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Planning and
Sustainability
Sam Adams, Mayor
Susan Anderson, Director

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M E M O

183694

April 1, 2010

To: Karla Moore-Love, Council Clerk

From: Sallie Edmunds, River Planning Manager

Subject: River Plan / North Reach Public Record

Following is a list of items that are incorporated into and comprise the record to date for the River Plan / North Reach (and related items). These items will be present at the City Council hearing and are available for review.

Reports
- River Plan / North Reach Proposed Draft (October, 2008)
- River Plan / North Reach Proposed Code Amendments (June, 2009)
- River Plan / North Reach Recommended Draft (November, 2009)

Legal Notices and Mailing Lists
- DLCD Notice of Proposed Amendment (45 day notice)
- Measure 56 Notices
- Planning Commission Hearing Notice
- City Council Hearing Notice

Planning Commission (Briefings, Work Sessions and Public Hearings)
- Meeting minutes, transcripts (when available) and PowerPoint shows
- Materials distributed at Planning Commission meetings
- Planning Commission testimony

Council Documents
- Ordinance: Adopt and implement the River Plan / North Reach (February, 2010)
- River Plan / North Reach Recommended Plan – Mayor's Proposed Amendments (February, 2010)
- River Plan / North Reach Recommended Plan – Revised Amendments (March, 2010)
- Resolution: Adopt the River Plan / North Reach Action Agenda and The Future of the North Reach (February, 2010)
- Substitute Resolution: Adopt the River Plan / North Reach Action Agenda and The Future of the North Reach (March, 2010)
- Resolution: Accept Memorandum of Understanding between Siltronic and City of Portland (February, 2010)
- Amendments to Exhibit A of the Resolution Related to Siltronic Corporation (March, 2010)
- Resolution: Direct the Bureau of Planning and Sustainability to negotiate a development agreement with the University of Portland for consideration by City Council (March, 2010)

Other
- Draft Economic Opportunities Analysis (relevant excerpts)
- Transportation memos (Linnton and McCormick/Baxter)
- Kittleson & Associates memos regarding the Siltronic access capacity analysis and the Balboa Road closure

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183694

MEMORANDUM

To: Mayor Sam Adams

From: Susan Anderson, Director

Date: February 10, 2010

---

1. **Ordinance Title**: Adopt and Implement the River Plan / North Reach

2. **Contact Name, Department, & Phone Number**: Sallie Edmunds, BPS, 503-823-6950

3. **Requested Council Date:** February 17, 2010

Consent Agenda Item: _____ or Regular Agenda Item: X

Emergency Item (answer below): _____ or Non- Emergency Item: X

If emergency, why does this need to take effect immediately:

---

4. History of Agenda Item/Background:

- In late 1998 the Portland City Council directed the Bureau of Planning to conduct a comprehensive update of the Willamette Greenway Plan and implementing regulations.
- In spring 2001 the City Council endorsed the River Renaissance Vision that includes five themes: a clean and healthy river; a prosperous working harbor; Portland's front yard; vibrant waterfront districts and neighborhoods; and partnerships, leadership and education.
- In late 2004 the City Council adopted the River Renaissance Strategy that established non-binding policy guidance for river-related planning projects.
- Detailed planning followed in cooperation with other bureaus and agencies, and with participation from residents, business persons and other interested citizens. The process included a Planning Commissioner-chaired River Plan Committee, stakeholder task groups and considerable general public outreach.
- The Planning Commission held public hearings and work sessions from late 2008 through mid-2009, and forwarded the *River Plan / North Reach* to City Council, but asked staff to continue to work on several items.
- Mayor Adams held several stakeholder meetings in fall 2009 to try to forge greater agreement between industrial and environmental stakeholders. These meetings resulted in amendments to the proposal.
- A December 16, 2009 public hearing was postponed. Mayor Adams and Commissioner Fritz used that time to hold a town hall meeting instead. The public hearing was rescheduled to January 28, 2010 but that hearing was also postponed. The first City Council hearing will be on February 17, 2010 at 6 pm.

5. Purpose of Agenda Item:

The purpose of the agenda item is to hold a hearing on the Planning Commission's Recommended *River Plan / North Reach and your proposed* amendments.

6. **Legal Issues**:
The Recommended *River Plan / North Reach* addresses some existing legal and compliance issues including:

- Remedies to comply with a 1994 U.S. Supreme Court case, *Dolan v. City of Tigard* , that requires governments to ensure that required dedications are related and proportional to the impacts of the proposed development.
- Compliance with state and regional requirements related to industrial land (State Goal 9 and Metro Title 4) and natural resources (Metro Title 13).

7. What individuals or groups are or would be opposed to this ordinance? Supportive?

City Bureaus have been involved to various degrees throughout the planning process. I would characterize BES, OHWR and BDS as very supportive of the Plan. PDC is not taking a position on River Plan but their staff has been very helpful in our problem-solving sessions.

On the issue of trails, the Parks Bureau is more comfortable with the most recent draft amendments to the Plan but BES and Parks are still working on language about trails in natural areas. PBOT has been very supportive of the trail recommendations and now that we have included the Albina Rail yard as a long-term alignment, we have addressed the freight staff's concerns.

State and Federal Agencies have indicated considerable support for the River Plan. Some of them may testify or send in letters of support regarding the City's review below the ordinary high water mark. We have already received a letter from the Corps of Engineers. NOAA sent a letter of support to the Planning Commission last year.

Council may hear about the following from various stakeholders:

- Industrial representatives
    - Support for the vision and goals of the River Plan.
    - Concern that the cost of mitigation is still uncertain.
    - Concern that City review below ordinary high water is duplicative of federal and state review.
    - Concern that the plan will result in uncertainty and delay.
    - Preference for simply paying a fee rather than going through river review.
    - Belief that the Natural Resource Inventory still needs to be ground-truthed.
    - Argument that mitigation banks should be managed by a 3rd party.

- Environmental representatives
    - Belief that they have compromised enough. Adopt the plan with the Mayor's amendments.
    - Mitigation for impacts to natural resources should be required. Applicants should pay the full price of that mitigation.
    - Questions and concerns about how the City is going to fund the restoration that the plan envisions.
    - Argument that the City should not abdicate authority below OHW.
    - Argument that it is essential to protect and restore natural resources in the North Reach and that the River Plan is essential for recovery of threatened species.

- Trail representatives
    - The City needs to negotiate with the railroads to complete the alignment from the Eastbank Esplanade to Cathedral Park. This includes acquiring an easement through the Albina Railroad yard and around the bluff near the University of Portland.
    - Argument that there are design solutions that can address conflicts between mitigation and trails. If the design solutions cannot address the conflicts, the City should not designate areas with proposed trails as mitigation sites.
    - Argument that Citizens need access to the river wherever possible.

- Linnton Neighborhood
  - Support for the River Plan because it allows habitat as a future for the Linnton riverfront.
  - Argument that the City is going to great lengths to protect industry without asking them to do their fair share.
  - Request for the City to agree not to ask Metro to reclassify the Linnton Plywood site as a Regionally Significant Industrial Area. They want flexibility for that site.

- University of Portland
  - Support for the comp plan designation change and the rezoning of the McCormick and Baxter Property.
  - While previously satisfied with the location of the proposed environmental protection zone as depicted in the Mayor's amendments they argue now that they want all environmental zoning removed from the area where they want to place their parking garage.

8. How Does This Relate to Current City Policies?

- The Recommended *River Plan / North Reach* will bring the City into greater consistency with City, state, regional and federal laws and policies.

- The Recommended *River Plan / North Reach* addresses the fact that the current *Willamette Greenway Plan* is out of date.

- The River Plan is consistent with all aspects of the Portland Comprehensive Plan and it supports other City policies such as the Portland Watershed Management Plan, the resolution calling for recovery of listed fish, Harbor REDi and the Bicycle Plan for 2030.

9. Community Participation:

River Plan / North Reach builds upon past planning efforts and adopted reports including the development of the River Renaissance Vision and Strategy 2000 - 2004. The development of these plans involved a considerable amount of community participation

Community participation for the River Plan / North Reach centered around the *River Plan Committee,* a voluntary citizen advisory group chaired by a member of the Portland Planning Commission. The committee met from September 2005 to June 2008.

Staff also convened topical task groups comprised of stakeholders and subject matter experts. Task groups met for a limited duration to discuss a specific topic and provide guidance to project staff. Meetings were open to the public and audience members were often invited to ask questions and make comments.

Interviews and focus groups were conducted in 2006 with 60 harbor area industry leaders to inquire about their expansion plans, industrial location advantages and constraints of the North Reach and business priorities for public investments. The results contributed to the recommended investments included in the Plan.

River Plan News, a monthly email newsletter was distributed to over 500 email addresses to keep people informed about River Plan related events and publications.

For a detailed list of outreach activities, please see *River Plan / North Reach, Volume 1A,* Appendix *B: Outreach Log.*

10. Other Government Participation:
Many of the issues addressed by the River Plan have links to other agencies' interests and decision making. As such, the River Team met with staff from the following agencies on the topics noted:

Federal
- EPA (superfund)
- Corps of Engineers (permitting, mitigation)
- NOAA Fisheries (permitting, mitigation and restoration)
- USFWS (mitigation, permitting)
- Representative Blumenauer's office (trails)

Tribal governments (mitigation)

State
- DEQ (contamination and permitting)
- DSL (mitigation and permitting)
- DLCD (state planning goals)
- Governor's office (river issues generally)

Metro (trails and mitigation)

Multnomah County (mitigation)

In addition, a group of technical advisors that included City, regional, state and federal agency staff were first convened in 2006 and met several times to provide input on projects related to the Willamette River, including the River Plan / North Reach.

11. Financial Impact:

Revenues are expected to result from new in lieu fees that applicants for new development may be allowed to pay as an alternative to mitigation, vegetation and balanced cut and fill regulations.
- The revenue from mitigation could range from a few thousand to several hundred thousand dollars depending on the quality of the natural resources impacted.
- The revenue from the vegetation in lieu fee is capped at $200,000 or 1% of project value (which can vary greatly) whichever is less.
- The revenue from balanced cut and fill is not expected to be significant. These funds will be directed to the River Restoration Fund improvements within the North Reach.

In the Willamette Industrial Urban Renewal Area (WIURA), public investment will leverage new private investment and generate additional TIF funds to be reinvested in the area. Public investments can be in the form of infrastructure or direct assistance for redevelopment. In the past, WIURA has not generated much revenue due to low industrial property values.

There will be some additional costs to the City as a result of this legislation including the cost to operate the River Restoration Program, set up the mitigation bank and for review and coordination on permit applications.

While the *River Plan / North Reach* recommends implementation of many capital improvement projects, the adoption of the Pl*an* does not commit the City of Portland to funding these projects.

183694

City of Portland, Oregon

FINANCIAL IMPACT STATEMENT
For Council Action Items

(Deliver original to Financial Planning Division. Retain copy.)

1. Name of Initiator	2. Telephone No.	3. Bureau/Office/Dept.
Sallie Edmunds	503-823-6950	Bureau of Planning and Sustainability

4a. To be filed (date)	4b. Calendar (Check One)			5. Date Submitted to FPD Budget Analyst:
	Regular	Consent	4/5ths	
February 10, 2010	X	☐	☐	November 23, 2009 Revised on February 8, 2010

1. Legislation Title:
Adopt and implement the Recommended River Plan / North Reach (Ordinance)

The Planning Commission recommends that the City Council:
1) Adopt an ordinance that:
   a) Approves the River Plan / North Reach and its appendices
   b) Amends the Comprehensive Plan;
   c) Amends the Comprehensive Plan Map;
   d) Amends Zoning Maps.
   e) Amends Title 33, Planning and Zoning (Chapters 33.10, 33.258, 33.272, 33.430, 33.440, 33.475, 33.510, 33.583, 33.585, 33.700, 33.810, 33.815, 33.840, 33.860, 33.865, 33.910, 33.930) and Title 24.50.060.

2. Purpose of the Proposed Legislation:

The Recommended River Plan / North Reach is an update of the Willamette Greenway Plan and zoning code for the North Reach of the Willamette River. The recommended plan replaces the existing regulations with new regulations that balance economic, environment and access to the river and recommends a variety of programs and investments. Some key elements include:

- Strengthened protection for industrial land, especially river dependent
- An updated Natural Resource Inventory for the North Reach.
- Strategic protection for natural resources
- Mitigation for impacts to natural resources.
- Mechanism to allow off-site mitigation.
- A refined trail alignment along both sides of the Willamette River.
- Clear guidance for contaminated site cleanup.
- A more coordinated process for the federal, state and city review of activities and development in the river.

3. Revenue:
Will this legislation generate or reduce current or future revenue coming to the City? If so, by how much? If new revenue is generated please identify the source.
New development in the project area will likely bring in revenue from new in lieu fees that applicants may be allowed to pay as an alternative to mitigation, vegetation and balanced cut and fill regulations. The revenue from mitigation could vary from a few thousand to over one million dollars depending on the site conditions pre- and post-development. The revenue from the vegetation in lieu fee is capped at $200,000 or 1% of project value (which can vary greatly) whichever is less. The revenue from balanced cut and fill is not expected to be significant.

In the Willamette Industrial Urban Renewal Areas public investment will leverage new private investment and generate additional TIF funds to be reinvested in the area. Public investments can be in the form of infrastructure or direct assistance for redevelopment. In the past, WIURA has not generated much revenue due to the lower industrial property values.

The River Plan / North Reach also calls for numerous investments that may be funded though grants.

4. Expense:

What are the costs to the City as a result of this legislation? What is the source of funding for the expense? *(Please include costs in the current fiscal year as well as costs in future years)*

There will be some additional costs to the City as a result of this legislation. The costs to BES include operation of a River Restoration Program and additional assistance to review permit applications.

The *River Plan / North Reach* does recommend implementation of an ambitious action agenda that calls for many capital improvement projects; however, the adoption of the *River Plan / North Reach* does not commit the City of Portland to funding these facilities or projects, most of which would be implemented by other government entities, nonprofit entities, or private sector interests.

Staffing Requirements:

5. Will any positions be created, eliminated or re-classified in the current year as a result of this legislation? (*If new positions are created please include whether they will be part-time, full-time, limited term or permanent positions. If the position is limited term please indicate the end of the term.)*

No positions are expected to be created in the current year as a result of the legislation.

6. Will positions be created or eliminated in *future years* as a result of this legislation?

As a result of this legislation, the Bureau of Environmental Services is expected to create 1.5 FTE beginning in FY 2010/2011 to 1) provide technical support for the River Restoration Program, including site design and implementation, 2) develop the mitigation bank certification procedure and 3) assist the Bureau of Development Services with the review of North Reach development permit applications.

The Office of Healthy Working Rivers does not need additional staff to implement the River Plan. However, the Office may need approximately $6000 in PTE funding to hire a facilitator to help with the early review of applications that require federal, state and city approval and additional funding to help develop the mitigation bank.

None of the other Bureaus expect to hire additional staff as a result of this legislation.

Complete the following section only if an amendment to the budget is proposed.

7. Change in Appropriations *(If the accompanying ordinance amends the budget please reflect the dollar amount to be appropriated by this legislation. Include the appropriate center codes and accounts that are to be loaded by accounting. Indicate "new" in Center Code column if new center needs to be created. Use additional space if needed.)*

No additional funds need to be appropriated.

Celia Heron, Bureau Operations Manager Celia Heron / Joan Hamilton

APPROPRIATION UNIT HEAD (Typed name and signature)

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183694

M E M O

February 4, 2010

To: Karla Moore-Love, Council Clerk

From: Sallie Edmunds, River Planning Manager

Subject: River Plan / North Reach Record

Please enter the attached items into the City Council record for the River Plan / North Reach. City Council is scheduled to have a hearing on the River Plan / North Reach on Wednesday, February 17, 2010.

Thank You.

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M E M O

183694

February 2, 2010

To: Sallie Edmunds, River Plan Project Manager

From: Arianne Sperry

Subject: River Plan / North Reach Linnton Rezone Trip Generation Analysis

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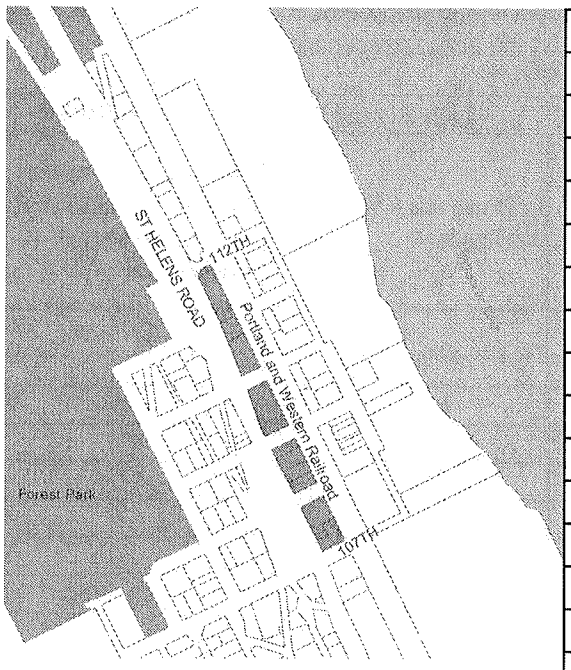
The River Plan / North Reach proposes to rezone 15 taxlots in the Linnton community by amending their zoning map designation from General Commercial (CG) to Commercial Storefront (CS) and their comprehensive plan map designation from General Commercial to Urban Commercial.

The properties are on the east side of St. Helens Road between NW 107th and 112th Avenues and are highlighted on the map below.



Address	Lot Size (sf)
10700 NW St. Helens Road	5,000
10710-10715 NW St. Helens Road	2,500
10710 WI/ NW ST HELENS RD	2,500
10808 WI/ NW ST HELENS RD	10,000
10800 NW St. Helens Road	2,500
10808 NW ST. Helens Road	2,500
10818 NW ST. Helens Road	5,000
10828 NW ST. Helens Road	6,250
10836 NW ST. Helens Road	3,750
10902 NW ST. Helens Road	5,000
10920 NW ST. Helens Road	14,625
11080 NW ST. Helens Road	12,425
11130 NW ST. Helens Road	5,677
11134 NW ST. Helens Road	13,586
11142 NW ST. Helens Road	1,450
	92,763

The General Commercial (CG) zone allows a variety of commercial uses and accommodates development that is oriented for the automobile. The Storefront Commercial (CS) zone also allows a variety of commercial services and is applied in areas where a main street storefront appearance and pedestrian orientation is desired. Table 1 contains a comparison of the applicable differences between the two zones.

Although the CS zone allows for more intense development because of higher allowed building coverage and no required on-site parking, the CG zone allows uses that generate a high number of trips, such as gas stations and uses with drive-through facilities.

Table 1. Select Development Standards and Allowed Uses		
	General Commercial (CG)	Storefront Commercial (CS)
Building Coverage	Max. 85% of site area	Min. 50% of site area
Minimum Landscaped Area	15% of site area	None
Required Parking	Yes	None required
Maximum Building Setback	None	10 ft
Drive-Through Facilities	Allowed	Prohibited
Allowed Uses		
Quick Vehicle Servicing	Yes	No
Commercial Parking	Conditional Use	Yes
Self Service Storage	Limited	No
Warehouse and Freight Movement	Conditional Use	No
Aviation and Surface Passenger Terminals	Conditional Use	No
Detention Facilities	Conditional Use	No

The following analysis compares a reasonable worst case buildout for the existing CG zoning with a reasonable worst case buildout for the proposed CS zoning. Table 2 shows the assumptions in terms of land use mix and parking ratios for the analyzed scenarios.

Table 2. Land Use Mix and Parking Ratios						
Land Use	**Land use mix -- % of building area**		**Parking ratios -- spaces provided per 1,000 sf of building area or per dwelling unit**		**Parking spaces needed given land use mix (per 1,000 sf of building area)**	
	CG Scenario	CS Scenario	CG Scenario	CS Scenario	CG Scenario	CS Scenario
Retail Sales and Service	40%	50%	3.3	2.0	1.3	1.0
Office	35%	35%	2.5	1.5	0.9	0.5
Fast Food	10%	0%	6.7	3.0	0.7	0.0
Quick Vehicle Servicing	less than 1%	0%	1	1	0.0	0.0
Household Living*	15%	15%	2	1.5	0.2	0.2
**Assumed size of dwelling units is 1,500 sf.*				***Sum***	***3.1***	***1.8***

The number of parking spaces required per 1,000 sf of building area—in this case 3.1 for the CG scenario and 2.8 for the CS scenario—is calculated for each scenario by multiplying the land use mix and the parking ratios.

Assuming a parking space size of 220 sf, the ratio of parking area required for every 1,000 sf of building area is identified for each scenario. Next, the required landscaping is subtracted out and the remaining hardscape is divided into building footprint and parking. The assumption is that the CG scenario will likely have single-story development while the CS scenario is likely to have multi-story development. The building height plays into the calculation of the building footprint because the taller the building, the more parking is needed and the smaller the building footprint can be. Finally, the building height and building footprint is used to calculate the total building area.

Table 3. Calculation of building area		
	CG Scenario	CS Scenario
Site area in sf	92,763	92,763
Required landscaping	15%	0
Potential hardscaped area	78,849	92,763
Height of building in stories	1	2
Parking spaces per 1,000 sf of building area	3.1	1.8
Parking area per 1,000 sf of building area*	678	385
Building footprint per 1,000 sf of building area	1000	500
Total hardscaped area per 1,000 sf of building area	1678	885
% of hardscaped area devoted to parking area	40%	44%
% of hardscaped area devoted to building footprint	60%	56%
Parking area	31,848	40,355
Building footprint	47,001	52,408
Building area in sf	***47,001***	***104,817***
Floor area ratio	**0.51**	**1.13**

**Assumes 220 sf per parking space*

In the final step, the building area is distributed by land use and PM peak trip rates from ITE's *Trip Generation* (7th Edition) are applied to estimate PM peak trip generation in each scenario.

Table 4. Trip Generation								
Land use	Land use mix		Building area		ITE trip generation land use code	PM trip rate	PM peak trip generation	
	CG Scenario	CS Scenario	CG Scenario	CS Scenario			CG Scenario	CS Scenario
Retail Sales and Service	40%	50%	18,800	52,408	Specialty Retail Center (814)	5.02 per 1,000 sf	94	263
Office	35%	35%	16,450	36,686	General Office Building (710)	1.49 per 1,000 sf	25	55
Fast Food	10%	0%	4,700	-	Fast Food with Drive Through (934)	46.68 per 1,000 sf	219	-
Quick Vehicle Servicing	less than 1%	0%	235	-	Gas Station with Convenience Market (945)	13.57 per vehicle fueling position or 162.84 for 12 fueling positions	163	-
Household Living	15%	15%	6,815	15,723	Residential Condominium/ Townhouse (230)	0.52 trips per dwelling unit; 1500 gsf per unit	2	5
						Total PM peak trips	**503**	**323**

The analysis indicates that changing the zoning to CS is unlikely to increase trips during the PM peak period.

