

**404 BLOCK 23 - AVOIDANCE, MINIMIZATION, AND COMPENSATION  
(continued from 404 application form)**

As illustrated in Exhibits 2 and 3, the PIK-104-10.64 project is closely surrounded by sensitive resources, including Lake White/Lake White State Park, Crooked Creek and Pee Pee Creek, jurisdictional wetlands and ponds, and agricultural and forested floodplain, some of which is owned by ODNR and some of which is in a USDA conservation easement. Consequently, ODOT's approach (in cooperation with ODNR) has been to design this complex and important dam safety and transportation improvement project in a manner that meets current design standards, addresses the purpose and need for the project, avoids/minimizes impacts (not only to jurisdictional waters, but also the other sensitive land uses and environmental resources in the project area) and is feasible from a cost standpoint.

ODNR initiated the PIK-104-10.64 project in the late 1990's with a series of hydraulic and flood studies, culminating with construction plans for the rehabilitation of the Lake White dam and spillway. The rehabilitation work began in 2005, and included slightly lowering the spillway, removing the eight original Tainter gates and replacing them with Pelican gates, constructing a new spillway slab, and filling and grading the east side of the dam to a 3:1 slope (approximately). At that time, the proposed work also included armoring the dam with roller compacted concrete and constructing a new emergency lake drain system; however, construction work was ultimately stopped prior to the placement of the roller compacted concrete and completion of the lake drain. A portion of the 48" lake drain pipe, the outlet structure, and the emergency rock spillway to Pee Pee Creek were constructed on the east side of the dam, but no intake structure was installed in Lake White.

Following an October 2006 flood that overtopped the SR 104/Lake White Dam embankment, and considering the deteriorated condition of the existing SR 104 bridge over the spillway and roadway deficiencies on SR 104 in the Lake White Dam area, ODOT and ODNR initiated a new major rehabilitation project for SR 104 and the Lake White Dam. Using previous hydraulic/flood studies and construction plans as a starting point, preliminary engineering work for this major rehabilitation assessed several design variations throughout the project area in an effort to identify a design alternative that maximizes transportation safety, dam stability and flood safety, minimizes environmental, right-of-way, and recreation impacts (to the extent possible), and is feasible from a cost standpoint. However, given the size and complexity of the structures involved in this project, the magnitude of risk involved with respect to flooding and a Class I dam failure, the high cost of rehabilitating and maintaining a 4,200 foot earthen dam and state highway corridor, and the rehabilitation work already completed by ODNR, several design constraints/requirements related to the project Purpose and Need were identified that needed to be addressed when developing and evaluating alternatives for this project, specifically:

- Substandard roadway conditions on SR 104 in the project area must be addressed as part of the dam rehabilitation, including replacement of the deteriorated bridge over the spillway, inadequate sight distances, insufficient lane/shoulder widths, and the lack of turn lanes at the SR 551 and SR 552 intersections.
- The dam must be rehabilitated in conjunction with the SR 104 improvements in without compromising the structural integrity of the dam.
- Dam/spillway hydraulics are not to be altered and there can be no increase in flood risk for properties above or below the dam. There can also be no net increase or decrease in the current winter/summer pool elevations. Consequently, the existing Lake White Dam spillway (which was previously rehabilitated by ODNR) is not to be modified, even though it does not have the capacity to pass the Probable Maximum Flood (PMF). Therefore, in order to safely pass the PMF, the rehabilitation project must maintain the current spillway capacity and accommodate flood flows overtopping the dam and SR 104.

- Since the spillway's Pelican gates can only lower the lake elevation by approximately three feet, a secondary lake drain system is necessary in order to provide greater control of water levels in the lake - mainly for dam maintenance purposes (routine or emergency).
- Section 4(f) of the U.S. Department of Transportation Act of 1966 protects public recreational areas from impacts by federally-funded or federally-permitted projects through inter-agency coordination and consideration of avoidance/minimization alternatives, which are documented as part of the National Environmental Policy Act (NEPA) process. The Lake White State Park is managed by ODNR - Division of Parks and Recreation as a public recreational facility. Additionally, ODNR owns property below the spillway that is planned for future use as a Pee Pee Creek/Scioto River public access area. In addition to addressing the transportation and dam safety needs of the project, as well as avoiding and minimizing impacts to streams, wetlands, and other sensitive natural resources, the project design must consider/address existing and planned recreational features in the project area.

