



**US Army Corps  
of Engineers**

Philadelphia District

**-FINAL-  
ENVIRONMENTAL ASSESSMENT**

**2006 TEMPORARY OPERATIONS PLAN  
FRANCIS E. WALTER DAM AND RESERVOIR  
CARBON AND LUZERNE COUNTIES, PENNSYLVANIA**

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## **1.0 PURPOSE AND NEED OF THE PROPOSED ACTION**

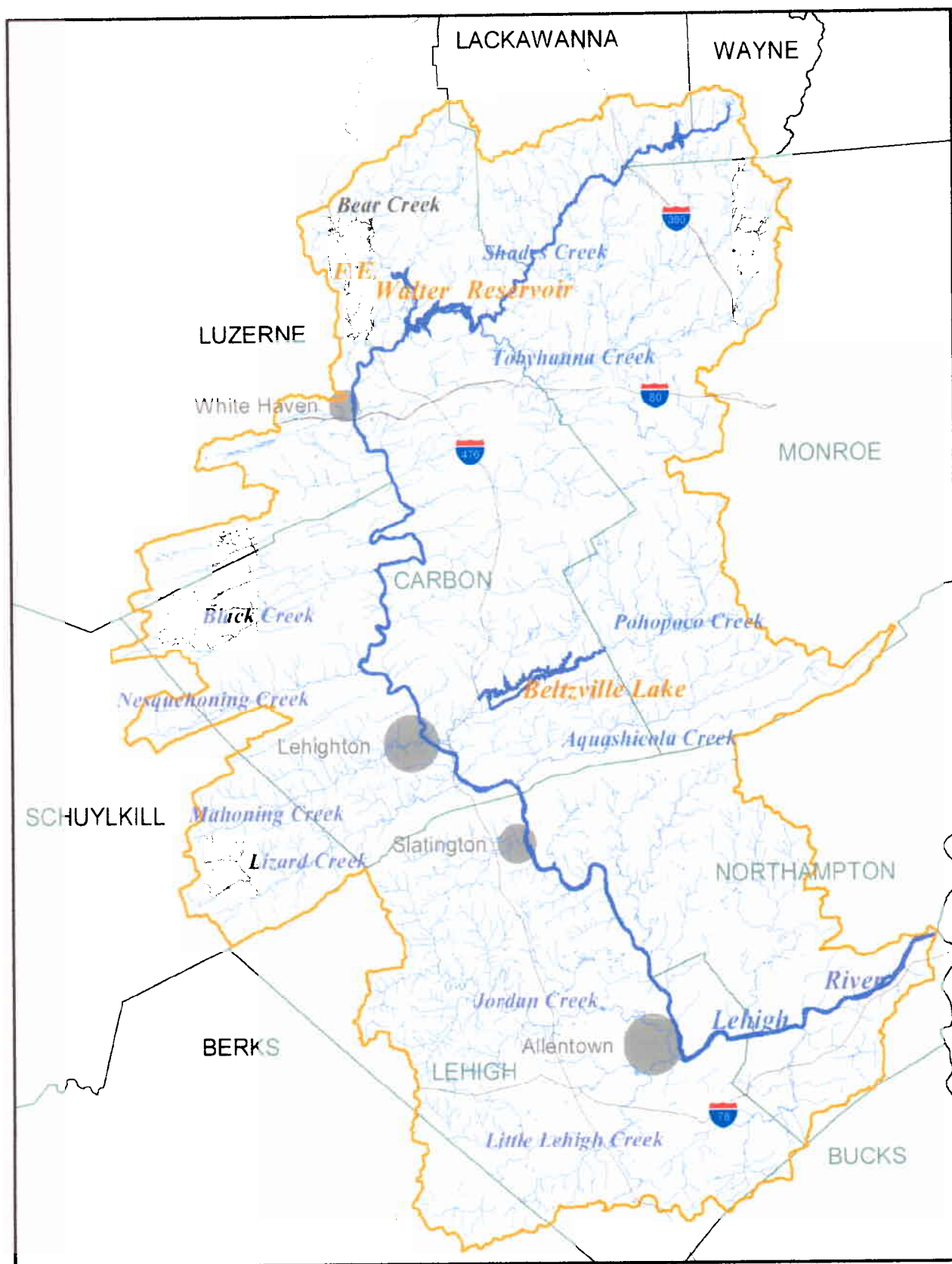
### **1.1 Property Location**

The Francis E. Walter Reservoir, originally known as Bear Creek Reservoir, is located near the convergence of Bear Creek and the Lehigh River in Luzerne and Carbon Counties in northeastern Pennsylvania (Figure 1). It is a man-made impoundment created by the U.S. Army Corps of Engineers in 1961 by damming the Lehigh River at the confluence with Bear Creek. The 3,000-foot long, 234-foot high earth-fill dam creates an 80-acre pool at the conservation pool 1,300-foot National Geodetic Vertical Datum (N.G.V.D.) elevation and controls a drainage area of 288 square miles. The reservoir is approximately 86 miles north of Philadelphia, 20 miles southeast of Wilkes-Barre, 39 miles south of Scranton and 23 miles north of Allentown. The project area is part of the Pocono Mountain complex.