TRIP GENERATION

7th Edition • Volume 3 of 3

Institute of Transportation Engineers

183694

General Office Building
(710)

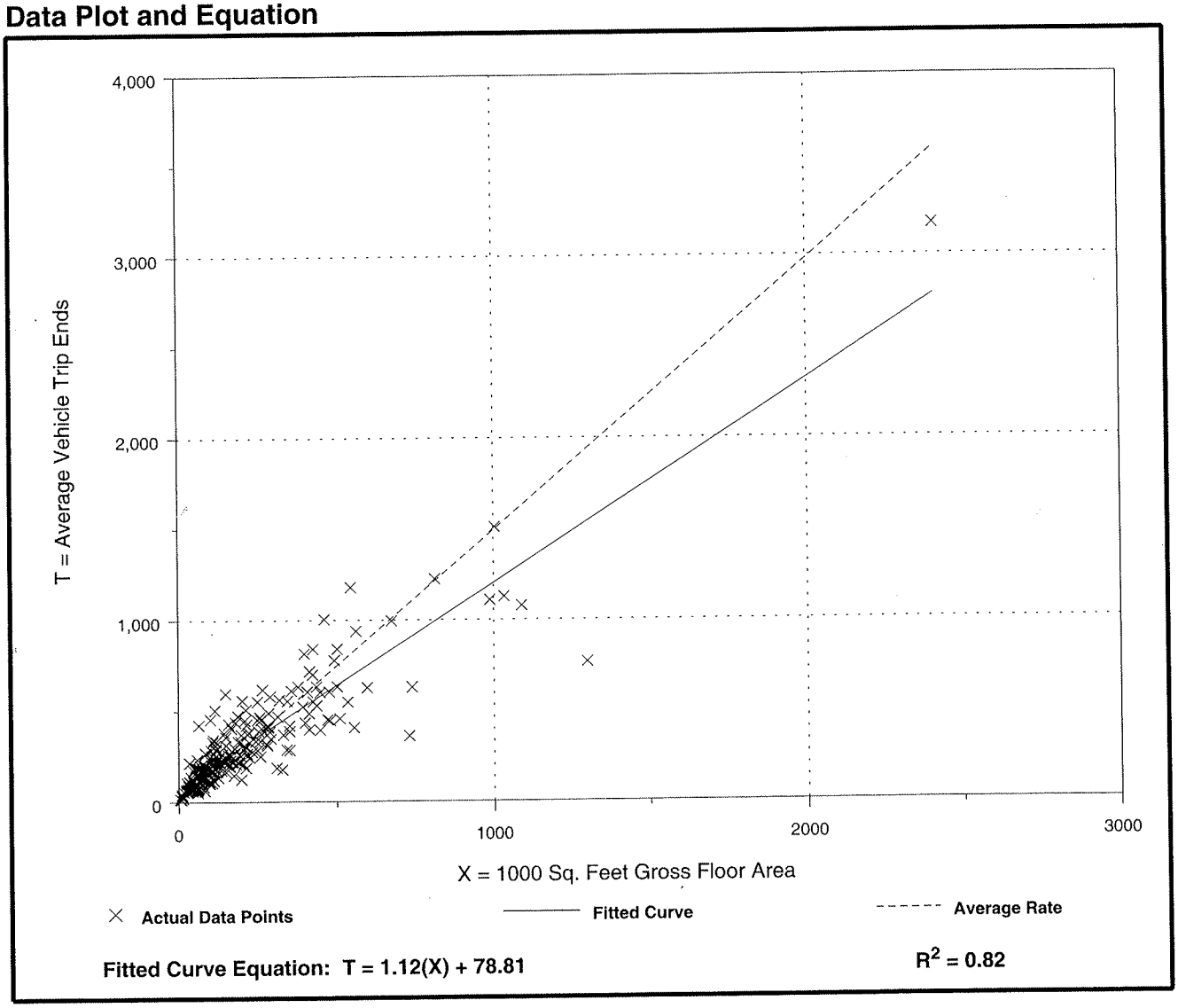
Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Floor Area
On a: Weekday,
P.M. Peak Hour

Number of Studies: 235
Average 1000 Sq. Feet GFA: 216
Directional Distribution: 17% entering, 83% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
1.49	0.49 - 6.39	1.37

Data Plot and Equation



Fitted Curve Equation: T = 1.12(X) + 78.81

R^2 = 0.82

Specialty Retail Center
(814)

183694

Average Vehicle Trip Ends vs: 1000 Sq. Feet Gross Leasable Area
On a: Weekday,
P.M. Peak Hour of Generator

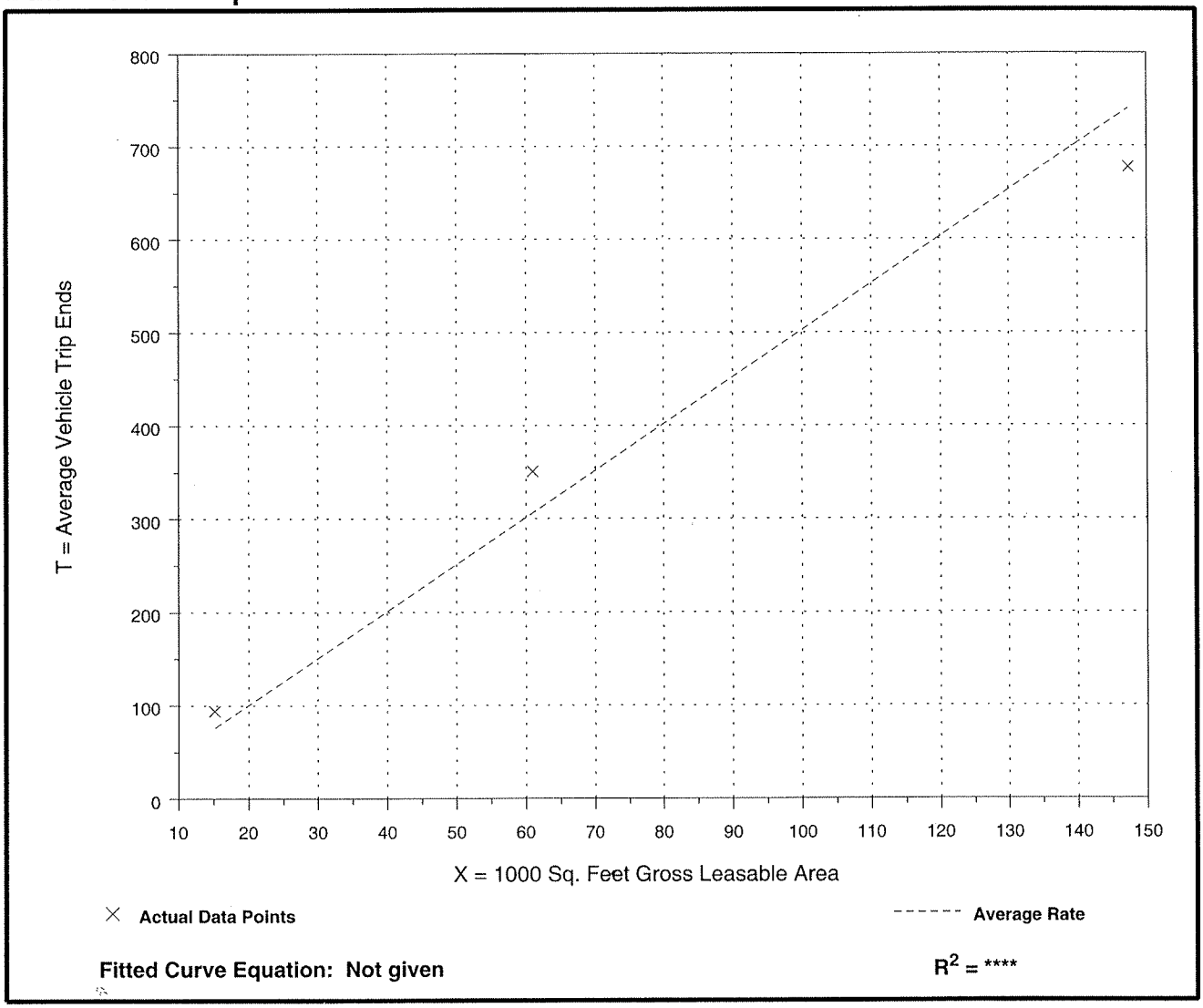
Number of Studies: 3
Average 1000 Sq. Feet GLA: 75
Directional Distribution: 56% entering, 44% exiting

Trip Generation per 1000 Sq. Feet Gross Leasable Area

Average Rate	Range of Rates	Standard Deviation
5.02	4.59 - 6.18	2.31

Data Plot and Equation

Caution - Use Carefully - Small Sample Size



Fitted Curve Equation: Not given

R^2 = ****

Fast-Food Restaurant with Drive-Through Window
(934)

18394

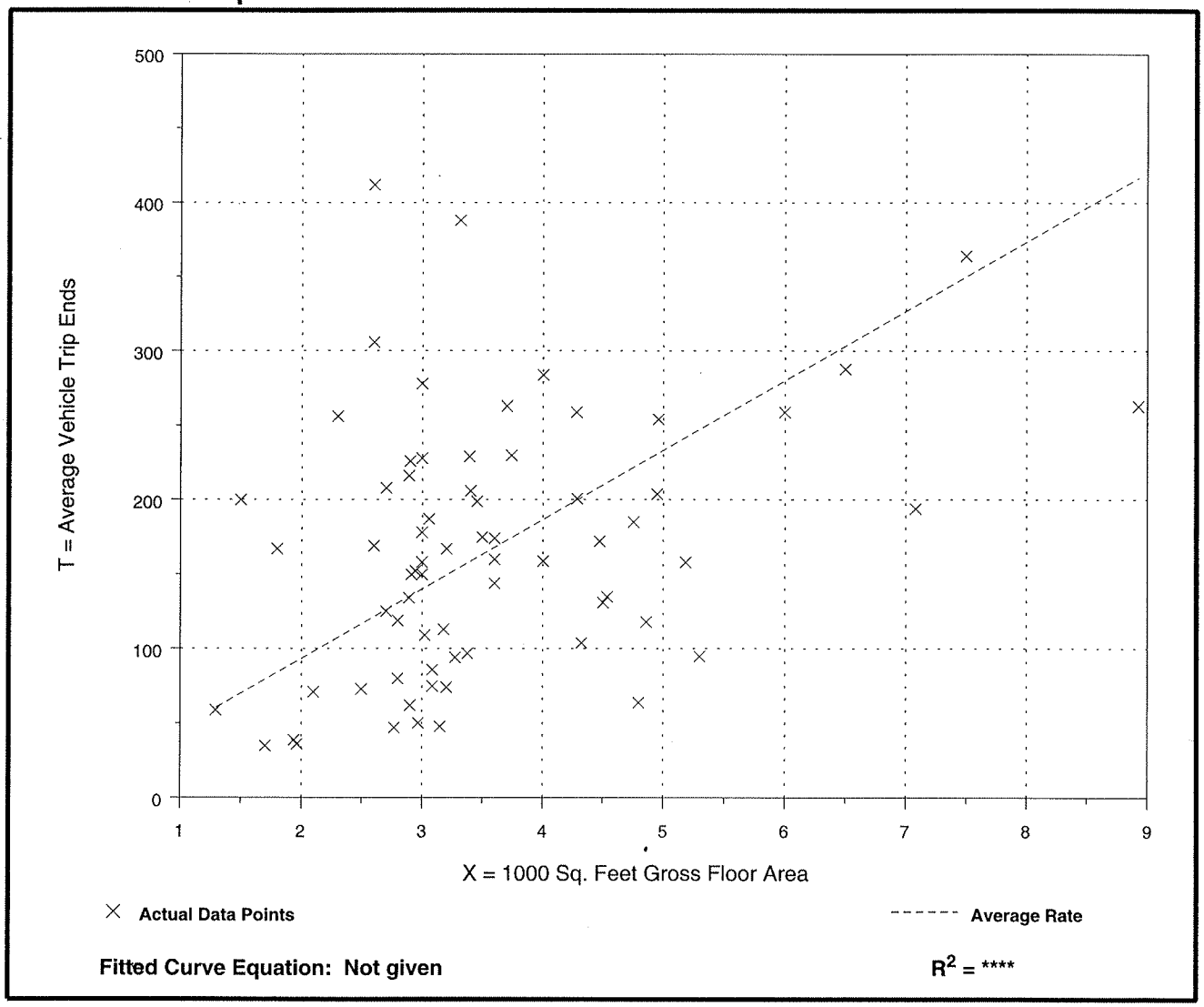
Average Vehicle Trip Ends vs: **1000 Sq. Feet Gross Floor Area**
On a: **Weekday,**
P.M. Peak Hour of Generator

Number of Studies: 69
Average 1000 Sq. Feet GFA: 4
Directional Distribution: 52% entering, 48% exiting

Trip Generation per 1000 Sq. Feet Gross Floor Area

Average Rate	Range of Rates	Standard Deviation
46.68	13.33 - 158.46	26.41

Data Plot and Equation



Fitted Curve Equation: Not given

R^2 = ****

Gasoline/Service Station with Convenience Market
(945)

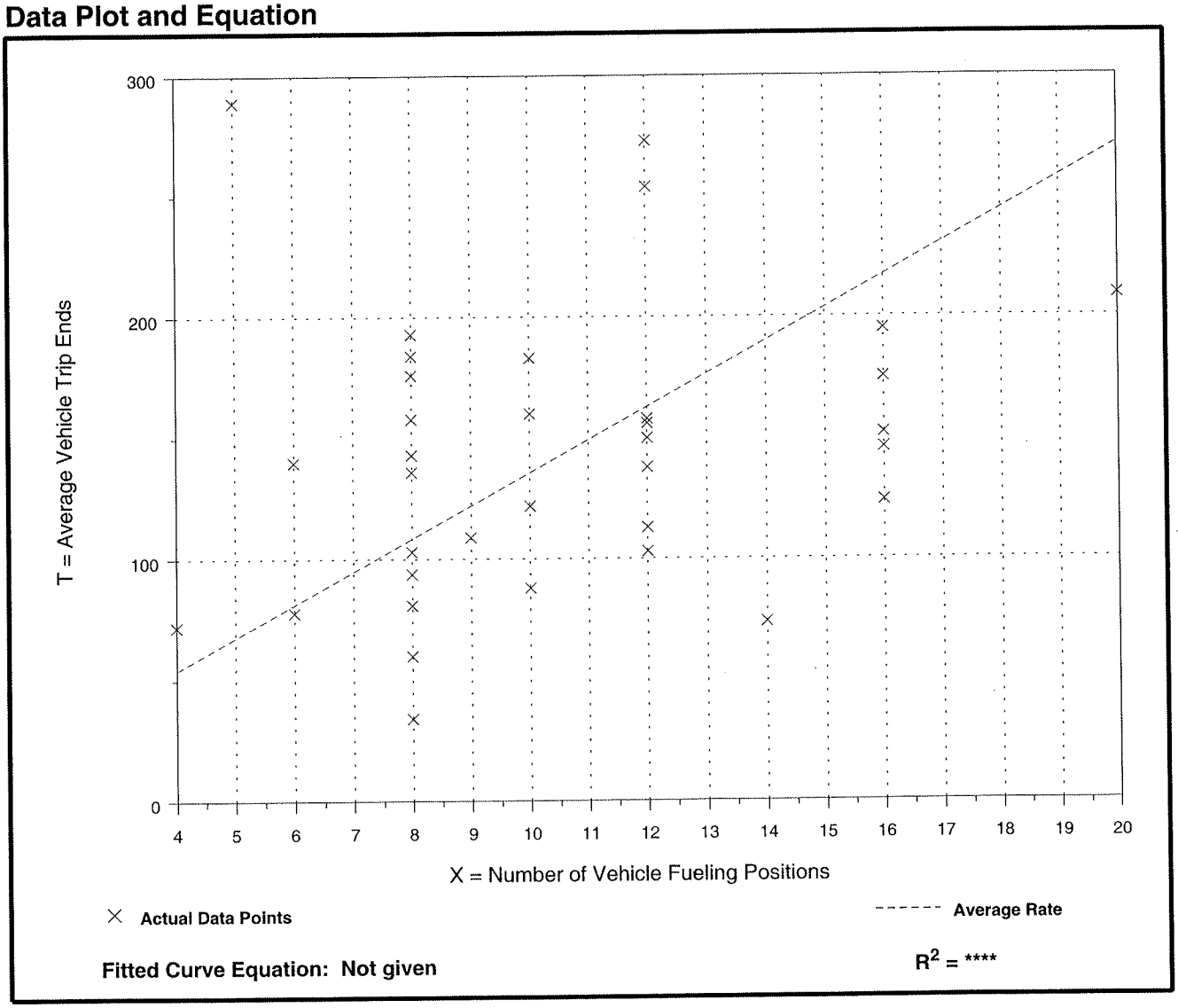
Average Vehicle Trip Ends vs: **Vehicle Fueling Positions**
On a: **Weekday,**
P.M. Peak Hour of Generator

Number of Studies: 37
Average Vehicle Fueling Positions: 10
Directional Distribution: 50% entering, 50% exiting

Trip Generation per Vehicle Fueling Position

Average Rate	Range of Rates	Standard Deviation
13.57	4.25 - 57.80	7.94

Data Plot and Equation



Fitted Curve Equation: Not given

R^2 = ****

TRIP GENERATION

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Residential Condominium/Townhouse (230)

183694

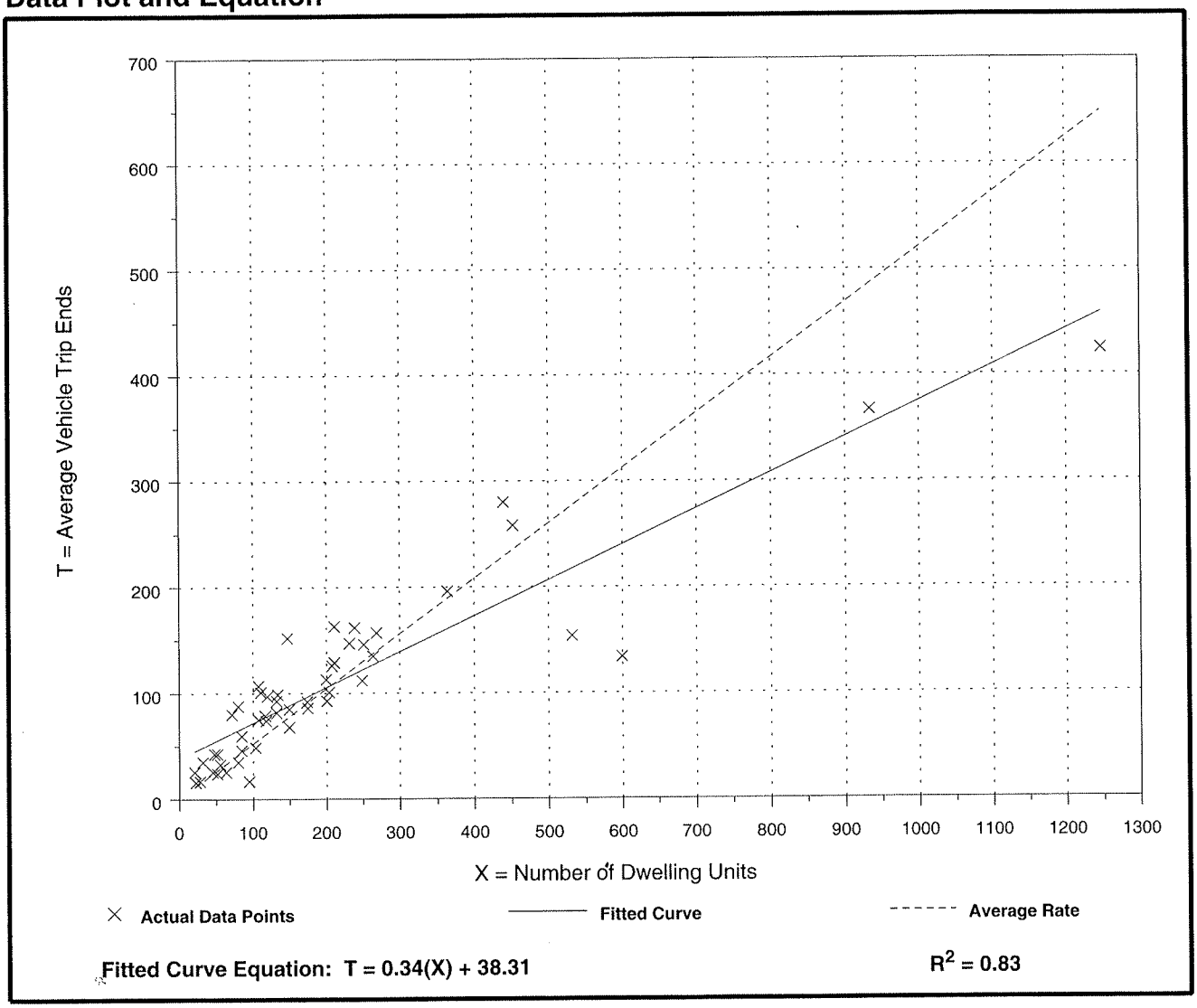
Average Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
P.M. Peak Hour of Generator

Number of Studies: 50
Avg. Number of Dwelling Units: 204
Directional Distribution: 64% entering, 36% exiting

Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.52	0.18 - 1.24	0.75

Data Plot and Equation



Fitted Curve Equation: T = 0.34(X) + 38.31

R^2 = 0.83

KITTELSON & ASSOCIATES, INC.
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183694

MEMORANDUM

Date: December 1, 2009 Project #: 10181.0

To: Sallie Edmunds, City of Portland
CC: Jim Kuffner, University of Portland
Christe White

From: Julia Kuhn
Project: McCormick and Baxter Zone Change
Subject: Transportation Planning Rule Analysis and Proposed Trip Cap

BACKGROUND

This traffic analysis and memorandum addresses the transportation-related impacts of the proposed zone change and comprehensive plan amendment for the McCormick and Baxter (M&B) property located west of the University of Portland. The site is currently zoned Heavy Industrial (IH) and has a comprehensive plan designation of Industrial Sanctuary. The City is proposing to change the zoning designation to General Employment 2 (EG2) with a comprehensive plan designation of Mixed Employment (ME). The purpose of this zone change and comprehensive plan map amendment is to facilitate efforts by University of Portland to acquire the property and develop it with University related uses. The current Industrial designation does not permit institutional uses such as the University of Portland.

The General Employment zoning designation would allow a variety of industrial uses on the property including manufacturing and production, warehouse and freight movement, wholesale sales and industrial service. For users other than the University of Portland, the EG zone could also enable a mix of office and retail to be constructed on the site. However, any development of the property will be constrained by existing environmental issues, regardless of the property's zoning.

As discussed below, the uses that are proposed in the future will need to comply with the "trip cap" that is proposed as part of this zone change. A trip cap is an acceptable mitigation measure per the Transportation Planning Rule (TPR) and would enable rezoning of the site without incurring a significant affect on the system. The remainder of this memorandum documents the analyses necessary to support the trip cap.

EXISTING TRANSPORTATION FACILITIES

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Access to the M&B site and the University of Portland is primarily provided via Willamette Boulevard and Portsmouth Avenue. The modal classification of the two facilities is summarized in Table 1 (as designated in the City of Portland's Transportation System Plan).

Table 1 Modal Classifications

	Traffic	Transit	Bicycle	Pedestrian	Freight	Emergency Response	Street Design
Willamette Boulevard	Neighborhood Collector	Transit Access Street	City Bikeway	City Walkway	Unclassified	Major Emergency Response	Community Corridor
Portsmouth Avenue (north of Willamette)	Neighborhood Collector	Transit Access Street	City Bikeway	City Walkway	Unclassified	Major Emergency Response	Local Street

The various modal classifications of Willamette Boulevard and Portsmouth Avenue (north of Willamette) are consistent with the adjacent neighborhoods and the University of Portland. In addition, the modal classifications are also consistent with the levels of pedestrian, bicycle, transit and vehicular demand that they facilitate as well as the design of the street space.

Portsmouth Avenue to the south of Willamette Boulevard and the other facilities in the vicinity of the site are classified as local streets, which is also consistent with the functions and land uses they serve.

TRIP GENERATION ANALYSIS

The trip generation analysis needed to support a trip cap allowed by the Transportation Planning Rule (TPR) as part of the zone change must compare "reasonable worse case" development scenarios under the existing and proposed zoning.

In analyzing the allowable uses under both scenarios, the type of uses that the University may locate on this property in the future would generate less than other allowable uses. The University would restrict the uses on the site to only those that support the campus-related uses. For this reason, the potential trip generation of the site with University-related uses would primarily be "internal" to the campus. Even the trip generation potential associated with a community recreational use would be insignificant in comparison to the trip generation potential of the existing IH zoning. For this reason, the trip generation analysis compares the industrial, retail and office uses that could be allowed under the existing and proposed zoning instead, assuming the property was under ownership and developed by someone other than the University of Portland (thereby constituting a "reasonable worse case" scenario).

This analysis uses an upland site area of 45 acres, which approximates the estimates that EPA and DEQ used in connection with the environmental remediation. The City of Portland has previously used a higher estimate of 50 acres (See City of Portland, McCormick & Baxter Reuse

Assessment Project Background Report, page 3). However, using the lower figure for the purpose of this analysis is appropriate because it results in a more conservative trip cap that is more consistent with the constraints of the site.

Existing Zoning

According to the City's Zoning Code, the IH zoning would allow up to 12,000 square feet of retail uses as an outright use in addition to various industrial uses.

An analysis of information contained in the Trip Generation Manual published by the Institute of Transportation Engineers revealed the following trip rates for industrial uses that could be developed under the IH zoning:

- Heavy Industrial (Land Use 120): 1.5 trips per 1,000 square feet (KSF) per day; 0.68 trips per KSF in the p.m. peak hour
- Manufacturing (Land Use 140): 3.82 trips per KSF per day; 0.73 trips per KSF in the p.m. peak hour
- Warehousing (Land Use 150): 3.56 trips per KSF per day; 0.32 trips per KSF in the p.m. peak hour

As shown above, the manufacturing category has the highest trip generation potential during both the daily and weekday pm peak hour periods. Although there are no floor-area-ratio requirements included in the City's zoning code, due to the significant environmental constraints on the site, the building coverage was estimated at 25 percent. This is consistent with typical suburban development and would result in 490,050 square feet of total uses on the approximately 45 acre site. If 12,000 square feet of retail uses were developed, an additional 478,050 square feet of manufacturing uses could be developed under the existing zoning.

Proposed Zoning

The proposed EG2 zoning allows for a mixture of office and retail uses. The Portland Zoning Code allows for a maximum of 60,000 square feet of retail uses within the EG2 zoning designation. While the property remains in Industrial designation, the Metro Title 4 requirements establish a maximum limit of 20,000 square feet of retail uses that could be developed on the property; however, this limitation will increase to 60,000 square feet if the Employment designation is adopted. Using the same assumption of 25 percent building coverage, 430,050 square feet of office in addition to 60,000 square feet of retail could be developed on the site.

Trip Generation Comparison

Table 2 compares the number of trips that could be generated under the worse case scenarios for the existing and proposed zoning. As shown in Table 2, no reduction for pass-by trips was made for the retail uses due to the location of the property "below the Bluff."

Table 2 Comparative Trip Generation – Potential Buildout

Land Use	ITE Code	Size (Sq Ft)	Daily	Weekday PM Peak Hour		
				Total	In	Out
Heavy Industrial (IH) Zoning						
Manufacturing	140	478,050	1,830	350	125	225
Retail[1]	820	12,000	520	45	20	25
Total IH Zoning			2,350	395	145	250
General Employment 2 (EG2) Zoning						
General Office	710	430,050	4,730	640	110	530
Retail[1]	820	60,000	2,580	225	110	115
Total EG2 Zoning			7,310	865	220	645
Net New Trips (EG2-IH Zoning)			+4,960	+470	+75	+395

1. Given location of retail uses down below the bluff and therefore likely lower trip generating potential than other high visibility locations in North Portland, the potential trip generation was calculated using the average rate rather than the fitted curve equation.

As shown in Table 2, if there were no land use restrictions imposed on the McCormick and Baxter property, the rezone to EG2 could result in an additional 4,960 daily trips and 470 weekday p.m. peak hour trips than would be generated by the site than under its current IH designation.

Impact of Zone Change

As part of the trip generation analysis prepared for the Triangle Park property zone change (i.e., the parcel directly to the south), we conducted an analysis of year 2025 conditions at the Willamette Boulevard/Portsmouth intersection (Kittelson & Associates, Inc., July 18, 2006 memorandum to Jamie Jeffrey et al). This analysis revealed that the intersection will function acceptably under the existing industrial zoning scenario and well below capacity. With the additional traffic associated with the existing zoning M&B site, the intersection will still meet the City's level of service requirements and operate below capacity.

Our 2006 analysis demonstrated that with the development of the Triangle Park property under the EG2 reasonable worse case scenario, the intersection would operate in excess of capacity but still meet level-of-service "D" conditions. With the addition of the traffic associated with the proposed zoning on the M&B site, the intersection would exceed City standards. In addition, like with the Triangle Park property, the proposed zoning could result in a significant increase in daily and pm peak hour trips on Portsmouth to the south of Willamette Boulevard at levels that are potentially in conflict with the existing local modal designations. The capacity and classification conflicts would constitute a significant affect on the transportation system, as defined by the Transportation Planning Rule. For these reasons, the Triangle Park property zone change was approved with a "trip-cap" limiting the potential trip generation of the site to that which would be allowed under the existing IH zoning.

Given that the proposed zone change faces similar transportation challenges as the Triangle Park property, the University of Portland is also proposing to place a trip cap on the McCormick and Baxter property that would also restrict the amount of buildings that could be developed on the property to a level that does not impact neighborhood livability and fits within the capacity of the Willamette Boulevard and Portsmouth Avenue as well as their intersection. As shown in Table 2, this limitation would equate to a daily trip generation of 2,350 trips and 395 pm peak hour trips as per the IH designation. Further, the University proposes to limit the future retail uses on-site to 12,000 square feet as defined by the existing IH zoning.

