

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

West Penn Power Company

Project No. 2459-005
West Virginia and Pennsylvania

ORDER ISSUING NEW LICENSE
(MAJOR PROJECT)

INTRODUCTION

DEC 27 1994

On December 20, 1991, West Penn Power Company (WPP) filed an application under Part I of the Federal Power Act (FPA) for a new license to continue to operate and maintain the 51.2-megawatt (MW) Lake Lynn Hydroelectric Project located on the Cheat River, in Monongalia County, West Virginia, and Fayette County, Pennsylvania.^{1/}

BACKGROUND

Notice of the application has been published. The following entities filed timely motions to intervene on the following dates: the Sierra Club (Monongahela Group), September 24, 1993; the Cheat Lake Recreation and Environmental Association (CLEAR), September 27, 1993; the League of Women Voters of Monongahela County, September 29, 1993; the West Virginia Division of Natural Resources (WVDNR), September 30, 1993; the West Virginia Division of Environmental Protection (WVDEP), September 30, 1993. No organization or individual filed a motion to intervene in opposition to the project. All comments received have been fully considered in determining whether, or under what conditions, to issue this license.^{2/}

On June 24, 1994, the Commission's staff issued a draft environmental assessment (DEA) for this project. Comments on the

^{1/} The Cheat River is a tributary of the Monongahela River, a navigable waterway of the United States. Power produced from the project is fed directly into an interstate grid. Since the project is located on a river over which Congress has jurisdiction under the Commerce Clause, affects interstate commerce through its connection to an interstate power grid, and was constructed after 1935, it is required to be licensed pursuant to Section 23(b)(1) of the FPA.

^{2/} In addition to the intervenors, the other comments received were from the U.S. Department of the Interior--Fish and Wildlife Service (DOI), the U.S. Army Corps of Engineers (COE), the Albert Gallatin Municipal Authority (AGMA), the Pennsylvania Department of Environmental Regulation (PDER), the West Virginia University (WVU) Student Administration, the WVU Sierra Student Coalition, and local residents.

9501030161

FERC-D-100000
DEC 27, 1994

DEA have been addressed in the final environmental assessment (EA), which is attached to and made a part of this license. The staff also prepared a safety and design assessment (S&DA) for this project, which is available in the Commission's public file.

PROJECT DESCRIPTION

The existing constructed project consists of a concrete gravity dam 125 feet high and 1,000 feet long with an integral power plant near the east abutment. The power plant has four generators with a total generating capacity of 51.2 megawatts (MW). The dam impounds a reservoir about 13 miles long covering about 1,700 acres and containing about 72,000 acre-feet when full. A more detailed project description is contained in the ordering paragraph (B)(2).

The project's original license, issued on July 3, 1962, permitted the Licensee to operate the project as a daily peaking facility and to use all inflow to generate hydropower. That is, there was no requirement to provide any release flow during non-generating periods to protect aquatic resources downstream of the project.

WPP proposes the following enhancements related to project operation: (1) provide a variable minimum flow release of 212 cubic feet per second (cfs), 100 cfs, or net reservoir inflow during nonoperating periods to enhance the quality of water, fish, and other aquatic life; (2) develop a 46-acre multiple-use barrier-free recreation facility and a 4-mile hiking/biking trail; (3) develop a barrier-free fishing area in the tailrace portion of the project; (4) provide a barrier-free public boat launch and parking area along the reservoir shore; (5) designate four "wildlife habitat/nature viewing areas" on parcels owned by WPP; and (6) submerge brush piles to enhance fish habitat during winter draw-downs within Rubles Run and Morgan Run (two deep embayments separated by a small peninsula--located about 1 mile upstream of the project along the reservoir's eastern shore).

APPLICANT'S PLANS AND CAPABILITIES

In accordance with Sections 10 and 15 of the FPA, the staff evaluated WPP's record as a Licensee for these areas: (1) conservation efforts; (2) compliance history and ability to comply with the new license; (3) safe management, operation, and maintenance of the project; (4) ability to provide efficient and reliable electric service; (5) need for power; (6) transmission line improvements; (7) project modifications; and (8) compliance record. I accept the staff's finding in each of these areas.

Here are the findings:

1. Section 10(a)(2)(C): Conservation Efforts

WPP and its affiliates periodically evaluate prospective conservation, load management, and demand-side management strategies. In 1986, Allegheny Power Service Corporation, as an agent of WPP, evaluated more than 80 candidate devices and techniques, publishing the results of the report APS Demand-Side Alternatives. By implementing selected programs through 1999, WPP intends to reduce demand at the time of the annual peak by about 69 MW from that which might have occurred otherwise.

WPP has made a satisfactory good faith effort to comply with Section 10(a)(2)(C) of the FPA and to support the objectives of the Electric Consumers Protection Act of 1986.