### **1.2 Need for Action**

F.E. Walter, in addition to aiding in flood control along the Lehigh River, is operated for recreation and drought emergency water storage for salinity repulsion in the Delaware River Estuary. The primary purpose of the project is flood control. A secondary purpose is recreation. The F.E. Walter Reservoir was authorized in House Document No. 587, 79th Congress, 2nd Session for Lehigh River flood control protection. The reservoir project was also authorized for recreation as part of Public Law 100-676, Section 6, dated November 17, 1988.

F.E. Walter Reservoir plays a vital role in providing flood control and recreation in the Lehigh River watershed. In the recent past, public interest has grown in regard to modifying operations at F.E. Walter Reservoir to benefit in-lake and downstream recreation meanwhile maintaining flood control capabilities, and protection of the environment. Operation of the reservoir during flood storage events inundates a project access road that crosses the upstream side of the dam. This access road is used by dam personnel for operation and maintenance of the dam and related project features. Historically, pool level operations at F.E. Walter Reservoir have been tailored, in part, to re-open this access road as soon as feasibly possible following a flood storage event. The construction of a new access road across the top of the dam has provided for more flexibility in pool level operations. As a result, opportunities to further evaluate and study the public recreational alternatives associated with the reservoir emerged in 2005. A 2005 Environmental Assessment evaluated the temporary raising of the conservation



**FIGURE 1. F.E. Walter Reservoir and Lehigh River watershed.**

pool elevation of 1300' N.G.V.D. to 1335' N.G.V.D. beginning in mid-April 2005 and ending in October 2005 at which time the pool was returned to the operation conservation pool elevation of 1300'. During this period of time water quality, flow, and recreational data were collected to evaluate the planned change. The data was used to consider long-term reservoir operational plans that enhance public recreation and to provide insight into operational and environmental limits associated with operational changes. Based on operational, environmental, and recreational data collected and evaluated during the 2005 operational study change, a 2006 modified operational plan has been developed. This environmental assessment evaluates the 2006 study plan for the temporary raising of the conservation pool and its affect on the environment and recreation.

Fish and wildlife conservation is not a designated project purpose. However, the Fish and Wildlife Coordination Act of 1958 (PL 85-624), which amended the Act of March 10, 1934, provides that fish and wildlife conservation shall receive equal consideration with other project purposes and be coordinated with other features of water resource development programs. As such, the study plan has been developed to not only benefit recreation and maintain flood control capabilities, but to also protect and potentially enhance fish and wildlife resources within the reservoir and downstream in the Lehigh River. Flood control operations will continue to take precedence over fish and wildlife resources in regard to overall project operations.

### **1.3 National Environmental Policy Act Documentation**

This temporary pool plan can be considered an action that normally requires an environmental assessment (EA). This guidance is found under 7(d) Construction and Operations and Maintenance in the U.S. Army Corps of Engineers Regulations (Engineering Regulation 200-2-2 dated 4 March 1988). This section states that an EA may be needed if changes in environmental impacts occur which were not considered in the project EIS or EA. An example would be change in pool level elevations. This EA has been developed to satisfy Engineering Regulation 200-2-2. NEPA documentation previously prepared for F.E. Walter Reservoir include a 1975 Environmental Assessment for Operation and Maintenance of Francis E. Walter Dam and Reservoir in White Haven, Pennsylvania, a November 1981 Environmental Assessment for the Proposed Modification of the Francis E. Walter Dam, an August 1985 Environmental Impact Statement for the Modification of the Francis E. Walter Dam and Reservoir, a 2002 F.E. Walter Emergency Drought Storage EA, and a 2005 Temporary Operations Plan EA.

This Environmental Assessment was prepared in accordance with National Environmental Policy Act (NEPA) regulations. This EA assesses conditions at the project site and evaluates the potential impacts of the 2006 temporary operational study plan on existing resources in the immediate and surrounding areas to include: physical, chemical, and biological characteristics of the aquatic and terrestrial ecosystem; endangered and threatened species; hazardous and toxic materials; aesthetics and recreation; cultural resources; and the general needs and welfare of the public. The U.S. Army Corps of Engineers and its partners will continue to pursue additional studies and data collection efforts to evaluate the 2006 plan and to refine potential future plan modifications. Funding is currently being pursued to apply a water quality model to the Lehigh River system which includes F.E. Walter and Beltzville Reservoirs.