As discussed above, the types of uses that will actually be developed on this property are constrained by existing environmental issues and general accessibility of the property to the transportation system. However, for informational purposes, we calculated the maximum development levels that could be allowed if developed with non-University related uses with the trip cap in-place and the retail limitation. As such, if the weekday p.m. peak hour is used to establish the trip cap, up to 12,000 square feet of retail and 235,000 square feet of office could be developed on the site. This level of office and retail results in a weekday p.m. peak hour trip generation comparable to that allowed under the existing zoning. The weekday p.m. peak hour is the critical time period on the system and is typically the mechanism by which a trip cap is established. However, if a daily trip cap is used to determine the maximum development levels, 12,000 square feet of retail uses and 165,000 square feet of office could be developed. Again, these types of uses would not be developed under UP ownership and would also be prevented by site constraints.

With a trip-cap on allowable land uses of 2,350 daily trips and 395 weekday pm peak hour trips and a retail limitation of 12,000 square feet, there are no significant affects associated with the zone change and comprehensive plan amendment as defined under the Transportation Planning Rule (OAR 660-012-060).

Please let us know if you have any questions regarding our analysis.

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MEMORANDUM

Date: July 18, 2006 **Project #**: 7286

To: Jamie Jeffrey, PDOT
Douglas Hardy, BDS
Christe White & Megan Walseth, Ball Janik
Jim Kuffner, University of Portland

From: Julia Kuhn

Project: University of Portland

Subject: Rezone Analysis

Per your request, this memorandum provides additional information related to the proposed Triangle Park property Comprehensive Plan Amendment and Zone Change. The 35-acre site is currently zoned Heavy Industrial (IH). The University of Portland (UP) is proposing to change the zoning designation to General Employment 2 (EG2) with a comprehensive plan designation of Mixed Employment (ME). This zone change and comprehensive plan map amendment would permit the eventual development of the Property with University-related uses.

Per discussions with PDOT staff, this memorandum presents a 20-year comparative analysis of traffic operations at the Portsmouth/Willamette Boulevard intersection under the existing and proposed zoning scenarios. Further, an analysis of potential increases in daily traffic associated with the rezone request is presented in the context of neighborhood livability issues.

As discussed in previous memoranda, if the zone change and comprehensive plan amendment is approved, the University will not be permitted to develop the Property until it applies for and obtains a Conditional Use Master Plan (CUMS) amendment. We understand that, at that time, the City will require additional traffic analysis associated with the CUMS amendment that addresses the specific uses proposed in the Master Plan, the impacts of those uses on the transportation system and the identification of any necessary mitigation measures to address the development's transportation impacts.

EXISTING ZONING

The current zoning of the property is Heavy Industrial (IH). An analysis of information contained in the Trip Generation Manual published by the Institute of Transportation Engineers revealed the following trip rates for uses that could be developed under the IH zoning:

- Heavy Industrial (Land Use 120): 1.5 trips per 1,000 square feet (KSF) per day; 0.68 trips per KSF in the p.m. peak hour
- Manufacturing (Land Use 140): 3.82 trips per KSF per day; 0.74 trips per KSF in the p.m. peak hour
- Warehousing (Land Use 150): 4.96 trips per KSF per day; 0.47 trips per KSF in the p.m. peak hour

Although the warehousing land use category has the highest daily trip generation, the manufacturing is highest during the critical weekday p.m. peak hour. For this reason, we selected manufacturing for the comparative analysis of existing versus proposed zoning at the Willamette Boulevard/Portsmouth intersection.

Assuming buildings could take up a maximum of 25 percent of the 35 acre-site, approximately 380,000 square feet of buildings could be constructed on the Triangle Park property. The trip generation associated with the IH zoning is shown in Table 1.

PROPOSED ZONING – MAXIMUM BUILDOUT

The proposed EG2 zoning allows for a mixture of office and retail uses. Per the Metro Title 4 requirements, a maximum of 20,000 square feet of retail uses could be developed on the property. Using the same assumption of 25 percent coverage, an additional 360,000 square feet of office could be developed on the site. The trip generation of these uses is also shown in Table 1. As shown in Table 1, no reduction for pass-by trips was made for the retail uses due to the location of the property "below the Bluff."

Table 1 Comparative Trip Generation – Maximum Potential Buildout

Land Use	Size	ITE Land Use Code	Average Weekday Trips	Weekday PM Peak Hour Trips		
				Total	In	Out
Heavy Industrial (IH) Zoning						
Manufacturing	380,000 sq ft	140	1,450	280	100	180
General Employment 2 (EG2) Zoning						
General Office	360,000 sq ft	710	3,960	535	90	445
Retail	20,000 sq ft	820	860	75	35	40
Total EG2 Zoning			4,820	610	125	485
Difference EG2 – IH Zoning			+3,370	+330	+25	+305

*Given location of retail uses down below the bluff and therefore likely lower trip generating potential than other high visibility locations in North Portland, the potential trip generation was calculated using the average rate rather than the fitted curve equation.

An operational analysis was conducted at the Portsmouth/Willamette Boulevard intersection for year 2025 conditions under both zoning scenarios. This analysis was based on weekday p.m.

peak hour counts measured in November 2005 when school was in-session and assuming a one percent annual growth rate over the next twenty years (a comparison of counts conducted at the intersection over the past five years shows traffic volumes have declined slightly at this location so the application of a one percent growth rate is reasonably conservative). In addition, it was assumed that of the site-generated traffic, 50 percent was oriented to/from the east along Willamette Boulevard, 45 percent to/from the west along Willamette Boulevard, and 5 percent to/from the north along Portsmouth.

This analysis revealed that the intersection will function acceptably under the existing zoning scenario. Under the maximum buildout of the proposed zoning, it will operate at level-of-service "D" but will exceed its capacity. In addition, as shown in Table 1, the maximum buildout of EG2 yields a significant increase in daily trip-making associated with the property (3,370 additional trips). This represents a doubling of the existing traffic volumes on Portsmouth on-campus today. For these reasons, three scenarios were analyzed that restrict the amount of buildings that could be developed on the property to a level that does not impact neighborhood livability and within the capacity of the Willamette Boulevard/Portsmouth intersection. Each is described below.

PROPOSED ZONING – LIMITED BUILDING SIZES

Under the existing zoning, the highest daily trip generator that could be developed is warehousing. Per the ITE data described above, 380,000 square feet of warehouse would equate to 1,880 daily trips. The amount of building space allowed on the Triangle Property could be limited to that which is equivalent to the 1,880 daily trips allowed under the existing zoning. Depending on the size of retail allowed, this could equate to:

- *Alternative A:* Retail = 20,000 square feet plus Office = 92,000 square feet; or,
- *Alternative B:* Retail = 10,000 square feet plus Office = 131,000 square feet; or,
- *Alternative C:* Retail = 5,000 square feet plus Office = 151,000 square feet

The estimated trip generation associated with each scenario is shown in Table 2.

Table 2 Alternative Building Size Limitations - Proposed Zoning

Land Use	Size	ITE Land Use Code	Average Weekday Trips	Weekday PM Peak Hour Trips		
				Total	In	Out
General Employment 2 (EG2) Zoning Alternative A						
General Office	92,000 sq ft	710	1,010	135	25	110
Retail	20,000 sq ft	820	860	75	35	40
Total	112,000 sq ft		1,870	210	60	150
General Employment 2 (EG2) Zoning Alternative B						
General Office	131,000 sq ft	710	1,440	195	35	160
Retail	10,000 sq ft	820	430	40	20	20
Total	141,000 sq ft		1,870	235	55	180
General Employment 2 (EG2) Zoning Alternative C						
General Office	151,000 sq ft	710	1,660	225	40	185
Retail	5,000 sq ft	820	210	20	10	10
Total	112,000 sq ft		1,870	245	50	195

As shown in the table, any of the options presented result in a daily trip generation associated with the property less than that of the existing zoning. Further, the Willamette Boulevard/Portsmouth intersection will operate at LOS D or better and under capacity under any of the scenarios. For these reasons, the amount of building space allowed on the Triangle Park property could be limited to any of the alternatives presented in Table 2.

Please let us know if you need any additional information.

CITY OF PORTLAND, OREGON
COMPREHENSIVE PLAN PERIODIC REVIEW

PROPOSED LOCAL REVIEW ORDER

BUREAU OF PLANNING

Earl Blumenauer, Commissioner-In-Charge
Norman A. Abbott, AICP, Planning Director
Michael Harrison, AICP, Chief Planner

PROJECT STAFF

Jan Childs, AICP, City Planner III
Periodic Review Coordinator

MARCH 1989

Economic Opportunities Analysis: Inventory of Industrial and Commercial Lands

Findings:

1. In 1987, the City conducted a new vacant land inventory. The Multnomah County Assessment and Taxation (A & T) data file served as the data base for the inventory, which included the entire Urban Services Boundary area. All tax accounts within the Urban Services Boundary area where the parcel size was 2,000 square feet or greater and where no value was given for improvements were included in the 1987 Vacant Land Inventory.

2. Based on the legal description from the A & T account, each parcel was mapped on 1" = 200' quarter-section zoning maps. These maps are the 1987 Vacant Land Inventory Map Atlas. As the parcels were mapped, a coding sheet was completed for each parcel, for use in the computer analysis. The data included on the coding sheets are the 1987 Vacant Land Inventory Data File.

3. The following information is included in the 1987 Vacant Land Inventory Data File: tax account number; quarter-section number; parcel ID number; city limits or unincorporated area; size of parcel; Plan Map designation; zone; overlay zone; neighborhood ID code; industrial district ID code; hazard area information and floodplain information.

4. The 1987 vacant land analysis was derived from the 1987 Vacant Land Inventory. To determine buildable lands, parcels smaller than the minimum lot size for existing lots were eliminated. Of the remaining land, parcels located in whole or in part within a hazard area or floodplain were separated from land without development constraints. Parcels meeting the minimum lot size and without development constraints are considered "buildable".

5. The methodology used in the 1987 vacant land analysis results in a conservative estimate of buildable land, since development can occur on undersized parcels, in hazard areas and within floodplains.

6. Where property that had been annexed to the City retained County zoning at the time the vacant land inventory was mapped, the County zone was listed on the coding sheet. For purposes of the tables that follow, totals for County zones are included with the equivalent City Plan Map designation, as determined by the Portland/Multnomah County Zone Conversion Chart.

7. Based on the 1987 vacant land analysis, 11,818 vacant parcels and 15,218.35 vacant acres were located within the City of Portland and within the Urban Growth Boundary as of June 30, 1987. An additional 10 vacant parcels and 359.10 vacant acres were located within the City of Portland in the Natural Resource area adjacent to the Urban Growth Boundary. A total of 1,404 vacant parcels and 2,768.40 vacant acres were located in unincorporated Multnomah County within Portland's Urban Services Boundary area.

8. Of the 11,818 vacant parcels, 2,736 (23%) were located in whole or in part within a hazard area or floodplain. The remaining 9,083 (77%) showed no hazard area or floodplain constraints. The following provides a summary of vacant land by Comprehensive Plan Map designation:

Plan Map Designation	With Hazard/Flood		Without Hazard/Flood		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres
Open Space	80	1,147.58	81	368.51	161	1,516.08
Farm/Forest	41	423.55	63	473.72	104	897.27
Single Family	1,681	2,455.49	4,361	3,532.98	6,042	5988.47
Attached SF & Multi-family	199	122.43	1,786	526.00	1,985	648.73
Commercial	114	116.94	1,187	319.24	1,301	436.18
Industrial	621	3,441.36	1,604	2,290.56	2,225	5,731.91
Total	2,736	7,707.35	9,083	7,511.00	11,818	15,218.35

9. Vacant land in commercial Plan Map designations accounted for 2.87% of the total vacant acreage, and 4.25% of the vacant acreage without hazard or floodplain constraints.

10. Vacant commercial acreage by Plan Map designation is given in the following summary table. For purposes of the table, land annexed to the City which retained County zoning as of November 1987 is included with the comparable City Comprehensive Plan Map designation.

Plan Map Designation	With Hazard/Flood		Without Hazard/Flood		Total	
	Parcels	Acres	Parcels	Acres	Parcels	Acres
C5	1	.46	36	17.47	37	17.93
C4	6	21.37	70	11.14	76	32.51
C3	0	0.00	90	30.31	90	30.31
C2	103	84.80	928	244.37	1,031	329.17
C1	4	10.31	63	15.95	67	26.26
Total	114	116.94	1,187	319.24	1,301	436.18

11. Vacant land in industrial Plan Map designations accounted for 37.66% of the total vacant acreage, and 30.50% of the vacant acreage without hazard or floodplain constraints.

12. Vacant industrial acreage by Plan Map designation is given in the following summary table. For purposes of the table, land annexed to the City which retained County zoning as of November 1987 is included with the comparable City Comprehensive Plan Map designation.

Plan Map Designation	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
MX	1	2.00	7	4.53	8	6.53
M3	129	882.60	458	615.30	587	1,497.90
GE/ME	26	251.66	144	246.37	170	498.03
GI/M2	267	1,006.46	797	1,077.85	1,064	2,084.31
HI/M1	198	1,298.64	198	346.50	396	1,645.13
Total	621	3,441.36	1,604	2,290.56	2,225	5,731.91

13. 1,804 of the total vacant industrial and commercial parcels were located within Portland's industrial districts. The following gives vacant acreage in industrial and commercial Plan Map designations for each of the industrial districts. Vacant acreage within the districts designated Open Space or residential are not included in the totals:

District	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
Albina	5	6.67	127	22.68	132	29.35
Brooklyn	1	.59	77	20.11	78	20.70
Columbia Corridor						
Rivergate	67	948.21	102	298.05	169	1,246.26
West	102	354.04	142	80.62	244	434.66
Central	151	839.85	197	643.37	348	1,483.22
South Shore	105	768.76	242	774.77	347	1,543.53
Central Eastside	8	22.98	142	51.88	150	74.86
Guilds Lake	40	171.03	36	63.51	76	234.54
Linnton	33	54.59	19	6.13	52	60.72
NW Industrial	2	2.65	93	27.94	95	30.59
St. Johns	12	65.60	31	10.28	43	75.88
Swan Island	19	60.57	41	156.69	60	217.26
Total	555	3,295.54	1,249	2,156.03	1,804	5,451.57

14. The following tables provide a list of vacant acreage in commercial or industrial Plan Map designations by designation for each of the industrial districts. Vacant acreage designated open space or residential are not included in the totals.

Albina Industrial District

Plan Map Designation	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
C2	0	0.00	2	.27	2	.27
GE	0	0.00	26	3.38	26	3.38
G1	0	0.00	95	17.40	95	17.40
HI	5	6.67	4	1.63	9	8.30

Brooklyn Industrial District

Plan Map Designation	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
C2	0	0.00	6	.80	6	.80
GE	0	0.00	8	1.49	8	1.49
GI	1	.59	49	15.62	50	16.21
M3	0	0.00	14	2.20	14	2.20

Columbia Corridor Industrial District: Rivergate

Plan Map Designation	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
M1	61	784.28	56	220.86	117	1,005.13
M2	5	25.91	30	72.71	35	98.62
M3	1	138.02	16	4.47	17	142.49

Columbia Corridor Industrial District: West Columbia

Plan Map Designation	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
C2	0	0.00	7	1.51	7	1.51
M1	41	183.81	71	37.20	112	221.01
M2	29	109.16	14	20.01	43	129.17
M3	32	61.07	50	21.90	82	82.97

Columbia Corridor Industrial District
Central Columbia

Plan Map Designation	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
C2	1	3.38	0	0.00	1	3.38
GI/M2	79	196.95	116	151.43	195	348.38
M3	71	639.52	81	491.95	152	1,131.47

Columbia Corridor Industrial District:
Columbia South Shore

Plan Map Designation	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
C2	0	0.00	1	.52	1	.52
GE/ME	17	241.94	95	229.36	112	471.30
GI	88	526.82	145	531.22	233	1,058.04
M3	0	0.00	1	13.67	1	13.67

Central Eastside Industrial District

Plan Map Designation	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
C2	0	0.00	14	1.66	14	1.66
C3	0	0.00	1	.18	1	.18
GI	7	22.72	113	47.93	120	70.65
HI	1	0.25	2	.24	3	.49
M3	0	0.00	12	1.87	12	1.87

Guilds Lake Industrial District

Plan Map Designation	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
HI	40	171.03	36	63.51	76	234.54

Linnton Industrial District

Plan Map Designation	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
C2	1	.09	2	.29	3	.38
GE	1	.17	0	0.00	1	.17
HI	31	54.33	17	5.85	48	60.18

Northwest Industrial District

Plan Map Designation	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
C2	0	0.00	1	.06	1	.06
GE	0	0.00	3	.91	3	.91
GI	0	0.00	77	19.03	77	19.03
HI	1	.65	3	.95	4	1.60
M3	0	0.00	2	2.46	2	2.46
MX	1	2.00	7	4.53	8	6.53

St. Johns Industrial District

Plan Map Designation	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
M2	12	65.60	24	8.90	36	74.50
M3	0	0.00	7	1.38	7	1.38

Swan Island Industrial District

Plan Map Designation	With Hazard/Flood Parcels	With Hazard/Flood Acres	Without Hazard/Flood Parcels	Without Hazard/Flood Acres	Total Parcels	Total Acres
GE	8	9.55	2	9.02	10	18.57
GI	8	15.58	34	132.40	42	147.98
HI	3	35.44	5	15.27	8	50.71

Conclusion:

The results of the buildable lands analysis demonstrates a sufficient inventory of vacant buildable commercial and industrial land. For commercial land, there are 1,187 buildable vacant parcels on 319.24 acres of land. Just over three-quarters of this buildable commercial land, 77% of the total, is in the City's General Commercial (C2) Plan Map designation. For industrial land, there are 1,604 buildable vacant parcels on 2,290.56 acres of land. In addition, much of the vacant industrial land within the floodplain can be developed under the regulations of Chapter 24.50 Flood Hazard Areas.

Portland's industrial districts provide significant economic development opportunities. Twelve industrial districts provide 1,249 buildable vacant parcels on 2,156.03 acres of land. These parcels provide a range of employment opportunities by district, and often within district. Only one industrial district, Guilds Lake, includes buildable vacant parcels in only one Plan Map designation. The remainder of the districts provide a range of Plan Map designations, from low intensity General Commercial (C2) and Light Manufacturing (M3) to Heavy Industrial (HI and M1).

Industrial and Commercial Development Policies

Findings:

1. In March 1980, City Council adopted the Economic Development Policy for Portland. This Policy, which provided the general framework and direction for the City's economic development efforts, was incorporated as the Economic Development element of Portland's Comprehensive Plan

2. In June 1983, City Council adopted Ordinance No. 154627 adopting the Commercial Policy Study, including the addition of new Comprehensive Plan Policies and Objectives specific to commercial areas. The four commercial area policies are: Policy 5.13 Area Character and Identity; Policy 5.14 Land Use; Policy 5.15 Transportation; and Policy 5.16 Business Environment.

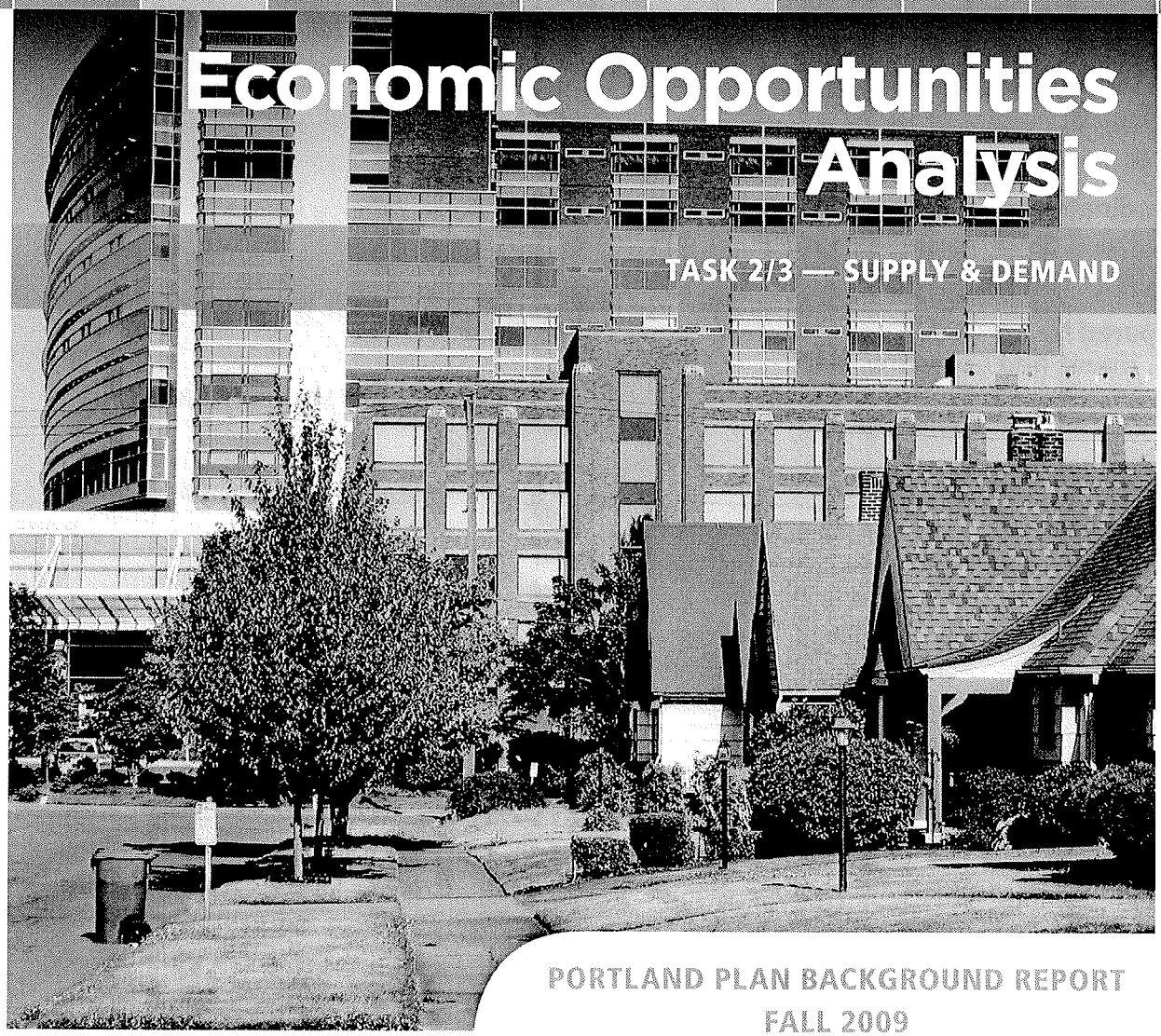
3. In July 1985, City Council adopted Ordinance No. 157633, amending the Zoning Code to establish new industrial zones and Ordinance No. 157664 amending the Comprehensive Plan to add new Plan Map designations for the new industrial zones.

4. The new industrial zones are: General Employment (GE), which allows industrial and commercial uses and restricts residential uses; General Industrial (GI), which allows a broad range of industrial uses and restricts most commercial and all residential uses; and Heavy Industrial (HI) which allows general and heavy industrial uses, restricts most commercial uses and prohibits new residential uses. The GE zone is within the Mixed Employment (ME) Plan Map designation, which is applied in areas where

PORTLAND PLAN

Economic Opportunities Analysis

TASK 2/3 — SUPPLY & DEMAND



PORTLAND PLAN BACKGROUND REPORT
FALL 2009

City of Portland Bureau of
Planning and Sustainability
Sam Adams, Mayor | Susan Anderson, Director

Acknowledgments

Bureau of Planning and Sustainability (BPS)

Mayor Sam Adams, *Commissioner-in-charge*
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Prepared by
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Economic Opportunities Analysis

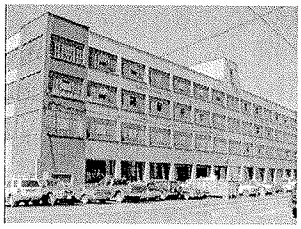
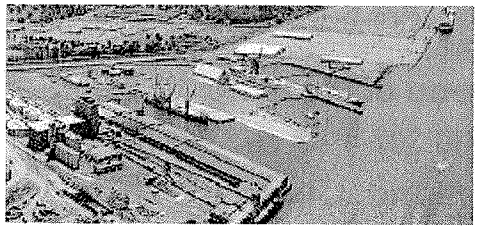
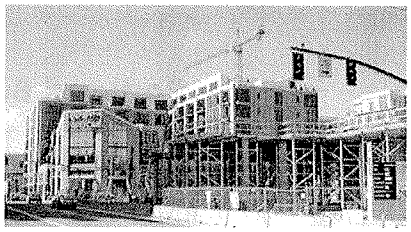
PORTLAND PLAN

City of Portland Bureau of
Planning and Sustainability
Sam Adams, Mayor I Susan Anderson, Director

To help ensure equal access to City programs, services and activities, the City of Portland will reasonably modify policies/procedures and provide auxiliary aids/services to persons with disabilities. Call (503) 823-7700 with such requests.

CITY OF PORTLAND
ECONOMIC OPPORTUNITIES ANALYSIS:

Task 2/3 – Supply & Demand

Revised Draft

Prepared for:

City of Portland Bureau of Planning & Sustainability

July, 2009

E. D. Hovee & Company, LLC

Economic & Development Services

City of Portland
Economic Opportunities Analysis

Task 2/3 Report – Supply & Demand

Revised Draft

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July 2009

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I. INTRODUCTION

The City of Portland is required to complete an Economic Opportunities Analysis (EOA) to comply with Oregon Statewide Planning Goal 9. At its basis, an EOA defines both short and long-term employment land demand and employment land supply, and suggests policy and public action to ensure that land demand is adequate to meet economic growth objectives.

There are four primary elements to Portland's EOA:

- *Task 1* – report reviewing national and local recent employment trends, quantitative analysis and focus groups conducted on five specific demand topics, summary of Portland's sectoral specializations.

  This element is complete; final draft of May 4 2009. Results have served as a starting point for subsequent Task 2 forecast analysis.
- *Task 2* - forecast of employment and associated employment land demand to 2035.

  This work product comprises three excel workbooks (representing a low, mid and high forecast scenario); results are summarized in this Task 2/3 June 3 draft report.
- *Task 3* - comparison of forecast demand with available supply.

  The land inventory product consists of GIS shapefiles and accompanying excel tables that summarize the results. Inventory results are also summarized in this Task 2/3 June 3 draft report.
- *Task 4* – report identifying alternative choices related to growth targets, land / development capacity and public investments / incentives.

  Draft report anticipated in advance of planned June 22 Advisory Committee meeting.

ORGANIZATION OF TASK 1 ANALYSIS

The remainder of this Task 1 report is organized to cover the following topics:

Employment & Land Demand Scenarios
Land Supply Inventory
Next Steps

II. EMPLOYMENT & LAND DEMAND SCENARIOS

This chapter details the conclusions and methodology used to forecast employment-related land needs within the City of Portland through 2035.

