.

We may provide additional comments on the scope of work. FTA looks forward to working constructively and cooperatively with Metro and Tri-Met on this project which will improve transit service in the Portland/Vancouver metropolitan area.

Sincerely,

Patricia Levine

Patricia Levine
Acting Regional Administrator

cc: Tom Walsh, Tri-Met
Les White, C-TRAN
Don Pennell, PMO
Dave Benjamin, PMO

South North
Transit Corridor Study

Appendix II
FY 97 Unified Work Program South/North Elements.

SOUTH/NORTH TRANSIT CORRIDOR STUDY

PROGRAM DESCRIPTION

The purpose of the South/North Transit Corridor Study is to refine the design scope and concept of South/North Light Rail Transit based upon the environmental analysis and evaluation of a handful of promising alignment alternatives, design options and terminus alternatives. The refined LRT alignment (locally preferred strategy) will advance into the Final Environmental Impact Statement (FEIS) and completion of Preliminary Engineering, Final Design and Construction. The Study has been structured into two tiers: The purpose of Tier I was to select a preferred HCT mode, identify the study termini and narrow the range of alignment alternatives and design options. The LRT termini and narrowed alignments will advance into Tier II and the DEIS. The completion of Tier I satisfies the federal major investment study requirements. The purpose of Tier II, the current work program, is to prepare the environmental analysis that will be used in preparing the DEIS, in refining the design scope and concept of the LRT alternative and in making the State of Oregon land use decisions. The Tier II design scope and concept refinement will be made by Metro Council and the C-TRAN Board of Directors, with recommendations from the project Steering Group, Citizens Advisory Committee and participating jurisdictions. Metro Council will make the State of Oregon land use decision, and the C-TRAN Board of Directors will make any decision relating to the State of Washington Environmental Protection Act (SEPA).

The South/North Transit Corridor Study was initiated following the conclusion of the I-205/ Milwaukie and the I-5/I-205 Portland/Vancouver Preliminary Alternatives Analyses in May 1993. Within the Metro Joint Resolution No. 93-1784, the Milwaukie Corridor and the I-5 North Corridor were selected to be combined into the single South/North Corridor as the region's priority for HCT following the Westside extension of light rail to downtown Hillsboro.

The South/North Transit Corridor Study completed the Federal MIS requirements in December 1993 with the adoption of the *Tier I Final Report* which selected the corridor's locally preferred design concept and scope and the subsequent amendment of the RTP in May 1995 to include the design concept and scope.

The current goal of the South/North Corridor is to initiate the Tier II DEIS and Step One of PE in January 1996. Several of the objectives of the program are to implement an on-going public involvement program through the duration of the project, to prepare a detailed transportation impacts analysis on the alternatives, to prepare a detailed environmental analysis on the alternatives, to prepare a definition of the alternatives (including conceptual engineering), to prepare and publish a DEIS, to initiate PE, and to implement a corridor-wide decision-making process.

The purpose of the South/North Phase II Extension to Oregon City is to determine the best light rail transit route between the proposed South/North LRT extension to Milwaukie and the Clackamas Town Center area as determined by Metro Council in December 1994. Two general alternative alignments are under consideration: 1) McLoughlin Boulevard between the Milwaukie Central Business District (CBD) and Oregon City, with possible routing through the Gladstone CBD; and 2) I-205 between the Clackamas Town Center area and Oregon City, with possible routing through the Gladstone CBD. A third identified route using the abandoned Portland Traction Company alignment south of the Milwaukie CBD and west of McLoughlin Boulevard removed from further consideration by the Metro Council in December 1994. The goal of the study is to establish a preferred Phase II alignment for inclusion within the RTP and Regional Framework Plan.

Current Year's Program - FY 1996-97

The focus of the South/North Transit Corridor Project in FY 1996-97 will be the conclusion of the Tier II process and the environmental and transportation analysis of the LRT alternative. The analysis will be documented within results reports and summarized within a DEIS. Preliminary Engineering on a set of alignment segments will continue. The candidate segments for PE Step One are those segments with one remaining alignment option under study in the DEIS that are South of the Oregon Arena: Downtown Portland; McLoughlin Boulevard (generally between Holgate Boulevard and Tacoma Street); and Railroad Avenue (generally between Milwaukie CBD and Clackamas Town Center. Following publication of the DEIS, the process leading to the refinement of the design concept and scope of the LRT alternative and adoption of the Land Use Final Order will be conducted. The LPS process will determine the alignments and minimum operable segment to advance into the FEIS/PE Step Two, which will be initiated in spring 1997.

The activities that will be the focus of FY 1996-97 are consistent with and are required steps in the process that leads to the refinement of the design scope and concept of the LRT alternative and adoption of the Land Use Final Order.

