

5.17 Prime Farmland

Farmland conversion, primarily to residential and commercial development, was considered the major factor in the loss of prime farmland. In addition, soil erosion was considered a by-product of land use change.

The impact analysis focused on the lands extending from the reservoir shoreline out to 0.25 mile. These lands could be indirectly affected by farmland conversion and soil erosion due to land use changes brought about by changes in the reservoir operations policy. As appropriate, more detailed analysis using criteria established by the FPPA (7 CFR 658.1 et. seq.) will be conducted at the county level as LMPs for specific reservoirs are written and updated.

Soil erosion along the shoreline, which is discussed in more detail in Section 5.16, Shoreline Erosion, initially was thought to affect prime farmland. After preliminary investigation, shoreline erosion was not considered a substantial impact on prime farmland and is not considered further in this section.

5.17.1 Impact Assessment Methods

Impacts on prime farmland by soil erosion were analyzed qualitatively by using the following guidelines:

- Reservoir operations that would increase the rate of development along the shoreline of the reservoirs and rivers would result in the loss of farmland.
- Factors influencing erosion include changes in land use that result in the removal of vegetation, changes in vegetative cover, and exposure of soil.

An assessment of the general extent of prime farmland within the TVA region was conducted using data provided by county offices of the NRCS. Farmland conversion was estimated by qualitatively looking at how land use changes, as described in Section 5.15, Land Use, would affect prime farmland around the reservoirs. The impact analysis focused on the backlands (lands extending from the shoreline out to 0.25 mile), which would be indirectly affected by changes in TVA operations.

The erosion assessment considered forestland to be the least susceptible to erosion while herbaceous cover, such as lawns and cropland (particularly row crops), were considered more vulnerable to erosion (Brady 1990). In addition, the anticipated increase in foot and vehicle traffic associated with roads and trails was assumed to result in additional areas of exposed soils.

Anticipated impacts by alternatives were assessed relative to the Base Case, which includes ongoing impacts as a result of existing operations, as well as impacts resulting from adjacent land uses related to commercial/industrial business, farming, and residential activities outside

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the control of TVA. The Base Case had established under the SMI a total residential buildout of 38 percent for the entire TVA system shoreline, which was projected to occur by 2023. The proposed alternatives, which also would be required to comply with the SMI, would differ from the Base Case by influencing the rate of development (see Section 4.15, Land Use).

5.17.2 Base Case

Based on farmland conversion data, the loss of farmland outlined in Section 4.17 is expected to continue under the Base Case. Farmland conversion at the county level ranged from a decline in acreage of 29 percent to an increase of 3.6 percent (Table 4.17-03). The total loss of prime farmland under the Base Case is considered minimal compared to the prime farmland resources within the counties bordering the Tennessee River watershed. In addition, the loss of prime farmland within the study area (0.25 mile from reservoir shorelines) is minimal compared to the total area (counties that surround TVA reservoirs). The loss would be attributed to factors outside the control of TVA, including proximity of reservoirs to large urban populations.

The erosion potential on prime farmland was assumed to involve the conversion of farmland to non-farm uses, which would affect erosion. The erosion potential of soils in the backlands was estimated to be moderate based on data available from the NRCS. Present TVA standards for soil stabilization and vegetation management under Section 26a regulations minimize the impact of erosion. The major difference in the erosion rate between the Base Case and the policy alternatives would result from a change in the rate of development in areas outside TVA jurisdiction, where county soil erosion and stabilization regulations are variable to non-existent. Sections 4.16 and 5.16, Shoreline Erosion, provide a detailed discussion of shoreline erosion.

5.17.3 Reservoir Recreation Alternative A, Reservoir Recreation Alternative B, Tailwater Recreation Alternative, and Tailwater Habitat Alternative

The rates of farmland conversion and soil erosion under Reservoir Recreation Alternative A, Reservoir Recreation Alternative B, the Tailwater Recreation Alternative, and the Tailwater Habitat Alternative may be slightly higher than under the Base Case. The amount of farmland conversion under the Base Case was considered minimal, and the additional conversion under these alternatives is small.

