## Data Sources

The map at right represents soils of the Willamette River Basin (WRB) ranked by land use capability classes, a general measure of the suitability of soils for agricultural field crop production. Data from two of the United States Department of Agriculture (USDA) soil geographic data bases were used to create the map: the Soil Survey Geographic data base (SSURGO) and the State Soil Geographic data base (STATSGO). The most detailed information about soil properties is contained in SSURGO, data appropriate for use with areas ranging in size from an individual agricultural field up to entire counties. SSURGO data are compiled using field observation methods or are based on aerial photography. STATSGO maps are designed for use in planning and natural resource management at a multistate or regional scale. As shown in Figure 9, Map 2 contains data from both sources. STATSGO data are coarser than SSURGO data, and are used only where SSURGO data are unavailable.

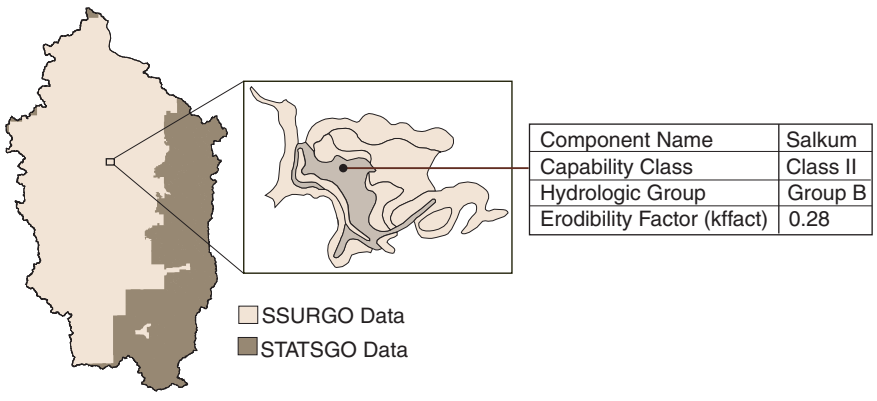



Figure 9. *Areas of WRB described by SSURGO and STATSGO data. Each SSURGO soil unit (polygon) represents a component that is associated with 60 properties and 84 data elements such as hydrologic group and erodibility factor.*

## Soil Classification

Soil science provides a comprehensive taxonomic classification for soils. This scientific classification is based on underlying geology, and the formation processes, composition, physical structure, and chemical properties of soils. Technical or interpretive classification systems consider specific land uses and management practices such as agricultural production, building development, and wildlife management. These are developed by experts in a specific field through interpretation of the comprehensive taxonomic system.

The scientific classification system used by the USDA National Cooperative Soil Survey has six hierarchical levels of taxonomic classification: order, suborder, great group, sub group, family, and series. A soil order, the most general level, contains soils that have similar processes and degrees of formation. A soil series, the finest level of description, comprises soils with similar composition and major soil horizons.

Map 2 at right depicts soils based on an interpretive classification system designed to indicate the suitability of soils for agricultural crop production. This system assigns a land use capability classification from I to VIII (this is also known as soil capability classification). Figures 10 and 11 show the percentage of these capability classes within the WRB and its 1995 urban growth boundaries. Class I soils present the fewest limitations and are the most suitable for agricultural crop production. As the capability classification number increases, soil limitations increase and suitability for agricultural crop production decreases. Soil capability is further described with the addition of subclass and unit labels. The most complete description of a soil capability class is in the form IVe2. The Roman numeral indicates the degree of limitation, the lower case letter (subclass) describes the type of limitation (e- erosion potential, w- wet soil, s- shallow soil) and the Arabic number (unit) characterizes appropriate crops and management practices.

## Soil Maps and Representation

Maps represent soils as uniform areas with well-defined boundaries. As with other land features such as vegetation and geology, soils can be heterogeneous complexes without distinct boundaries. Soil map delineations represent the dominant soil type in an area, but, like all maps, may include errors in classification and boundary position.

## Land Use Planning and Resource Management

Soil properties and characteristics are important considerations in determining how land is used. Choices arise when land is well suited for many uses. For example, attributes such as gentle slopes, availability of water, and adequate drainage characterize many agricultural soils in the Willamette Valley and also make them valuable for building and urban development.

The Oregon Department of Land Conservation and Development uses soil capability classes to define Agricultural Land and High-Value Farmland in Administrative Rule #660-033-0010-20 for implementation of Goal 3 in Oregon's Statewide Planning Goals (see p. 72). In western Oregon, Agricultural Land is defined as being soils predominantly in capability classes I-IV. High-Value Farmland includes all soils in capability classes I and II, and soils in subclasses IIIe, IIIw, IVe, and IVw. Land within acknowledged urban growth boundaries (UGBs) is not considered Agricultural Land and is exempt from Goal 3. Figure 12 and Table 2 show acreages of soil capability classes within the WRB and its 1995 UGBs.