PRODUCTS

1) On-going public involvement program;

2) Transportation Analysis documented in Results Reports;

3) Environmental Analysis documented in Results Reports;

4) Costing and Financial Analysis documented in Results Reports;

5) DEIS;

6) Briefing Document;

7) Locally preferred strategy report;

8) Initial set of PE products:

   Project Management Plan and Utility Relocation Plan;
   Construction Management Framework;
   Station Location Analysis;
   Right-of-Way Determination;
   Preliminary 30% Design Sheets; and
   Preliminary Detailed Capital Costs for the three PE segments; and

9) FEIS/PE Step One Work Plan and Project Management Plan.

Next Year's Program 1996-97

Work will be initiated on the Final EIS and PE Step Two in the Spring of 1997. Project management responsibility will shift from Metro to Tri-Met, with Metro still responsible for management of the FEIS. Tri-Met will prepare and implement a Funding Plan for the FEIS/PE Step Two. Tri Met will also execute IGA's with Metro and the other participating jurisdictions for the FEIS/PE Step Two.

The focus of the South/North Project in FY 1997-98 will be the completion of the FEIS and mitigation plans. Tri-Met will conclude PE and will seek a Record of Decision from FTA.

The next year's program for the Phase II extension to Oregon City will be to conclude the development and documentation of data, to complete the public involvement work plan and to conclude the study with the selection of one Phase II alignment to be included within the RTP and Regional Framework Plan, and to be studied further within the Phase II environmental analysis. FY 1995-96 will see the accomplishment of the program's goals and objectives.

The focus of the current year's program for the Phase II extension of the South/North Transit Corridor to Oregon City is to develop and adopt a work plan, budget and necessary intergovernmental agreements for the conduct of the study. Initial analysis of the alternatives will be initiated with alternative transportation network development and initial background data development. Work on developing land use projections and alternatives will also be initiated. Finally, initial implementation of a public involvement work element will be undertaken. Because the work plan, budget and intergovernmental agreements have not been adopted or executed, the current budget estimates are preliminary and pending their completion.

Materials & Services - FY 1996-97

Graphic/Repro Supplies	$ 9,500
Subscriptions/Publications	1,200
Dues	1,305
Auditing Services	5,000
Miscellaneous Professional Services	1,516,244
Equipment Rental	10,000
Ads & Legal Notices	21,500
Printing	190,000
Typesetting & Repro	56,000
Postage	31,000
Delivery Services	7,500
Travel	13,005
Mileage Reimbursement	85
Temporary Help	5,000
Training/Tuition/Conferences	9,095
Pay to Other Agencies	5,472,185
Meetings	21,000
Capital Lease-Furn/Equipment	1,500
Total	**$7,371,119**

EXPENDITURES			**REVENUE**	
	Amount	FTE		Amount
Personal Services	$1,508,919	22.045	ODOT S/N Lottery	$2,000,000
Transfers	417,644		94 S/N AA/DEIS OR-29-9022	200,000
Materials & Services	7,371,119		96 FTA 103 e(4) OR-29-9023	5,504,349
Computer	65,623		T-M DEIS	1,006,651
			T-M FEIS	640,000
			Metro	12,325
Total	**$9,363,325**		**Total**	**$9,363,325**

South North
Transit Corridor Study

Appendix III
Draft FY 98 Unified Work Program South/North Work Element.

SOUTH/NORTH TRANSIT CORRIDOR STUDY

PROGRAM DESCRIPTION

The High Capacity Transit (HCT) Program is responsible for the completion of project planning for major fixed guideway transit facilities in the Region, from systems planning, through the Major Investment Study (MIS) process, to the completion of the federal environmental process, Preliminary Engineering (PE) and adoption of a project financing plan. The HCT Program at Metro works closely with Tri-Met, ODOT and local jurisdictions in HCT studies.

Currently, the HCT Program includes one fixed guideway study: the South/North Transit Corridor Study. The South/North Study was initiated in mid-1993 following completion of the I-205/Milwaukie and the I-5/I-205 Portland/Vancouver Preliminary Alternatives Analyses. The Federal Transit Administration (FTA) authorized the preparation of a Draft Environmental Impact Statement (DEIS) for the South/North Corridor in October 1993. Following the Scoping Process that concluded in December 1993, the Study initiated and completed Tier I (in December 1994) with the selection of the Length (terminus) and Alignment (routing) Alternatives to be studied further within the DEIS. Tier I also concluded with the adoption of light rail as the locally preferred alternative (LPA) and subsequent inclusion of light rail in the South/North Corridor as the LPA through amendments to Metro's and the Southwest Washington Regional Transportation Council's Region Transportation Plans. Metro concluded the federal MIS process in November 1995 with the adoption of the *South/North MIS Final Report*. In December 1995, the Study adopted the set of design options and the downtown Portland alignment alternatives to be studied further within the DEIS. In April 1996, the FTA approved the *South/North MIS Final Report* and authorized the project to advance into PE concurrent with the preparation of the DEIS.