In consideration of these constraints/design requirements, the Selected Alternative for the PIK-104-10.64 project (as described in Block 18 and illustrated in Exhibits 3 through 12) evolved through ODOT's Project Development Process (PDP), which addresses the requirements of the National Environmental Policy Act (NEPA). The Selected Alternative has been evaluated and documented in a Level 2 Categorical Exclusion (NEPA) document, which will be approved in 2014 following completion of all required Section 4(f) coordination and documentation. As part of the NEPA/404 merger process (<http://www.environment.fhwa.dot.gov/projdev/tdmnepa404.asp>), the design team has minimized the footprint of the project and impacts to jurisdictional waters to the extent possible, while addressing the critical project need and design requirements discussed above. For example, the initial design for the roller compacted concrete on the Lake White Dam embankment called for 3:1 slopes (to match the existing 3:1 slopes - particularly on the east side of the dam). However, after further geotechnical and engineering analysis and completion of a Level 2 Ecological Survey Report (establishing the limits of jurisdictional water resources in the project area), the design team concluded that the roller compacted concrete could be safely constructed on a 2:1 slope instead of the more preferred 3:1 slope. By utilizing this 2:1 slope, the impact footprint of the project is reduced by approximately 30 feet, which avoids the USDA conservation easement, minimizes impacts to Pee Pee Creek and Wetlands 1, 4, and 6, and avoids impacts to Wetland 7. Additionally, a 400' retaining wall is proposed (from Sta. 197 to Sta. 201) to protect the Aqua Ohio water well/pump house and the Wetland 4/5/5a and Pond 1 complex from permanent fill impacts. Finally, the final design plans will label jurisdictional waters outside permitted areas as "Do Not Disturb" and these areas will be flagged in the field, which will protect adjacent jurisdictional waters from temporary construction impacts that are not included in this permit application.

However, changes in the Selected Alternative location (alignment) or more substantial changes in the overall design of the project to further avoid or minimize impacts to water resources are not feasible or practical. For example, the majority of the Selected Alternative is already located within existing right-of-way and has already been designed under the ODOT PDP (NEPA/404 merger) process to address the critical purpose and need elements, meet design standards, and minimize impact footprint and cost. Shifts in the alignment of SR 104 would impact other water resources avoided by the current design and would be infeasible from a cost standpoint (SR 104 is located on the 40 foot-high Lake White Dam embankment, which is immediately bordered by Lake White to the west and broad floodplain with streams and wetlands to the east). Increasing slope grades on the SR 104/Lake White Dam embankment steeper than the proposed 2:1 slope (i.e. further reducing the width of the dam footprint) would require substantial dam excavation that would compromise the integrity of the dam during rehabilitation work. Utilizing rock channel protection instead of roller compacted concrete would require a wider 4:1 slope which would increase impacts on streams and wetlands. Construction of an Articulating Concrete Block mat system is not allowed on Class 1 dams. Construction of single-span or two-span bridge designs over the spillway (as opposed to the proposed four-span bridge design) requires girder placement at lower elevations which restricts flow through the spillway during flood events. Alternative lake drain designs – such as a gravity drain – would have a negligible difference in overall impact to Lake White and would not be able to lower the water level in the lake to the extent provided by the currently proposed siphon drain. Constructing additional retaining walls along the east side of SR 104 in place of the roller compacted concrete, similar to the proposed 400' wall that protects the pump station and Wetlands 4, 5, 5a and Pond 1, would block floodwaters from overtopping the dam during a flood event (unblocked overtopping is necessary during flood events since

the spillway cannot safely pass the Probably Maximum Flood). Constructing a “tie-back” wall along the east side of SR 104 along the toe of the dam embankment in place of the roller compacted concrete would require a level of excavation that would compromise the integrity of the dam during construction.

Further discussion of potential avoidance and minimization alternatives are included in the attached Ohio EPA 401 Antidegradation Evaluation (Block 10). Compensatory mitigation for unavoidable impacts to jurisdictional streams, wetlands and Lake White due to construction of the PIK-104-10.64 Selected Alternative is described in detail in Table H and 401 Block 10k. Other environmental commitments for the project are also discussed in Block 10k.