As stipulated by Goal 9 (Economy of the State), the intent of the Economic Opportunities analysis is to "compare the demand for industrial and other employment uses to the existing supply of such land." This report provides both forecast conditions and comparison with inventoried land supply. While employment growth serves as a major driver for land demand, the forecast process also recognizes that some needs (such as regional transportation logistics functions) require industrial land without significant corresponding employment.

CITY-WIDE EMPLOYMENT GROWTH TARGETS

Two primary variables influence anticipated employment growth for the City:

1. *Metro's overall employment forecast.* In April 2000, Metro released a range of long-term forecasts for the seven county metro region. This forecast is developed on an industry level and is informed by national and local industry trends and an assessment of the region's future competitive position. The region's projected average annual job growth rate from 2010-2035 ranges from 1.5% per year (with the low scenario) to 1.9% with the high scenario. For all three regional forecast scenarios, the projected growth rate is above the 0.7% rate the region actually experienced from 2000-06.
2. *Portland's anticipated share of regional employment growth.* As with the regional job forecast, three alternative scenarios have been developed. These reflect lower annual growth rates of 0.9% - 1.6%, all higher than the 0.2% annual growth the City reported from 2000-2006. While Portland currently has an approximate 40% share of the region's employment, its capture rate has declined over time as higher rates of both population and employment growth are experienced elsewhere in the PMSA. From 2000-2006, the City captured only 11% of the region's net added jobs. The city's proposed forecast range, when applied to Metro's mid forecast scenario, equates to a capture rate ranging from 18% of net new jobs (low scenario) to 36% (high scenario). Varying both Portland's capture rate and the Metro forecast range was deemed to result in too great a forecast range (of 600% +), therefore, the Metro mid forecast range is used in all scenarios.

The resulting forecast range of added in-city jobs anticipated over the 2010-2035 period is summarized as follows:

- Low Scenario (+ 100,000 jobs)
- Mid Scenario (+ 150,000 jobs).
- High Scenario (+ 200,000 jobs)

Across the three scenarios, total citywide job growth projected by 2035 varies by 100%. This exceeds the variation within Metro's low-high forecasts (about 40%). The mid forecast is very similar to that anticipated for the City via Metro's May 2009 Metroscope run (approximately

147,000 net new jobs). Metro's preliminary numbers have been reported in aggregate only; the City corresponds to portions of four regional subareas used in that analysis. Metro's introduction of regional subareas have allowed for its first assessment of sub-regional employment growth.

FORECAST RESULTS

The steps taken to translate projected jobs into land demand are described in the following section, after forecast results are reported. Results are reported by ten geographies, allowing development assumptions to vary across the City and describing job growth trends and future land needs on a sub-City level. These forecast geographies are an aggregation of the 19 geographies reported in the May 4 *Trends, Opportunities and Market Factors* report (Task 1).

Forecast job growth corresponds to an estimated 50 million to 100 million square feet of building development, and a total of 1,600 to 3,500 acres of land area need (expected to be met through both vacant and redevelopment sites). This acreage increases to a range of 2,200 – 4,100 acres when additional non-employment related industrial land uses are included.

Figure 1. Demand Forecast: Mid Scenario

	Jobs		Total Building Square Feet		Total Acres		Avg
	First 5 Years	By 2035	First 5 Years	By 2035	First 5 Years	By 2035	FAR
Central City Urban	15,730	50,120	5,268,000	19,110,000	30	90	4.87
Central Eastside + Lower Albina	2,000	6,950	1,212,000	3,649,000	30	80	1.05
Columbia Harbor	4,440	16,360	3,813,000	11,697,000	290	880	0.31
Columbia East of 82nd	4,620	8,320	1,571,000	3,715,000	110	250	0.34
Dispersed Industrial	(130)	2,400	(396,000)	544,000	(30)	40	0.31
Gateway Regional Center	2,580	5,040	691,000	1,852,000	40	80	0.53
Town Centers	1,080	3,900	639,000	2,125,000	40	100	0.49
Neighborhood Commercial	8,680	28,800	4,854,000	13,914,000	230	600	0.53
Residential	(3,320)	(730)					
Institutions	8,770	28,840	5,074,000	16,660,000	160	470	0.81
Total	44,450	150,000	22,726,000	73,266,000	900	2,590	0.65
Capture of PMSA Net Job Growth	*38%*	*27%*					
Share of PMSA Total Jobs	*39%*	*35%*					
AAGR		*1.3%*					

Non-Employment Driven Land Needs	Total Acres First 5 Years	Total Acres By 2035
1. Airport runway expansion	-	50
2. Railyard expansion	-	200
3. Marine Terminal	-	390
	-	640
	900	3,230

Note: Building square feet and acres available/needed are not reported for residential areas; it is assumed that no jobs will back-fill vacated land in these areas and that it is not necessary to 'provide' land for job growth in these areas.

Source: E.D. Hovee & Company, LLC.

The above table includes three line items for 'Non-Employment Driven Land Needs.' These land uses – marine and rail terminal expansion and airport runway expansion – have been profiled separately as there is no readily apparent correlation between these industrial land uses and employment trends. The rationale behind the acreage need estimate is described in forecast details, below.

Figure 2. Demand Forecast: Low Scenario

	Jobs		Total Building Square Feet		Total Acres		Avg
	First 5 Years	By 2035	First 5 Years	By 2035	First 5 Years	By 2035	FAR
Central City Urban	13,480	34,220	4,487,000	12,889,000	30	60	4.93
Central Eastside + Lower Albina	1,710	4,480	1,033,000	2,297,000	30	50	1.05
Columbia Harbor	3,440	8,750	3,024,000	6,002,000	230	460	0.30
Columbia East of 82nd	4,180	5,950	1,379,000	2,307,000	100	160	0.33
Dispersed Industrial	(370)	650	(535,000)	(411,000)	(40)	(30)	0.31
Gateway Regional Center	2,370	3,860	629,000	1,352,000	40	60	0.52
Town Centers	940	2,740	569,000	1,544,000	30	70	0.51
Neighborhood Commercial	7,360	18,300	4,203,000	8,973,000	200	390	0.53
Residential	(3,680)	(3,340)					
Institutions	8,050	22,420	4,673,000	13,038,000	140	380	0.79
Total	37,480	98,030	19,462,000	47,991,000	760	1,600	0.69
Capture of PMSA Net Job Growth	*32%*	*18%*					
Share of PMSA Total Jobs	*38%*	*32%*					
AAGR		*0.9%*					

Non-Employment Driven Land Needs	Total Acres First 5 Years	Total Acres By 2035
1. Airport runway expansion	-	50
2. Railyard expansion	-	200
3. Marine Terminal	-	390
	-	640
	37,480	98,030	19,462,000	47,991,000	760	2,240

Note: Building square feet and acres available/needed are not reported for residential areas; it is assumed that no jobs will back-fill vacated land in these areas and that it is not necessary to 'provide' land for job growth in these areas

Source: E.D. Hovee & Company, LLC.

Figure 3. Demand Forecast: High Scenario

	Jobs		Total Building Square Feet		Total Acres		Avg
	First 5 Years	By 2035	First 5 Years	By 2035	First 5 Years	By 2035	FAR
Central City Urban	16,870	65,010	5,665,000	24,982,000	40	110	5.21
Central Eastside + Lower Albina	2,150	9,290	1,302,000	4,926,000	40	100	1.13
Columbia Harbor	4,950	23,570	4,214,000	17,086,000	320	1,290	0.30
Columbia East of 82nd	4,840	10,500	1,668,000	5,047,000	120	340	0.34
Dispersed Industrial	-	4,060	(326,000)	1,449,000	(20)	100	0.33
Gateway Regional Center	2,690	6,120	723,000	2,325,000	40	100	0.53
Town Centers	1,150	5,000	674,000	2,673,000	40	120	0.51
Neighborhood Commercial	9,350	38,750	5,184,000	18,584,000	250	780	0.55
Residential	(3,130)	1,740					
Institutions	9,130	34,890	5,277,000	20,072,000	160	550	0.84
Total	48,000	198,930	24,381,000	97,144,000	990	3,490	0.64
Capture of PMSA Net Job Growth	*41%*	*36%*					
Share of PMSA Total Jobs	*39%*	*38%*					
AAGR		*1.6%*					

Non-Employment Driven Land Needs	Total Acres First 5 Years	Total Acres By 2035
1. Airport runway expansion	-	50
2. Railyard expansion	-	200
3. Marine Terminal	-	390
	-	640

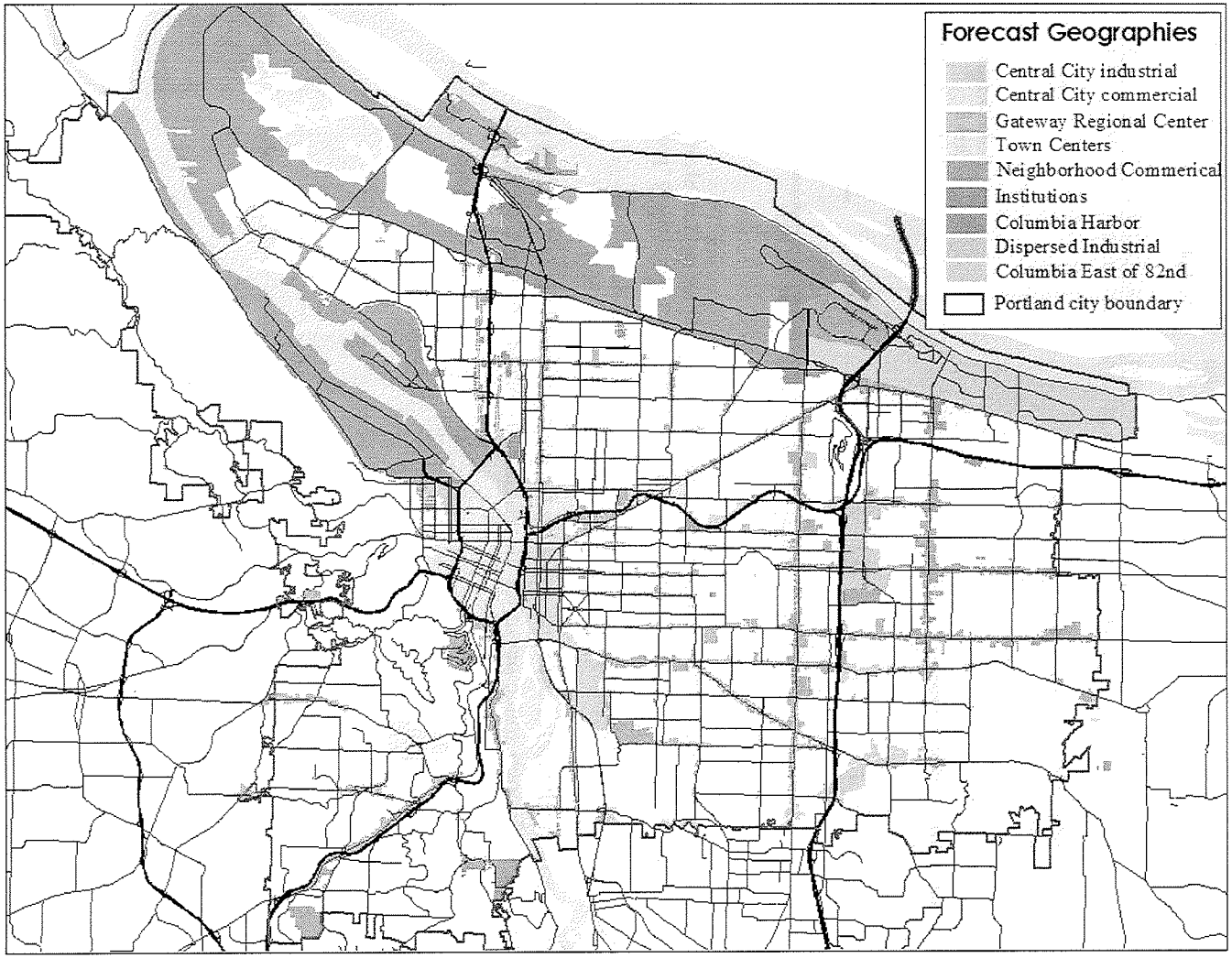
	48,000	198,930	24,381,000	97,144,000	990	4,130

Note: Building square feet and acres available/needed are not reported for residential areas; it is assumed that no jobs will back-fill vacated land in these areas and that it is not necessary to 'provide' land for job growth in these areas.

Source: E.D. Hovee & Company, LLC.

The following map illustrates the nine sub-city forecast geographies (excluding residential, which together with open space occupies all unmarked portions of the City map).

Figure 4. Forecast Geographies



Source: E.D. Hovee & Company, LLC., Portland Bureau of Planning & Sustainability.

Methodology Detail

City of Portland anticipated job growth was translated into land demand via an excel worksheet model. The key steps in translating job growth into land demand are outlined below, and indicate that two variables are altered across the three scenarios: the City's share of PMSA job growth (which impacts total job numbers, required building square feet and land acres), and the FAR of new development (which impacts required land acres only).

I. Starting point: **Metro's seven county PMSA forecast**. In March 2009, Metro released a low, mid and high scenario job forecast for the region. The PMSA forecast is included in this report's Appendix C (Figure 18).

This input does not vary by scenario; Metro's mid scenario is used in all Portland forecast scenarios.

II. **Portland PMSA job capture**: Allocation of 7 county forecast to City of Portland. Reported in Figure 19, within this report's Appendix C.

This input varies by scenario: In the low scenario, Portland captures 18% of net new regional jobs (still above the 11% capture rate reported for 2000-2006). This increases to 36% in the high scenario.

III. **Translate jobs into building types** that capture the most relevant distinctions in job environments (e.g. square feet per employee, floor to land area ratios). This allows jobs to be aggregated, rather than forecasting the land needs of 18 separate industries. The six building types are: office, retail, institutional, general industrial, warehouse/ distributing, and business park/flex. This translation is primarily informed by where jobs are located across the city and is reported in Appendix C, Figure 20.

This input does not vary by scenario.

IV. The number **of jobs per building type per forecast geography** is determined for each of the 10 forecast geographies by assigning the building typology to 2006 and 2000 employment data. The 2000-2006 observed trend in job distribution across the geographies is continued and moderated over time.

This input does not vary by scenario.

V. **Jobs are translated into building square feet**. An average square feet per job is assigned to each building type and each geography (a cross-matrix of 60 inputs), although there in many cases the assumption is consistent across geographies. This relationship is informed by industry standards and data from the 2005 Industrial Atlas for industrial uses. Square footage assumptions are reported in Appendix C, Figure 21.

This input does not vary by scenario.

VI. **Building square feet is translated into land area** via Floor Area Ratios (FAR). A separate FAR is assumed for each building type and each geography. FARs are informed by actual FARs (derived from Bureau of Planning and Sustainability data) and Industrial Atlas data.

This input varies over the 25 year forecast period within each scenario. Low scenario: Central City FARs increase by 16%, other non-industrial by 10%. Mid: Central City FARs increase by 34%, other non-industrial by 16%. High: Central City FARs increase by 48%, other non-industrial by 22%. Industrial FARs remain constant in all scenarios (do not increase over time).

Figure 5. Forecast Summary

Forecast Variable	Low Scenario	Mid Scenario	High Scenario
Employment Growth:			
1. Metro PMSA Job Forecast (2010-2035)	--Mid scenario used: 1.7% AAGR consistent across all scenarios--		
2. Portland Capture of PMSA Job Growth	18% Capture (0.9% AAGR)	27% Capture (1.3% AAGR)	36% Capture (1.6% AAGR)
1+2 Resulting Job Forecast	100,000	150,000	200,000
Building/Land Need:			
3. Job Allocation to Building Types	---------- Constant across all scenarios ----------		
4. Typical Building Square Feet per Job	---------- Constant across all scenarios ----------		
5. Floor Area Ratios (FARs)	Central City increases by 16%, other non-industrial by 10%, industrial constant	Central City increases by 34%, other non-industrial by 16%, industrial constant	Central City increases by 48%, other non-industrial by 22%, industrial constant
6. Special Land Needs	---- Determined separately for airport, rail and marine terminals ----		

Additional Sources of Industrial Land Demand

The three land transport/logistic demand drivers described below are treated as separate line items because they do not directly correlate to employment growth. Each is long-term and subject to considerable refinement, responding to policy commitments and priorities; Portland could strive to meet the anticipated expansion or allow it to locate elsewhere. Ideally these policy priorities would be formulated with a full understanding of the impact to the City and region of both capturing and not capturing these three forms of potential future industrial growth.

1. Airport runway expansion. Port of Portland staff estimated future land needs – for runway expansion, infrastructure need, de-icing needs – as 50 acres.
2. Rail yard expansion. Rail yard expansion is currently underway in the Port of Porltand's Ramsey Yard and South Rivergate Yard, equating to a total of about 25 acres. This expansion will serve both Union Pacific and Burlington Northern Santa Fe, (the two main-line railroads serving the City of Portland). A Union Pacific representative states that the railroad's plans are unclear in the current economic climate. The organization has a five year plan that describes track capacity; for the Portland area, plans focus on working with what they have given the land-locked nature of their holdings. The railroad

focuses on consolidation and efficiencies within urban areas, and if necessary, relocation. While additional tracks may be required, there does not appear to be a widely articulated need for additional facilities.

3. Marine Terminal. Port of Portland representatives state that terminal expansion is difficult to project, as it relates more to strategic decisions on the part of a small number of shippers than to commodity flow projections. The 390 acre figure used assumes a trend continuation of 15.7 acres absorbed per year for marine cargo uses (between 1960 and 1997, as reported in the *Portland Harbor Industrial Land Study*).

LAND DEMAND DETAIL BY BUILDING TYPE

The following two tables break down projected demand (jobs, building square feet and land acres) for the mid scenario by building type. Building types roughly correspond to industry types, however, a number of professional services locate in retail spaces, etc. (step III of the forecast methodology).

These tables provide a sense of the sources of job growth and land demand within each geography. They illustrate that most employment-related demand – even within the industrial areas – derives from the commercial building types (office, retail and institutional). Citywide, 71% of the land demand forecasted within the mid scenario (excluding additional industrial land uses) is associated with these building types. Commercial building types comprise a smaller share of land demand within the Columbia Harbor geography, at 61%, but still the majority.

Land demand is also influenced by FARs, as less dense building types (such as retail and warehousing) generate more land demand than building types such as office for an equivalent number of jobs. The FARs employed in the mid-scenario are reported in Appendix C.

Following the land demand by building type tables, this report considers land supply available and its relationship to estimated future land demand.

Figure 6. Mid-Range Demand Scenario Detail: Industrial Buildings

	Jobs		Total Building Square Feet		Total Acres	
	First 5 Years	By 2035	First 5 Years	By 2035	First 5 Years	By 2035
			General Industrial			
Central City Urban	(600)	(700)	(207,000)	(260,000)	(1)	(1)
Central Eastside + Lower Albina	(400)	(500)	(374,000)	(470,000)	(9)	(10)
Columbia Harbor	(2,500)	(3,200)	(2,285,000)	(2,933,000)	(175)	(224)
Columbia East of 82nd	-	100	(5,000)	114,000	(0)	8
Dispersed Industrial	(100)	(100)	(119,000)	(54,000)	(9)	(4)
Gateway Regional Center	-	-	-	7,000	0	0
Town Centers	-	-	(11,000)	(14,000)	(0)	(1)
Neighborhood Commercial	(400)	(400)	(409,000)	(406,000)	(31)	(31)
Residential	(600)	(800)				
Institutions	-	-	(1,000)	(2,000)	(0)	(0)
Total	(4,600)	(5,600)	(3,411,000)	(4,018,000)	(226)	(264)
			Warehouse & Distributing			
Central City Urban	-	400	1,000	125,000	0	1
Central Eastside + Lower Albina	400	1,000	347,000	794,000	8	18
Columbia Harbor	2,600	6,200	3,273,000	7,779,000	250	595
Columbia East of 82nd	300	800	420,000	1,046,000	28	69
Dispersed Industrial	(300)	(400)	(403,000)	(537,000)	(31)	(41)
Gateway Regional Center	-	100	10,000	25,000	0	1
Town Centers	-	100	8,000	20,000	0	1
Neighborhood Commercial	200	500	126,000	359,000	12	31
Residential	-	100				
Institutions	(100)	(100)	(18,000)	(25,000)	(1)	(1)
Total	3,100	8,700	3,764,000	9,586,000	267	673
			Flex			
Central City Urban	5,900	6,900	521,000	888,000	2	4
Central Eastside + Lower Albina	-	300	268,000	457,000	3	5
Columbia Harbor	1,500	2,800	1,494,000	2,482,000	114	190
Columbia East of 82nd	2,700	3,100	411,000	685,000	27	45
Dispersed Industrial	400	600	173,000	260,000	13	20
Gateway Regional Center	1,300	1,300	26,000	46,000	1	2
Town Centers	-	-	17,000	28,000	1	1
Neighborhood Commercial	-	800	624,000	1,083,000	48	81
Residential	-	-				
Institutions	-	-	(4,000)	(8,000)	(0)	(0)
Total	11,800	15,800	3,530,000	5,921,000	209	347
			Total Industrial			
Central City Urban	5,300	6,600	315,000	753,000	1	3
Central Eastside + Lower Albina	-	800	241,000	781,000	2	12
Columbia Harbor	1,600	5,800	2,482,000	7,328,000	190	561
Columbia East of 82nd	3,000	4,000	826,000	1,845,000	54	121
Dispersed Industrial	-	100	(349,000)	(331,000)	(27)	(25)
Gateway Regional Center	1,300	1,400	36,000	78,000	1	3
Town Centers	-	100	14,000	34,000	1	1
Neighborhood Commercial	(200)	900	341,000	1,036,000	28	81
Residential	(600)	(700)	-	-	-	-
Institutions	(100)	(100)	(23,000)	(35,000)	(1)	(2)
Total	10,300	18,900	3,883,000	11,489,000	250	756

Figure 7. Mid-Range Demand Detail: Non Industrial Buildings

	Jobs		Total Building Square Feet		Total Acres	
	First 5 Years	By 2035	First 5 Years	By 2035	First 5 Years	By 2035
			Office			
Central City Urban	1,400	24,400	478,000	8,553,000	2	24
Central Eastside + Lower Albina	200	2,000	53,000	715,000	1	7
Columbia Harbor	100	5,600	35,000	1,955,000	3	139
Columbia East of 82nd	100	1,500	27,000	539,000	2	33
Dispersed Industrial	-	2,200	(7,000)	765,000	(1)	54
Gateway Regional Center	(100)	600	(34,000)	212,000	(1)	3
Town Centers	(200)	300	(69,000)	116,000	(3)	3
Neighborhood Commercial	(1,300)	7,300	(472,000)	2,558,000	(18)	81
Residential	(2,900)	(2,700)				
Institutions	100	1,500	23,000	539,000	1	13
Total	(2,600)	42,700	34,000	15,952,000	(14)	358
			Retail			
Central City Urban	7,300	12,800	3,448,000	6,027,000	26	45
Central Eastside + Lower Albina	1,300	2,300	608,000	1,061,000	28	47
Columbia Harbor	2,600	4,500	1,225,000	2,136,000	94	163
Columbia East of 82nd	1,400	2,500	680,000	1,193,000	52	91
Dispersed Industrial	(200)	(200)	(85,000)	(92,000)	(6)	(7)
Gateway Regional Center	1,100	1,900	502,000	884,000	38	66
Town Centers	600	1,100	297,000	520,000	23	39
Neighborhood Commercial	9,300	16,200	4,348,000	7,594,000	200	338
Residential	100	300				
Institutions	1,400	2,100	652,000	995,000	30	44
Total	24,900	43,500	11,675,000	20,318,000	484	826
			Instititutional			
Central City Urban	1,700	6,300	1,026,000	3,777,000	5	16
Central Eastside + Lower Albina	500	1,800	311,000	1,090,000	4	12
Columbia Harbor	100	500	71,000	279,000	5	21
Columbia East of 82nd	100	200	38,000	137,000	2	9
Dispersed Industrial	100	300	44,000	202,000	3	15
Gateway Regional Center	300	1,100	187,000	677,000	3	12
Town Centers	700	2,400	396,000	1,455,000	15	53
Neighborhood Commercial	1,100	4,500	637,000	2,727,000	24	98
Residential	-	2,300				
Institutions	7,400	25,300	4,422,000	15,160,000	127	412
Total	12,000	44,700	7,132,000	25,504,000	189	649
			Total Commercial			
Central City Urban	10,400	43,500	4,952,000	18,357,000	33	85
Central Eastside + Lower Albina	2,000	6,100	972,000	2,866,000	32	66
Columbia Harbor	2,800	10,600	1,331,000	4,370,000	102	323
Columbia East of 82nd	1,600	4,200	745,000	1,869,000	56	133
Dispersed Industrial	(100)	2,300	(48,000)	875,000	(4)	63
Gateway Regional Center	1,300	3,600	655,000	1,773,000	41	81
Town Centers	1,100	3,800	624,000	2,091,000	35	95
Neighborhood Commercial	9,100	28,000	4,513,000	12,879,000	206	517
Residential	(2,800)	(100)	-	-	-	-
Institutions	8,900	28,900	5,097,000	16,694,000	157	470
Total	34,300	130,900	18,841,000	61,774,000	659	1,833

Source: E.D. Hovee & Company, LLC.

III. LAND SUPPLY INVENTORY

This analysis considers two primary categories of land supply as the easiest and most likely to host new construction associated with job growth: vacant and redevelopable (low value lots).

VACANT LAND SUPPLY

The inventory developed for this report finds just over 3,000 acres of vacant industrially and commercially designated land within the City. However, some form of constraint applies to the bulk of land within the vacant inventory, limiting its availability for development. Definitions of the five vacant land categories utilized with this analysis follow the tables.