2. Section 15(a)(2)(A): Ability to Comply with the New License

WPP's license application shows its ability to comply with the articles, terms, and conditions of any license issued, and with other applicable provisions of this part of the FPA.

WPP has or can acquire the resources and expertise necessary to carry out its plans and comply with all articles, terms and conditions of a new license.

3. Section 15(a)(2)(B): Safe Management, Operation, and Maintenance of the Project

Under Part 12 of the Commission's regulations, WPP filed the fifth Part 12 Safety Inspection Report on August 28, 1992. WPP also has an emergency action plan on file at the power plant office. WPP conducts regular tests of the emergency action plan and all personnel receive emergency training. The Safety Inspection Report and emergency action plan are adequate.

WPP shows regard for public safety by installing fences and gates at the powerhouse and dam to deter unauthorized access, placing warning signs at dangerous areas, and installing safety barriers at the dam to keep boaters away from the spillway.

The project is safe for continued use and operation. WPP's proposal would not adversely affect the project's operation and safety.

4. Section 15(a)(2)(C): Ability to Provide Efficient and Reliable Electric Service

WPP's operating plans show its ability to give efficient and reliable electric service. WPP is operating the project

efficiently and reliably.

WPP's record of lost generation because of unscheduled outages shows that the outages were minimal and lost generation is not a significant part of the project's annual generation.

5. Section 15(a)(2)(D): Need for Power

Considering the short- and long-term need for power generated by the project and the cost of alternative replacement power in the region if WPP does not get a new license for the project, we conclude that: (1) the project power helps meet a part of the Allegheny Power System's regional power needs, and (2) the project produces about 129.4 GWh of energy annually. Replacing the project power would cost WPP about \$5.0 million based on 38.6 mills/kWh.

The Allegheny Power System's short- and long-term need for power justifies licensing the Lake Lynn Project.

6. Section 15(a)(2)(E): Existing and Planned Transmission Services

WPP does not see any need to change the transmission network affected by the project operation.

Whether the Commission issues a license for the project or not, the existing transmission service is sufficient and no changes are necessary.

Considering the Licensee's transmission system with respect to the application for new license, licensing the project to continue operations would have no significant effect on the existing or planned transmission system.

7. Section 15(a)(2)(F): Project Modifications

WPP has no plans to make any major engineering modifications at the project.

Installing additional generating units is not necessary at this time. Furthermore, the project as presently constructed, and as WPP proposes to operate it, fully develops and uses the economical hydropower potential of the site.

8. Section 15(a)(3)(A) and (B): Compliance Record

WPP's record of compliance with the existing license is not fully satisfactory. Among other things, the Licensee failed to file a timely Emergency Action Plan or Update (five times), Part 12 Safety Report (two times), Part 8 Recreation Resource materials, revised Exhibit G drawings (two times), revised

Exhibit F drawings (two times), and a state Water Quality Certificate. These instances of noncompliance occurred between January 1971 and May 1990.

This compliance record, although less than satisfactory, does not warrant the denial of WPP's application for a new license. However, because of the Licensee's compliance history, special monitoring must be set up to ensure that the Licensee complies with the terms and conditions of the new license. Therefore, Article 501 will require the Licensee to develop and file for Commission approval a Hydropower Compliance Management Program that will ensure compliance with the terms and conditions of the new license and allow the Commission to monitor progress toward compliance.

WATER QUALITY CERTIFICATION

Under Section 401(a)(1) of the Clean Water Act,^{3/} the Commission may not issue a license for a project unless either the license applicant obtains water quality certification from the certifying agency of the state in which the project discharge will originate, or the certifying agency waives certification. Section 401(a)(1) states that certification is deemed waived if the certifying agency fails to act on a water quality certification request within a reasonable period of time, not to exceed one year.

On September 19, 1991, WPP filed with WVDNR an application for Section 401 water quality certification for the Lake Lynn Project. WVDNR denied the application for certification on March 9, 1992 for failure to comply with state regulatory requirements.

On May 11, 1992, WPP filed a second application for water quality certification. On June 8, 1992, WVDNR notified WPP that the second application was incomplete and requested that WPP provide more information. Effective July 1, 1992, authority to grant water quality certification in West Virginia was transferred from the WVDNR to the newly created West Virginia Department of Environmental Protection (WVDEP). In a letter dated May 10, 1993, WVDEP denied the second WPP application for certification.

