5.12 Construction Impacts

5.12.1 Introduction

Construction of any of the build alternatives will impact the existing environment in several ways. The construction impacts for this project may include noise generated by construction equipment, air pollution as a result of construction activities, water pollution due to soil erosion and construction activities, impacts due to heavy blasting, and traffic impacts from detours and motorist inconveniences.

Since the publication of the DEIS, the following change has been made to this section:

- Impact calculations have been updated to reflect the selection of variations, route shifts and other changes, as described in Section 5.1.3.

5.12.2 Analysis

Noise

Noise generated by construction equipment may be an impact of construction. The presence of a sensitive noise receptor within close proximity of the construction limits could raise the concern of potential construction noise impacts. Generally speaking, the potential for construction-related noise impacts will be much higher where an alternative passes through an urban or suburban area, and where an alternative follows an existing alignment. The potential in these areas is increased due to the higher number of noise receptors in close proximity to the construction activity. Additional construction-related noise impacts may be generated by rock blasting.

Air Pollution

The main component of air pollution derived from construction activities is fugitive dust. Fugitive dust is the generation of airborne particulate matter which escapes beyond the right-of-way or construction boundary. Fugitive dust emissions can be created by many construction-related activities. Reasonable precautions are typically sufficient to control fugitive dust emissions.

Groundwater and Karst

Alternatives 3, 5, and to a lesser degree Alternative 4, cross karst areas and would require the following of the Memorandum of Understanding (MOU) dated October 13, 1993 between INDOT, IDNR, IDEM, and USFWS for crossing karst areas (see Appendix U). Alternative 2 crosses some karst in the Rattlesnake Creek area, while Alternative 1 does not cross any karst. Tier 2 NEPA studies will determine the specific location for the Interstate and will focus in particular on karst impacts and mitigation where Preferred Alternative 3C traverses karst topography. The design of roadside drainage ditches connected to “filter strips” and containment basins for spill prevention/containment as well as other Best Management Practices (BMPs) will be implemented to minimize impacts. Such designs are constructed to prevent contaminants from entering the groundwater.

Because of the rapid transport of runoff into and under the ground in karst areas, groundwater contamination is a primary concern in karst topography. Similar to construction near surface streams, primary construction concerns in karst areas pertain to erosion and sediment contamination as well as contamination from servicing of construction vehicles. In addition to groundwater contamination, sediment erosion from a construction site could plug the drain-

age of a sinkhole, causing flooding. The erosion control measures mentioned above as well as peat filters, runoff retention basins, grassed waterways, catch basins, and any other BMPs available at the time of construction may be implemented. Because drainage features can be difficult to identify in karst areas, timely implementation of erosion control devices is crucial for construction in and around sinkholes. Additionally, particular care must be taken in choosing designated construction vehicle maintenance areas in karst terrain. These areas should not be located within a sinkhole or any area draining directly to a sinkhole.

Figure 5.12-1: Sedimentation Basin BMP on Roadway Construction Project

Wetlands

Construction activities may also impact wetlands within and outside of the proposed right-of-way for this Interstate. All efforts to avoid, minimize and mitigate for wetlands shall be implemented as much as possible. The Wetlands MOU dated January 28, 1991 between INDOT, IDNR, and USFWS shall be followed (see Appendix T).

Erosion Control

There are several stream crossings under any proposed alternative that could be adversely affected by construction activity. Erosion on the construction site is accelerated due to vegetation clearing and the prominence of bare disturbed soils on the site during construction. Procedures to reduce the impact of erosion and runoff into streams will be implemented. Major streams crossed by the alternatives may be found in the Environmental Atlas in the Comment Box for each sheet of each alternative. Also, Appendix J, *Floodplain Impacts Details*, lists major stream crossings per alternative. BMPs shall be used in the construction of this Interstate to minimize impacts of erosion.

Heavy Blasting Impacts

A major concern for limestone is the effects of heavy blasting. The main concern for limestone is shock waves that could travel from the highway sites through the rock and possibly fracture marketable limestone. Blasting specifications will be prepared and followed including special excavation measures during blasting. Alternatives 3, 5, and to a lesser degree, Alternative 4, by the nature of their terrain and the preliminary grades in crossing the Crawford Upland, Mitchell Plain, and Norman Upland, have the greatest possibility of heavy blasting involving limestone. Alternative 2 would have very little, if any, heavy blasting, while Alternative 1 is not expected to have any heavy blasting due to its flat terrain.

Traffic

Existing travel patterns will be impacted during construction of a new Interstate along existing roadways. Motorist inconveniences and safety concerns will be greatest where construction occurs along existing four-lane roadways.[1] There will be more detours and lane restrictions along these routes compared to construction, which occurs on new terrain routes. For each alternative, the magnitude of annual construction-related delay costs was estimated in this FEIS (See Table 5.12-1). These delays are substantial for some alternatives. An alternative using SR 37 or US 41 has

[1] Existing two-lane roads are generally not proposed for use as rights-of-way for the alternatives. The significant impacts upon existing traffic will be largely concentrated where construction occurs on existing four-lane roads.

higher construction-related delays. For example, Alternative 2C causes added road user costs of over $52,000,000/yr (during construction) due to added time, vehicle operating costs, and increased crashes. Alternative 1 leads to increased road user costs of $45,000,000 annually during construction (See Table 5.12-1), of which, $15,000,000 of this annual cost increase (one-third) is due to increased crashes during construction.[2]

Figure 5.12-2: Typical Traffic Impacts

In order to assess the relative impacts of construction-related delays among alternatives, traffic forecasts were made to estimate the effect of construction-related delays upon existing highway users. These delays will be temporary, affecting any section of existing highway for no more than two or three years.

