
APPENDIX D: LAND SUPPLY METHODOLOGY REPORT

Provided by

**JD WHITE COMPANY, A DIVISION OF
BERGER-ABRAM ENGINEERING, INC.**

CITY OF CENTRALIA LAND CAPACITY ANALYSIS

The land capacity analysis is centered on 20-year population and employment forecasts. This response memorandum contains tables, assumptions, and information about how the land capacity analysis was developed.

Table 1 and Table 2 are summary tables that identify the forecasted commercial, industrial, and residential population. In both cases, the UGA is divided between lands within City limits and lands in the unincorporated UGA. More detailed tables are located at the conclusion of the memorandum.

Table 1. 20-Year Commercial/Industrial Growth

	Urban Growth Boundary (UGB)			
	Incorporated City Limits		Unincorporated UGA	
	Available Acreage	Jobs	Available Acreage	Jobs
Commercial	212	2,120	166	1,660
Industrial	423	2,115	880	4,400
Totals	635	4,235	1,046	6,060

Table 2. 20-Year Residential Growth^{1,2}

	Urban Growth Boundary (UGB)					
	Incorporated City Limits			Unincorporated UGA		
	Available Land	Households	Population	Available Land	Households	Population
Residential	454	1,794	4,198	1,386	1,294	3,106

¹ low density residential projection

² Annual growth of approximately 2% resulting in Washington State Office of Financial Management (OFM) 20-year population projection of approximately 7,200 additional residents for Centralia (total 22,540) by 2025 (based on June 2005 Office of Financial Management total population of 15,340)

Assumptions

The City intends to emphasize job creation to provide ample employment for Centralia residents as well as residents of surrounding communities.

The City of Centralia is expected to grow by 7,200 residents to a population of 22,540 by the year 2025, according to Lewis County and Office of Financial Management. This represents approximately 38% of the total projected residential growth for the county. The Lewis County industrial land demand for 2025 is 3,038 total acres, according to the Lewis County Industrial Lands Analysis Update (E.D. Hovee & Company, August 2005).

The City of Centralia Comprehensive Plan map includes the addition of approximately 1,303 acres of industrial land within the urban growth area, which represents approximately 43% of the Lewis County industrial acreage land demand, and includes approximately 6,515 new industrial jobs by 2025. It is assumed that approximately five jobs per acre would occur in industrial areas, consistent with the base assumptions used in the E.D. Hovee & Company Industrial Lands Analysis.

The map includes the addition of approximately 378 acres of commercial land within the urban growth area. It is assumed that approximately 10 jobs per acre would occur in commercial areas. Approximately 3,780 new commercial jobs could occur by 2025 based on these assumptions. It is important, however, to recognize that some of this commercial development will require redevelopment to occur. This job per acre ratio is consistent with other communities when factoring in that commercial jobs occur in retail, service and professional sectors.

Job growth is an important component of the City's Comprehensive Plan update process. Having an available land supply of industrial and commercial land is important for the City to continue to attract major employers and to reverse the traditionally higher unemployment rates in Lewis County. The City has been successful in recruiting employers and desires to continue this trend. In addition to job expansion throughout the UGA, continued job expansion at the Port of Centralia and within the downtown area are highly desired.

Residential Density

The inclusion of lower density residential areas within the unincorporated UGA is justified because much of that land is within environmentally critical areas or is committed so that further land division would not be possible. Constraints in this area include steep slopes, wetlands, and floodplains while committed lands include those areas that could not be further subdivided based on proposed residential zoning. Those areas added to the City as unincorporated UGA have historically larger parcel sizes due to the Lewis County regulations of five acre minimum lot sizes. The City's Comprehensive Plan encourages greater residential densities than permitted in Lewis County, but also recognizes environmental critical land constraints and historic legal lots of record in these areas.

Environmental Sensitive Critical Areas

Areas within the unincorporated UGA have development limitations due to steep slopes, with 30% or greater slope, wetlands, 100-year floodplain constraints, or other geologic hazards. Development in these areas requires more land area and therefore these areas are proposed with lesser residential density. The City's Environmental Element goes into further details on environmentally sensitive lands.