Figure 8. Inventory Details: Table 1

	Acres of Vacant Land by (Vacant) Parcel Size								
	0.1 - 0.5	0.5 - 1.0	1 - 3	3-6	6-10	10-20	20-50	50+	Total
Central City Commercial									
1 Vacant/redevelopable, no constraints	0	1	7	-	-	-	-	-	8
2 Vacant/redevelopable, environmental overlay		-	18	13	8	32	-	-	71
3 Partially vacant, no constraints									-
4 Partially vacant, environmental overlay									-
5 Vacant, potential brownfield	-	-	7	-	-	11	-	-	18
Total	0	1	32	13	8	43	-	-	96
Central City Industrial									
1 Vacant/redevelopable, no constraints	1	2	-	-	-	-	-	1	5
2 Vacant/redevelopable, environmental overlay		7	-	-	-	-	-	-	7
3 Partially vacant, no constraints									-
4 Partially vacant, environmental overlay									-
5 Vacant, potential brownfield									-
Total	1	9	-	-	-	-	-	1	12
Columbia Harbor									
1 Vacant/redevelopable, no constraints		3	58	70	105	51	110	-	396
2 Vacant/redevelopable, environmental overlay		13	102	77	40	68	34	56	391
3 Partially vacant, no constraints		1	29	16	34	-	-	-	80
4 Partially vacant, environmental overlay		4	25	4	-	23	28	82	167
5 Vacant, potential brownfield		2	39	80	127	121	383	123	877
Total		23	254	247	307	263	555	261	1,910
Columbia East									
1 Vacant/redevelopable, no constraints		5	32	31	9	13	-	-	90
2 Vacant/redevelopable, environmental overlay		7	47	54	40	80	-	-	228
3 Partially vacant, no constraints		2	9	-	-	-	-	-	11
4 Partially vacant, environmental overlay		-	7	-	-	-	-	-	7
5 Vacant, potential brownfield		-	14	15	-	-	-	-	29
Total		14	110	99	49	93	-	-	366
Dispersed Industrial									
1 Vacant/redevelopable, no constraints		-	7	4	-	-	-	-	11
2 Vacant/redevelopable, environmental overlay		1	12	-	14	11	-	-	38
3 Partially vacant, no constraints		1	2	5	-	-	-	-	7
4 Partially vacant, environmental overlay		-	5	-	-	-	-	-	5
5 Vacant, potential brownfield		-	-	-	-	-	20	-	20
Total		1	26	9	14	11	20	-	82

Note: Parcels under 0.5 acres were not considered viable for industrial uses.

Figure 9. Inventory Details: Table 2

	Acres of Vacant Land by (Vacant) Parcel Size								
	0.1 - 0.5	0.5 - 1.0	1 - 3	3-6	6-10	10-20	20-50	50+	Total
Neighborhood Commercial									
1 Vacant/redevelopable, no constraints	5	6	18	7	7	43	-	-	87
2 Vacant/redevelopable, environmental overlay	1	1	16	31	50	11	118	-	227
3 Partially vacant, no constraints	-	1	3	6	-	-	-	-	10
4 Partially vacant, environmental overlay	-	-	1	-	-	-	-	-	1
5 Vacant, potential brownfield	0	-	-	-	-	-	-	-	0
Total	6	9	38	43	57	54	118	-	325
Town Centers									
1 Vacant/redevelopable, no constraints									-
2 Vacant/redevelopable, environmental overlay	-	-	3	-	15	-	-	-	18
3 Partially vacant, no constraints	-	-	1	-	-	-	-	-	1
4 Partially vacant, environmental overlay									-
5 Vacant, potential brownfield									-
Total	-	-	4	-	15	-	-	-	19
Gateway Regional Center									
1 Vacant/redevelopable, no constraints	1	2	5	-	-	-	-	-	8
2 Vacant/redevelopable, environmental overlay									
3 Partially vacant, no constraints									-
4 Partially vacant, environmental overlay									-
5 Vacant, potential brownfield	-	-	2	-	-	-	-	-	2
Total	1	2	7	-	-	-	-	-	10
Institutions									
1 Vacant/redevelopable, no constraints	0	-	6	3	-	-	-	-	9
2 Vacant/redevelopable, environmental overlay	-	-	6	-	-	-	-	-	6
3 Partially vacant, no constraints	-	1	6	-	-	-	-	-	6
4 Partially vacant, environmental overlay	-	1	4	3	10	19	-	-	37
5 Vacant, potential brownfield	-	-	3	6	17	15	28	-	68
Total	0	2	24	12	27	35	28	-	126
All Forecast Geographies									
1 Vacant/redevelopable, no constraints	8	18	133	115	122	107	110	1	614
2 Vacant/redevelopable, environmental overlay	1	29	204	174	166	202	152	56	984
3 Partially vacant, no constraints	-	5	50	27	34	-	-	-	116
4 Partially vacant, environmental overlay	-	5	42	7	10	43	28	82	217
5 Vacant, potential brownfield	0	2	65	101	144	147	431	123	1,013
Total	10	59	495	424	476	499	721	262	2,946

Source: Metro's vacant land inventory (January 2009), Bureau of Planning and Sustainability, Real Urban Geographics LLC, E.D. Hovee & Company, LLC.

The bulk of the City's roughly 3,000 acres is within the Columbia Harbor geography. Other significant land holdings include the Columbia Corridor East of 82nd (369 acres), Neighborhood Commercial areas (381 acres) and land under institutional ownership (128 acres). Properties that are vacant with no constraints comprise 687 acres (or 23%) of the total vacant land inventory.

While one-third (982 acres) consists of parcels that are 20+ acres in size, the majority (83%) of this lies in the Columbia Harbor area and most acreage is partially constrained or has some existing development. For large, entirely vacant and unconstrained sites, Columbia Harbor reports 100 acres.

Inventory Definitions: With this EOA inventory, vacant land is described via five categories. This categorization system is distinct from Tier system utilized by Metro, which is included in Appendix D.

1. **Vacant, no constraints**: Parcels that are at least 90% vacant and have no environmental overlays that may limit development.

   This land category is considered the easiest to develop; all is projected to be available for development in the low, mid and high forecast scenarios.

2. **Vacant, environmental overlay**: Parcels that are vacant in their entirety but have some environmental overlays (covering more than 10% of the parcel) that impacts development. The relevant environmental overlays are: Title 13 designation or c overlay (conservation) outside of the Columbia Harbor North Reach, and newly proposed p, c, and e (protection, conservation, environmental) overlays within the North Reach. Beyond the North Reach, land impacted by a p overlay has been removed from the vacant land inventory as unbuildable.

   The implications of environmental overlays for parcel developability vary widely. For wetlands/riparian areas, development requires balanced land cut & fill, which reduces the portion of the site on which buildings can locate. Environmental overlays also tend to increase the cost and timeline of development. For this analysis, it is assumed that some portion of sites with environmental overlays will not develop. No data exists to fully ground-truth this assumption in past trends, especially as the portion of vacant land impacted by environmental zoning has risen steadily over time (as vacant land decreases and environmental zoning increases). The portion of land projected to develop varies by geography and across the low, mid and high scenarios.

3. **Partially vacant, no constraints**: Vacant land comprises less than 90% of a parcel. This land category represents sites on which development is already located, but a portion of the site is not used. The site may be owner-occupied or leased, and its vacant portion in some cases represents land held in strategic reserve for future business expansion.

   It is assumed that some portion of land within this category will not be available for development due to lack of owner interest. This portion varies by geography and across the low, mid and high scenarios.

4. **Partially vacant, environmental overlay**: This category combines categories 2 and 3. While in some ways this property is 'doubly constrained,' it may also be that a business wishing to expand on site is more likely to accommodate the conditions on development that environmental overlays bring than would a business seeking a vacant site on which to develop.

   Again, no data exists to fully ground these assumptions in past trends. The portion of partially vacant, environmentally constrained land projected to be available for development varies by geography and across the low, mid and high scenarios.

5. **Potential Brownfields**. Brownfields are defined as underutilized sites with some amount of contamination. This vacant land inventory includes only vacant brownfields; it excludes contaminated sites with low improvements values (these will be included in the tally of 'redevelopable' land). Brownfields were identified within the DEQ's Environmental Cleanup Site Information and Leaking Underground Storage Tank databases. Brownfields are identified as 'potential' because the severity of contamination and its impact on development is not explicitly identified via these databases and is expected to vary widely among sites. Within the Columbia Harbor, potential brownfields were identified by the Bureau of Planning and Sustainability.

   As with other site constraints, the portion of potential brownfields available for development (feasible to develop) varies by geography and scenario.

Low Value Land Supply

Along with vacant parcels, low valued parcels within each geography were also inventoried as the City's most likely source of redevelopable land. Low valued parcels were defined as any land with improvements valued at 50% or less of the land value (an improvement to land value ratio of 0.5 or less). Some amount of development exists on all of these parcels, although not all are occupied by active businesses or support jobs at the same density as would be expected of new development.

Redevelopable lots were not identified within the three industrial geographies, as the value of improvements is a less useful gauge of where reinvestment may occur.

The inventory reports a total of 1,300 redevelopable acres within the nine forecast geographies, about 45% as much land as is reported vacant. A smaller percentage of this inventory is impacted by environmental constraints or brownfields – 43%, versus 77% of the vacant land inventory.

Three categories of redevelopable land are described:

1. No environmental overlay
2. Presence of environmental overlay
3. Potential brownfield

As with vacant land, it is assumed that a lower percent of categories 2 and 3 redevelop than for category 1 (no constraints).

Figure 10. Redevelopable Land Supply (Improvements = 50% or less of Land)

	Acres of Redevelopable Land by Parcel Size								
	0.1 - 0.5	0.5 - 1.0	1 - 3	3-6	6-10	10-20	20-50	50+	Total
Central City Commercial									
1 No constraints	76	42	23	12	-	-	-		152
2 Environmental Overlay	1	1	8	10	-	-	-		21
3 Potential Brownfield	5	7	18	20	9	14	-	-	73
	82	50	48	42	9	14	-	-	246
Central City Industrial									
1 No constraints	36	12	6	-	-	-	-		53
2 Environmental Overlay	4	2	4	-	-	-	-		9
3 Potential Brownfield	3	6	10	4	7	-	-	-	30
	42	19	20	4	7	-	-	-	92
Neighborhood Commercial									
1 No constraints	179	95	63	42	23	56	-		459
2 Environmental Overlay	10	8	23	17	-	38	25		120
3 Potential Brownfield	19	10	24	37	27	66	27	65	276
	208	114	110	95	50	161	52	65	855
Town Centers									
1 No constraints	15	1	10	-	-	-	-		26
2 Environmental Overlay	2	1	-	5	-	-	-		8
3 Potential Brownfield	1	2	1	6	-	-	-	-	9
	18	4	11	10	-	-	-	-	43
Gateway Regional Center									
1 No constraints	15	5	7	-	-	-	-		27
2 Environmental Overlay	-	-	2	6	-	-	-		8
3 Potential Brownfield	1	1	3	-	-	-	-	-	5
	16	7	11	6	-	-	-	-	40
Institutions									
1 No constraints	6	1	12	-	-	-	-		20
2 Environmental Overlay	1	-	3	-	-	-	-		4
3 Potential Brownfield	1								1
	8	1	15	-	-	-	-	-	25
All Forecast Geographies									
1 No constraints	327	156	120	54	23	56	-	-	736
2 Environmental Overlay	19	12	40	37	-	38	25	-	170
3 Potential Brownfield	29	27	56	67	42	80	27	65	394
	375	195	216	158	66	174	52	65	1,301

Source: Bureau of Planning and Sustainability, Real Urban Geographics LLC, E.D. Hovee & Company, LLC.

III. SUPPLY & DEMAND RECONCILIATION

The following three tables summarize the relationship between supply and demand for the low, mid and high forecasts. The tables report:

Demand. Described in this report's first chapter.

1. Total acres in demand, the end result of the City's projected job growth.
2. Corresponding building square footage (reported in millions).

Vacant & Low Value Land Supply. Vacant and low value land supply inventories are combined to describe the parcels that are easiest and most likely to develop/redevelop. Low value defined as land with improvements valued at 50% or less than land value.

1. Acres. This column reports available acres, rather than all acres within the inventory. A 'percent available' estimate was applied to each of the land categories described above.

   For instance, it is estimated that 100% of parcels will be available for development that are vacant in their entirety and have no environmental overlays or known contamination. However, some smaller percentage of parcels will be available for development by 2035 that have an environmental overlay, are vacant only in part, or have some level of contamination. This percentage varies by forecast range: the greater the land demand, the more constrained land will be enticed into development.

   Details on the 'percent available' applied to both the vacant and low value land inventories are included in Appendix E.

2. Building square feet capacity of the vacant & low value land inventory. This applies an estimated 'market supportable' FAR to each geography (based on observed trends, the same FAR assumptions that were used in the demand forecast to translate jobs into acres). Existing building square footage on low value parcels are subtracted from the carrying capacity of the inventory, so that *net new* building square feet are described. Reported in millions.
3. Resulting surplus or shortage of land within each geography. This column adjusts (supply acres – demand acres) to account for existing square footage on low value lots: in effect demand is increased by the number of acres required to replace existing square footage.

Non-Vacant Land Supply. Combines low and high value developed parcels.

1. Total acres
2. Required redevelopment rate. This describes the percent of developed acreage within each geography that must *redevelop* after vacant land is absorbed.

Total Land Supply. The entire landscape of the forecast geography (other than unbuildable land, such as parks).

1. Zoned FAR headroom: The sum of allowable building square footage (determined via maximum FAR allowed by zoning) minus the sum of existing building square footage.
2. Market supportable FAR headroom: The sum of our estimate of market supportable building square footage minus the sum of existing square feet.

Figure 11. Supply and Demand Comparison, Mid Scenario

	Mid Demand		Vacant & Low Value Land Supply			Non Vacant Supply		Total Land Supply	
Forecast Geographies	**Acres**	**Building SF***	**Available Acres**	**SF Capacity - Existing SF***	**Acres Surplus (Shortage)**	**Total Acres**	**% Redev Required**	**Bldg SF FAR Headroom***	**SF Market Headroom***
Central City Commercial	90	19.1	297	58.7	187	942	2%	219.7	135.4
Central City Incubator	80	3.6	80	2.8	(19)	465	16%	216.6	2.7
Columbia Harbor	880	11.7	926		46	4,291	0%		(42.5)
+ 640 ac Regional Transport.	*1,520*	*11.7*	*926*	vacant only	*(594)*	*4,291*	14%	No zoned FAR max	*(42.5)*
Columbia East	250	3.7	199		(51)	498	10%		0.3
Dispersed Industrial	40	0.5	39		(1)	737	0%		(7.1)
Neighborhood Commercial	600	13.9	862	16.7	119	3,383	12%	417.4	26.1
Town Centers	100	2.1	47	0.8	(62)	462	19%	45.6	1.2
Regional Center	70	1.9	47	0.8	(40)	368	16%	57.6	1.0
Institutions	470	16.7	110	3.7	(365)	490	78%	26.4	12.8
With Regional Transportation	3,220	73.3	2,606	83.5	(826)	11,637	14%	983.3	130.0
Without Regional Transportation	2,580	73.3	2,606	83.5	(186)	11,637	9%	983.3	130.0

Notes: *All building square feet reported in millions.

Available Acres = Portion of vacant land and less improved sites (<.5 improvements:land value ratio) estimated to be available for development by 2035. This corresponds to the 'easiest to develop/redevelop' land supply. See Appendix E for details.

Acres Surplus (Shortage) = Adjusts surplus (shortage) to account for land needed to replace existing square footage on low value parcels.

Non Vacant Supply = combines low value and high value developed sites to describe what percentage of developed land must redevelop to accommodate demand (after vacant land is absorbed).

Bldg SF FAR Headroom = Est. maximum allowable FAR under 2009 Comprehensive Plan designations minus existing FAR of all taxlots in forecast geography.

SF Market Headroom = Est. average FAR of new construction in 2010-2035 period minus existing FAR of all taxlots in forecast geography.

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Figure 12. Supply and Demand Comparison Low Scenario

Forecast Geographies	Mid Demand Acres	Mid Demand Building SF*	Vacant & Low Value Land Supply Available Acres	Vacant & Low Value Land Supply SF Capacity - Existing SF*	Vacant & Low Value Land Supply Acres Surplus (Shortage)	Non Vacant Supply Total Acres	Non Vacant Supply % Redev Required	Total Land Supply Bldg SF FAR Headroom*	Total Land Supply SF Market Headroom*
Central City Commercial	90	19.1	297	58.7	187	942	2%	219.7	135.4
Central City Incubator	80	3.6	80	2.8	(19)	465	16%	216.6	2.7
Columbia Harbor	880	11.7	926	vacant only	46	4,291	0%	No zoned FAR max	(42.5)
+ 640 ac Regional Transport.	*1,520*	*11.7*	*926*		*(594)*	*4,291*	14%		*(42.5)*
Columbia East	250	3.7	199		(51)	498	10%		0.3
Dispersed Industrial	40	0.5	39		(1)	737	0%		(7.1)
Neighborhood Commercial	600	13.9	862	16.7	119	3,383	12%	417.4	26.1
Town Centers	100	2.1	47	0.8	(62)	462	19%	45.6	1.2
Regional Center	70	1.9	47	0.8	(40)	368	16%	57.6	1.0
Institutions	470	16.7	110	3.7	(365)	490	78%	26.4	12.8
With Regional Transportation	3,220	73.3	2,606	83.5	(826)	11,637	14%	983.3	130.0
Without Regional Transportation	2,580	73.3	2,606	83.5	(186)	11,637	9%	983.3	130.0

Figure 13. Supply and Demand Comparison High Scenario

Forecast Geographies	High Demand Acres	High Demand Building SF*	Vacant & Low Value Land Supply Available Acres	Vacant & Low Value Land Supply SF Capacity - Existing SF*	Vacant & Low Value Land Supply Acres Surplus (Shortage)	Non Vacant Supply Total Acres	Non Vacant Supply % Redev Required	Total Land Supply Bldg SF FAR Headroom*	Total Land Supply SF Market Headroom*
Central City Commercial	110	25.0	319	67.7	188	942	3%	219.7	150.7
Central City Incubator	100	4.9	85	3.2	(34)	465	20%	216.6	4.5
Columbia Harbor	1,290	17.1	1,121	vacant only	(169)	4,291	4%	No zoned FAR max	(42.6)
+ 640 ac Regional Transport.	*1,930*	*17.1*	*1,121*		*(809)*	*4,291*	*19%*		*(42.6)*
Columbia East	340	5.0	228		(112)	498	22%		0.3
Dispersed Industrial	100	1.4	47		(53)	737	7%		(6.3)
Neighborhood Commercial	780	18.6	926	18.3	(10)	3,383	16%	417.4	28.5
Town Centers	120	2.7	50	0.9	(79)	462	23%	45.6	1.7
Regional Center	80	2.3	48	1.0	(47)	368	21%	57.6	2.0
Institutions	550	20.1	125	4.4	(430)	490	91%	26.4	13.5
With Regional Transportation	4,110	97.1	2,950	95.5	(1,387)	11,637	20%	983.3	152.2
Without Regional Transportation	3,470	97.1	2,950	95.5	(747)	11,637	14%	983.3	152.2

RECONCILIATION RESULTS

This report describes results. The policy implications of the data are explored in the Task 4 Policy Report.

The current mid forecast scenario results in an overall land demand of 3,220 acres when regional transportation needs are included. Without regional transportation needs, this figure falls to 2,580. Given estimated limitations to land supply, about 2,600 acres of vacant and low value land are estimated to be available for development over the forecast period. Citywide, the result is a shortage of 826 acres.

Assuming all available vacant land has been absorbed, accommodating demand in this scenario requires a citywide redevelopment rate (of all developed parcels, both low and high value) of 14%. Redevelopment rates are described as 'required' rather than market supported. If redevelopment rates are not achieved, demand could be accommodated via higher than modeled FARs, or within other geographies within the City or elsewhere in the region.

As expected, vacant land is far more constrained within the densest, urban geographies, although the Central City reports 67 acres of available vacant land (much within the River District and South Waterfront). The lowest land availability – and highest redevelopment rates – are forecast within the Central City industrial areas, town and regional centers, and institutional land ownership. Again, redevelopment rates and land shortage would fall if higher FARs were assumed for these areas. FAR detail is provided in Appendix C.

In the mid scenario, the bulk of the City's projected land shortage is associated with regional industrial transportation needs and institutional uses. Based on experience to date, the feasibility of land redevelopment for industrial uses is less market ready than redevelopment for commercial uses such as office and institutional (including realization of higher FARs for net added job growth).

As would be expected, the low growth scenario comes far closer to accommodating the most land uses within the supply of suitable vacant industrial and commercial land inventory. Institutions remain the exception, reporting a land shortage (after available vacant and low value lots have been absorbed) of 276 acres.

With high growth, there are significant mismatches of demand to available supply across all industrial and commercial categories.

Central City Commercial: The Central City (excepting Central Eastside and Lower Albina) does not report a land shortage in any forecast scenario, primarily due to the high FARs this geography supports (an average of around 5 across all building types). Projected land shortage remains remarkably consistent across the scenarios, as higher demand is modeled to entice a greater share of the land inventory to the market. A surplus of about 190 acres exists in all scenarios, compared with demand ranging from 60 – 110 acres. Demand can be accommodated

through vacant land only in the low scenario. In the mid and high scenario, only 2-3% of the Central City's developed land base (of any value) is required to redevelop.

Anticipated commercial land needs can be expected to overlap to some extent with residential land needs, particularly within the Central City and increasingly along major transit corridors. Residential forecasts have not been cross-referenced for this report. However, as one example, if employment land demand is increased by 200% to approximate residential land demand (assuming that employment represents one-third of the demand for future building space within this geography), vacant and low-valued parcels are sufficient to accommodate both residential and employment land demand.

Central City Incubator: There is almost no vacant land within this geography; low value lots provide the bulk of the 76-85 acres estimated to be available for development within the three scenarios. The result is a land surplus in the low scenario (13 acres) and a shortage of 19-34 acres in the mid and high scenarios. Given the small size of this geography, the required redevelopment rate is relatively high at 9-20% of the geography's developed land base.

Columbia Harbor: Columbia Harbor reports the widest variation in land demand, from a low of 230 to a high of 1,230 (more than any other geography). It also contains more vacant land than any other geography, much of it constrained by contamination and environmental overlays.

For the industrial areas, only vacant land was included in the tally of 'easiest to develop parcels' (for commercial geographies, both vacant and low-value parcels were included). Columbia Harbor is a special geography as the appropriate host of regional transportation land demand. Without this demand source, the geography has sufficient available vacant acreage in both the low and mid scenarios, and a shortage of about 170 acres in the high scenario. When regional transportation needs are included, all scenarios report a shortage: about 100 acres in the low scenario, 600 in the mid and over 800 in the high scenario.

Without regional transportation land, the high scenario requires that 4% of Columbia Harbor's developed land redevelop. No redevelopment is required in the low and mid scenarios. When regional transportation needs are included, the required redevelopment rate increases to 2%, 14% and 19% in the low, mid and high demand scenarios. The redevelopment need would be reduced is added industrial land is annexed to the City.

Columbia East: This geography reports shortages in both the mid and high scenarios, due to the strong growth rate it experienced between 2000-2006 (the period on which job distribution across forecast geographies is founded). Land shortage requires a redevelopment rate of 10-20% in the mid and high scenarios.

Dispersed Industrial: Demand is lowest in this industrial geography, and is negative within the low demand scenario. In the mid and high scenarios, demand increases to 40 and 100 acres. A very minor land shortage is reported for the mid scenario, increasing to 53 acres in the high scenario, which corresponds to a redevelopment rate of 7% for all developed land.

Neighborhood Commercial: This geography reports the second highest acreage demand after Columbia Harbor. Demand varies between 390 and 780 acres. Vacant and low value parcels are

sufficient to meet this demand in all but the high scenario. In the high scenario, a relatively minor shortage of 10 acres is required. The bulk of the 'easy to develop' land supply for this geography is within low value rather than vacant sites, however; a redevelopment rate of 6% - 16% is required across the scenarios.

Town Centers: This is one of the smallest geographies, along with Gateway Regional Center. Demand is also among the smallest, at 60-100 acres. Land shortages exist in all scenarios ranging from 23 to 79 acres. The associated redevelopment rate required is 11 – 23%. Estimated market supported FARs are relatively low here (0.5); achieving higher FARs would reduce land needs.

Regional Center: Size and demand are also low in this geography, with land shortages in all scenarios ranging from 22 to 47 acres. Estimated market supportable FARs are 0.60 (in the mid scenario, this increases in the high scenario). Required redevelopment rates are very similar to the Town Centers at 11-21%.

Institutions: Along with Columbia Harbor + regional transportation needs, institutions report the greatest estimated land shortage. Demand is high, reflecting strong recent job growth in these geographies. Demand varies from 370-550 acres, resulting in a shortage of 276-430 acres. Most of the 'easy to redevelop' land is low value rather than vacant; leading to very high required redevelopment rates: 60% - 91%. In addition to denser development, expansion is a possible scenario for this geography as institutions acquire additional parcels.

The policy options that arise from the land surplus or shortage within each geography – which vary by forecast scenario – are discussed in this project's Task 4 Policy Options report.

APPENDIX A. INDUSTRIAL LAND NEEDS

Additional research has been compiled to provide a cross-check against the industrial land needs forecast via the employment + additional land drivers approach utilized in this analysis. These items will inform the Task 4 policy options report.

Absorption Trend Comparison

Reviewing long-term industrial land absorption trends may be the most valuable check against estimated future industrial land needs, although this approach obscures possible future growth changes (decreases or increases) within the industrial sectors.

Historic absorption is available only for properties along the Willamette and Columbia (west of the rail bridge) between the river and the nearest parallel street or railroad right-of-way. This area represents about one-third of the City's industrial areas, but likely a greater portion of land absorption. The other primary area that has realized industrial development during this time frame (post 1960) is the Columbia Corridor east of 82nd and north of Sandy. A land absorption trend estimate is currently being completed for this second geography so that a citywide industrial absorption trend can be approximated.

Figure 14. Industrial Land Demand Comparison with Past Trends: Annual Acres

Absorption Trends	
Portland Harbor 1960 - 1997 abosorption trends, all industrial uses (source: PHILS)	45
Portland Harbor 1960-1990, marine uses (Port land only. Source: Port of Portland)	24
Portland Harbor 1960-1990, all uses (including parks and residential. Source: Port of Portland)	39

Absorption Forecast

	All Industrial Areas		Columbia Harbor	
2009 EDH Forecast	driven	terminals	driven	terminals
Low	(9)	(9)	(5)	(5)
Mid	45	45	30	30
High	104	104	69	69

Source: Portland Harbor Industrial Lands Study Feb 2003, Portland Bureau of Planning; E.D. Hovee & Company, LLC.

The historic absorption figures available indicate an increase in annual absorption between 1990 and 1997. The bulk of this absorption occurred within the Port's Rivergate development and on Swan Island.

This EOA's Task 4 policy report may also address East Columbia Corridor absorption trends, assess the appropriateness of the low, mid and high scenarios in regards to anticipated industrial land needs, the likelihood of land supply availability and redevelopment, and possible public actions to accommodate anticipated land demand.

Commodity Flows

Commodity flows provide another indicator of economic activity and terminal and distribution facility needs. The 2003 *Portland Harbor Industrial Land Study* (PHILS) reports that cargo moving through the Portland Harbor increased at an average annual rate of 2.3% between 1960 and 2000. Marine terminal investments of note that accompanied this increase include the 85 acre Portland Bulk Terminal facility at Port of Portland and a 20-acre expansion of the container terminal at T-6.