5.17.4 Summer Hydropower Alternative and Equalized Summer/Winter Flood Risk Alternative

Under the Summer Hydropower Alternative and the Equalized Summer/Winter Flood Risk Alternative, the rate of land use changes resulting in conversion of prime farmland is not expected to change, and the amount of land use conversion is expected to be the same as under the Base Case. Land use conversion rates may diminish slightly due to the decrease in summer recreation opportunity.

The rate of soil erosion is expected to decrease compared to the Base Case, as a result of a reduced rate of development.

5.17.5 Commercial Navigation Alternative

The Commercial Navigation Alternative would result in similar impacts on prime farmland and soil erosion as described for the Base Case.

5.17.6 Preferred Alternative

The Preferred Alternative would result in increased conversion of prime farmland and soil erosion, similar to the effects of Reservoir Recreation Alternative A, Reservoir Recreation Alternative B, the Tailwater Recreation Alternative, and the Tailwater Habitat Alternative, as this alternative provides increased recreation opportunities and related development compared to the Base Case.

5.17.7 Summary of Impacts

Because the land use buildout rate described in the SMI would occur under all alternatives, including the Base Case, the conversion of prime farmland to 2030 would be similar under all alternatives. Development may be accelerated under certain alternatives, however, resulting in an accelerated rate of prime farmland conversion. Erosion controls in the backlands would continue to depend on county-specific regulations, which govern land development and erosion from construction sites.

Table 5.17-01 provides a summary of impacts on prime farmland and soils by policy alternative. Under the Base Case and the Commercial Navigation Alternative, farmland conversion and soil erosion were considered minimal within 0.25 mile of the TVA shoreline. Reservoir Recreation Alternative A, Reservoir Recreation Alternative B, the Tailwater Recreation Alternative, the Tailwater Habitat Alternative, and the Preferred Alternative would increase the rates of farmland conversion and soil erosion. Because the Summer Hydropower Alternative and the Equalized Summer/Winter Flood Risk Alternative would result in slower rates of farmland conversion, impacts on prime farmland and soils would be less than under the Base Case. Under all alternatives, the total amount of prime farmland converted is expected to be minimal compared to the total acreage within the counties that border the TVA reservoir system.

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Table 5.17-01 Summary of Impacts on Prime Farmland and Soils by Policy Alternative

Alternative	Description of Impacts
Base Case	No change – Farmland conversion is considered minimal compared to overall resources of counties bordering the TVA system. Section 26a regulations would minimize erosion on land bordering shoreline. Erosion controls in backlands depend on county regulations, which are variable.
Reservoir Recreation A	Slightly adverse – Farmland conversion and resultant soil erosion are projected to increase at a slightly faster rate than under the Base Case, but the total amount of farmland conversion through 2030 is expected to be similar to the Base Case.
Reservoir Recreation B	Slightly adverse – Farmland conversion and resultant soil erosion are projected to increase at a faster rate than under Reservoir Recreation Alternative A, but the total amount of farmland conversion through 2030 is expected to be similar to the Base Case.
Summer Hydropower	Slightly beneficial – Farmland conversion and resultant soil erosion are projected to be slower than under the Base Case. The total amount of farmland conversion through 2030 may be less than the Base Case.
Equalized Summer/Winter Flood Risk	Slightly beneficial – Farmland conversion and resultant soil erosion are projected to be slower than under the Base Case. The total amount of farmland conversion through 2030, however, maybe less than the Base Case.
Commercial Navigation	No change – Farmland conversion and resultant soil erosion are projected to be at a similar rate to the Base Case, and the total amount of farmland conversion through 2030 is expected to be similar to the Base Case.
Tailwater Recreation	Slightly adverse – Farmland conversion and resultant soil erosion are projected to increase at a faster rate than under Reservoir Recreation Alternative B, but the total amount of farmland conversion through 2030 is expected to be similar to the Base Case.
Tailwater Habitat	Slightly adverse – Farmland conversion and resultant soil erosion are projected to increase at a slightly higher rate than under the Base Case, but the total amount of farmland conversion through 2030 is expected to be similar to the Base Case.
Preferred	Slightly adverse – Farmland conversion and resultant soil erosion are projected to increase at a higher rate than under the Base Case, but the total amount of farmland conversion through 2030 is expected to be similar to the Base Case.