CHAPTER 4. ENVIRONMENTAL ANALYSIS

Topography

Jackson County is part of what is known as the Scarped Plains Region, midway between the Great Plains to the west and the Ozark Plateau to the southeast. The topography of Raytown is generally described as gently rolling uplands.

The City's most rugged terrain is located in the extreme southeast portion of the community along the White Oak tributary to the Little Blue River. The other significant valley is the Wildwood Lakes area near the eastern City limits. Also, the Round Grove Creek Valley in Raytown is marked by steep slopes (more than 20 percent).

Geology and Soils

Bethany Falls limestone is the most typical and easily recognized rock formation near the surface. It is frequently mined in the metropolitan area for aggregate used in road bases and concrete mix.

The majority of Raytown is composed of Higginsville soil and Urban Land soil with smaller areas of Sibley, Sharpsburg, Snead, Menfro and Oska soil types. The soil types range from silt loams to silty clay loams. The alluvial soil types in the valleys represent the Sarpy groupings, while the tributary valleys are composed of the Wabash groupings.

In areas with the Higginsville and Urban Land soil types, the depth to bedrock is greater than sixty inches. The depth to bedrock is between twenty to forty inches where the Snead and Oska soil types exist.

Soil types containing clay, such as Sharpsburg, Snead, Menfro and Oska, generally have a higher shrink-swell potential, which means that reinforced building foundations are recommended. When present in level areas, these soil types also drain more slowly than some other types.

Hydrology

For most of Raytown (areas with Higginsville and Urban Land soil) the depth of the high water table varies between one and three feet. Areas with Sibley, Oska, Menfro and Sharpsburg soils have a depth of at least six feet to the high water table.

According to the Department of Public Works, there have not been any recent reports of groundwater contamination in Raytown. Reported cases have been limited to specific points of contamination and were treated accordingly.

The portion of Jackson County around Raytown is within the Osage-Salt Plains that often yield

highly in mineralized water. Although small yields of fresh water may be obtained from shallow wells, aquifers deeper than 400 to 500 feet are highly mineralized. Because of the poor quality of groundwater in these areas, water supplies from wells usually are drawn from the alluvium (sand and gavel) underlying the floodplains of major streams.

Currently, the Water Well Driller's Act (1985) places standards on the construction of new wells. The State's groundwater protection strategy includes defining contaminant sources, determining groundwater quality standards, and establishing protective regulations. Restrictive discharge permits are required for the discharge of wastes to groundwater recharge areas; for land application and rapid infiltration wastewater systems; and for leaking storage and treatment lagoons.

Floodplains

Three areas are affected by the one hundred year floodplain. They are:

- ***White Oak Creek Valley:*** Extending south from Mount Olivet Cemetery to the south boundary of the City limits. Floodplain widths range from approximately 200 to 600 feet. Flooding in this area has considerably reduced as a result of two retention basins: Ong Lake and Mount Olivet. This floodplain was considerably built-out prior to the adoption of the Federal Emergency Management Act in 1978. The structures within the one hundred year floodplain boundaries were grandfathered in, yet are required to pay a high insurance premium. Since 1978, however, the Public Works Department has monitored floodplain boundaries and not permitted any new buildings within the floodplain.
- ***Tributary of the Little Blue River:*** Extending east from the Wildwood Lake Dam to the eastern City limits. Floodplain widths range from approximately 100 to 350 feet.
- ***Round Grove Creek:*** Extending south from the northern City limits to 59th Street. Floodplain widths range from approximately 200 to 650 feet. This area has a number of structures, though the floodway has been retained for natural vegetation.

Tree Cover

Prior to urban development, the Raytown area was generally covered by short-grass prairie, with limited oak / hickory woodlands located on upland hills and mixed deciduous forest along creek banks and drainage ways. Currently, significant concentrations of tree coverage tend to follow creek alignments and floodplains. Various areas throughout the City contain small pockets of wooded areas. These are more evident north of M-350.

Native trees that dominate the uplands in the region include:

- White Oak — Quercus alba
- Northern Red Oak — Quercus rubra
- Shagbark Hickory — Carya ovata
- Sugar Maple — Acer saccharum

- Redbud — Cercis canadensis

Native trees that dominate the wetlands in the region include:

- Swamp White Oak — Quercus bicolor
- Pin Oak — Quercus palustris
- Cottonwood — Populus deltoides
- Bur Oak — Quercus macrocarpa

Endangered plants in the region include many of the elm species (Ulmus sp.). This species is particularly susceptible to the widespread Dutch Elm disease that infects and kills several strains of elm. Additionally, pussy willow (Salix discolor), cat-tail (Typha latifolia), ostrich fern (Toaro pennsylvanica, also listed as Matteuccia struthiopteris var. pennsylvanica), and some foxtail species (Setaria sp.) are considered rare. Fox sedge (Carex comosa) is on the Missouri Department of Conservation watch list. Being on the watch list means that there are reasons for possible concern associated with the species. It does not imply that they are endangered.

Planning Implications

Almost all areas have been developed except the southernmost reaches of the White Oak Creek Valley, which is too steep for any concentrated development efforts. Other than these steep slopes, there are no significant soil or geological formations that could potentially present major obstacles to development. The low depth to shale and limestone layers, however, will impact storm water drainage design and minimum easements for utilities.

Protecting groundwater against pollution is critical, as cleanup costs are very expensive. In addition to Federal and State agencies that have taken actions to prevent contamination of groundwater, cities are in the best position to exercise land use control. The State's monitoring of groundwater quality in cities will affect those uses in Raytown that could potentially release harmful pollutants into local aquifers and/or groundwater.

Because there is no cure for Dutch Elm disease at this time and preventive measures are complex and costly, substantial efforts to preserve elms should be reserved for outstanding specimens that have not been infected. It is unlikely, however, that there are any susceptible elm varieties that meet these criteria.

There are two primary reasons for recognizing native plant communities. The first is to be able to preserve biological diversity. Native plant communities contain numerous species and complex relationships among plant and animal life. Preservation of some species is dependent on preservation of the entire plant community. The second is to identify plants that should be considered first for planting within the City by public agencies (the Park Department) and private citizens. By using mainly native plant materials in the City landscape, a healthier and better adapted stand is created. Native birds and insects are in turn attracted to the seeds and protection afforded by these plants.