## **2.0 DESCRIPTION OF THE PROPOSED ACTION**

### **2.1 Project Background**

As outlined in the October 1994 F.E. Walter Reservoir, Lehigh River, Pennsylvania Water Control Manual (Revised), the F.E. Walter Reservoir Project is an integral part of the Lehigh River Flood Control Program. The project is regulated by the Philadelphia District in conjunction with the Beltzville Lake project in Carbon County for optimum flood control benefits on the Lehigh River. The primary purpose of the project is flood control. A secondary purpose is recreation. F.E. Walter, in addition to aiding in flood control along the Lehigh River, is operated for recreation and drought emergency water storage for salinity repulsion in the Delaware River Estuary.

The Philadelphia District, U.S. Army Corps of Engineers operates and maintains the project and associated storage and discharge of water from the F.E. Walter Reservoir project. Under normal regulation, the flood control system is operated in such a manner that the flow passed through the dam equals inflow into the reservoir while maintaining a pool elevation of 1,300' N.G.V.D. A conservation release of 50 cubic feet per second (cfs) makes up the current minimum release criterion on the Lehigh River below the project. During flood periods, the flood control system is operated with the gates closed to the minimum required flood control outflow (100 cfs) only long enough to obtain the maximum reduction of damaging flood stages downstream. Flood control storage at F.E. Walter Reservoir is 107,815 acre-feet. Releases from the F.E. Walter project are governed by actual and/or predicted flood stages at critical downstream control points, by predicted inflow volume into the lake and by regulation of the Beltzville Lake flood control project.

In addition to flood control operations, downstream recreation in the form of whitewater releases that are sanctioned under Public Law 100-676, Section 6, dated November 1988 has existed historically at the F.E. Walter Reservoir Project. Historically, the District, in coordination with the Pennsylvania Department of Environmental Protection, U.S. Fish and Wildlife Service, Pennsylvania Fish and Boat Commission, Delaware River Basin Commission, organized canoeing clubs and commercial whitewater organizations, schedule five events annually for whitewater releases. For those events, water was stored up to elevation 1,309' N.G.V.D. (minimum elevation of access road located on the upstream embankment of the project). The 2005 operational study resulted in an increase in recreational whitewater releases from seven days to twenty two days and the establishment of a minimum downstream flow target of 250 cubic feet per second (2005 F.E. Walter Temporary Operations Plan EA and project website [www.nap.usace.army.mil/Projects/FEWalter/index.htm](http://www.nap.usace.army.mil/Projects/FEWalter/index.htm)).

### **2.2 Project Components and Expected Outcomes**

Following the coordination and evaluation of the 2005 temporary operations plan results with the Pennsylvania Fish and Boat Commission, Delaware River Basin Commission, Pennsylvania Department of Conservation and Natural Resources and other stakeholders, a temporary operational study plan has been developed for the 2006 recreational season (May



through October). The plan includes a temporary summer recreational pool elevation of 1365 feet with a pool fluctuation of no more than 5 feet, a minimum flow target downstream, and additional recreational whitewater releases. Meeting the objectives of the plan is directly dependent on seasonal environmental conditions and normal reservoir operations, specifically flood control. The 2006 plan considers meteorological conditions (low precipitation) experienced in 2005 that subsequently resulted in the modification of the 2005 plan throughout the season. The likelihood of the 2006 plan realistically meeting the aforementioned objectives was determined by simulating historic outflows using the following parameters and guidelines:

***General plan guidelines***

- Pool elevation 1365 Feet NGVD
- Start storing April 1
- Match inflow on weekends while storing
- Sunday releases are reduced or canceled before the Saturday releases are reduced/canceled
- Whitewater releases start at midnight and end at noon
- Whitewater releases are scheduled every other weekend starting with the second weekend in May and ending in September
- Drawdown of any remaining storage to 1300 feet NGVD will occur in early to mid October
- Whitewater releases are canceled if minimum 500 cfs cannot be met

***May - June***

- Match inflow on non-whitewater weekends
- Limit pool fluctuations to 5 feet (elevation 1360-1365)
- Target minimum release is 250 cfs; will match inflow down to 50 cfs to maintain pool at 1360
- Maximum whitewater releases will be 1000 cfs in May, 750 cfs in June

***July-September***

- Constant 1:6 weekday/non whitewater weekend to whitewater weekend augmentation
- Amount of augmentation determined by date and storage
- Maximum whitewater releases will be 750 cfs in July, 750 cfs in August, 750 cfs early September, 1000 cfs mid to late September
- Augmentation rule curve will be followed to allocate water for weekday augmentation and weekend whitewater releases

***October***

- Minimum release for drawdown will be 144 cfs
- Target flow for Columbus Day weekend (October 7<sup>th</sup> and 8<sup>th</sup>) is 1200 cfs