It has been the experience of the City and the consultant that the National Wetland Inventory is an indicator of wetlands and that it often underestimates their extent and amount. The City will be monitoring development within critical areas on a case-by-case basis to determine what proportion of those lands is in fact buildable. Also, as of the date of this analysis, the City has not completed a critical areas ordinance (CAO), which may further restrict land development activities. Wetland filling is restricted by the US Army Corps of Engineers and any fill of over a half-acre requires an individual permit and an alternatives analysis that compares the site to others that do not require fill. As well, the Washington State Department of Ecology requires wetland mitigation for wetland impacts. Therefore, development in wetland areas is more costly and fill is limited by the Corps' permitting process.

Although development is permitted within 100-year flood fringe areas, raising site areas through fill placement may be required, which likely would increase construction cost and therefore be a limiting factor for some property owners.

Infrastructure

The infrastructure deduction for areas with densities of four or fewer dwelling units per acre has been reduced to 25% because less infrastructure is needed for lower density developments. Areas with five or more dwelling units per acre include a 30% deduction for infrastructure.

Interlocal Agreement

Centralia has an interlocal agreement with Lewis County that the City's UGA is subject to the City's zoning and other development regulations.

Comprehensive Plan

Please refer to the City of Centralia Comprehensive Plan related to housing densities in the land use, housing, and capital facilities elements for additional information.

The following tables, Tables 3 and 4, contain detailed information about the incorporated City limits and unincorporated UGA area.

Table 3. Incorporated City of Centralia 20-Year Population Forecast, June 2007

Low Density Projections	Gross Acres	Land Based Reduction Factors ²					Available Land	Households	Population
		Critical Areas Deductions ⁷	Committed Land ¹²	Net Acres	25% Market Factor ¹¹	30% Infrastructure ⁶ (25% if DU ≤4)			
High - 16 du/acre ⁴	40	-11	0	29	-7.2	-6.5	15	245	588
Medium High - 8 du/acre ⁴	94	-4	-15	75	-25	-15	45	360	864
Medium - 5 du/acre ⁴	813	-173	-255	385	-96	-86	203	1,015	2,436
Low - 1 du/acre ⁴	685	-386	-182	117	-29	-22	66	66	158
Very Low - min 2 acre parcel ⁶	581	-225	-134	222	-55	-42	125	63	151
Totals	2,213			828			454	1,794	4,198

Medium Density Projections	Gross Acres	Land Based Reduction Factors ²					Available Land	Households	Population
		Critical Areas Deductions ⁷	Committed Land ¹²	Net Acres	25% Market Factor ¹¹	30% Infrastructure ⁶ (25% if DU ≤4)			
High 18 du/acre ⁴	40	-11	0	29	-7.2	-6.5	15	275	660
Medium High 12 du/acre ⁴	94	-4	-3	87	-22	-19	46	552	1,325
Medium 7 du/acre ⁴	813	-173	-195	445	-111	-100	234	1,638	3,931
Low 3 du/acre ⁴	685	-386	-67	232	-58	-43	131	393	943
Very Low 1 du/acre ⁵	581	-225	-99	257	-64	-48	145	145	348
Totals	2,213			1,050			571	3,003	7,207

High Density Projections	Gross Acres	Land Based Reduction Factors ²					Available Land	Households	Population
		Critical Areas Deductions ⁷	Committed Land ¹²	Net Acres	25% Market Factor ¹¹	30% Infrastructure ⁶ (25% if DU ≤4)			
High - 20 du/acre ⁴	40	-11	0	29	-7.2	-6.5	15	306	734
Medium High - 15 du/acre ⁴	94	-4	-3	87	-22	-19	46	690	1,656
Medium - 8 du/acre ⁴	813	-173	-105	535	-133	-120	282	2,256	5,414
Low - 4 du/acre ⁴	685	-386	-40	259	-65	-49	145	580	1,392
Very Low - 2 du/acre ⁵	581	-225	-61	295	-74	-55	166	332	797
Totals	2,213			1,208			656	4,194	9,993