The focus of the South/North Corridor Study in FY 97/98 will be the publication of the South/North DEIS, adoption of the *Locally Preferred Strategy Report*, initiation of the Final Environmental Impact Statement and continuation of PE. The Study expects to complete the federal environmental process and PE within FY 98/99, allowing final design and construction to be initiated on the initial segment or Interim Operable Segment. The Study will also focus on narrowing alignment alternatives for a Phase II extension to Oregon City.

The Program is generally subject to the federal intermodal surface transportation funding schedule which authorizes federal funding match to new start rail programs approximately every five to six years, with annual appropriations. The Region has proposed approximately 50% federal funding for the Project. In addition, the Program provides the required federal environmental process and documentation needed to qualify for federal funding. The Program also provides the federal, state and local project and land use decision-making process for the South/North project.

The federal environmental process and federal, state and local transportation and land use decision-making provides the clientele for the Program. The Program's clientele includes the general public (which is involved in the process through an early, continuing and pro-active public involvement program), local jurisdictions (through participation in technical, project management and decision-making committees) and the federal and state governments (which

are provided the environmental process and documentation needed to approve a variety of federal and state permits and the federal record of decision).

RELATION TO PREVIOUS WORK **(Work Program Prior to FY 97-98)**

With the defeat of Ballot Measure 32, which would have provided, among other things, $375 million in state lottery bond funds, the South/North Project has undertaken a reassessment and re-scoping process aimed at reducing project costs. This process has delayed publication of the DEIS by approximately six months, depending upon the scope of the changes to be made to the DEIS alternatives. Ballot Measure 32 results may also reduce the level of PE activities to be undertaken concurrently with the preparation of the DEIS. Finally, adoption of the *LPS Report* and initiation of the FEIS have also been delayed by approximately six months.

OBJECTIVES

- Completion of the technical analysis for the DEIS and documentation of that analysis in a variety of Results Reports;
- Publication of the South/North DEIS in the *Federal Register*;
- Adoption of the *LPS Report* for the Project by Metro Council;
- Adoption of the *Land Use Final Order* for the Project by Metro Council;
- Approval by the FTA to initiate preparation of the FEIS;
- Initiate refinement of the Results Reports, preparation of Mitigation Plans and preparation of the FEIS;
- Continuation of PE; and
- Continued implementation of a pro-active public involvement program;
- Narrow alignment alternatives for a Phase II extension to Oregon City.

PRODUCTS

- Results Reports (Draft and Final)
- PE Status Report
- DEIS
- Briefing Document
- Public Information Material
- Locally Preferred Strategy Report
- Land Use Final Order and Findings Report
- Initial Draft Products for FEIS and Mitigation Plans
- Phase II Oregon City extension reports

During this period the public involvement program will concentrate on the publication of the DEIS and providing public with the opportunity to participate in the adoption of the *LPS Report* and *LUFO.* Activities will include distribution of the *South/North News* (summarizing the DEIS results), open houses following publication of the DEIS, federally required public hearings and a public comment period of at least 45 days and various other forums for public comment during the LPS adoption process. More focused public involvement efforts supporting the preparation of mitigation plans and the FEIS will be initiated following adoption of the *LPS Report.* A public involvement plan and program for the phase II Oregon City extension will also be developed and implemented.

EXPENDITURES		FTE	REVENUE	
	Amount			Amount
Personal Services	$1,423,277	22.266	FTA OR-29-9023	7,017,263
Transfers	425,448		Tri-Met Local Match	1,847,212
Material & Services	6,981,063			
Computer	29,687			
Capital Projects	5,000			
Total	**$8,864,475**		**Total**	**$8,864,475**

GRANT OR-29-9023
DEIS/FEIS/PE

Expenditures	4/1/96 - 6/30/97	7/1/97 - 6/30/98	7/1/98 - 2/28/99	Total
Personal Services	$1,508,919	$1,423,277	$1,166,233	$4,098,429
Transfers	$417,644	$425,448	$348,612	$1,191,704
Materials & Services	$6,624,401	$6,981,063	$5,720,283	$19,325,747
Computer	$65,623	$29,687	$24,326	$119,636
Capital Projects		$5,000	$4,096	$9,096
Total Expenditures	**$8,616,587**	**$8,864,475**	**$7,263,550**	**$24,744,612**

Revenue	4/1/96 - 6/30/97	7/1/97 - 6/30/98	7/1/98 - 2/28/99	Total
FTA OR-29-9023	$7,206,422	$5,855,273		$13,061,695
FTA OR-29-9023 Amend (Sec. 5309)		$1,161,990	$4,796,147	$5,958,137
Clackamas County			$2,000,000	$2,000,000
C-TRAN	$138,443			$138,443
Tri-Met	$1,271,722	$1,847,212	$467,403	$3,586,337
Total Revenue	**$8,616,587**	**$8,864,475**	**$7,263,550**	**$24,744,612**