The 2006 plan was presented to the public at a public workshop held at Split Rock Lodge in White Haven Pennsylvania on 16<sup>th</sup> February 2006. The public was afforded the opportunity to discuss the plan with project partners and provide comment. In addition, the public is afforded



the opportunity to comment specifically on the 2006 proposed plan and future plans through the project website at [www.nap.usace.army.mil/Projects/FEWalter/index.htm](http://www.nap.usace.army.mil/Projects/FEWalter/index.htm). Comments will continuously be accepted by the project partners in the future in an effort to modify the plan to meet in-lake and downstream objectives. Implementation of the plan is directly dependent on meteorological conditions experienced in the region in 2006 and the Corps ability to meet flood control objectives at the project. The plan reflects target objectives and there is no guarantee that these objectives can be met. The Corps will make every effort to meet the 1365 foot pool level target. However, in the event that meteorological predictions, such as consecutive rainstorms or high precipitation events, show that an elevated pool may jeopardize the Corps flood control capability in the Lehigh River, the Corps will make a decision to either maintain the 1365 foot pool or evacuate the stored water to allow for maximum flood control storage. Under these conditions, water release plans shall be implemented as per the October 1994 F.E. Walter Reservoir, Lehigh River, Pennsylvania Water Control Manual (Revised).

### **3.0 ALTERNATIVES CONSIDERED**

The no-action alternative would not achieve the purpose of studying the effects of having additional water available at F.E. Walter Reservoir to enhance recreational activities and improve environmental conditions in-lake and downstream on the Lehigh River.

A range of pool level and minimum low flow alternatives were evaluated based on potential negative and positive impacts on flood control, recreation and the environment in general. The alternatives are essentially modifications of the 2005 plan taking into account the results of that effort. Historic flow and operational records, in-lake and river water quality data, expected recreational use, public input, and known environmental resources in the project area were evaluated against the alternatives. An operational study plan, described previously, was selected as the most likely to meet recreational, downstream water quality and flow, and flood control objectives. This plan is expected to benefit in-lake and downstream recreation meanwhile protecting and potentially enhancing the natural environment. Coordination between project partners and the public will continue through and after the study period. Data collected during the study will be used by the Corps and its partners to evaluate the degree of success in meeting the objectives of the study plan and for identification of any environmental impacts not previously expected.

### **4.0 EXISTING ENVIRONMENT**

A description of the existing environment was provided in the 2002 F.E. Walter Reservoir Emergency Drought Storage Environmental Assessment. These descriptions are not expected to have changed appreciably. Detailed descriptions were provided on topics to include: Project Description; Climate; Air Quality; Topography; Geology and Soils; Land Use and Recreation; Hazardous, Toxic, and Radioactive Substances; Aquatic Resources; Surface Waters (Lehigh River Water Quality and Reservoir Water Quality); Groundwater; Wetlands; Wild and Scenic Rivers; Vegetation; Wildlife Resources; Finfish and Invertebrate Species; Threatened and Endangered Species; Prime and Unique Farmlands; Cultural Resources; Infrastructure; Socioeconomic Conditions; and Environmental Justice. The 2002 Drought Storage EA and 2005

F.E. Walter Temporary Operations Plan EA are available for review on the project web page at [www.nap.usace.army.mil/Projects/FEWalter/index.htm](http://www.nap.usace.army.mil/Projects/FEWalter/index.htm).

## **5.0 ENVIRONMENTAL EFFECTS**

### **5.1 Project Area Descriptions**

Changes in reservoir operation as a result of the 1365 foot study elevation are expected to increase the base pool elevation behind F.E. Walter Reservoir by 65 feet and therefore temporarily submerge adjacent land areas not normally submerged at pool elevation 1300 feet. However, these areas are routinely inundated annually during drought, recreational whitewater, and flood storage events and are located within federally owned project operational boundaries. As a result, impact to the project area will be temporary and minor. In 2005, the pool equaled or exceeded 1365 feet for a total of 11 days from January 2005 through December 2005. Based on historic data, pool levels at F.E. Walter equaled or exceeded 1365 feet for 945 days from January 1974 through December 2005, representing approximately 9% of this operational record time period. The number of consecutive days the pool level exceeded 1365 feet ranged from 1 to 449 days depending on operations. For example, during drought storage operations in 2002, the pool level exceeded 1365 feet from March 2002 through November 2002 for a total of 249 consecutive days.

### **5.2 Climate**

Due to the nature of this project, which includes no construction requirements, this project is not expected to adversely impact the climate within or around the project area.

### **5.3 Air Quality**

The project will result in no significant change in air quality within or around the project area. Since there is no construction required, there will be no air emissions generated from construction equipment.

### **5.4 Topography**

Approximately 444 acres of land will be submerged within the reservoir boundaries. This impact will be temporary and minor as the pool level will only be increased from April through October of 2006. These submerged areas have the potential to provide approximately 119 acres of 0-10 foot depth fishery spawning habitat. No impact to the Lehigh River topography downstream is expected as a result of this project.