Table 4. City of Centralia's UGA 20-Year Population Forecast, June 2007

Low Density Projections	Gross Acres	Land Based Reduction Factors ²					Available Land	Households	Population
		Critical Areas Deductions ⁷	Committed Land ¹²	Net Acres	25% Market Factor ¹¹	30% Infrastructure ⁶ (25% if DU <=4)			
High - 16 du/acre ⁴	30	-20	-0.6	9	-2.5	-2	5.5	88	211
Medium High - 8 du/acre ⁴	46	-13	-7	26	-6.5	-6	13.5	108	259
Medium - 5 du/acre ⁴	350	-68	-166	116	-29	-26	61	305	732
Low - 1 du/acre ⁴	809	-204	-105	500	-125	-94	281	281	674
Very Low - min 2 acre parcel ⁵	2,977	-663	-491	1,823	-456	-342	1,025	512	1,229
Totals	4,212			2,473			1,386	1,294	3,105

Medium Density Projections	Gross Acres	Land Based Reduction Factors ²					Available Land	Households	Population
		Critical Areas Deductions ⁷	Committed Land ¹²	Net Acres	25% Market Factor ¹¹	30% Infrastructure ⁶ (25% if DU <=4)			
High 18 du/acre ⁴	30	-20	-0.6	9	-2.5	-2	5.5	99	238
Medium High 12 du/acre ⁴	46	-13	-10	23	-6	-5	12	144	346
Medium 7 du/acre ⁴	350	-68	-188	94	-23	-21	50	350	840
Low 3 du/acre ⁴	809	-204	-141	464	-116	-87	261	783	1,879
Very Low 1 du/acre ⁵	2,977	-663	-194	2,120	-530	-397	1,193	1,193	2,863
Totals	4,212			2,710			1,521	2,569	6,165

High Density Projections	Gross Acres	Land Based Reduction Factors ²					Available Land	Households	Population
		Critical Areas Deductions ⁷	Committed Land ¹²	Net Acres	25% Market Factor ¹¹	30% Infrastructure ⁶ (25% if DU <=4)			
High - 20 du/acre ⁴	30	-20	-0.6	9	-2.5	-2	5.5	110	264
Medium High - 15 du/acre ⁴	46	-13	-2	31	-8	-7	18	270	648
Medium - 8 du/acre ⁴	350	-68	-228	54	-13	-12	29	232	557
Low - 4 du/acre ⁴	809	-204	-134	471	-118	-88	265	1,060	2,544
Very Low - 2 du/acre ⁵	2,977	-663	-79	2,235	-559	-419	1,257	2,514	6,034
Totals	4,212			2,797			1,574	4,186	10,046

The following footnotes apply to the tables for both the incorporated and unincorporated areas:

1. Land base accounts for all residential areas within Urban Growth Boundary (UGB).
2. The Land Base Reduction Factors allow for the calculation of net available residential land for future development.
3. Annual growth of approximately 2% resulting in Washington State Office of Financial Management (OFM) 20-year population projection of approximately 7,200 additional residents for Centralia (total 22,540) by 2025 (based on June 2005 Office of Financial Management total population of 15,340).

4. Low Residential 1 to 4 dwelling units per acre, Medium Density Residential 5 to 8 dwelling units per acre, Medium-High Density Residential 9 to 15 units per acre, and High Density Residential 16-20 units per acre. These residential designations are assumed to have full urban services including public water and sewer service with connection requirements based on city water and sewer availability.
5. Very Low Density Residential areas will typically not have community water or sewer systems. Streets will be paved, but curb, gutter, and sidewalk will usually not be in place. These areas include land that may have the presence of critical areas.
6. A 25% infrastructure deduction for roads and utilities is included for residential densities of four or fewer dwelling units per acre based on larger lot size and smaller road standards. A 30% infrastructure deduction was used for five or more dwelling units per acre based on smaller lots sizes and greater impervious surface ratios.
7. Undevelopable critical areas to include Federal Emergency Management Agency (FEMA 100-year floodplains, National Wetland Inventory (NWI) wetlands and slopes of 30% and greater.
8. The City has an Interlocal agreement with the County for governmental jurisdiction.
9. Existing legal lots of record in the Urban Growth Area (UGA) (outside City limits) will not be required to subdivide; however, they will be redesignated with a residential comprehensive plan that may allow for greater residential density when rezoned by the City.
10. Based on recent platting patterns in the City, the medium density projections are more likely to occur than the higher density projections and infill development is expected to continue into the future at higher densities.
11. The 25% market factor accounts for properties that are eligible for further land division, but that may not be potentially divided based on property owner decisions to not further divide property, even though eligible to do so under proposed residential zoning.
12. Committed land include existing lots that are not eligible to be further divided based on minimum lot requirements under proposed residential zoning.