WPP filed a third application for certification with WVDEP on June 23, 1993. In a subsequent letter to WPP dated October 18, 1994, WVDEP indicated that it had granted water quality certification for the project, subject to 15 specific conditions being included in any new Commission license for the project. However, because WVDEP did not act on the application within a

^{3/} 33 U.S.C. § 1341.

year of its June 23, 1993, filing date, the certification requirements of Section 401 of the CWA for the Lake Lynn Project are deemed by the Commission to be waived. ^{4/} Therefore, I do not consider inclusion in the license of the conditions proposed in WVDEP's October 18, 1994 letter to be mandatory. However, in the exercise of the Commission's responsibilities under FPA Section 10(a), the Commission staff has examined WVDEP's 15 proposed license conditions and recommended adoption or partial adoption of several of the proposed conditions. The Commission staff's findings and recommendations with respect to WVDEP's 15 proposed license conditions are summarized in Section IV.C of the EA. I concur with staff's recommendations. The requirements of those WVDEP proposed conditions recommended in the EA for whole or partial inclusion in the project license are reflected in Articles 401, 403, 404, 405, 406, 411, and 415 of the license.^{5/}

COASTAL ZONE MANAGEMENT PROGRAM

The Lake Lynn Project is not located in the state-designated coastal zone management area.

RECOMMENDATIONS OF FISH AND WILDLIFE AGENCIES

Section 10(j)(1) of the FPA requires the Commission to include license conditions based on recommendations of federal and state fish and wildlife agencies submitted pursuant to the Fish and Wildlife Coordination Act for the protection, mitigation, and enhancement of fish and wildlife resources.

Section 10(j)(2) of the FPA also states that whenever the

^{4/} Section 16.8(f)(7)(ii) of the Commission's regulations, 18 C.F.R. § 16.8(f)(7)(ii), states that the certifying agency is deemed to have waived the certification requirement if it has not acted by one year after receiving the request.

^{5/} WVDEP's condition no. 2 (peaking and reservoir elevations) was adopted in Articles 403 and 404; condition no. 4 (water quality, biological studies, and minimum flows) in Articles 404, 405 and 411; condition nos. 7 (West Penn Beach area public fishing access recreation site), 8 (development of project area 26 for recreation), 9 (public boat launch site), 11 (recreation development plan), 12 (tailrace area public fishing access/recreation area site), 13 (substation area parking), 14 (tailrace area recreation use survey), and 15 (tailrace area recreation development plan) in Articles 15 and 17; and condition no. 10 (reservoir recreation use survey) in Article 417. Condition nos. 1 and 3 (project operating plan); 5 (construction of storm water/nonpoint source program contacts); and 6 (turbine entrainment study) were not adopted.

Commission believes that a fish and wildlife agency recommendation may be inconsistent with the purposes and requirements of the FPA, the Commission and the agencies shall attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agencies.

Staff made a preliminary determination by letters dated July 13, 1994, that certain DOI, PFBC, and WVDNR recommendations were inconsistent with the purpose and requirements of Part I of the FPA and other applicable law, and conflicted with the comprehensive planning standards of Section 10(a) of the FPA. Staff also made a preliminary determination that certain fish and wildlife agency recommendations were outside the scope of Section 10(j) and that they should be considered under Section 10(a) of the FPA.^{6/}

In response to the determinations, staff received comment letters from DOI (August 5, 1994), WVDNR (August 22, 1994), PFBC (August 23, 1994), and WPP (August 5, 1994). All of the agencies requested, and subsequently attended, a negotiation meeting with Commission staff on September 13, 1994, in Ligonier, Pennsylvania. Representatives of WPP also participated in the meeting.

Staff and the agencies at the September 13, 1994, meeting examined both additional evidence in support of the recommendations found by staff to be inconsistent with 10(j) and possible alternatives to such recommendations. As a result of these discussions, a number of staff's recommendations for the project have been modified as reflected in the EA. Based on the evidence examined at the meeting and the rest of the record in the proceeding, including the EA, I have made the following determinations with respect to the agency recommendations found by staff to be inconsistent with Section 10(j):

1. Run-of-the-river Operation. Both DOI and PFBC had recommended that the project be operated in a run-of-the-river mode. In the DEA, staff concluded that run-of-the-river operation is not feasible because the economic costs would exceed the environmental benefits of the project. ^{7/} The DEA recommended a continued peaking operation with 212 cubic feet per second (cfs) minimum release flow, and limited reservoir fluctuations. When reservoir inflow drops below 212 cfs, the staff recommended that the minimum flow release should equal reservoir inflow.

^{6/} See EA section VII.

^{7/} See Final EA section VI and Tables 11 and 12.

In the subsequent 10(j) negotiations DOI agreed that such a mode would not be ideal at Lake Lynn when river flow drops to the lowest levels, and PFBC stated that although it still prefers a run-of-the-river operation, something other than run-of-the-river is acceptable in the short term, provided there is an opportunity to reconsider run-of-the-river operation as the fishery improves.