### **5.5 Geology and Soils**

The possibility of soil erosion within the F.E. Walter Reservoir is considered slight to moderate as a result of the rocky condition of the reservoir shoreline. A minor increase in bank erosion along the edges of F.E. Walter Reservoir is possible during storm events as a result of wave action. Historically, bank erosion has occurred immediately downstream of the F.E. Walter outfall. Erosion in this area is most evident during high release events typically associated with flood control operations. Minor bank erosion in this area is therefore expected as a result of the 2006 plan, but at a rate no different than seen during normal historic operations. No increase in erosion along the Lehigh River banks downstream of F.E. Walter Reservoir is

expected due to operational discharge controls. Due to the nature of this project, no significant adverse impact to the geology or soils within or around the project area is expected.

## **5.6 Land Use and Recreation**

Land use in the area surrounding the reservoir boundaries is predominantly forested. Areas within the reservoir's operational limits are sparsely vegetated and have no trees. A short-term and minimal impact to some of those areas inundated by the 2006 operations study pool is expected as a result of the public not being able to access the reservoir shoreline in areas typically utilized. However, no planned restriction on access to the reservoir is expected. No impact to downstream land use is expected as a result of the increased minimum release and operational controls.

In-lake recreation for boating and fishing is impeded when the pool exceeds elevation 1,306' N.G.V.D. and above. Most recreational benefits occur during the summer months. Recreational structures such as the boat launch area and access road are located in the flood control storage area of the project. Access will still be permitted for in-lake recreation such as fishing and boating. However, the public may find it more difficult and time consuming to reach and utilize the resource. As a result, there will be a short-term and minor impact on in-lake recreation during the storage period. As plans are modified in the future and a more stable schedule and plan is finalized, the location and construction of a new boat launch facility will be pursued.

The 2006 plan is expected to also protect the recreational value associated with inlake and downstream resources. The increased storage and target minimum release plan at F.E. Walter Reservoir will provide the ability to augment flows in the Lehigh River to benefit recreational angling and boating. The increased inlake habitat available has potential to improve the inlake fishery.

## **5.7 Hazardous, Toxic, and Radioactive Substances**

Based on sediment analysis at F.E. Walter Reservoir and the nature of the watershed upstream of F.E. Walter Reservoir no hazardous, toxic and radioactive substance impacts are expected as a result of this project.

## **5.8 Aquatic Resources and Wetlands**

### **5.8.1 Surface Water**

The F. E. Walter project has limited selective withdrawal capability. The three flood control gates release water near the reservoir bottom. Selective withdrawal capability at multiple pool elevations is not possible at this time. A bypass system does exist at approximately elevation 1297'. This system was placed into operation during the 2005 plan. At this time, the water in the lower water column and its associated water quality is released when outflows exceed approximately 300 cubic feet per second (approximate maximum volume through the bypass system).

The water quality in the lake is greatly influenced by inflow to the lake. This would include volume, sediment load, and water quality in general. The drainage basin above the dam is predominantly forested with little development. However, development is occurring and has increased the potential for environmental degradation. The hydraulic retention time is an important factor affecting lake water quality. The retention time from May through October under conservation pool conditions of 1,300 feet N.G.V.D. would be approximately 3 days. Historically, at conservation pool elevation during the summer, the water column of F.E. Walter Reservoir is typically weakly stratified with respect to temperature. This allows for mixing of surface and bottom waters throughout the summer. A complete reservoir volume exchange in approximately 3 days is expected to occur under these conditions. At a pool elevation of 1,392 feet N.G.V.D., and if an average August through September inflow of 300 cfs is assumed, the retention time would be around two months. It is possible, that during the summer, the entire pool may not be exchanged due to summer stratification. Warmer surface waters would not be expected to mix with the deeper colder water. All releases occurring from the flood control gates near the bottom would draw water from the hypolimnion only. Surface waters would not be released downstream until mixing occurs during fall turnover. Therefore, the entire volume of the reservoir would not be exchanged until the complete mixing of the reservoir pool occurs. Historic water quality sampling has shown negative water quality effects within the lake at pool levels exceeding approximately elevation 1370 feet over an extended period of time (throughout the summer). Water chemistry data collected during drought operations in 2002 showed anoxic conditions throughout most of the reservoir during July and August at a 1392 foot pool elevation. As a result of these conditions, iron was released from the reservoir sediments and eventually deposited downstream on Lehigh River sediments causing impacts to downstream biological communities in the Lehigh River.

