Draft Environmental Impact Assessment

October 30, 2001

Task Force Meeting

Areas Assessed

I. Historic and Cultural Resources
II. Natural Resource Impacts
III. Displacements & Encroachments
IV. Air Quality
V. Environmental Justice

I. HISTORIC AND CULTURAL RESOURCES

Direct Impacts – need to acquire right-of-way.

- *"Full Impact:"* Could require acquisition of the entire parcel for transportation improvements.
- *"Major Impact:"* Could require the acquisition of half or more of the parcel, but the existing resource would likely not be affected.
- *"Minor Impact:"* Could require the acquisition of a small part of (less than half) of the affected parcel and the structure/resource would not be affected.

Indirect Impacts – No property acquisition, but may result in impacts to the setting, access or noise levels.

Potential Historic/Cultural Impacts

Table 1: Potential Impacts to Historic Properties

Option	Indirect	Minor	Major	Full
Baseline	1	None	None	None
Express Bus/3 Lanes	5	2	None	None
LRT/ 3 Lanes*	11	3	None	None
Express Bus/ Add 4th Lane	5	5	1	2 (w/10 lane bridge)
LRT/Add 4th Lane *	11	3	None	None
West Arterial Road	None	None	None	None

*Impacts vary depending on whether LRT is on a joint highway bridge or a LRT only bridge.

II. NATURAL RESOURCE IMPACTS

Impacts were estimated to be "*major*," "*moderate*," or "*minor*" on the following identified resources:

- **Fish Habitat**
- **Wildlife Habitat**
- **Wetlands**
- **Plant Communities**

Potential Natural Resource Impacts

Table 2: Natural Resource Impacts by Option Package

	Fish Habitat	Wildlife Habitat	Wetlands	Vegetation
Baseline	Moderate	Minor	Minor	Minor
Three-lane	Moderate	Minor	Minor	Minor
Light Rail Loop	Moderate	Moderate	Major	Moderate
Four-lane	Moderate	Minor	Minor	Minor
West Arterial	Moderate	Moderate	Major	Major

Figure 26 shows the locations of various natural resource areas in the study area.

III. DISPLACEMENTS AND ENCROACHMENTS

The following definitions were used to determine potential displacements and encroachments:

***"Displacement"* – The proposed option would impact the entire parcel and/or part of the building.**

***"Encroachment"* – The proposed option would a portion of the affected parcel and the remaining property is likely to continue to be usable by the property owner. (This also included full impacts to vacant parcels.)**

Potential Displacements: Options

Table 5
Potential Displacements to Existing Land Uses

	Oregon Residential	Oregon Non-Res.	Washington Residential	Washington Non-Res.	Total
Option					
Existing Conditions (2000)	0	0	0	0	0
No-Build (2020)	0	0	0	0	0
Baseline (2020) (w/ Delta Park and Rose Quarter widening)	5	7	0	0	12
Express Bus (w/no bridge impacts)	0	0	0	1	1
LRT Loop (w/no bridge impacts)	0	0	55	12	67
3 Lane (w/ 4-lane supplemental bridge)	15	9	0	0	24
Add 4th Lane (w/ 6-lane supplemental bridge)	3	4	32	3	42
West Arterial Road	13	8	0	1	22

Potential Displacements: Spot Improvements & Bridges

Table 6
Displacements for Spot Improvements and River Crossings

	Oregon Residential	Oregon Non-Res.	Washington Residential	Washington Non-Res.	Total
Spot Improvements					
Delta Park to Lombard Widening (in Baseline 2020)	0	0	0	0	0
Rose Quarter Widening (in Baseline 2020)	5	7	0	0	12
Marine Dr - Hayden Island	0	1	0	0	1
Modify Vancouver Interchanges (in 4-Lane)	0	0	29	0	29
River Crossings					
Light Rail Only Bridge	7	5	0	0	12
4-Lane Supplemental Bridge	15	9	0	0	24
6-Lane Supplemental Bridge	0	4	0	3	7
10-Lane Replacement Bridge	0	0	0	2	2
4-Lane Tunnel	0	3	0	2	5