Key Elements for Centralia Comprehensive Plan Update Process June 2007

Industrial and Commercial Employment Projections

20-Year General Employment Forecast Land Use Assumptions

- Place emphasis on job creation to provide ample employment for Centralia residents as well as those residents from surrounding communities
- City Population will grow by an estimated 7,200 residents over the next 20 years, 2025 horizon.
- New industrial jobs are assumed at a rate of 5 jobs per net acre
- New commercial jobs are assumed at a rate of 10 jobs per net acre
- Areas redesignated from residential comprehensive plan designations to commercial or industrial designations will be considered legal non-conforming uses that can be maintained but not expanded.
- All properties within the existing Urban Growth boundary, but outside existing city limits will be assigned a comprehensive plan designation and will be subject to City zoning upon adoption by the City Council.

Industrial Land Yield Assumption

- Assuming development at 5 jobs per acre
- 469 gross acres of light industrial land
- 405 of the 469 acres of light industrial either is currently vacant or to be rezoned
2,025 potentially new light industrial jobs ($405 \times 5 = 2,025$)
- 1,140 gross acres of heavy industrial land
- 898 of 1,140 acres of heavy industrial is either currently vacant or to be rezoned
4,490 potentially new heavy industrial jobs ($898 \times 5 = 4,490$)

Result: 6,515 new industrial jobs could be created on currently available or land set to be rezoned ($2,025 + 4,490 = 6,515$)

Commercial Land Yield Assumption

- Assuming development at 10 jobs per acre
- 672 gross acres of commercial land
- 378 of the 672 acres of commercial either is currently vacant or to be rezoned
3,780 potentially new commercial jobs ($378 \times 10 = 3,780$)

Result: 3,780 new commercial jobs could be created on currently available or land set to be rezoned

Overall Employment Sector Assumption

Based on the Comprehensive Plan projections for year 2025 employment projection for the city of Centralia are as follows

- 2,025 total light industrial jobs ($405 \times 5 = 2,025$)
 - 4,490 total heavy industrial jobs ($898 \times 5 = 4,490$)
- 6,515 projected new industrial employment for year 2025*

- 3,780 total commercial jobs ($378 \times 10 = 3,780$)
3,780 *projected new commercial employment for year 2025*
- Result:** Total employment growth = 10,295 new jobs ($6,515 + 3,780 = 10,295$)
Job to population ratio = 1.5 jobs for every new resident ($10,295/6,800 = 1.5$)

Residential Population, Households and Density Projections

20-Year Population Forecast Land Use Assumptions

- Annual growth of approximately 2% resulting in Washington State Office of Financial Management 20-year population project of approximately 7,200 new residents (total 22,540) by 2025 (assuming 2005 population of 15,340).
- Overall residential density target for new development; is a minimum of 1-2 dwelling units per acre, with a number of residential designations including: Very Low Density Residential $\frac{1}{2}$ to 2 acre parcels, Low Density Residential 1 to 4 dwelling units per acre, Medium Density Residential 5 to 8 dwelling units per acre, Medium-High Density Residential 9 to 15 units per acre and High Density Residential 16+ units per acre
- Very Low Density Residential areas will typically develop without city water and sewer service, but city water service may be available with connection required based on city water availability
- All other residential areas are assumed to have full urban services including public water and sewer service with connection requirements based on city water and sewer availability
- 30% infrastructure deduction for roads and utilities.
- Undevelopable critical areas to include Federal Emergency Management Agency (FEMA 100 year floodplains, National Wetland Inventory (NWI) Wetlands and slopes of 30% and greater.
- All properties within the existing Urban Growth boundary, but outside existing city limits will be assigned a comprehensive plan designation and will be subject to City zoning upon adoption by the City Council.
- Existing legal lots of record in the Urban Growth Area (UGA) (outside city limits) will not be required to subdivide; however, they will be redesignated with a residential comprehensive plan that may allow for greater residential density when zoned by the City.

