

CHAPTER 4 - EFFECTS ANALYSIS

4-1 EFFECTS ANALYSIS PROCESS

This Chapter forms the scientific and analytic basis for alternative comparisons. It addresses potential effects on the physical, biological, and social resources of the human environment that could result from implementing each alternative oil and gas leasing scenario. Appendix B, of the 1992 Amendment, discusses the three major oil and gas targets within the Wayne. These geologic targets are referred to as: the Berea Sandstone, the Ohio Shale and the Clinton-Medina. As outlined in the Reasonably Foreseeable Development Scenario (RFDS) in Appendix 1, if leasing occurs, it is projected that up to 4 wells would be drilled to develop the Federal mineral interest. These 4 wells would result in a maximum 8 acres of surface disturbance (2 acres per well including access roads, pad, production facilities, tanks/storage and pipeline corridor).

As required by 40 CFR 1502.16 regulations, implementing NEPA, this chapter discusses anticipated direct and indirect effects of the Alternatives including the No Action Alternative on the identified affected resources and recommends mitigation measures, for each resource if necessary, to offset these effects. In addition, irreversible and irretrievable commitment of the resources and cumulative effects are also addressed in this chapter. Chapter 4A contains the impact analysis resulting if Alternative A is implemented; Chapter 4B contains the impact analysis resulting if Alternative B is implemented; Chapter 4C contains the impact analysis resulting if Alternative C is implemented; and Chapter 4D contains the impact analysis resulting if Alternative D is implemented.

4-2 DEFINITIONS

Direct effects are caused by a specific action or activity at the same time and place. Leasing itself would not cause direct effects though it is reasonable to expect direct effects to result from leasing, i.e. subsequent exploration and development. These effects on lands and resources were analyzed assuming the reasonable foreseeable development scenario (RFDS) described in Appendix 1. Indirect effects are caused by a specific action or activity but typically occur later in time or farther in distance. Indirect effects on lands and resources were analyzed for the alternatives. Direct and indirect effects are sometimes considered together in the analysis and are not specifically identified or disclosed separately.

Note: The terms: effects, consequences and impacts are used interchangeably.

Effects can be beneficial (positive) or adverse (negative). effects can be long lasting (long term), or temporary (short term). In the case of this analysis, long-term effects are defined as those that would substantially remain for the life of the

project or beyond. Short-term effects are defined as those changes to the environment during construction that would generally revert to preconstruction conditions at or within a few years of the end of construction. An irreversible impact is one that is permanent once it occurs as in the loss of an entire species. An irretrievable impact occurs for a period of time but is not irreversible. effects can vary in significance from no change, or only slightly discernible change, to a full modification or elimination of the environmental condition.

Cumulative effects result from incremental effects of an action when added to other past, present, and reasonably foreseeable future actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time. Reasonably foreseeable actions consist of projects, actions, or developments that can be projected, with a reasonable degree of confidence, to occur within a defined timeframe and that will impact the same environmental factors. Extensive coal and iron mining, industrial development, oil and gas exploration and development, farming, suburban development, road construction, livestock grazing, recreation and other uses have occurred in and adjacent to the Wayne National Forest for over a century. Also, some past activities have occurred and present activities are occurring. A discussion of these activities is included in the cumulative effects analysis under the appropriate resource headings in this document.

Table 4-1

Resource	Affected by Alternative A?	Affected by Alternative B?	Affected by Alternative C?	Affected by Alternative D?
1. Air Quality	No	No	No	No
2. Environmental Justice	No	No	No	No
3. Fire Risk	No	No	No	No
4. Forest Fragmentation	Yes	No	Yes	Yes
5. Heritage	Yes	No	Yes	Yes
6. Land Use	Yes	Yes	Yes	Yes
7. Livestock Grazing	No	No	No	No
8. Minerals	Yes	Yes	Yes	Yes
9. Noise	Yes	No	Yes	Yes
10. Recreation	Yes	No	Yes	Yes
11. Road Analysis/Transportation	Yes	No	Yes	Yes
12. Socio-economic	Yes	Yes	Yes	Yes