In these forecasts, the existing four-lane highways (SR 37 and US 41), which would be upgraded for the various alternatives, were assumed to be under construction conditions. The available roadway capacity was reduced to correspond to construction-related conditions. Forecasts were made of the increased costs for travel time, vehicle operating costs, and increased crashes (safety costs). This evaluation tended to be conservative in determining construction-related road user costs because of the assumption that entire sections of the four-lane highways being upgraded will be under construction at the same time. Table 5.12-1 gives the estimated increase in annual user costs for each of the alternatives.

Table 5.12-1: Annual Construction-Related User Costs, by Alternative

	Annual Construction-Related Costs			
Alternative	Mobility	Veh. Op.	Safety	Total
1	$33,000,000	$(3,000,000)	$15,000,000	$45,000,000
2A	$21,000,000	$ 1,000,000	$11,000,000	$33,000,000
2B	$21,000,000	$ 1,000,000	$11,000,000	$33,000,000
2C	$25,000,000	$ 4,000,000	$23,000,000	$52,000,000
3A	$ -	$ -	$ -	$ -
3B	$ 7,000,000	$ 8,000,000	$14,000,000	$29,000,000
3C	$17,000,000	$ 4,000,000	$10,000,000	$31,000,000
4A	$ -	$ -	$ -	$ -
4B	$ -	$ -	$ -	$ -
4C	$ 4,000,000	$ 4,000,000	$13,000,000	$21,000,000
5A	$19,000,000	$(1,000,000)	$ (2,000,000)	$16,000,000
5B	$23,000,000	$ 3,000,000	$11,000,000	$37,000,000

Source: Indiana Statewide Travel Model and NET_BC Program: Bernardin, Lochmueller & Associates, Inc.

Note: No costs were calculated for Alternatives 3A, 4A and 4B because no construction is proposed on existing four-lane facilities; these alternatives consist of all new alignments.

The change in ***mobility*** costs represents the value of additional time travelers spend delayed in traffic and/or diverting to other routes. The change in ***vehicle operating*** costs represents the change in expenditures on fuel, oil, tires, vehicle maintenance and depreciation. Since these costs are lower at lower travel speeds, some alternatives provide a vehicle operating cost reduction when they are under construction. The change in ***safety*** costs represents the costs attributable to increased traffic crashes.

These costs are annual costs, assuming that most construction occurs between 2007 and 2017. The total user costs for construction-related impacts would be the total construction-related cost multiplied by the number of years the alternative is under construction. Three alternatives (3A, 4A, and 4B) do not

[2] These calculations assume a construction period of 10 years.

require the upgrading of any existing four-lane road. Accordingly, the construction-related user costs for these alternatives are anticipated to be minimal.

These costs must be viewed in context. Once a facility is completed, the annual user benefits are many times the temporary costs incurred during construction. Typically, the annual user benefits are four to ten times these temporary costs. As noted above, these costs will be incurred over two to three years, while the resulting benefits will continue year after year.

Threatened and Endangered Species

Construction activities also have potential to impact threatened and endangered species primarily during right-of-way clearing and construction in and around streams. Right-of-way clearing concerns are directed at the Indiana bat whose summer roost habitat is primarily large diameter trees with loose bark. The clearing of these trees during the summer roosting season could constitute a take of this species. All construction activities with the potential to affect the Indiana bat or its habitat will take place in accordance with the terms and conditions specified in the US Fish and Wildlife Biological Opinion, which is included in Appendix LL.

Stream crossing and construction in and around streams has the potential to impact listed and non-listed species of mussels and fish. Both direct disturbance at the site and habitat disruption from sediments downstream may result from in-stream work.

5.12.3 Mitigation

Construction impacts will be minimized and mitigated in accordance with standard INDOT specifications for construction contracts. These specifications address issues such as erosion control, servicing of equipment, spill prevention and containment, blasting, minimization of construction noise, and minimization of construction-related air quality impacts.

In addition, traffic impacts will be minimized and mitigated through the development and implementation of a traffic management plan.

In areas where residences may be subject to high levels of construction noise, consideration will be given to the early construction of reasonable and feasible noise barriers, so that barriers are in place during construction of the highway.

5.12.4 Summary

Each of the build alternatives will have similar construction impacts to the existing environment and require similar mitigation measures. However, alternatives utilizing existing four-lane highways will incur additional construction-related user costs due to delays and safety issues. Additionally, alternatives crossing karst terrain will have added concerns for construction site runoff and erosion control as well as blasting restrictions due to the limestone in these areas. The No Build Alternative will have no construction impacts.

While all of the proposed alternatives will have similar construction impacts, Preferred Alternative 3C will have moderate to high construction impacts relative to the other proposed alternatives. Preferred Alternative 3C utilizes a portion of SR 37, an existing four-lane highway. This construction on SR 37 will increase the traffic impacts for Alternative 3C due to delays and safety issues. Preferred Alternative 3C also crosses unglaciated karst terrain where construction impacts from construction site runoff are increased due to groundwater sensitivity. Additionally, construction impacts related to heavy blasting will be an issue for Preferred Alternative 3C due to its proximity to marketable limestone.