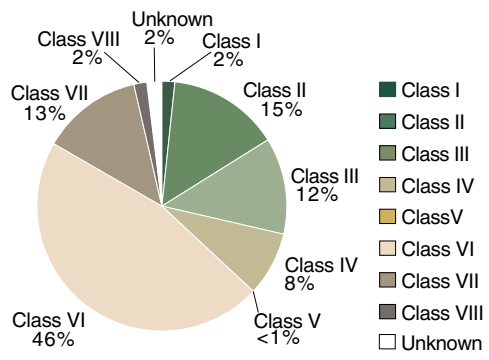



Figure 10. *Percentage of soil capability classes within WRB.*

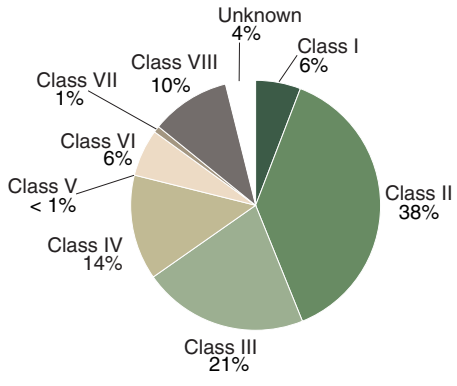



*Figure* 11. *Percentage of soil capability classes inside 1995 urban growth boundaries within WRB.*

| UGB | Class I | Class II | Class III | Class IV | Class V | Class VI | Class VII | Class VIII | Unknown |
|---|---|---|---|---|---|---|---|---|---|
| Portland Metro | 4,149 | 75,777 | 51,781 | 24,930 | 53 | 15,966 | 2,911 | 40,809 | 10,218 |
| Salem | 1,333 | 24,441 | 10,733 | 4,170 | 0 | 1,013 | 227 | 38 | 1,687 |
| Corvallis-Philomath | 900 | 6,505 | 3,785 | 7,547 | 0 | 1,188 | 52 | 0 | 584 |
| Albany-Millersburg | 1,741 | 6,799 | 3,550 | 3,554 | 0 | 145 | 0 | 490 | 629 |
| Eugene-Springfield | 10,686 | 13,788 | 6,558 | 10,603 | 0 | 3,501 | 304 | 2,038 | 1,374 |
| **Subtotal** | 18,809 | 123,310 | 76,406 | 50,804 | 53 | 21,813 | 3,495 | 43,375 | 14,492 |
| **Other UGBs** | 6,909 | 42,207 | 18,334 | 9,648 | 0 | 5,752 | 181 | 1,827 | 2,805 |
| **UGB Total** | **25,718** | **165,517** | **94,740** | **60,451** | **53** | **27,566** | **3,676** | **45,202** | **17,297** |

Table 2. *Acres of soil capability classes inside 1995 urban growth boundaries within WRB.*
*Note: 2.47 acres equal one hectare.*

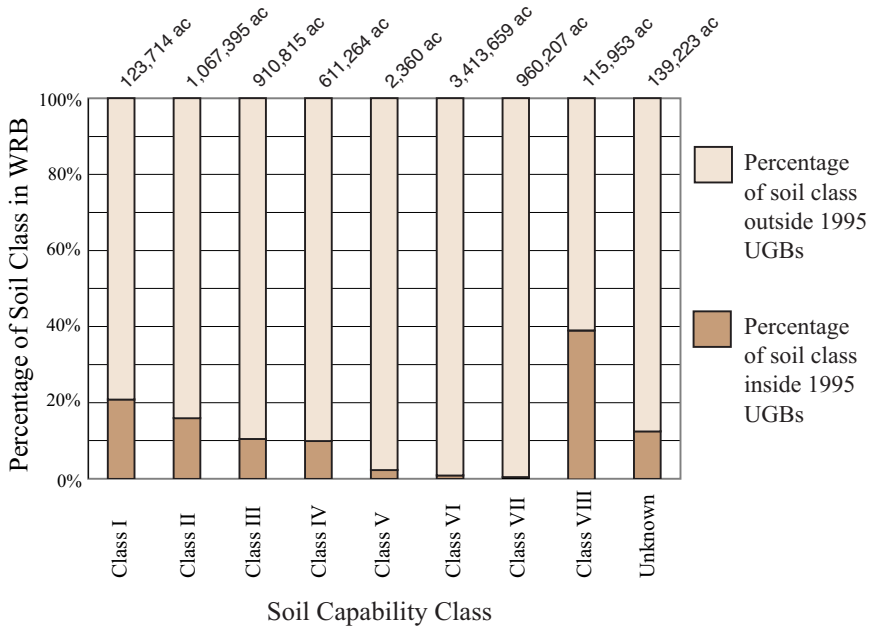
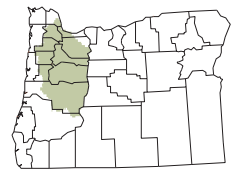



Figure 12. *Percentage of soil capability classes within and outside 1995 urban growth boundaries in WRB. The numbers at the top of the chart represent the total number of acres for each soil capability class within WRB.*

# Map 2. Soils

Projection UTM Zone 10
Scale 1:750000
0 mi 10 mi 20 mi
0 km 10 km 20 km 30 km



Class I Few limitations for agriculture
Class II Moderate limitations for agriculture
Reduce choice of plants or require moderate conservation practices
Class III Severe limitations for agriculture
Reduce choice of plants and/or require special conservation practices
Class IV Very severe limitations for agriculture
Reduce choice of plants and/or require very careful management
Class V Limitations for agriculture
Use limited by considerations, other than erosion, that are impractical to remedy
Class VI Severe limitations for agriculture
Generally unsuitable for cultivation
Class VII Very severe limitations for agriculture
Unsuitable for cultivation
Class VIII Unsuitable for agriculture
Limitations nearly preclude use for cultivation
Water
Unknown
Interstate Highways
1995 Urban Growth Boundary