The EA recommends a continued peaking operation with a 212 cubic feet per second (cfs) minimum release flow, and limits on reservoir fluctuations. When reservoir inflow drops below 212 cfs, the staff recommends that the minimum flow release be equal to reservoir inflow. I concur with the EA's findings. Article 404 of this license requires a 212 cfs minimum release whenever the reservoir water level is stable or increasing, and an absolute minimum release flow of 100 cfs.

2. Water Quality Monitoring and Gauging. In the DEA, staff recommended two additional permanent/continuous water quality monitoring stations--one upstream of the Lake Lynn dam and one immediately downstream of the dam. As stated in the EA (Section V.C.2), additional water quality data (i.e., farther downstream of the dam) may be obtained from COE and the Environmental Protection Agency (EPA). Staff also recommended installation of two USGS flow-gauging stations--one in the reservoir headwaters area and one downstream of the dam.

PFBC had originally recommended continuous water quality monitoring at four locations in the reservoir and river. At the September 13 meeting, PFBC stated that with only 13 grab samples per year from the backwater of the Monongahela River, there are no assurances of when water quality samples would be collected. Therefore, PFBC stated that the staff-recommended sampling program in the DEA provided no reasonable way to measure the project's water quality impacts downstream of the most acidic tributaries.

The WVDNR also indicated support for more water quality monitoring downstream of the dam (especially below the acid tributaries) as well as water quality profile sampling in the reservoir. DOI stated that it concurred with PFBC and WVDNR.

Staff and the agencies agreed that a reasonable compromise would be to require one additional water quality monitoring station, to be placed at a site downstream of the acid tributaries. This measure would improve the collection of river pH data and help relate project operations to downstream water quality, as required by Article 405 of this license. The EA (Section V.C.2) discusses this issue and recommends the additional water quality monitoring station.

3. Effects of Peaking and Lake Level Fluctuations. In the

DEA, staff recommended reservoir water level elevations of 863-870 feet NGVD from April 1 to April 30, 868-870 feet from May 1 to October 31, and 857-870 feet from November 1 to March 31. The staff also recommended placement of submerged brush piles in the two principal reservoir embayments (Rubles Run and Morgan Run) to reduce adverse impacts to the fisheries from winter draw-downs. At the meeting, staff stated that winter draw-downs are related to peaking power operation, below-normal reservoir inflows, and a need for reservoir storage because of occasional flood flows.

The PFBC and WVDNR stated that they had no major objections to the reservoir water levels recommended in the DEA. The DOI had originally recommended only that WPP study the effects of peaking and lake level fluctuations and develop a plan to mitigate adverse impacts. In the DEA, staff indicated that this recommendation was partially adopted. In response, the DOI stated that it still objected, in particular, to the project's 13-foot winter draw-down based on (1) adverse impacts to winter recreation use of the reservoir, and (2) adverse impacts on the reservoir fishery. DOI stated that it is unreasonable for the DEA to attribute the 13-foot draw-down to flood control, and that the brush piles are insufficient fisheries mitigation for the winter draw-downs.

The EA (Section V.C.2) recommends and Article 403 of this license requires increasing the minimum reservoir water level elevation to 863 feet NGVD in April based on the potential to benefit fish spawning in the reservoir, while also maintaining storage capacity during high spring inflows. Staff maintains that modifying the allowable winter drawdowns any further would adversely affect the beneficial (although incidental) flood control capability of the Lake Lynn project, as well as the project economics, making the DOI's recommendation inconsistent with Section 10(a) of the FPA.

4. Dissolved Oxygen Requirements. The staff concluded in the DEA that low dissolved oxygen (DO) levels are not a serious water quality issue at this project. Staff recommended WPP monitor DO; but did not propose that WPP maintain any specific DO standards. The PFBC had originally recommended that the Commission require a minimum DO level consistent with previously licensed hydroelectric projects in the Upper Ohio River Basin (6.5 mg/L). The PFBC did not state any specific concerns about recorded DO levels at the Lake Lynn project; but during negotiations, the PFBC stated that DO could decline at the Lake Lynn project in the future.

The WVDNR stated that DO is not currently a problem, but recommended a plan to address DO if it does drop below desired levels. The DOI stated concern about consistent DO standards and added that profile DO sampling in the reservoir would be an appropriate requirement of the new license.

To accommodate PFBC's and WVDNR's concerns, the EA (Section V.C.2) recommends that if water quality monitoring shows any DO readings below 5.0 mg/L, WPP would notify the Commission and the resource agencies within 10 days to evaluate the low DO reading(s). Then, if required by the Commission, WPP would develop and file a plan to achieve compliance in consultation with DOI, WVDEP, WVDNR, and PFBC. That requirement is included in Article 406 of this license.