Focused areas of Residential Development

1. **Cooks Hill**

- Assumed development at 1 DU/acre, and 2.4 PPH
- 1,424 gross developable acres
- 380 acres deducted to areas constrained by critical areas (slope > 30%, 100 year flood, and NWI wetlands)
- 84 acres deducted to already committed lands (Parcels less than one acre that under proposed zoning could be subdivided no further)
- 960 net developable acres*

- 288 acres deducted for infrastructure (30% of total available land after critical areas and committed lands deduction)
- 672 acres available for development after all deductions

Result: *A projected population of 1,613 ($672 \times 2.4 \times 1 = 1,613$) or 672 households (672×1)*

2. City Center

- Assumed development at 8 DU/acre, and 2.4 PPH
- 860 gross developable acres
- 411 acres deducted to areas constrained by critical areas (slope > 30%, 100 year flood, and NWI wetlands)
- 391 acres deducted to already committed lands (Parcels are all ready parcelized or built and under proposed zoning could be subdivided no further)
- 58 net developable acres*
- 17 acres deducted for infrastructure (30% of total available land after critical areas and committed lands deduction)
- 41 acres available for development after all deductions

Result: *A projected population increase of 787 ($41 \times 2.4 \times 8 = 787$) or 328 households (41×8)*

3. North City

- Assumed development at 1 DU/acre, and 2.4 PPH
- 1,159 gross developable acres
- 361 acres deducted to areas constrained by critical areas (slope > 30%, 100 year flood, and NWI wetlands)
- 106 acres deducted to already committed lands (Parcels less than one acre that under proposed zoning could be subdivided no further)
- 692 net developable acres*
- 208 acres deducted for infrastructure (30% of total available land after critical areas and committed lands deduction)
- 484 acres available for development after all deductions

Result: *A projected population increase of 1,162 ($484 \times 2.4 \times 1 = 1,162$) or 484 households (484×1)*

4. Seminary Hill

- Assumed development at 1 DU/acre, and 2.4 PPH
- 658 gross developable acres
- 113 acres deducted to areas constrained by critical areas (slope > 30%, 100 year flood, and NWI wetlands)
- 122 acres deducted to already committed lands (Parcels less than one acre that under proposed zoning could be subdivided no further)
- 423 net developable acres*
- 127 acres deducted for infrastructure (30% of total available land after critical areas and committed lands deduction)
- 296 acres available for development after all deductions

Result: *A projected population increase of 710 ($296 \times 2.4 \times 1 = 710$) or 296 households (296×1)*

5. Widgeon Hill

- Assumed development at 1 DU/acre, and 2.4 PPH
- 921 gross developable acres
- 119 acres deducted to areas constrained by critical areas (slope > 30%, 100 year flood, and NWI wetlands)
- 4 acres deducted to already committed lands (Parcels less than one acre that under proposed zoning could be subdivided no further)
- 798 net developable acres*
- 239 acres deducted for infrastructure (30% of total available land after critical areas and committed lands deduction)
- 559 acres available for development after all deductions

Result: *A projected population increase of 1,342 ($559 \times 2.4 \times 1 = 1,342$) or 559 households (559×1)*

6. West City

- Assumed development at 2 DU/acre, and 2.4 PPH
- 835 gross developable acres
- 263 acres deducted to areas constrained by critical areas (slope > 30%, 100 year flood, and NWI wetlands)
- 217 acres deducted to already committed lands (Parcels less than one acre that under proposed zoning could be subdivided no further)
- 355 net developable acres*
- 106 acres deducted for infrastructure (30% of total available land after critical areas and committed lands deduction)
- 249 acres available for development after all deductions

Result: *A projected population increase of 1,195 ($249 \times 2.4 \times 2 = 1,195$) or 498 households (249×2)*

OVERALL RESIDENTIAL RESULT

A projected population increase of 6,809 persons or 2,837 households for the entire City of Centralia designated UGB area. Overall project residential density for new development will be approximately 1.2 dwelling units per acre (2,837 dwelling units / 2,301 acres).

City of Centralia and Urban Growth Area

Population Analysis Areas Map