Future commodity flows are forecast in the *Lower Columbia River Cargo Forecast* (DRI-WEFA, et al, 2002), as reported within PHILS. Commodity flows have been projected to slow in the future. Without Columbia River channel depending, the growth forecast range for Lower Columbia River ports is -0.4 – +0.8% annually. With channel deepening (to 43 feet), the range increases from 0.0 – +1.3% annually.

Other West Coast ports such as the Port of Tacoma have recently reduced cargo projections due to the current economic downturn and anticipated capacity expansion of the Panama Canal, which is expected to encourage more ships to sail directly to America's East Coast, diverting traffic from West Coast ports.

The Port of Portland describes land needs associated with commodity flows an inherently difficult to forecast. Over the past 10 years, the Port has twice been the fastest growing on the West Coast, and also the fastest declining. This fluctuation results from decisions within the handful of steamship line companies on whether or not to utilize Port of Portland facilities, and is independent of shipping growth associated with business activity. Portland has seen dramatic fluctuation its steamship line clientele in the past decade.

Given the difficulty of quantifying the relationships of commodity flows to city-wide or regional land demand and the prospective (at least near-term) reduction in anticipated commodity flows, this measure is seen as less relevant to future land needs than historic absorption trends. Terminal and distribution facility needs might better be forecast via the Port of Portland's internal planning processes; again, plans remain highly preliminary but should inform the City's land needs and economic development policy discussions as plans solidify.

Gross Domestic Product Output

Industry output provides a third measure of the health and growth of an industry. Data on industry output is newly available (via the Bureau of Economic Analysis) on a metro area level; current data is available for years 2001 through 2006.

The first half of the current decade realized a substantial increase in output among many industries, including manufacturing and information and technology. Between 2001 and 2006, manufacturing output (across the seven county PMSA, the smallest geography for which data is available) increased at an annual rate of close to 12%, compared to an annual average increase of 6% for the PMSA economy as a whole.

GDP data portrays manufacturing as a growth industry, rather than the declining industry that employment trends suggest. Industry stakeholders describe several factors that influenced this sector's recent profitability gains, including:

- Substantial increases in commodity and product pricing;
- Substitution of technology for labor, and
- A low valued dollar that fueled export growth.

These factors may continue in future years. However, the challenge remains of predicting land needs based on industry output; as yet no clear quantitative relationship between the two measures has been identified.

Figure 15. Portland-Vancouver PMSA Gross Domestic Product Trends (01-06)

Industry	2001	2006	Change Net	Change AAGR
All industry total	77,200	103,400	26,200	6.0%
Private industries	69,600	94,000	24,400	6.2%
Manufacturing	12,000	21,000	9,000	11.8%
Transportation and utilities	3,600	4,300	700	3.6%
Retail trade	4,300	4,900	600	2.6%
Professional and business services	8,700	11,000	2,300	4.8%
Education and health services	5,400	7,600	2,200	7.1%
Leisure and hospitality	2,300	3,000	700	5.5%
Information, Communication, and Technol	8,200	15,800	7,600	14.0%
Government	7,500	9,400	1,900	4.6%
Private goods-producing industries	*16,600*	*26,700*	*10,100*	*10.0%*
Private services-providing industries	*53,100*	*67,300*	*14,200*	*4.9%*

Source: Bureau of Economic Analysis, US Dept of Commerce, April 2009

APPENDIX B. RETAIL LAND NEEDS

A cross-check was performed to estimate the City's future retail needs, as retail sector growth responds primarily to household growth (which in the future may exceed past growth trends). As described in the Task 1 Report *Trends, Opportunities and Market Factors*, the City of Portland as of 2007 is well supplied by retail: The national demographics firm ERSI Business Analyst estimates that the City supports about $6.5 billion annually in resident-generated demand for retail, food and drink, but generates $7.6 billion in yearly sales volume. This indicates that the City serves as a destination market, attracting and supported by residents of surrounding communities. Focus group participants felt that the City's retail growth potential was primarily tied to household growth; leakage data supports this assessment.

The following table compares anticipated household growth rates with retail job growth rates within each of the forecast scenarios. Metro estimates overall Portland household growth at 1.4% annually through 2030, via its Transportation Analysis Zone forecast effort. (Metro-wide growth is projected at 1.3% annually).

Projected household growth falls within the mid and high retail job forecast scenario (1.0% and 1.8% annual average growth respectively).

Figure 16. Household/Retail Growth Rates Comparison

Geography (approximate)	Household 05-30 AAGR
Central City Commercial	3.8%
Central City Industrial	3.1%
Gateway Regional Center	2.9%
Town Centers	0.7%
Other	0.6%
City Average	1.4%

Forecast Retail + Food Services Job Forecast AAGR (2010-2035)	
Low Scenario	0.90%
Mid Scenario	1.00%
High Scenario	1.80%

Source: Metro May 2009 TAZ household projections, E.D. Hovee & Company, LLC.

Factors that could mediate the relationship between these two growth rates include:

- A retail adjustment (decrease), as appears to be currently occurring nationwide, due to over supply of retail developed during the past decade, or
- A diminishment of Portland's status as a regional destination retail market.

These factors discussed in the EOA's forthcoming Task 4 policy options report.

APPENDIX C. FORECAST DETAILS

The tables in this appendix provide detail on five forecast elements:

- Metro's forecast, the basis of the Portland forecast;
- 2006 City employment share, and the decreasing share trend employed in the low and mid forecasts;
- The allocation of jobs to building types (consistent across scenarios)
- Square foot per employee assumptions (consistent across scenarios)
- Floor Area Ratios (varies across scenarios)

Figure 17. Metro's Seven County PMSA Forecast: Total Jobs by 2035

Industry Sector	Low	Mid	High
Ag, Mining	1,130	1,280	1,440
Construction	38,810	85,580	132,340
Manufacturing	99,010	132,650	166,300
Wholesale	83,590	87,670	91,750
Retail	119,770	138,330	156,900
Transportation, Warehouse & Utilities	57,700	61,350	65,010
Information	30,950	41,480	51,010
Finance	66,610	72,530	78,460
Real Estate	36,170	39,940	43,710
Professional Services	83,960	97,060	110,170
Management	30,550	45,250	59,950
Admin, Waste	60,160	101,870	143,590
Education	36,080	41,210	46,330
Health & Social Services	212,980	229,890	246,800
Arts, Entertain, Rec	19,670	22,150	24,630
Accomm & Food Service	127,320	131,690	136,070
Other Services	56,520	69,850	83,190
Government	189,790	199,420	209,050
Total	1,350,770	1,599,200	1,846,700
2010-2035 AAGR	1.4%	1.7%	1.9%

Source: Metro Regional Government

Figure 18. City Share of PMSA Employment: 2006 and Projected

NAICS	Sector	2006 Actual	2035 Forecast Low	Mid	High
11 & 21	Ag, Mining	10%	8%	9%	10%
23	Construction	29%	22%	25%	27%
31-33	Manufacturing	25%	19%	21%	23%
42	Wholesale	37%	28%	31%	34%
44-45	Retail	31%	23%	26%	28%
22, 48-49	Transportation, Warehouse & Utilities	74%	57%	63%	68%
51	Information	42%	32%	36%	39%
52	Finance	49%	38%	42%	45%
53	Real Estate	41%	31%	35%	38%
54	Professional Services	49%	37%	41%	45%
55	Management	65%	49%	55%	59%
56	Admin, Waste	38%	29%	32%	35%
61	Education	165%	126%	139%	152%
62	Health & Social Services	47%	36%	40%	44%
71	Arts, Entertain, Rec	45%	34%	38%	42%
72	Accomm & Food Service	42%	32%	35%	38%
81	Other Services	44%	34%	38%	41%
92	Government	12%	9%	10%	11%
	TOTAL	39%	32%	35%	38%

Figure 19. Jobs to Building Types

NAICS	Sectors Represented	Office	Institution	Flex/BP	Gen Industrial	Warehouse	Retail
11 & 21	Ag, Mining	51%		6%	6%	6%	32%
23	Construction	29%		9%	38%		23%
31-33	Manufacturing	4%		11%	76%		9%
42	Wholesale	11%		13%		65%	11%
44-45	Retail						100%
22, 48-49	Transport, Warehouse & Utilities	31%		11%		55%	3%
51	Information	75%		4%			21%
52	Finance	84%		7%			10%
53	Real Estate	65%		24%			11%
54	Professional Services	90%		3%			7%
55	Management	100%					
56	Admin, Waste	57%		28%			16%
61	Education	10%	85%				5%
62	Health & Social Services	15%	70%				15%
71	Arts, Entertain, Rec	77%					23%
72	Accomm & Food Service	44%					56%
81	Other Services	33%					67%
92	Government	87%					13%

Figure 20. Square Feet per Employee

	Office	Institution	Flex/BP	Gen Industrial	Warehouse	Retail
Central City Urban	350	600	350	350	350	470
Central City Incubator	350	600	599	926	780	470
Columbia Harbor	350	600	769	926	1,263	470
Columbia East of 82nd	350	600	769	926	1,263	470
Dispersed Industrial	350	600	769	926	1,263	470
Gateway Regional Center	350	600	350	350	350	470
Town Centers	350	600	350	350	350	470
Neighborhood Commercial	350	600	599	926	780	470
Residential	350	600	599	926	780	470
Institutions	350	600	599	350	350	470
Notes	*Industry standard range: 250-350*	*Metro assumption*	*Atlas + acts like office in urban geogs*	*Atlas + acts like office in urban geogs*	*Atlas + acts like office in urban geogs*	*Industry standard assumption*

Figure 21. Base Floor Area Ratios

	2010-2015					
	Office	Institution	Flex/BP	Gen Industrial	Warehouse	Retail
Central City Urban	5.00	5.00	5.00	5.00	5.00	3.00
Central City Incubator	1.00	1.00	1.00	1.00	1.00	0.50
Columbia Harbor	0.30	0.30	0.30	0.30	0.30	0.30
Columbia East of 82nd	0.35	0.35	0.35	0.35	0.35	0.30
Dispersed Industrial	0.30	0.30	0.30	0.30	0.30	0.30
Gateway Regional Center	1.25	1.25	0.60	0.60	0.60	0.30
Town Centers	0.60	0.60	0.50	0.50	0.50	0.30
Neighborhood Commercial	0.60	0.60	0.30	0.30	0.25	0.50
Residential	0.30	0.30	0.30	0.30	0.30	0.30
Institutions	0.50	0.50	0.50	0.50	0.50	0.50

Figure 22. 2035 Floor Area Ratios (Mid Scenario)

	2030-2035					
	Office	Institution	Flex/BP	Gen Industrial	Warehouse	Retail
Central City Urban	6.70	5.79	5.79	5.79	5.79	3.47
Central City Incubator	1.34	1.16	1.16	1.16	1.16	0.58
Columbia Harbor	0.35	0.30	0.30	0.30	0.30	0.30
Columbia East of 82nd	0.41	0.35	0.35	0.35	0.35	0.30
Dispersed Industrial	0.35	0.30	0.30	0.30	0.30	0.30
Gateway Regional Center	1.68	1.45	0.69	0.69	0.69	0.35
Town Centers	0.80	0.69	0.58	0.58	0.58	0.35
Neighborhood Commercial	0.80	0.69	0.35	0.35	0.29	0.58
Residential	0.35	0.30	0.30	0.30	0.30	0.30
Institutions	0.67	0.58	0.58	0.58	0.58	0.58

Figure 23. 2035 Floor Area Ratios (Low Scenario)

	2030-2035					
	Office	Institution	Flex/BP	Gen Industrial	Warehouse	Retail
Central City Urban	5.79	5.51	5.51	5.51	5.51	3.31
Central City Incubator	1.16	1.10	1.10	1.10	1.10	0.55
Columbia Harbor	0.32	0.30	0.30	0.30	0.30	0.30
Columbia East of 82nd	0.37	0.35	0.35	0.35	0.35	0.30
Dispersed Industrial	0.32	0.30	0.30	0.30	0.30	0.30
Gateway Regional Center	1.45	1.38	0.66	0.66	0.66	0.33
Town Centers	0.69	0.66	0.55	0.55	0.55	0.33
Neighborhood Commercial	0.69	0.66	0.33	0.33	0.28	0.55
Residential	0.32	0.30	0.30	0.30	0.30	0.30
Institutions	0.58	0.55	0.55	0.55	0.55	0.55

Figure 24. 2035 Floor Area Ratios (High Scenario)

2030-2035

	Office	Institution	Flex/BP	Gen Industrial	Warehouse	Retail
Central City Urban	7.39	6.08	6.08	6.08	6.08	3.65
Central City Incubator	1.48	1.22	1.22	1.22	1.22	0.61
Columbia Harbor	0.36	0.30	0.30	0.30	0.30	0.30
Columbia East of 82nd	0.43	0.35	0.35	0.35	0.35	0.30
Dispersed Industrial	0.36	0.30	0.30	0.30	0.30	0.30
Gateway Regional Center	1.85	1.52	0.73	0.73	0.73	0.36
Town Centers	0.89	0.73	0.61	0.61	0.61	0.36
Neighborhood Commercial	0.89	0.73	0.36	0.36	0.30	0.61
Residential	0.36	0.30	0.30	0.30	0.30	0.30
Institutions	0.74	0.61	0.61	0.61	0.61	0.61

APPENDIX D. METRO VACANT LAND TIERS

The vacant land classification system utilized in this analysis differs from that employed by Metro, due to the City of Porltand's unique development environment as a primarily built-out and land-locked jurisdiction. Metro considers parcels less than one acre to be less developable than parcels above one acre; this analysis has included all parcels above 0.5 acres as feasible development options. Metro's final three tiers describe land requiring annexation and zoning; these categories do not apply as no land outside of the City of Portland or not in employment zoning has been included in the vacant land inventory.

Figure 25. Metro Vacant Land Tiers

Metro Tier	Title	Constraints
Tier A	Vacant, unconstrained (over 1 acre)	No known constraints
Tier B	Vacant, constrained (over 1 acre)	Environmental desigations
Tier C	Infill (0.2 - 1 acre)	Vacant in entirety or in part, no designations
Tier D	Part vacant, with constraints (over 1 acre)	Some development within same parcel, with environmental desingations
Tier E	Vacant, no urban services, infastructure or zoning	Requires annexation and zoning
Tier F	Part vacant, no urban services, infrastructure or zoning	As above, with some existing development
Tier G	Infill, no urban services or infrastructure or zoning	Requires annexation and zoning

APPENDIX E. AVAILABLE LAND SUPPLY

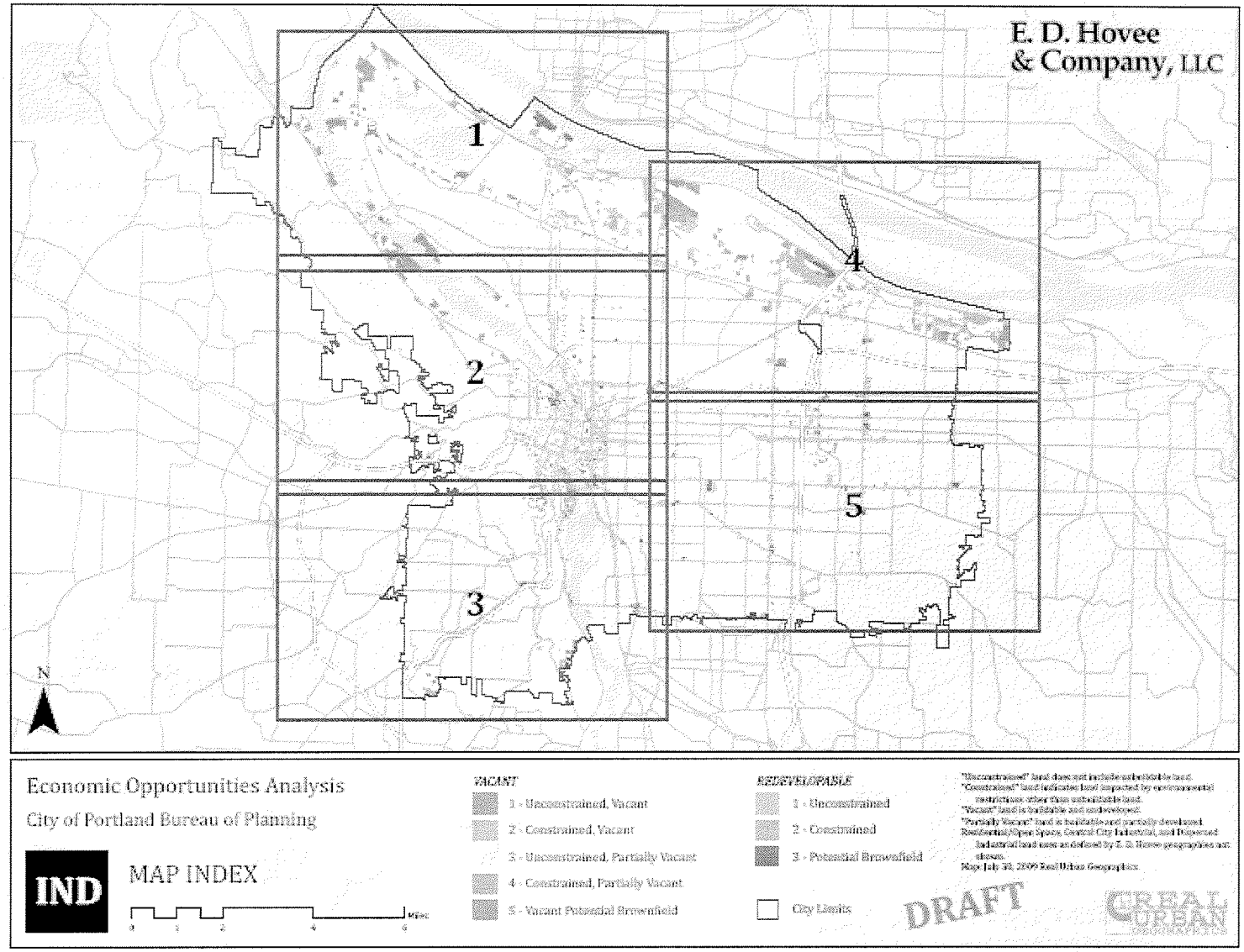
The following table describes the adjustment made to the vacant and low value land supply within each geography to determine the likely available land supply.

Figure 26. Estimated Percent of Vacant and Low Value Land Available

	Total Vacant & Low Value Acres	Percent Available for Development by 2035 Demand Scenario Mid	Low	High
Central City Commercial				
1 Vacant/redevelopable, no constraints	8	100%	100%	100%
2 Vacant/redevelopable, environmental overlay	92	65%	55%	75%
3 Partially vacant, no constraints	-		NA	
4 Partially vacant, environmental overlay	-			
5 Vacant, potential brownfield	91	85%	60%	100%
	342	71%	60%	82%
Central City Industrial				
1 Vacant/redevelopable, no constraints	57	100%	100%	100%
2 Vacant/redevelopable, environmental overlay	16	55%	45%	65%
3 Partially vacant, no constraints	-		NA	
4 Partially vacant, environmental overlay	-	50%	40%	60%
5 Vacant, potential brownfield	30	50%	40%	60%
	103	70%	64%	77%
Columbia Harbor (vacant only)				
1 Vacant/redevelopable, no constraints	396	100%	100%	100%
2 Vacant/redevelopable, environmental overlay	391	40%	30%	50%
3 Partially vacant, no constraints	80	55%	45%	65%
4 Partially vacant, environmental overlay	167	40%	30%	50%
5 Vacant, potential brownfield	877	30%	20%	45%
	1,910	48%	41%	59%
Columbia East (vacant only)				
1 Vacant/redevelopable, no constraints	90	100%	100%	100%
2 Vacant/redevelopable, environmental overlay	228	40%	30%	50%
3 Partially vacant, no constraints	11	55%	45%	65%
4 Partially vacant, environmental overlay	7	40%	30%	50%
5 Vacant, potential brownfield	29	30%	20%	45%
	366	55%	47%	62%
Dispersed Industrial (vacant only)				
1 Vacant/redevelopable, no constraints	11	100%	100%	100%
2 Vacant/redevelopable, environmental overlay	38	40%	30%	50%
3 Partially vacant, no constraints	7	55%	45%	65%
4 Partially vacant, environmental overlay	5	40%	30%	50%
5 Vacant, potential brownfield	20	30%	20%	45%
	82	47%	39%	57%

Neighborhood Commercial	Total Vacant & Low Value Acres	Percent Available for Development by 2035 Demand Scenario Mid	Low	High
1 Vacant/redevelopable, no constraints	546	100%	100%	100%
2 Vacant/redevelopable, environmental overlay	347	50%	40%	60%
3 Partially vacant, no constraints	10	45%	35%	55%
4 Partially vacant, environmental overlay	1	50%	40%	60%
5 Vacant, potential brownfield	276	50%	40%	60%
	1,180	63%	56%	71%
Town Centers				
1 Vacant/redevelopable, no constraints	-	100%	100%	100%
2 Vacant/redevelopable, environmental overlay	35	55%	45%	65%
3 Partially vacant, no constraints	2	100%	100%	100%
4 Partially vacant, environmental overlay	-		NA	
5 Vacant, potential brownfield	-	60%	50%	70%
	38	58%	48%	67%
Gateway Regional Center				
1 Vacant/redevelopable, no constraints	35	100%	100%	100%
2 Vacant/redevelopable, environmental overlay	8	55%	45%	75%
3 Partially vacant, no constraints	-		NA	
4 Partially vacant, environmental overlay	-			
5 Vacant, potential brownfield	7	100%	50%	100%
	50	100%	90%	100%
Institutions				
1 Vacant/redevelopable, no constraints	29	100%	100%	100%
2 Vacant/redevelopable, environmental overlay	10	65%	55%	75%
3 Partially vacant, no constraints	6	100%	100%	100%
4 Partially vacant, environmental overlay	37	65%	55%	75%
5 Vacant, potential brownfield	69	65%	55%	80%
	151	69%	61%	81%
All Forecast Geographies				
1 Vacant/redevelopable, no constraints	1,349	100%	100%	100%
2 Vacant/redevelopable, environmental overlay	1,154	45%	35%	55%
3 Partially vacant, no constraints	116	57%	48%	66%
4 Partially vacant, environmental overlay	217	44%	34%	54%
5 Vacant, potential brownfield	1,407	33%	23%	48%
	4,245	53%	45%	62%