5. Minimum Release Flows. The DEA recommended a minimum release flow of 212 cfs or reservoir inflow, whichever is less.

The PFBC had previously recommended variable minimum releases, such as 450 cfs, 212 cfs, 100 cfs, etc., triggered by specific reservoir level/inflow. The PFBC stated that it believes this sort of plan still needs to be evaluated, although it did not put forth any specific operating plans--either in its 10(j) recommendations or in response to the DEA.

Staff evaluated variable minimum release alternatives in the EA, including consideration of environmental benefits (Sections V.C.2 and V.C.3) and economic effects (Section VI.B). Those evaluations indicated that the variable minimum release flow options were inconsistent with the balancing objectives of Section 10(a). Staff, however, did revise the minimum release flow recommended in the DEA to include an absolute minimum release of 100 cfs, as required by Article 404 of this license.

6. Fish Entrainment and Mortality Impacts. The DEA stated, and staff emphasized, that there is not any reliable information to either confirm or disprove loss of fish through turbine entrainment. The DEA notes that (based on field studies) the fish population of the main reservoir appears to be very low. The DEA recommended that WPP conduct a biological monitoring program to establish a baseline, with the possibility of reopening the license to address site-specific turbine entrainment impacts and/or compensation for lost fish.

The PFBC had no comments on the fish entrainment issue. The WVDNR stated that it eventually wants to look at the issue further, but has no immediate concern about relicensing. The DOI had originally recommended that WPP "be required to adequately address the fish entrainment issue in full detail to ensure that existing and potential future fishery resources will be protected from injury/mortality." In response, the DEA recommended the approach outlined above--to collect biological data first, then reopen the license if warranted. During the 10(j) meeting, the DOI stated that it believes entrainment impacts could be a problem, and should be studied further before a new license is issued.

Staff maintained that it does not see merit in detailed

studies of the entrainment issue until there is more data available about the reservoir fishery. Staff indicated that proceeding with detailed entrainment studies now would substantially delay relicensing, with a corresponding delay in the benefits to be provided by a minimum release flow and the other enhancements. Furthermore, staff noted that DOI's original recommendation was not specific as to the types of studies to be undertaken.

Therefore, staff concluded that DOI's recommendation at the meeting--to delay license issuance--would unnecessarily prevent achievement of other beneficial use objectives. Staff maintained that the project should be relicensed without completion of further studies. The EA (Section V.C.3) discusses this issue and notes that the license could be reopened in the future to address the entrainment issue based on the results of the biological monitoring program required by Article 411.

7. Restriction of Peaking. The DEA did not evaluate a specific alternative to restrict or eliminate peaking during the fish spawning and fry periods (recommended by PFBC). The recommendation was considered in general by staff; but the considerations were not fully documented in the DEA. Staff explained that they would like to know more about the applicable time period(s) and the specific fish species in question.

The PFBC originally recommended only that a plan be developed to restrict or eliminate peaking during the fish spawning and fry periods. At the 10(j) meeting, the PFBC acknowledged that there is a need to define the alternative more specifically, and agreed to provide further information on fish spawning and fry periods for further consideration in the EA. The WVDNR had no comments on this issue. The DOI concurred with the PFBC, and urged further review of the IFIM study results.

In the EA (Section V.C.3 and Appendix B), staff provide an analysis of alternatives to restrict or modify peaking during the fish spawning and fry periods, including consideration of environmental benefits (Section V.C.3) and economic effects (Section VI.B). Staff concluded that further restrictions on peaking, including run-of-the-river operation, would result in increased costs with little potential for biological benefit, and therefore concluded that the recommendation is inconsistent with the balancing provisions of Section 10(a).

8. Inconsistencies on Issues Outside of 10(j). The Commission staff also determined that a number agency and entity recommendations for license conditions were outside the scope

Section 10(j) and did not warrant adoption.^{8/} I have examined these recommendations and the Commission staff comments on them in the EA. I concur with the EA's finding that under Section 10(a) these recommendations are unwarranted and would not be in the public interest for the reasons given in Section VII of the EA.

COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project.

Under Section 10(a)(2), federal and state agencies filed a total of 25 comprehensive plans that apply to West Virginia and Pennsylvania, of which staff identified 4 plans that are applicable.^{9/} No conflicts were found.

COMPREHENSIVE DEVELOPMENT

Sections 4(e) and 10(a)(1) of the FPA, 16 U.S.C. 797 (e) and 803(a)(1), require the Commission, in acting on applications for license, to give equal consideration to the power and development purposes and to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgement will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration. For the reasons discussed below, we conclude that the Lake Lynn Project does not conflict with any planned or authorized development and is best adapted to comprehensive development of the waterway for beneficial public uses.