The retention time from April through October under pool operating conditions of 1,365' N.G.V.D. would be approximately 37 days. Due to the short term nature of the 2006 storage and flow operation study plan, the potential negative impacts to water quality both within the reservoir and downstream in the Lehigh River will be minimized and at most temporary. A pool elevation of 1365' was selected, in part, because historic water quality data showed a low probability of the formation of poor water quality conditions within the reservoir at this elevation. The Philadelphia District will continue its annual water quality sampling at F.E. Walter from April through October of 2006. As the operations study plan is implemented and the pool elevation is maintained near elevation 1365' N.G.V.D., sampling will provide a means of monitoring water quality changes in the tributaries, reservoir pool and outflow under these conditions. Water quality data collected during the 2005 study showed the formation of a moderately stratified water column with low dissolved oxygen in the bottom waters (Appendix A).

Based on coordination with the resource agencies, operating guidelines such as target minimum releases, augmented outflows, and other storage and release guidelines were established to protect environmental resources associated with the Lehigh River. This will be most evident during typically low flow periods during the summer. By maintaining a higher minimum flow rate during portions of the season, it is expected that point source pollution will be diluted in the river resulting in better than typically expected water quality. Of particular

importance are the known impacts from abandoned mine discharges to the Lehigh River during low flow periods of the summer. In addition to potential water quality benefits, it is expected that there will be an increased benefit to aquatic organisms through additional habitat availability which may not be available during low flow periods of the summer in the river.

The Lehigh River from F.E. Walter Dam downstream to Jim Thorpe is designated for protection as a High Quality-Cold Water Fishery in accordance with 25 Pennsylvania Code Chapter 93 Water Quality Standards. The temperature criteria for this reach shall not exceed 66° F for the period from July 1<sup>st</sup> to August 30<sup>th</sup>. Historic sampling show river temperatures routinely exceeding the temperature criteria established for this reach of the river during the summer months. Historic sampling of inflows to the reservoir also shows temperatures routinely exceeding the temperature criteria. A maximum 68° F water temperature will be the target release water temperature in 2006. In 2005, downstream temperature monitoring showed temperatures exceeding the state criteria throughout most of the summer. In part, this was a result of meteorological conditions during 2005. Other than the limited bypass system, selective withdrawals at F.E. Walter Reservoir are not possible at this time. In an effort to meet temperature objectives downstream, the bypass system will be maximized to conserve the maximum amount of cooler water deeper in the water column. Inflow, intake, and downstream temperatures and water quality will be closely monitored during the 2006 plan to assess the effects, if any; the 1365 foot pool elevation and release schedule has on downstream river temperatures and intake and downstream water quality. All necessary precautionary measures such as water quality monitoring, will be implemented to ensure that the Lehigh is protected from harmful discharges that may adversely affect aquatic life, and/or their recreational use. No long term negative impacts are expected as a result of the 2006 study plan.

### **5.8.2 Groundwater**

Based on the analysis of expected groundwater changes associated with raising pool elevations described in the 2002 EA, only short term and minor temporary impacts to ground water are expected as a result of the 2006 study plan.

### **5.8.3 Wetlands**

Both vegetated wetlands and open water habitat exist within the boundaries of the reservoir pool. These acreages have not been quantified. Some of the vegetated wetland areas are routinely submerged during flood control and drought operations at F.E. Walter Reservoir. As in the past, these areas will be temporarily submerged during the 2006 study plan. It is expected that the vegetation found in these areas have evolved to withstand temporary inundation. The impact is expected to be short term and minor.

## **5.9 Wild and Scenic Rivers**

A resource information review revealed that no nationally designated wild and scenic rivers or river segments are located within the project area. No impact to this resource is expected. The Lehigh River downstream of F.E. Walter Dam is designated a Pennsylvania scenic river. No negative impact to this resource is expected.



## **5.10 Vegetation**

The project area has been significantly impacted by human activities in the past. The major impact on vegetation within the reservoir pool area occurred during reservoir operations in the mid 1960's and 1981. Although these events were isolated incidences, all terrestrial vegetation was killed up to approximately elevation 1,392 N.G.V.D. Today, the land surface within the reservoir from elevation 1,300 to 1,392 N.G.V.D. is predominantly rocky with limited vegetation. The vegetative habitat within the reservoir pool area has had little opportunity to recover because of historic operations of the reservoir and associated periodic inundation of surrounding lands. Some areas of the upper reservoir arms of Bear Creek and the Lehigh River have had the opportunity to recover, but on a limited basis. A potential impact associated with submerging this vegetation during the 2006 study plan is the elimination of foraging and nesting habitat for various birds and small animals. It is believed that the vegetation colonizing these areas is adapted to the periodic inundation experienced in the reservoir pool area and will be reestablished following the completion of the 2006 study plan. As a result, no significant long-term impact is anticipated as a result of temporarily raising the pool level. No impact to vegetation along the Lehigh River is expected.

## **5.11 Wildlife Resources**

Birds, mammals, reptiles and amphibians are capable of moving, and would be expected to leave the submerged project area and relocate to areas in the immediate vicinity. Species that reside in these adjacent areas may be temporarily impacted by increases in species densities. A temporary reduction in the amount of nesting, feeding, resting and breeding cover in the area for some species, which utilize this habitat, may occur. Due to the amount of adjacent nearby habitat, it is expected that no significantly adverse impacts to wildlife resources will occur as a result of this project. No impact to wildlife resources along the Lehigh River is expected.