APPENDIX F. VACANT & LOW VALUE LAND MAPS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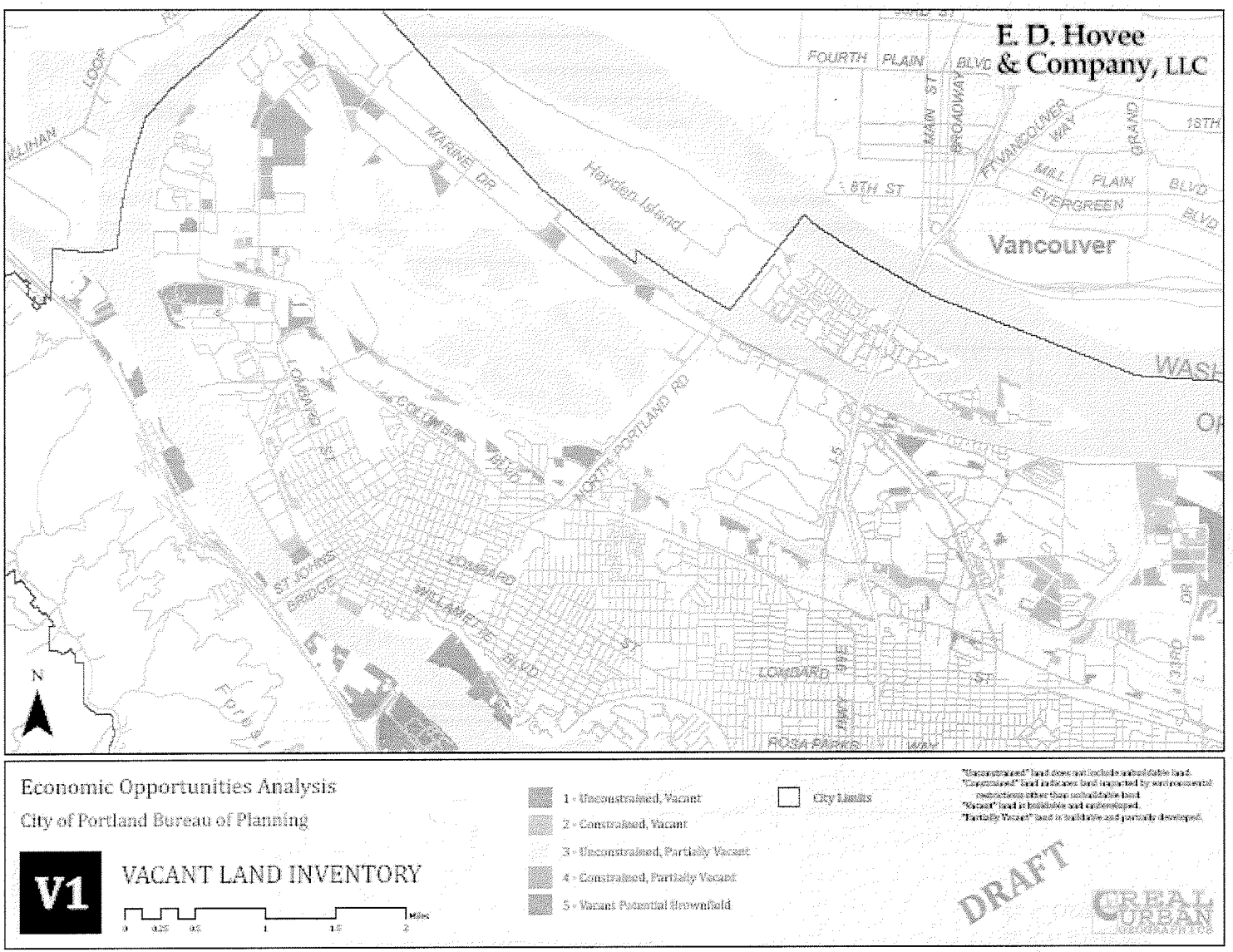
MAP INDEX
VACANT
1 - Unconstrained, Vacant
2 - Constrained, Vacant
3 - Unconstrained, Partially Vacant
4 - Constrained, Partially Vacant
5 - Vacant Potential Brownfield
REDEVELOPABLE
1 - Unconstrained
2 - Constrained
3 - Potential Brownfield
City Limits
DRAFT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& Company, LLC
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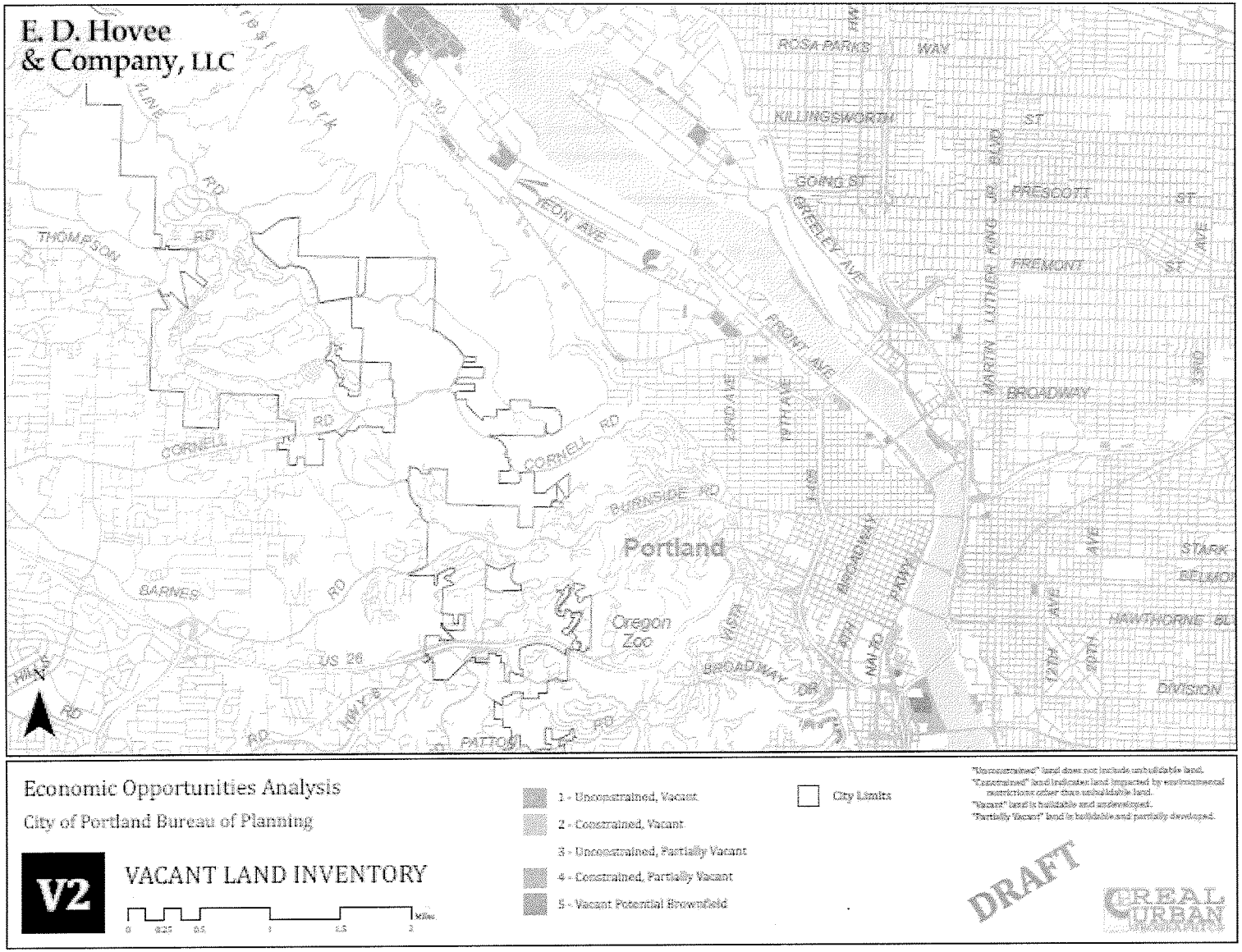
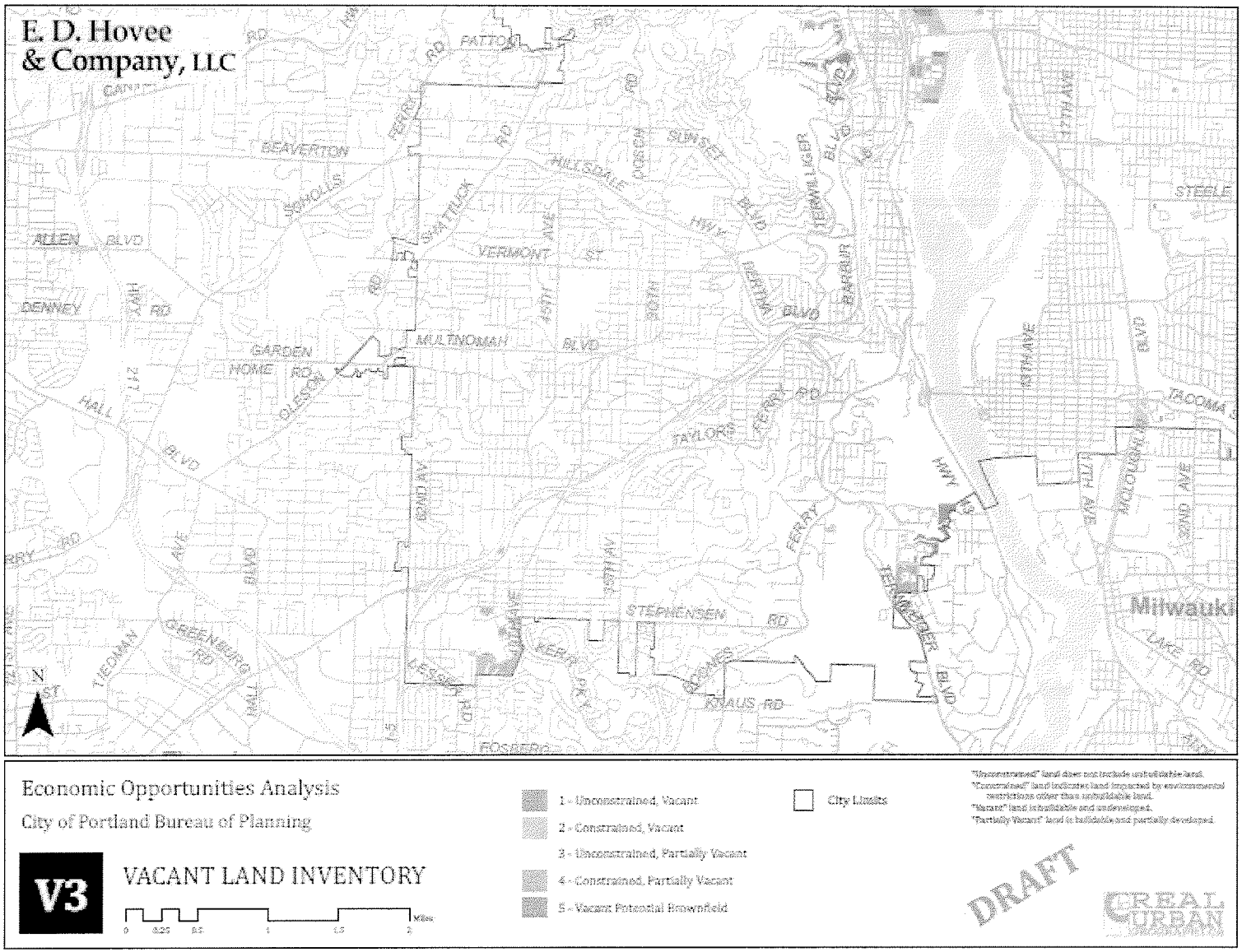
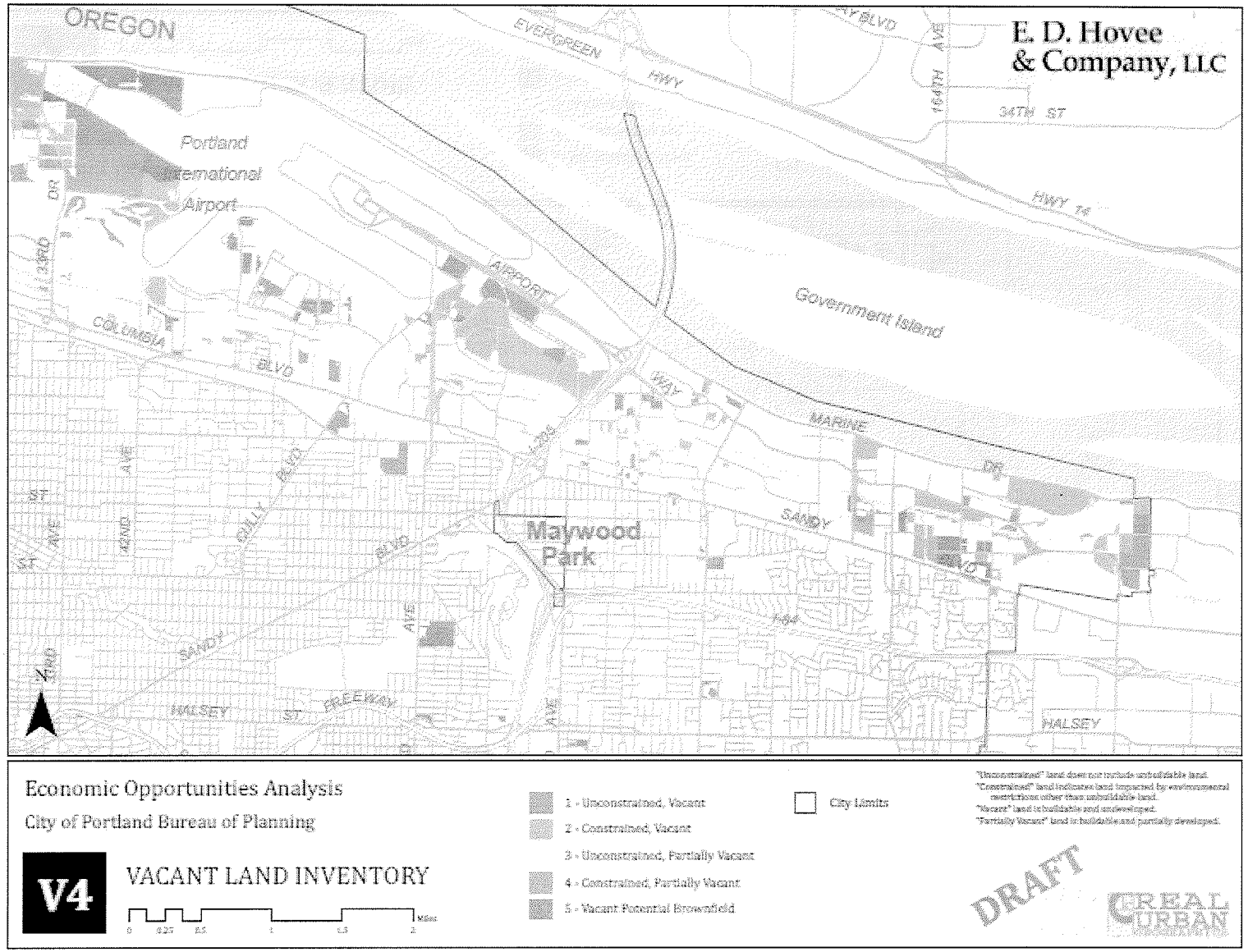
EVERGREEN BLVD
Vancouver
MAINE DR
Hayden Island
COLUMBIA BLVD
NORTH PORTLAND RD
LOMBARD
ST JOHNS BRIDGE
WILLAMETTE BLVD
N
Economic Opportunities Analysis
City of Portland Bureau of Planning
V1
VACANT LAND INVENTORY
1 - Unconstrained, Vacant
2 - Constrained, Vacant
3 - Unconstrained, Partially Vacant
4 - Constrained, Partially Vacant
5 - Vacant Potential Brownfield
City Limits
DRAFT
CREAL URBAN


E. D. Hovee
& Company, LLC
Portland
Oregon Zoo
Economic Opportunities Analysis
City of Portland Bureau of Planning
V2
VACANT LAND INVENTORY
1 - Unconstrained, Vacant
2 - Constrained, Vacant
3 - Unconstrained, Partially Vacant
4 - Constrained, Partially Vacant
5 - Vacant Potential Brownfield
City Limits
"Unconstrained" land does not include unbuildable land.
"Constrained" land indicates land impacted by environmental restrictions other than unbuildable land.
"Vacant" land is buildable and undeveloped.
"Partially Vacant" land is buildable and partially developed.
DRAFT
REAL URBAN




OREGON
E. D. Hovee
& Company, LLC
EVERGREEN
HWY
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International
Airport
AIRPORT
Government Island
COLUMBIA
BLVD
MARINE
DR
Maywood
Park
SANDY
BLVD
HALSEY
ST
FREEWAY
Economic Opportunities Analysis
City of Portland Bureau of Planning
V4
VACANT LAND INVENTORY
1 - Unconstrained, Vacant
2 - Constrained, Vacant
3 - Unconstrained, Partially Vacant
4 - Constrained, Partially Vacant
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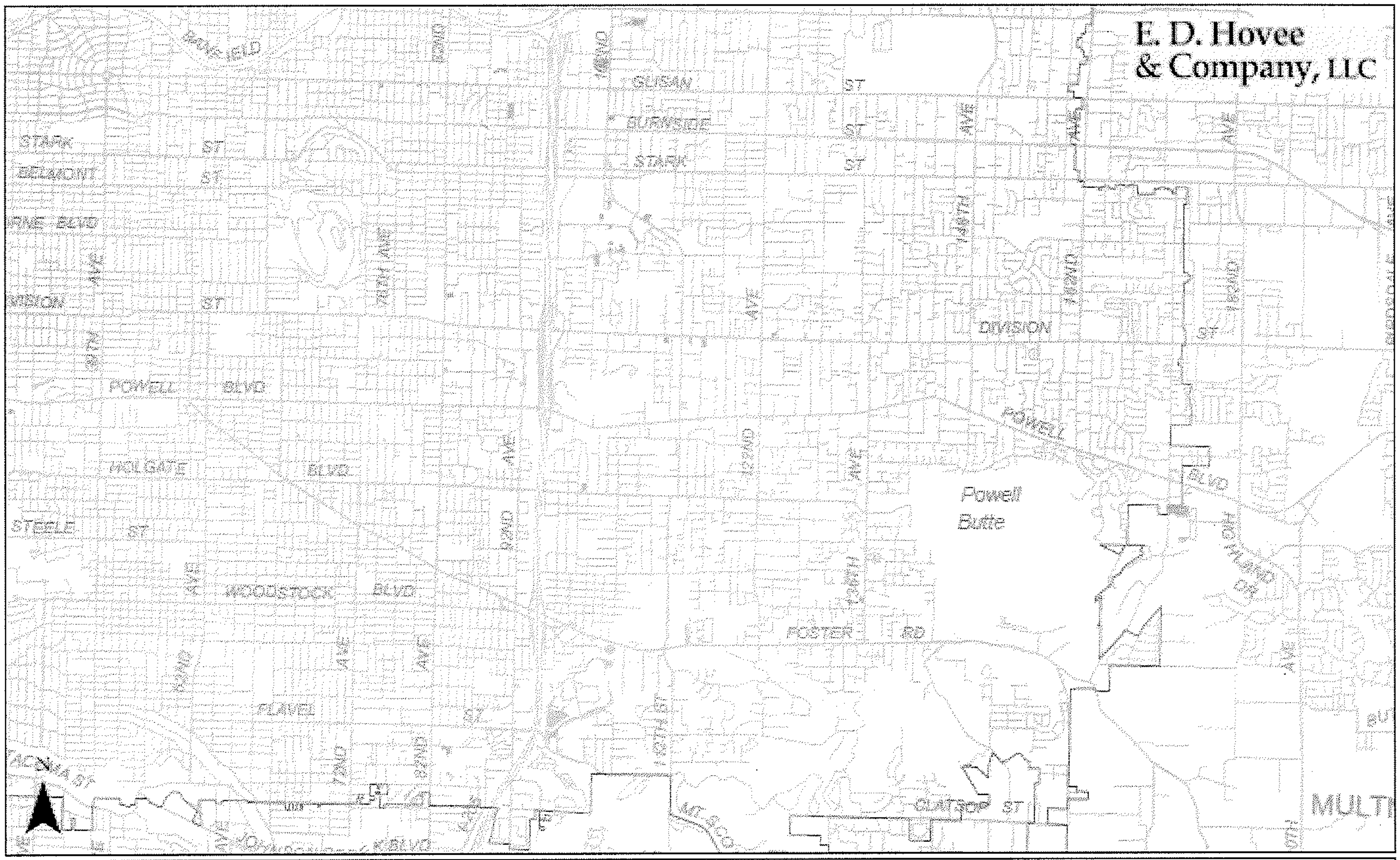
DRAFT
REAL URBAN



Economic Opportunities Analysis

City of Portland Bureau of Planning

V5 VACANT LAND INVENTORY

0 0.25 0.5 1 1.5 2 Miles

1 - Unconstrained, Vacant

2 - Constrained, Vacant

3 - Unconstrained, Partially Vacant

4 - Constrained, Partially Vacant

5 - Vacant Potential Brownfield

City Limits

"Unconstrained" land does not include unbuildable land.
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"Partially Vacant" land is buildable and partially developed.

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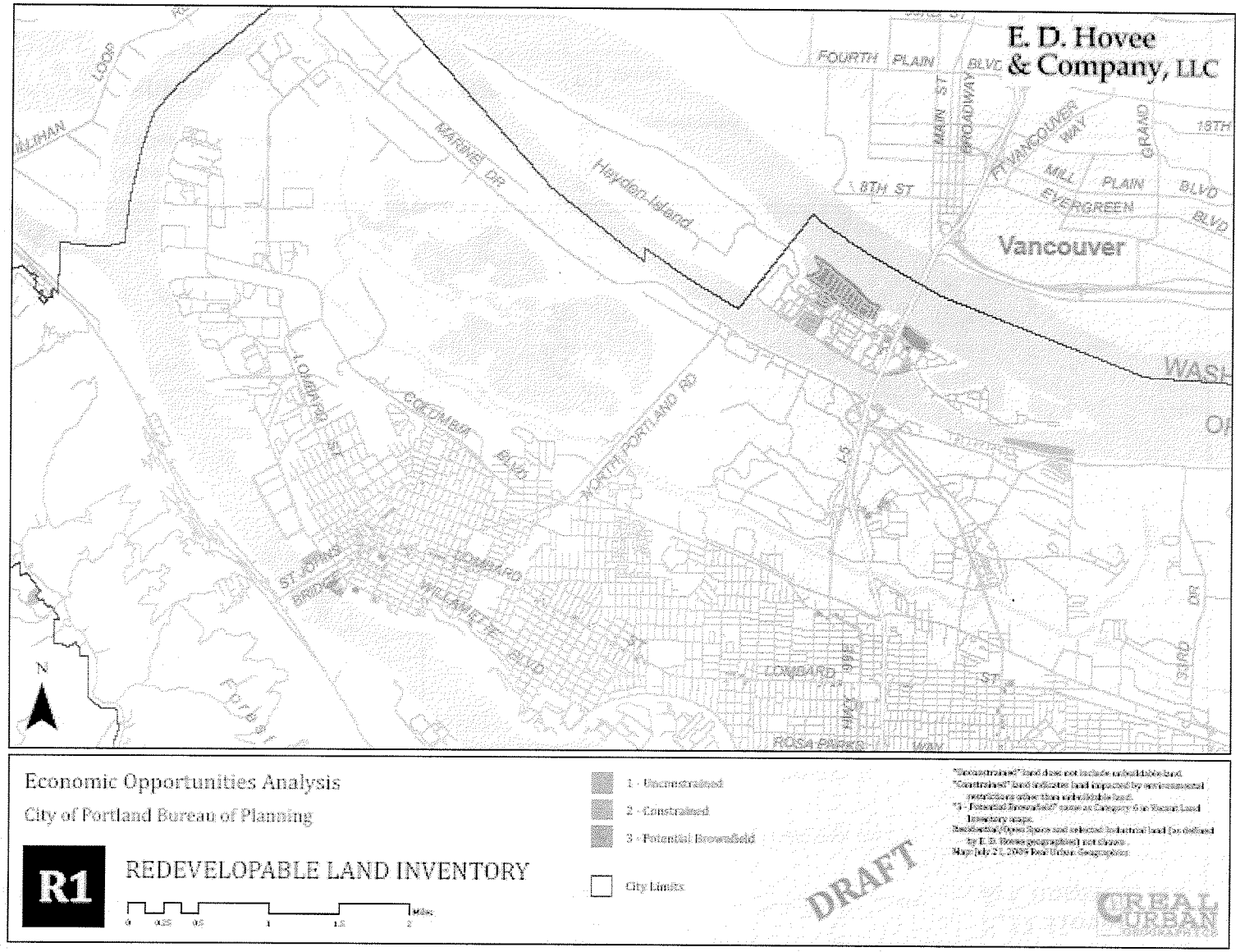
E. D. Hovee
& Company, LLC
FOURTH PLAIN BLVD
MAIN ST
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C VANCOUVER HWY
GRAND
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EVERGREEN BLVD
8TH ST
Vancouver
Hayden Island
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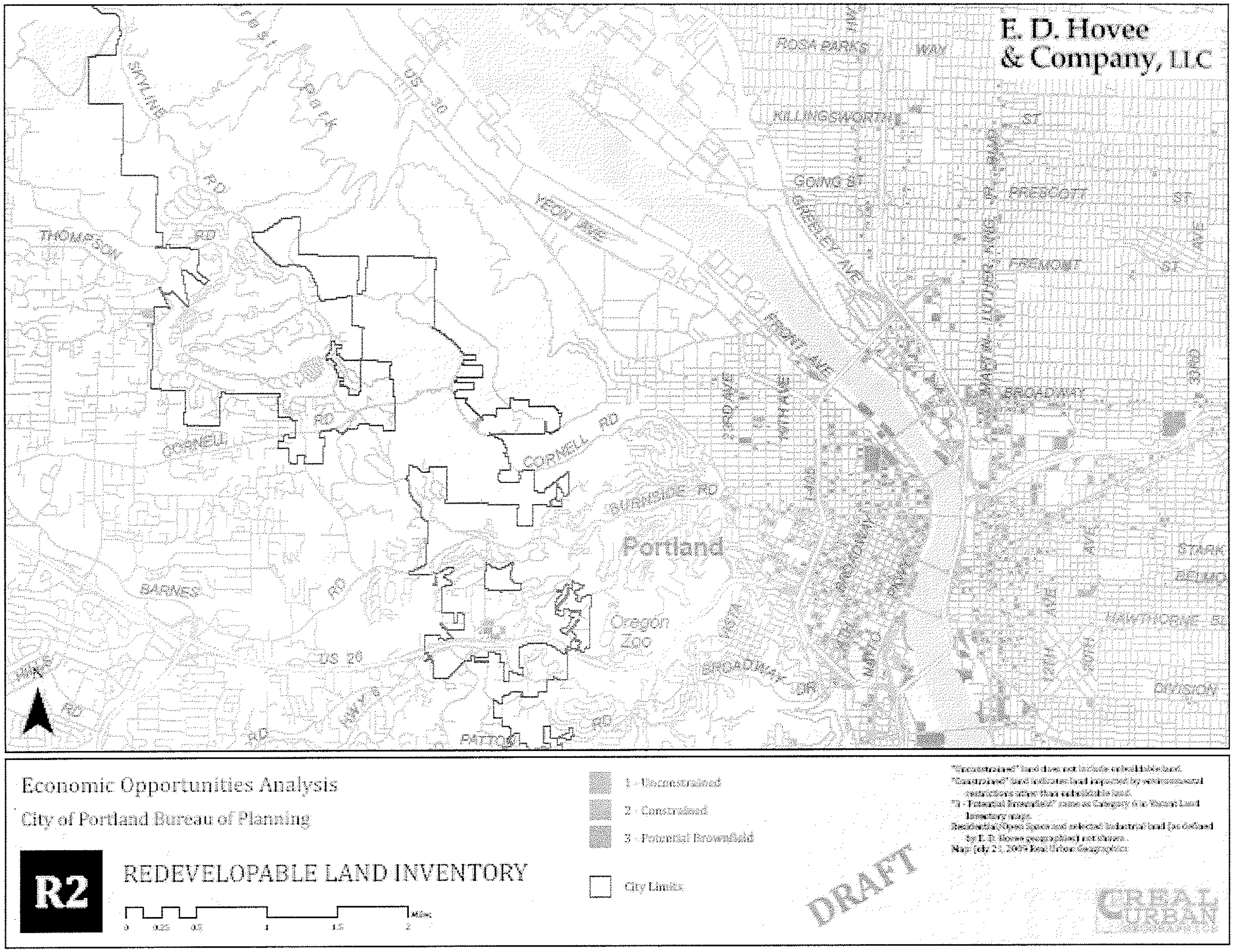
COLUMBIA BLVD
NORTH PORTLAND RD
ST JOHNS BRIDGE
WILLAMETTE BLVD
LOMBARD
ROSA PARKS WAY
N
Economic Opportunities Analysis
City of Portland Bureau of Planning
R1
REDEVELOPABLE LAND INVENTORY
1 - Unconstrained
2 - Constrained
3 - Potential Brownfield
City Limits
DRAFT
CRAG URBAN