A. RECOMMENDED ALTERNATIVE

Staff considered several environmental enhancement measures including: run-of-the-river operation, minimum release flows,

^{8/} These recommendations included additional studies before license issuance; the scheduling of meetings, reporting, and plan updates; certain details regarding recreational enhancements; and a recommendation to prepare a drought contingency or water utilization plan.

^{9/} For a list of these plans, see Section VI of the attached EA.

flow ramping, recreational enhancements, and fisheries habitat enhancements.

Based upon staff's independent analysis of the environmental and economic effects of the alternatives, I have selected the applicant's proposed environmental enhancement measures, with additional staff-recommended enhancements, as the preferred alternative. I have selected this alternative because implementation of these measures will: enhance water quality, fisheries, and recreational resources; and will increase public access to the reservoir and river in the project area.

The required enhancement measures will include:

- (1) providing a minimum reservoir release flow of 212 cfs when reservoir inflow is greater than or equal to 212 cfs; at other times the minimum release flow will equal inflow to the reservoir but will never be less than 100 cfs;
- (2) installing and maintaining three water quality monitoring stations;
- (3) conducting a biological monitoring program, including reports every 3 years to the Commission and the resource agencies;
- (4) developing plans to evaluate and possibly construct fish attractive/protective structures within an area 200 yards or more down-stream of the dam;
- (5) constructing, operating, and maintaining various proposed recreational facilities, with additional enhancements as recommended by staff;
- (6) providing consistent notification to the Albert Gallatin Municipal Authority (AGMA) of reservoir water level changes greater than 10 feet;
- (7) installing one stream gage down-stream of the dam and a reservoir water level probe up-stream of the dam to ensure accurate compliance monitoring;
- (8) preparing a formal agreement to coordinate fluctuating flows with the U.S. Army Corps of Engineers (COE)

B. DEVELOPMENTAL AND NONDEVELOPMENTAL USES OF THE WATERWAY

The project will generate an estimated 125.8 gigawatt-hours (GWh) annually of relatively low-cost electricity from a renewable energy resource for use by WPP customers. Positive, long-term benefits to water quality, aquatic habitat, area

aesthetics, and recreational resources also will result from operating the project with the required enhancement measures. Though the cost of these measures will reduce the existing power benefits of the project, the project will still have net benefits over the new license term compared to the least-cost alternative.

The primary costs associated with the required enhancements will be: (1) operation of the project with a minimum release flow, resulting in the loss of about 3,620 MWh in annual generation at an annual levelized cost of about \$446,000; and (2) development of new recreational facilities and fisheries enhancements at an annual levelized cost of about \$773,000;

In total, the required enhancement measures will reduce the project's levelized annual net benefits from about \$12,100,000 to about \$10,881,000, or by about \$1,219,000.

Based on review of the agency comments filed on this project, and on staff's independent analysis and assessment of the project pursuant to sections 4(e), 10(a)(1), and 10(a)(2) of the FPA, I find that the Lake Lynn Project with the required environmental enhancement measures is best adapted to a comprehensive plan for the proper use, conservation, and development of the Cheat River and other project-related resources.

TERM OF LICENSE

In 1986, the Electric Consumers Protection Act modified Section 15 of the FPA to specify that any license issued under Section 15 shall be for a term which the Commission determines to be in the public interest, but not less than 30 years, nor more than 50 years.

Generally, we issue 30-year relicenses for projects that include no substantial new construction or power-generating expansion. We issue relicenses for 40 years or more for projects that include substantial new construction or capacity increases. We issue licenses of longer duration to ease the economic impact of the new costs and to encourage better comprehensive development of the renewable power-generating resource. For the same reason, we may issue longer duration licenses for projects that include substantial or costly environmental mitigation and enhancement measures. Licenses of longer duration in these instances encourage license applicants (1) to be better environmental stewards, and (2) to propose more balanced and comprehensive development of the nation's river basins.

WPP does not propose new hydropower development at the project. In light of the relatively modest environmental mitigation and enhancement costs involved, the new license for the Lake Lynn Project will be for a term of 30 years, effective

the first day of the month in which this license is issued.

SUMMARY OF FINDINGS

The EA issued for this project includes background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment. Issuance of this license is not a major federal action significantly affecting the quality of the human environment.

The design of this project is consistent with engineering safety standards. The project will be safe if operated and maintained in accordance with the requirements of this license. Analysis of related issues is provided in the S&DA prepared for the Lake Lynn Project and available in the Commission's public file for this project.

I conclude that the Lake Lynn Project does not conflict with any planned or authorized development, and it is best adapted to the comprehensive development of the Cheat River for beneficial public uses.