Potential Displacements: Light Rail

- **Light Rail Loop**
  This option has a total of 67potential displacements and 67 potential encroachments. A breakdown of the displacements and encroachments by segment is shown below:

Segment	Displacements	Encroachments
Expo LRT Station to Clark College	4 Non-Residential	21
Clark College to Vancouver Mall (along SR500)	52 Residential 7 Non-Residential	28
83rd to Parkrose LRT Station (along I-205)	3 Residential 1 Non-Residential	18

As designed, this has the greatest number of displacements for Washington of any option. Most of the displacements associated with this option are due to the particular alignment that was studied. If LRT were recommended, further work would be done to examine several alternative alignments that may reduce the number of displacements. This would be particularly helpful for the segment between Clark College and Vancouver Mall.

IV. AIR QUALITY

Air quality impacts were assessed by estimating the total daily pollutant emissions from transportation sources. This evaluation examined potential emissions for:

I-5 Corridor Study Area

I-5 Freeway

Pollutants

•Definitions:

• *"Carbon Monoxide (CO)"* - CO is a colorless, odorless, poisonous gas. In urban areas, motor vehicles are often the source of over 90 percent of the CO emissions that cause ambient levels to exceed the air quality standards.

• *"Nitrogen Oxides (NO_x), and Volatile Organic Compounds (VOC)"* – These two compounds form a reaction with sunlight to produce ozone, a major component of the complex chemical mixture that forms photochemical smog. Ozone is primarily a product of regional vehicular traffic, point-source and fugitive emissions of ozone precursors.

• *"Particulate Matter" (PM_{10})"* - includes small particles of dust, soot, and organic matter suspended in the atmosphere. Particulate matter may carry absorbed toxic substances, and a particle itself may be inherently toxic. Sources of particulates include: motor vehicles, industrial boilers, wood stoves, open burning, along with dust from roads, quarries, and construction activities. Particulates emitted from diesel vehicles pose specific health risks when compared to other types of particulate matter.

Potential Air Quality Impacts

Table 8
Study Area and Freeway Emissions

	Study Area Emissions				Freeway Emissions			
Option Package	CO	VOC	NOx	PM10	CO	VOC	NOx	PM10
Existing Conditions (2000)	14,483	1,251	2,337	67	18,838	1,442	3,146	85
No-Build	9,034	346	333	83	10,600	350	390	95
Baseline	9,518	354	350	87	11,888	393	435	106
Express Bus/3 Lanes	10,225	446	375	89	13,711	655	499	113
LRT/ 3 Lanes	10,059	438	369	88	13,655	651	497	112
Express Bus/ Add 4th Lane	10,430	442	383	91	14,818	651	539	123
LRT/Add 4th Lane	9,608	336	353	88	13,644	435	500	121
West Arterial Road	10,114	361	371	93	11,918	394	436	107

V. ENVIRONMENTAL JUSTICE

- **In selecting appropriate transportation improvements for the I-5 Corridor, we are seeking to:**
  1. **Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on**
     a) **minority populations and**
     b) **low-income populations.**
  2. **Prevent the denial of, reduction in, or significant delay in the receipt of benefits by those populations.**

Minority and Low Income Neighborhoods

- Much of corridor is surrounded by low income or minority neighborhoods.
- True in Washington and Oregon
- Next map show:
  - Red - Low Income Neighborhoods
  - Purple - Minority Neighborhoods
  - Green - Both
- Map is on pg. 21 of report

Data for Neighborhoods

- Population data - 2000 Census
- Minority population data 2000 Census
- Low-income data:
  - Clark County data 1990 Census
  - Multnomah County data 1996 American Community Survey (US Census)

Neighborhood Boundaries

- The neighborhood boundaries were developed to fit the boundaries of Census tracts.
- In many cases the neighborhoods are not the same neighborhood boundaries for city and county neighborhood associations.