E. D. Hovee
& Company, LLC
ROSA PARKS
WAY
KILLINGSWORTH
GOING ST
PRESCOTT
FREMONT
BROADWAY
YEON AVE
FRONT AVE
CORNELL RD
BURNSIDE RD
Portland
Oregon Zoo
US 26
US 30
SKYLINE
THOMPSON
BARNES
PATTON
STARK
HAWTHORNE
DIVISION
Economic Opportunities Analysis
City of Portland Bureau of Planning
R2
REDEVELOPABLE LAND INVENTORY
1 - Unconstrained
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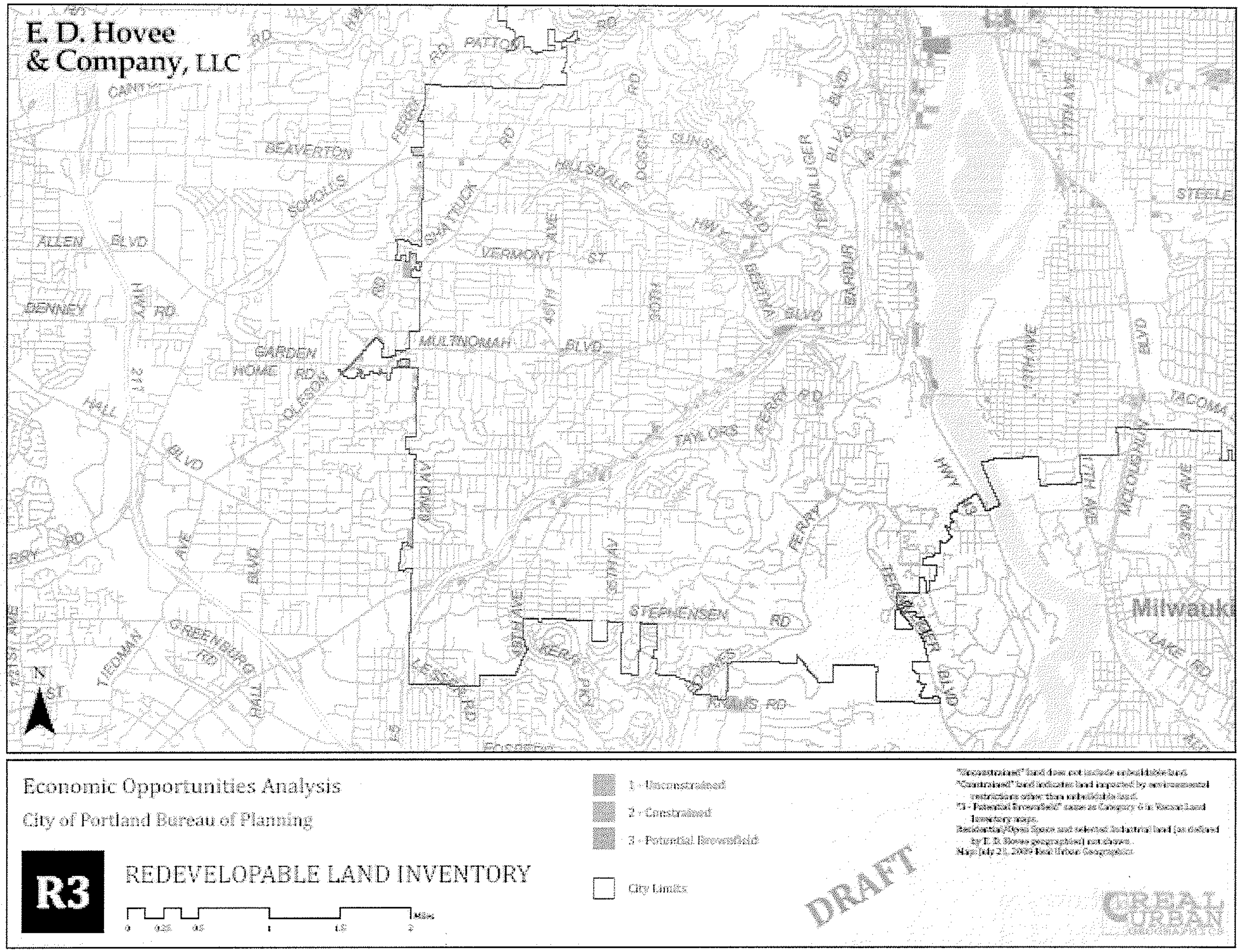
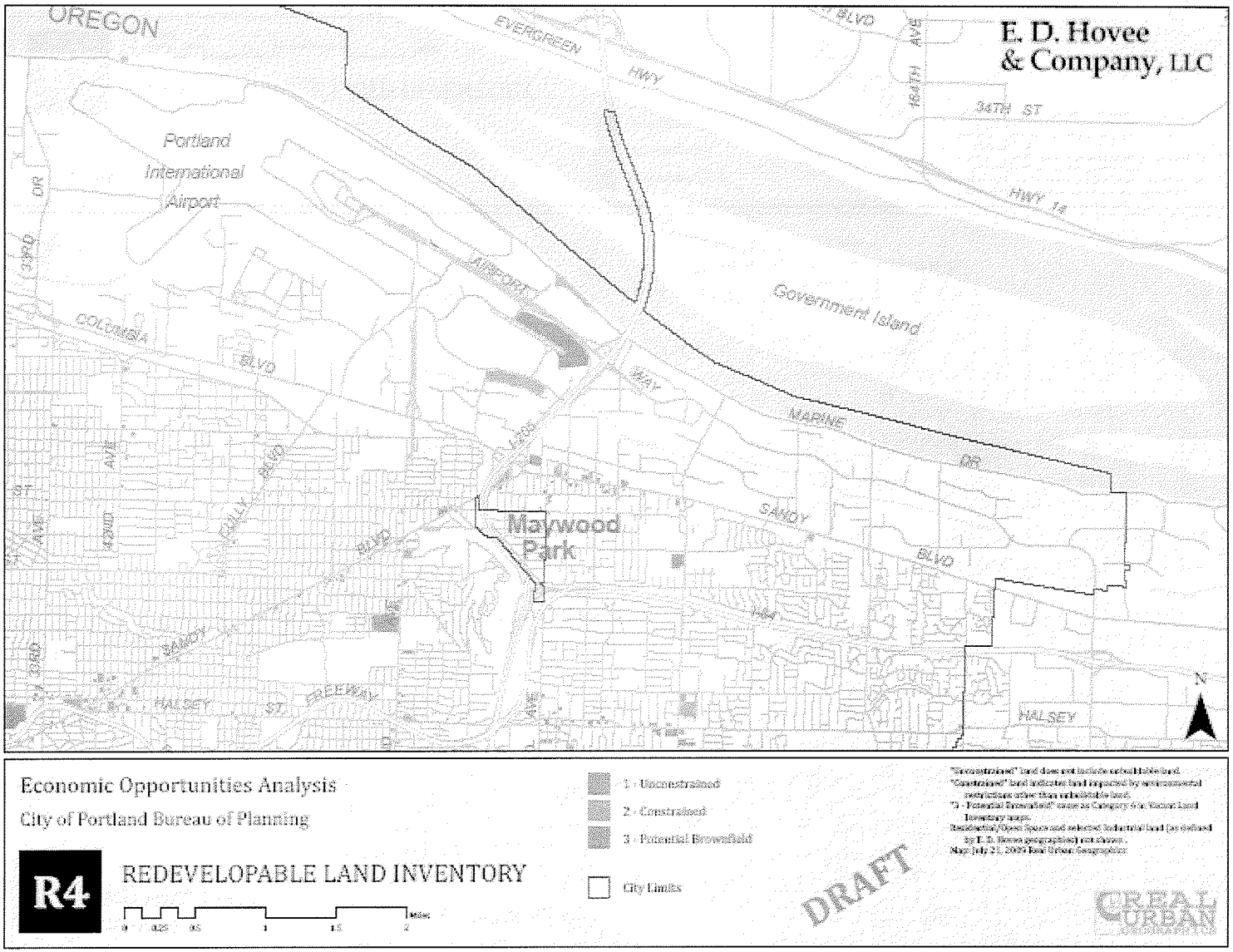
City Limits
DRAFT

183694


E. D. Hovee
& Company, LLC
PATTON
BEAVERTON
SCHOLLS
ALLEN
BLVD
DENNEY
RD
HWY
217
GARDEN
HOME
RD
OLESON
MULTNOMAH
BLVD
VERMONT
ST
HILLSDALE
HWY
SUNSET
DOSCH
TERWILLIGER
BLVD
BARBUR
TAYLORS
FERRY
RD
HALL
BLVD
GREENBURG
RD
TIEDEMAN
STEPHENSEN
RD
BOONES
FERRY
LESSER
RD
STEELE
TACOMA
MILWAUKIE
AVE
Milwauk
LAKE
RD
Economic Opportunities Analysis
City of Portland Bureau of Planning
R3
REDEVELOPABLE LAND INVENTORY
0 0.25 0.5 1 1.5 2 Miles
1 - Unconstrained
2 - Constrained
3 - Potential Brownfield
City Limits
"Unconstrained" land does not include unbuildable land.
"Constrained" land indicates land impacted by environmental restrictions other than unbuildable land.
"3 - Potential Brownfield" same as Category 6 in Vacant Land Inventory maps.
Residential/Open Space and selected Industrial land (as defined by E. D. Hovee geographies) not shown.
Map: July 21, 2009 Real Urban Geographics
DRAFT
REAL URBAN GEOGRAPHICS

183694


E. D. Hovee
& Company, LLC
OREGON
EVERGREEN
HWY
NE 82ND AVE
164TH AVE
34TH ST
HWY 14
Portland
International
Airport
AIRPORT
Government Island
COLUMBIA
BLVD
MARINE
DR
Maywood
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SANDY
BLVD
HALSEY ST
FREEWAY
N
Economic Opportunities Analysis
City of Portland Bureau of Planning
R4
REDEVELOPABLE LAND INVENTORY
1 - Unconstrained
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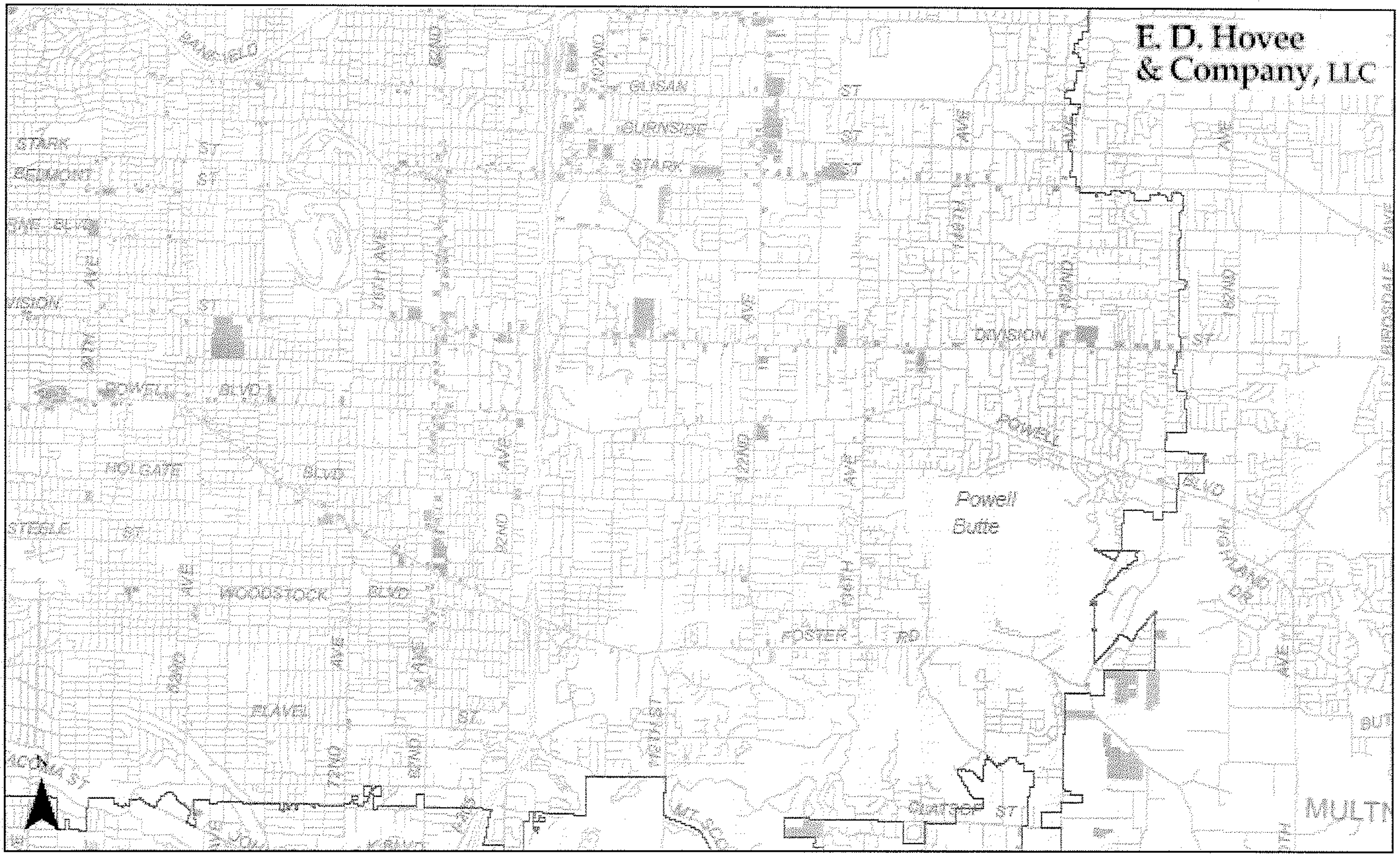
City Limits
DRAFT
CRAIG URBAN



Economic Opportunities Analysis

City of Portland Bureau of Planning

R5 REDEVELOPABLE LAND INVENTORY

0 0.25 0.5 1 1.5 2 Miles

1 - Unconstrained

2 - Constrained

3 - Potential Brownfield

City Limits

"Unconstrained" land does not include unbuildable land.
"Constrained" land indicates land impacted by environmental restrictions other than unbuildable land.
"3 - Potential Brownfield" same as Category 6 in Vacant Land Inventory maps.
Residential/Open Space and selected Industrial land (as defined by E. D. Hovee geographies) not shown.
Map July 21, 2009 Real Urban Geographics

DRAFT

REAL URBAN

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APPENDIX G. LAND INVENTORY METHODOLOGY

EOA GIS Methodology

July 2009

Data Sources (partial):

"tax_vac_zonespec_pdx", January '09, City of Portland Bureau of Planning.

"Unbuildable_Lands_pdx_010909", January '09, City of Portland Bureau of Planning.

"Proposed_RPNR_ezones052209.zip", proposed ezone.

"ezones_exist&proposed.zip", existing and proposed e-zones, [ovrly] attribute.

"potential_contaminated_underutilized", BOP, Industrial sites only.

LUST sites, Oregon DEQ LUST, June 2009

Contaminated Sites, Oregon DEQ ESCI, June 2009

Generate Vacant Lands and Brownfields Inventory:

Assign TLID from Metro to records without one in "tax_vac_zonespec_pdx".

a. Select features where TLID = blank (181 out of 902)

b. Convert to points

c. Assign TLID to points

d. Check join, edit/delete non-matching records (8 slivers deleted, 1 edited)

e. Join points back to table, calculate TLID, delete non-matching records (same 8, 15,181 sq. ft.)

2. Because of multiple TLID instances in "tax_vac_zonespec_pdx", aggregated records by TLID with the following settings, creating "pdx_vacant_clean":

a. Sum [AREA_12_SUM]; area in square feet (PDXAREA = original area)

b. First [MAP_KEY]; comprehensive plan designations

c. First [BOP_COMMEN]; additional info

d. First [BOP_COMP]; comp plan designation

e. First [ZONE]

f. First [ZONE_CLASS]

g. First [ZONEGEN_CLASS]

h. First [OWNER_1]

i. First [Landval]

j. First [Bldgval]

k. First [Totalval]

3. Delete records where [AREA_12_SUM] < 5,000 sq. ft. (89,285 sq. ft, 38 records of 685)

4. Intersect "pdx_vacant_clean" with "Unbuildable_Lands_pdx"

   a. calculate new intersected areas

   b. "unbuildable" has overlapping polygons, so resulting intersection table has duplicate records in the same space. Aggregate by recalculated Area into "clean_unbuild_intersect_clean".

   c. Create "unbuild" attribute, calculate area (this is the area of unbuildable land by TLID)

   d. Remove intersected areas less than 100 sq. ft. (719 records, 13,591 sq. ft.)

   e. Aggregate by TLID, sum [unbuild] area.

   f. Join "clean_unbuild_intersect_clean" with "pdx_vacant_clean" on TLID.

   g. calculate new "UNBUILD" attribute. This is the unbuildable portion of each vacant lot.

5. Delete unbuildable portions of vacant land

   a. Erase "clean_unbuild_intersect_clean" from "pdx_vacant_clean" to create "pdx_vacant_buildable2"

6. Add AREA_ACT (actual area) attribute, calculate area. PDX_AREA is the original area from the City files before Unbuildable Land was subtracted.

7. Append "potential_contaminated_underutilized" data to "pdx_vacant_buildable2"

   a. Add Boolean attribute "PDX_PCU", 1=appears in "potential_contaminated_underutilized" database

   b. SPOT CHECK: "potential_contaminated_underutilized" land is largely accounted for in the vacant land inventory (approx. 80%).

c. Add lots from "potential_contaminated_underutilized" that do not appear in "pdx_vacant_buildable2". 11 lots joined, 3 deleted upon >90% intersection with Unbuildable Lands, creating "pdx_vacant_buildable3". BOP_COMMENT = "Portland PCU Addition", sum_AREA_1 ("PDX_AREA") = AREA_SQFT (from PCU), ZONE_GEN = IND, MAP_KEY = Industrial, PDX_PCU = 1; *lacking some zoning information.*

d. Multidelete fields from join to clean up

e. Join TLID, create "pdx_vacant_buildable4"

8. Create Contaminated Sites (ESCI) taxlot selection

a. Add field "ECSI" where 1 = identified from the Oregon DEQ ECSI database where "Status" = 'Active' OR "Status" = 'Active Admin extended' OR "Status" = 'Active DEQ Init Modif' OR "Status" = 'Active Name Changed' OR "Status" = 'Active New' OR "Status" = 'Active Renew no eff mod' OR "Status" = 'Active Transfer' OR "Status" = 'CLEANUP_STARTED' OR "Status" = 'REPORTED' OR "Status" = 'Suspect site requiring further investigation' OR 'Listed on CRL or Inventory'.

b. Screen out Residential points by selecting by zonegen_class = "ZONEGEN_CL" = 'MFR' OR "ZONEGEN_CL" = 'POS' OR "ZONEGEN_CL" = 'RUR' OR "ZONEGEN_CL" = 'SFR', reversing selection.

c. Select taxlots that intersect points, export as "taxlots_ESCI"

d. Intersect "taxlots_ESCI" with "ESCIContaminated_active_zoned" to create "ESCIintersect"

e. Join "pdx_vacant_buildable4" to "ESCIintersect" calculate VAC = 1 where intersection exists.

f. Create invacant and outvacant taxlots.

g. Aggregate on TLID, count incidents, get land/improvement value

h. Select from both where improvement value/land value >= .5, delete records.

i. For invacant, join and calculate values. Where ECSI = 1, record has ECSI record.

j. For outvacant, Union new taxlots (ESCI_Outlots_Add) (5a) and populate fields. ECSI = 1 AND Add "ECSI Added" to comment. Some QA/QC to confirm overlap between ESCI and LUST.

9. Create LUST taxlot selection.

a. Add field "LUST" where 1 = identified from the Oregon DEQ LUST database where "Status" = 'Active' OR "Status" = 'Active Admin extended' OR "Status" = 'Active DEQ Init Modif' OR "Status" = 'Active Name Changed' OR "Status" = 'Active New' OR "Status" = 'Active Renew no eff mod' OR "Status" = 'Active Transfer' OR "Status" =

'CLEANUP_STARTED' OR "Status" = 'REPORTED' OR "Status" = 'Suspect site requiring further investigation' OR 'Listed on CRL or Inventory'.

b. Screen out Residential points by selecting by zonegen_class = "ZONEGEN_CL" = 'MFR' OR "ZONEGEN_CL" = 'POS' OR "ZONEGEN_CL" = 'RUR' OR "ZONEGEN_CL" = 'SFR', reversing selection.

c. Select taxlots that intersect points, export as "taxlots_LUST"

d. Intersect "taxlots_LUST" with "LUST_active_zoned" to create "LUSTintersect2"

e. Join "pdx_vacant_buildable4" to "LUSTintersect2" calculate VAC = 1 where intersection exists.

f. Create invacant and outvacant taxlots.

g. Aggregate on TLID, count incidents, get land/improvement value

h. Select from both where improvement value/land value >= .5, delete records.

i. For invacant, join and calculate values. Where LUST = 1, record has LUST record.

j. For outvacant, Union new taxlots (LUST_Outlots_Add) and populate fields. LUST = 1 AND Add "LUST Added" to comment. LUST_ct is not populated.

k. Creation of "pdx_vacant_buildable7".

10. Include "partly buildable" land.

a. For each constraint, area impacted is shown: [PARTIAL] = Boolean, [PARTTYPE] = type of constraint, [PARTAREA] = area in square feet of non-overlapping constraints or combinations of constraints.

b. In the North Reach area, a BOP file combining '96 Flood, Fema Floodplain, and e or proposed c zone was used.

c. In areas other than the North Reach, Metro's Title 13 and current c-zones are used: "Czone_Title13_uniquepoly".

d. Intersect North Reach Partly Buildable with "pdx_vacant_buildable7", recalc area, aggregate on TLID (losing [PARTTYPE])

e. Join, assign PARTIAL, PARTTYPE, PARTAREA

f. Clip North Reach from Title 13 (All HCA_VALUES), Clip North Reach from c-zone, Union Title 13 and c-zone, assign TYPE (one, other, or both), intersect with vacant, recalc area, delete slivers < 1000 sq. ft., aggregate by TLID, join, assign PARTIAL, PARTTYPE, PARTAREA (partially buildable area).

11. Assign Geographies in order.

12. Join with RLIS to join original tax lot area: [RLISAREA]

a. 1(!) record did not match.

13. Assign size classes by [AREA_ACT]:

    a. .5 – 1 acres (.1 - .5 is "x")

    b. 1 – 3

    c. 3 – 6

    d. 6 – 10

    e. 10 – 20

    f. 20 – 50

    g. 50+

    h. NOTE: a number of lots fall below the .1 threshold and have no [SIZECLAS] value, but perhaps should not be deleted as they occasionally represent large parcels with 100% "unbuildable" land.

14. Join FAR data by RNO from shapefile: "BPS_development_capacity_analysis", Kevin, BOP.

    a. Join RNO from RLIS (aggregated by RNO, sum sqft and ebldsqft, take first FAR).

    b. Join [FAR_SQFT], [FAR], and [EBLDSQFT].

15. Assign [EOA_CAT] to assign summary table/"tier" designations from Hovee table.

    a. 1=[AREA_ACT]/[AREARLIS] > .9 and [VAC] = 1

    b. 2=[AREA_ACT]/[AREARLIS] > .9 and [VAC] = 1 and [PARTIAL] = 1

    c. 3=[AREA_ACT]/ [RLISAREA] <= .9 and [VAC] =1 and [EOA_CAT] <> 4

    d. 4=[AREA_ACT]/ [RLISAREA] <= .9 and [VAC] =1 and [PARTIAL] =1

    e. 5=[BROWN] = 1 and [VAC] = 1

    f. Result leaves no vacant land without an [EOA_CAT] value.

16. Create new [GEOAGG] attribute according to table aggregation scheme from Hovee.

17. Create summary tables.

    a. Aggregate master file by size class, land category ("tier"), and geography (aggregated subareas spec'd in Hovee table.

    b. Break table into land category tables in Excel.

Generate Redevelopable Non-Vacant/Non-Brownfield Inventory:

1. Isolate Study Area taxlots.
2. Create [EOARATIO] attribute (float).
3. Select where [LANDVAL] and [BLDGVAL] are both > 0.
4. Calculate [EOARATIO] =[BLDGVAL]/ [LANDVAL].
5. Isolate where [EOARATIO] < .5.
6. Create "EOAratio_taxlots" shapefile
7. Join to "pdxEOAtaxlots _052709", remove any matches based on joined FID > 0.
8. Intersect "EOAratio_taxlots" with "Unbuildable Land", recalc area, aggregate on TLID, join to "EOAratio_taxlots", calculate new attributes [UNBUILD] and [BUILD].
9. Intersect "EOAratio_taxlots" with Title 3/C zone combined shapefile, recalc area, aggregate on TLID, take largest segment to ID constraint type, join to "EOAratio_taxlots", populate [PARTIAL], [PARTAREA], and [PARTTYPE] fields.
10. Join to FAR data by RNO, populate [FAR_SQFT], [FAR], and [EBLDSQFT].
11. Assign [EOA_CAT] to assign summary table/"tier" designations from Hovee table.
    a. 1=[BUILD]/[AREA] > .9 and [VAC] = 1
    b. 2=[BUILD]/[AREA] > .9 and [VAC] = 1 and [PARTIAL] = 1
    c. 4=[BUILD]/ [AREA] <= .9 and [VAC] =1 and [PARTIAL] =1
    d. 3=[BUILD]/ [AREA] <= .9 and [VAC] =1 and [EOA_CAT] <> 4
12. Assign Hovee geographies via conversion to centroids (label-style), intersect with geographies in specified order.
13. Assign size classes by [BUILDACR]:
    a. .5 – 1 acres (.1 - .5 is "x")
    b. 1 – 3
    c. 3 – 6
    d. 6 – 10
    e. 10 – 20
    f. 20 – 50
    g. 50+

h. NOTE: a number of lots fall below the .1 threshold and have no [SIZECLAS] value, but perhaps should not be deleted as they occasionally represent large parcels with 100% "unbuildable" land.

14. Delete the unbuildable portions of lots from the inventory via an erase process.

Identify All Revelopable Land within the Study Area:

Select taxlots (RLIS May '09) intersecting city boundary.

1. Join with vacant lots, remove successful joins
2. Join with redevelopable and contaminated lots, remove successful joins
3. Create center points, delete attributes
4. Assign data to points based on geographies.
5. Join point data to polygon data
6. Delete residential taxlots
7. Intersect with unbuildable, calculate new area, join, calculate new "unbuild" area, "unbuild percentage", delete unbuildable areas.
8. Join on FAR data, calc attributes.

Potential Questions:

- Count incidents in LUST/ESCI-Added lots? I.E.: *How* contaminated are the sites?
- Intersect non-vacant DEQ lots with unbuildable?
- Lookup table for DEQ detail?
- Do we need to know Partial Buildable/*Type* of Constraint? This above method only takes the type-of-constraint value from the largest portion of a multi-part property in the original BOP data.
- Zoning/land use for all lots?
- A handful of subareas not populated that lie within the Study Area but outside E. D. Hovee's geographies (< .1 percent).
- How to handle large lots with 100% unbuildable (no size class)?

Attributes:

VAC = Vacant land (as opposed to underutilized, from original BOP data).

BROWN = 1 where ECSI = 1 or LUST = 1 or PDX_PCU = 1 or fst_BOP_CO = some kind of brownfields/contamination comment.

PARTAREA = Otherwise buildable vacant portion of site constrained by "partially buildable", square feet.

PARTTYPE = "partially buildable" type or types of constraints.

PARTIAL = portion of otherwise buildable vacant land is "partially buildable".

PDX_PCU = BOP's "potential_contaminated_underutilized" brownfield.

ECSI = active site, appears in DEQ ECSI database.

LUST = active site, appears in DEQ LUST database

AREA_ACT = buildable vacant area

UNBUILD = unbuildable area

Sum_AREA_1 = where applicable, original area from BOP data for tracking.

Fst_BOP_CO = where applicable, original comments from BOP/Port of Portland.

Contact: Justin Healy, 503.796.7219