13. Soils	Yes	No	Yes	Yes
14. Threatened/Endangered/Sensitive Animals	Yes	No	Yes	Yes
15. Threatened/Endangered/Sensitive Plants	Yes	No	Yes	Yes
16. Timber	No	No	No	No
17. Vegetation	Yes	No	Yes	Yes
18. Visual	Yes	No	Yes	Yes
19. Water Quality	Yes	No	Yes	Yes
20. Wetlands/Riparian	Yes	No	Yes	Yes
21. Wilderness	No	No	No	No
22. Wildlife/Fisheries	Yes	No	Yes	Yes

4-3 EFFECTS COMMON TO ALL ALTERNATIVES

All the alternatives, except the No Action/No New Leasing, could involve operation of wells and fields. Potential effects from long-term operation are primarily the potential for spills and releases, increased erosion, and stream sedimentation. There also may be short-term high water demands, increased short-term erosion and stream sedimentation due to new construction. Application of Best Management Practices (BMPs-see Appendix 9) will reduce effects below that which would affect the beneficial uses of the water. Use of BMPs applies to all alternatives. All of the alternatives involve the potential for new construction of exploratory and development wells. Potential effects from new construction on ground water resources include increased potential for spills and releases of undesirable or hazardous materials and for inter-aquifer transfer of fluids.

Oil and gas drilling and well development can impact the ground water resource if standard mitigation measures are not applied. Drilling fluids and saline ground water or injection water could impact usable quality water aquifers if drilling muds are not used and wells are not properly cased and cemented. Prior to casing and during drilling, drilling muds are used to form a “mud cake” on the walls of the well bore to minimize loss of drilling fluids. Hydrostatic head prevents ground water from entering the well bore. Applying standard mitigation measures and following the prescribed minimum standards required in BLM Onshore Order No. 2 for items such as installing and cementing casing through all usable quality water aquifers and into impermeable strata, should adequately protect the ground water resource for all the alternative developments. BLM Onshore Order

No. 2 also establishes standards that provide for control of the well during drilling in order to minimize the likelihood of well blowouts. BLM Onshore Order No. 7 regulates the disposal of produced water. The oil and gas operator must obtain BLM's approval of the method of brine disposal. BLM verifies that the operator will use a State-approved disposal facility or method. Surface activities from oil and gas fields can also affect the groundwater resource. Leaks from piping and storage tanks, and spills during petroleum transfer operations can reach the water table depending on the depth to water, the volume of petroleum leaked, and the permeability of surface material. Malfunctioning petroleum delivery equipment also can leak petroleum, which may reach the water table if the equipment is not repaired quickly. Industry standards of equipment, maintenance, and training are expected to be sufficient to minimize the impact on groundwater by oil and gas field operations.

4-4 CURRENT AND FORESEEABLE ACTIVITIES WITHIN THE WAYNE NATIONAL FOREST

Land Use Planning:

The Wayne National Forest is currently completing an amendment to the 1988 Forest Plan to address threatened and endangered species. In addition, a forest plan revision process is underway to review and update the 15-year forest plan. A notice of intent was published in April 2002 initiating the planning process.

BLM Applications:

With the passage of the Federal Onshore Oil and Gas Leasing Reform Act of 1987 (Reform Act), the Federal oil and gas leasing process was modified. The Reform Act requires that Federal leases be offered competitively through oral auction. The law states that all noncompetitive oil and gas lease applications and offers that were pending on the date of enactment of the Reform Act would be processed under the previous system.

Other Activities:

The Athens Ranger District staff of the Wayne National Forest are coordinating with the Ohio Department of Transportation personnel to address the Route 33 Nelsonville Bypass project. Regardless of the final alignment of the route, the route will affect public lands administered by the Wayne National Forest. The Ironton Ranger District staff of the Wayne National Forest are coordinating with energy companies to address future drilling activities on public lands administered by the Wayne National Forest. At least six drilling projects, on public and private mineral estates, are under review.

Private Activities:

Public lands within the Wayne National Forest lands are intermixed with and surrounded by private and State-owned lands. Activities on private lands and subsurface private mineral estates (reserved and outstanding) is expected to continue given the current energy market