Travel Time Changes by Neighborhood

- Next slides show changes in travel time
  - >10% increase in red
  - >10% decrease in green

Displacements by Neighborhood

- Next slides show displacements by neighborhoods
- Options first
- Bridges and Spot Improvements Follow
- Depending on bridge - displacements can vary.

- Maps start on page 24 of report.

Historic and Cultural Resources by Neighborhood

Tables on the next two slides identify the potential impacts to historic resources by neighborhood.

Maps on the following two slides identify the location of the historic resources.

Table is on page 48 and 50 of report.
Maps are on pages 49 and 51 of report.

Natural Resources by Neighborhood

Table is on page 53 and 54 of report.

Map is on page 55 of report.

Air Quality by Corridor Segment

Three segments of the corridor were specifically analyzed to determine their relative impacts.

Not possible to specifically identify air quality impacts by neighborhood.

Further analysis on air quality impacts would need to be completed in an Environmental Impact Statement should an improvement be recommended by the Task Force.

CO Emissions

Table 13

CO Emissions by Freeway Segment (Kilograms per Day)

Option Package	Columbia to Going Interchanges, Portland	Mill Plain Blvd. to SR 500 Interchanges, Vancouver	78th to 134th Interchanges, Vancouver	Total CO
Existing Conditions (2000)	7,074	4,863	6,901	18,838
No-Build	3,780	2,398	4,422	10,600
Baseline	4,100	2,851	4,937	11,888
Express Bus/3 Lanes	4,751	3,341	5,619	13,711
LRT/ 3 Lanes	4,715	3,324	5,616	13,655
Express Bus/ Add 4th Lane	5,353	3,453	6,012	14,818
LRT/Add 4th Lane	5,050	3,166	5,429	13,644
West Arterial Road	4,110	2,822	4,986	11,918

VOC Emissions

Table 14

VOC Emissions by Freeway Segment (Kilograms per Day)

Option Package	Columbia to Going Interchanges, Portland	Mill Plain Blvd. to SR 500 Interchanges, Vancouver	78th to 134th Interchanges, Vancouver	Total VOC
Existing Conditions (2000)	585	357	500	1,442
No-Build	139	77	134	350
Baseline	150	92	151	393
Express Bus/3 Lanes	242	168	245	655
LRT/ 3 Lanes	239	167	245	651
Express Bus/ Add 4th Lane	231	170	250	651
LRT/Add 4th Lane	172	98	165	435
West Arterial Road	150	91	154	394

NO_x Emissions

Table 15

NOx Emissions by Freeway Segment (Kilograms per Day)

Option Package	Columbia to Going Interchanges, Portland	Mill Plain Blvd. to SR 500 Interchanges, Vancouver	78th to 134th Interchanges, Vancouver	Total NOx
Existing Conditions (2000)	1,180	813	1,152	3,146
No-Build	148	105	181	434
Baseline	148	105	182	435
Express Bus/3 Lanes	172	122	205	499
LRT/ 3 Lanes	171	121	205	497
Express Bus/ Add 4th Lane	192	126	221	539
LRT/Add 4th Lane	183	117	201	500
West Arterial Road	149	104	184	436

PM_{10} Emissions

Table 16

PM10 Emissions by Freeway Segment (Kilograms per Day)

Option Package	Columbia to Going Interchanges, Portland	Mill Plain Blvd. to SR 500 Interchanges, Vancouver	78th to 134th Interchanges, Vancouver	Total PM10
Existing Conditions (2000)	33	21	30	85
No-Build	35	21	38	95
Baseline	38	25	43	106
Express Bus/3 Lanes	40	26	47	113
LRT/ 3 Lanes	40	26	47	112
Express Bus/ Add 4th Lane	47	27	49	123
LRT/Add 4th Lane	46	28	47	121
West Arterial Road	38	25	44	107