THE DIRECTOR ORDERS

(A) This license is issued to the West Penn Power Corporation (Licensee) for a period of 30 years, effective the first day of the month in which it is issued. This license is subject to the terms and conditions of the FPA, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) The following section of Exhibit A filed December 20, 1991:

Section 3.0, pages 2 through 3, entitled "Powerhouse and Turbine-Generating Equipment;" and Section 7.0, page 3, entitled "Transmission Lines.

(2) All lands, to the extent of the Licensee's interests in those lands, shown by the following exhibits, which were included in the application for new license, filed on December 20, 1991.

<u>Exhibit No.</u>	<u>FERC Drawing No. 2459-</u>	<u>Showing</u>
F-1	37	Plan and elevation - dam & powerhouse
F-2	38	Sections - powerhouse
F-3	39	Plan and sections of bridge and east bulkhead
F-4	40	Section - spillway
G-1	41	Project area map
G-2	42	Project area map
G-3	43	Project area map

(3) Project works, consisting of (a) a 125-foot-high by 1,000-foot-long concrete gravity-type dam with a 624-foot-long spillway controlled by 26 Taintor gates, each 17 feet high by 21 feet long; (b) a reservoir with a surface area of 1,700 acres and containing about 72,000 acre-feet of water at full pool elevation of 870 feet National Geodetic Vertical Datum (NGVD); (c) a log boom and trash racks at the intake facility; (d) eight 12-foot by 18-foot gated penstocks of reinforced concrete; (e) a 72-foot by 165-foot by 68-foot-high brick powerhouse containing four identical generating units with a total rated capacity of 51.2 MW; (f) dual 800-foot-long, 138-kV transmission lines; and (g) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of exhibits A, F, and G, recommended for approval.

(4) All of the structures, fixtures, equipment or facilities used to operate or maintain the project, all portable property that may be employed in connection with the project, and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The Exhibits A, F, and G described above are approved and made part of the license.

(D) This license is subject to the articles set forth in Form L-10 (October 1975), entitled "Terms and Conditions of License for Constructed Major Project Affecting the Interests of Interstate or Foreign Commerce", and the following additional articles:

Article 201. The Licensee shall pay the United States an annual charge, effective the first day of the month in which this license is issued, for the purpose of reimbursing the United States for the cost of administration of Part I of the FPA, as determined by the Commission. The authorized installed capacity for that purpose is 68,270 horsepower.

Article 202. Pursuant to Section 10(d) of the Act, a

specified reasonable rate of return upon the net investment in the project shall be used for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. The Licensee shall set aside in a project amortization reserve account at the end of each fiscal year one half of the project surplus earnings, if any, in excess of the specified rate of return per annum on the net investment.

To the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year, the Licensee shall deduct the amount of that deficiency from the amount of any surplus earnings subsequently accumulated, until absorbed. The Licensee shall set aside one-half of the remaining surplus earnings, if any, cumulatively computed, in the project amortization reserve account. The Licensee shall maintain the amounts established in the project amortization reserve account until further order of the Commission.

The specified reasonable rate of return used in computing amortization reserves shall be calculated annually based on current capital ratios developed from an average of 13 monthly balances of amounts properly includible in the Licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rate for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10 year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 401. The Licensee shall, within 6 months of license issuance, file with the Commission an erosion control plan that specifically addresses construction of the proposed West Penn Beach Recreation Area. The Licensee shall also file similar plans at least 90 days before the start of any other scheduled land-disturbing or land-clearing activities. The erosion control plans shall include measures to control dust and erosion, to stabilize slopes, and to minimize the quantity of sediment and other potential air or water pollutants likely to result from site access, project construction, spoil-disposal, and project operation.

The erosion control plan(s), at a minimum, shall include:

- (1) descriptions, functional design drawings, and topographic map locations of control measures;
- (2) an implementation schedule; and
- (3) provisions for the Licensee's periodic review

and revision of the plan.

The Licensee shall prepare the plan after consultation with the Department of Interior (DOI), the West Virginia Division of Natural Resources (WVDNR), the West Virginia Division of Environmental Protection (WVDEP), and the Pennsylvania Fish and Boat Commission (PFBC). The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on geological, soil, and groundwater conditions at the site.

The Commission may require changes to the plan. No land-disturbing or land-clearing activities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 402. The Licensee shall, within one year of license issuance, complete an initial survey of shoreline erosion along the entire reservoir shoreline. The Licensee shall also conduct: (1) annual follow-up shoreline erosion surveys of the West Penn Beach shoreline area extending from the dam to the Cheat Haven peninsula, and (2) triennial follow-up shoreline erosion surveys (i.e., every 3 years) of the entire reservoir shoreline. The Licensee shall file shoreline erosion survey reports with the Commission describing survey findings and any planned shore protection measures or measures implemented since the last report.