## **5.12 Finfish and Invertebrate Species**

Aquatic life in the form of invertebrates, reptiles and finfish inhabit the waters of the Lehigh River, reservoir and surrounding tributaries. In the absence of site-specific investigations regarding adequate minimum releases to enhance downstream aquatic resources at F.E. Walter Reservoir, the Pennsylvania Fish and Boat Commission has recommended various storage and release augmentation scenarios. As a result of the release and storage targets during the 2006 study period, the habitat and flows required by species located in the Lehigh River downstream of F.E. Walter are expected to be protected and potentially enhanced during low flow periods of the year. The potential for a temporary increase in aquatic habitat availability due to a higher and stable pool elevation during the May through June in-lake spawning period exists. These submerged areas have the potential to provide 119 acres of 0-10 foot fishery spawning habitat.

There are no negative appreciable changes in the water temperature regime expected as a result of the study. No physical intrusion to the aquatic environment to accomplish this study is required. Low dissolved oxygen levels in the lower water column of the reservoir have the potential to restrict aquatic species movements in addition to creating an anoxic environment. This occurrence would be a short term minor impact on the system as other more suitable habitat areas exist within the reservoir and aquatic species would be expected to utilize those areas. As a result, no significant adverse long term impacts to invertebrate and finfish resources are

expected as a result of this project. Positive impacts associated with augmented low flows downstream are expected.

### **5.13 Threatened and Endangered Species**

Coordination with various Federal and State natural resource agencies as part of the 2002 F.E. Walter Emergency Drought Storage Environmental Assessment identified numerous threatened and endangered species that may be utilizing the project area. These species include the bald eagle which is federally threatened and Pennsylvania endangered; timber rattlesnake which is a Pennsylvania species of concern; and osprey and small-footed bat which are Pennsylvania threatened species. Due to the nature of the 2006 study and the mobility of the majority of the species, no significant long-term negative impact to these species or their habitat is expected.

### **5.14 Prime and Unique Farmlands**

Possible areas of concern have been identified by the Natural Resource Conservation Service (NRCS) in the 2002 EA. Due to historic operations of raising and lowering the pool elevation at the reservoir, land surface cover in the form of vegetation is lacking. Therefore, areas identified as being of concern will not be affected (increased erosion) by destruction or removal of land surface vegetation. A minor increase in erosion may be seen due to wind-induced movement of surface waters and infiltration of water through the soils. The areas identified by NRCS are within the reservoir pool boundaries and have not been used for agricultural production since, at a minimum, the construction of F.E. Walter Reservoir. These areas are routinely inundated as part of operating the reservoir to meet its congressionally authorized purposes. No significant impact to these resources is expected.

### **5.15 Cultural Resources**

In a letter dated February 22, 2002, the District notified the Pennsylvania Historical and Museum Commission (PHMC) about the proposal to raise the reservoir's base pool elevation from 1300 feet to a drought storage pool of 1370 feet (winter pool) or 1392 feet (summer pool). In a letter to the Philadelphia District dated April 25, 2002, the PHMC determined that the proposed drought storage increase would have no effect on archaeological sites or historic structures. It is therefore anticipated that since pool elevations will be lower than seen in 2002, no resources will be impacted during this study.

### **5.16 Infrastructure**

The newly modified access road crossing the top of the dam was opened to the public in 2005. No impacts to public transportation are therefore expected.

### **5.17 Socioeconomic Conditions**

The 2006 temporary operation study plan at F.E. Walter Reservoir is not expected to adversely impact the economy or social structure near the reservoir or downstream on the Lehigh River. Future economic benefits may result by protecting aquatic resources of the Lehigh River and improving boating and other recreational activities in the watershed that directly depend on the resources of the Lehigh River and operation of F.E. Walter Reservoir. In 2005, the number of whitewater recreational releases was increased and minimum low flows were in place to



protect aquatic resources in the Lehigh River. This likely resulted in an increase in public use and tourism in the region.

#### **5.18 Environmental Justice**

This project is not expected to adversely impact any minority or low-income communities in the project area, because none exist.

#### **5.19 Cumulative Impacts**

Cumulative impacts are impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of who undertakes these actions. This cumulative impact assessment focuses on the 2006 temporary operation study plan for F.E. Walter Reservoir and the impact it may or may not have on future operations at the reservoir and on the Lehigh River.

The Philadelphia District in cooperation with the Delaware River Basin Commission, Pennsylvania Fish and Boat Commission, Pennsylvania Department of Conservation and Natural Resources and other interests will pursue additional study to evaluate the positive and negative effects of the 2006 plan on recreation, the environment, the congressionally authorized operation of F.E. Walter Reservoir, and the Lehigh River in general. The 2006 plan was developed, in part, as a result of observed conditions and recreational and environmental benefits and values observed in 2005. The plan was evaluated using historic flow data, water quality data, and recreational use information provided by the resource agencies. As a result, the various aspects of the study, as determined by the resource agencies involved, would provide protection of existing resources meanwhile potentially improving them. Future study and monitoring of the 2006 and future plans will likely result in the refinement of operational alternatives in the future as what was witnessed from 2005 into 2006.

It is expected that positive cumulative effects, as a result of the 2006 temporary operation plan at F.E. Walter, will occur with regard to increased spawning areas and habitat in-lake due to stable pool operations, increased whitewater recreation opportunities, downstream protection of aquatic resources in the Lehigh River, and overall improvement and protection of recreation and the environment in the watershed. All potential negative impacts associated with the 2006 plan are short-term and minor and have been considered in the selection and development of the plan. The potential negative impacts of the plan may include changes in water quality, in-lake recreation being impeded, and loss of upstream aquatic and terrestrial habitat. It is anticipated that future environmental and recreational benefits in both the Lehigh River and potentially the Delaware River Basin will be realized. It has been determined that there will be no long term negative cumulative impacts as a result of the 2006 operational study plan.

### **6.0 COORDINATION**

Coordination with resource agencies conducted for the 2002 F.E. Walter Emergency Drought Storage Environmental Assessment was utilized, in part, for this Environmental Assessment. That project was coordinated with the Delaware River Basin Commission, U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency Region 3, Pennsylvania Department of Environmental Protection, Pennsylvania Historical and Museum Commission,

Pennsylvania Fish and Boat Commission, Pennsylvania Game Commission, and Pennsylvania Department of Conservation and Natural Resources. The 2005 and 2006 F.E. Walter temporary operations plan was developed through coordination with the Pennsylvania Fish and Boat Commission, Pennsylvania Department of Conservation and Natural Resources, Delaware River Basin Commission and stakeholders. The plan was presented to the public at a public information workshop on 16 February 2006 at the Split Rock Lodge located in Carbon County, Pennsylvania. This forum allowed attendees to directly question project partners and comment on the proposed plan. In addition, the public is afforded the opportunity to comment on the 2005 and 2006 plans and future plans by submitting written comments directly to the Philadelphia District Corps or by providing their comments via the project website at [www.nap.usace.army.mil/Projects/FEWalter/index.htm](http://www.nap.usace.army.mil/Projects/FEWalter/index.htm). Public Notice CENAP-PL-E-06-03 for the F.E. Walter Temporary Operations Plan- 2006 Draft Environmental Assessment was circulated to the public and resource agencies on 17 February 2006 (Appendix B).

A total of 90 pages of public comments were received by the Philadelphia District in regard to the 2005 proposed plan. As of 27 March 2006, approximately 35 written comments have been received by the Philadelphia District in regard to the 2006 proposed plan. These comments were provided by the public through the project website, at the public workshops and also through comment letter submittal. All comments were reviewed by the Corps and provided to the respective project partners with expertise in a particular topic or resource, when applicable. For example, comments that involved aquatic resources such as fisheries would have been provided to the Pennsylvania Fish and Boat Commission for review. Based on comments received on the 2005 plan, the project partners evaluated the 2005 plan and have modified it to better balance 2006 plan objectives and protect the resources of the reservoir and river. To date, comments received on the 2006 plan have been tailored toward recommended operational changes to enhance the recreational boating and fishing potential downstream on the Lehigh River. The public comments and agency response, where applicable, are available for review at [www.nap.usace.army.mil/Projects/FEWalter/index.htm](http://www.nap.usace.army.mil/Projects/FEWalter/index.htm). Comments will continuously be accepted by the project partners in the future in an effort to modify the plan to meet in-lake and downstream objectives.

## **7.0 CONCLUSIONS**

This Environmental Assessment has evaluated potential environmental impacts associated with implementing the 2006 F.E. Walter temporary operations plan. The findings herein have been prepared in accordance with the National Environmental Policy Act of 1969, as amended. Potential impacts to environmental and cultural resources resulting from the proposed action have been described and evaluated in this document.

Due to the previously disturbed nature of the area bordering the reservoir and based on historic data, any negative effects to the environment are expected to be minor and temporary. A positive effect of increasing in-lake fishery habitat, protecting downstream water quality and aquatic habitat, and increasing whitewater recreational opportunities is expected. Future evaluation and study may result in a more permanent change to operations at F.E. Walter Reservoir. As part of the 2006 plan, no permanent environmental changes to the F.E. Walter Reservoir area and downstream habitat and water quality in the Lehigh River are expected due to

the short-term nature of the operation. The study will be closely monitored to evaluate the positive and negative aspects of the effort.

## 8.0 LITERATURE CITED

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