The Licensee shall be fully responsible for funding and implementing appropriate shore protection measures along the West Penn Beach shoreline area extending from the dam to the Cheat Haven peninsula, and for other shoreline areas as required by the Commission. The Licensee shall provide the results of its erosion surveys to WVDNR, other agencies, and property owners upon request.

The Commission may change the schedule for shoreline erosion surveys and reports. The Commission may require changes to the reports. No land-disturbing or land-clearing activities shall begin until the Licensee is notified by the Commission that the reports are approved. Upon Commission approval, the Licensee shall implement the measures stipulated in the reports including any changes required by the Commission.

Article 403. The Licensee shall maintain the project reservoir at a surface elevation between 868 feet National Geodetic Vertical Datum (NGVD) and 870 feet NGVD from May 1 to October 31, between 857 feet NGVD and 870 feet NGVD from November 1 to March 31, and between 863 feet NGVD and 870 feet

NGVD from April 1 to April 30. The minimum and maximum surface elevations may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods for project maintenance purposes. If the reservoir surface elevations are so modified, the Licensee shall notify the Commission and the West Virginia Division of Natural Resources as soon as possible, but no later than 10 days after each such incident.

To ensure compliance with reservoir surface elevation requirements, the Licensee shall install a level monitor in the project reservoir that records reservoir surface elevation hourly. The Licensee shall provide this data to the Department of Interior (DOI), the West Virginia Division of Natural Resources (WVDNR), the West Virginia Division of Environmental Protection (WVDEP), the Pennsylvania Fish and Boat Commission (PFBC), and the Commission within 30 days of any request. The Licensee shall submit a report annually to the DOI, WVDNR, WVDEP, PFBC, and the Commission summarizing the reservoir surface elevation data.

Article 404. The Licensee shall release from the Lake Lynn Hydroelectric Project into the Cheat River a minimum flow of 212 cubic feet per second (cfs), or inflow to the project reservoir, whichever is less--with an absolute minimum release flow of 100 cfs regardless of reservoir inflow, evaporation or other withdrawals. The Licensee shall maintain the 212 cfs minimum release whenever the reservoir water level (measured hourly per Article 403) is stable or increasing. When the reservoir water level is decreasing, the Licensee may reduce the minimum release flow by increments of not more than 25 cfs per hour in order to achieve a stable reservoir water level.

The minimum release flow from the dam shall be measured at the U.S. Geological Survey (USGS) gauge to be installed in the area immediately down-stream of the dam (see Article 407). The reservoir water level shall be measured at the level monitor to be installed in accordance with Article 403.

The minimum release flow may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods upon agreement between the Licensee and the West Virginia Division of Environmental Protection (WVDEP). If the flow is so modified, the Licensee shall notify the Commission and the WVDEP as soon as possible, but no later than 10 days after each such incident.

Article 405. Within 1 year of license issuance, the Licensee shall file with the Commission, for approval, a plan to continuously monitor dissolved oxygen (DO) levels, temperature, pH, and conductivity of the Cheat River in the project reservoir and down-stream of the project.

The water quality monitoring plan shall describe the installation and maintenance of three water quality monitoring stations, to be located: (1) on the reservoir, (2) in the tailrace area up-stream of Grassy Run, and (3) down-stream of Grassy Run and other principal tributaries known to contain acid mine drainage.

The purpose of this monitoring plan is to evaluate water quality trends and determine compliance with state water quality standards for dissolved oxygen, temperature, and pH in the reservoir and tailrace area down-stream of the dam.

The monitoring plan shall include a schedule for:

- (1) implementation of the program;
- (2) consultation with the Department of Interior (DOI), the West Virginia Division of Natural Resources (WVDNR), the West Virginia Division of Environmental Protection (WVDEP), and the Pennsylvania Fish and Boat Commission (PFBC) concerning the results of the monitoring; and
- (3) filing the results, agency comments, and Licensee's response to agency comments with the Commission.

The Licensee shall, at a minimum, summarize the water quality data and provide flow release data in an annual report to the Commission and the DOI, WVDNR, WVDEP, and PFBC. The Licensee shall also arrange to meet once every 3 years with the resource agencies (coordinated with triennial biological and recreational plan revisions) to review the effect of operations on water quality and fisheries.

The Licensee shall prepare the plan after consultation with the DOI, WVDNR, WVDEP, and PFBC.

The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the DOI, WVDNR, WVDEP, and PFBC to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 406. If the water quality monitoring required under Article 405 shows any dissolved oxygen levels of less than 5.0 mg/L in the project tailrace area, the Licensee shall notify the Commission and the following resource agencies as soon as possible but no later than 10 days after each such incident: the Department of Interior (DOI); the West Virginia Division of Natural Resources (WVDNR); the West Virginia Division of Environmental Protection (WVDEP); and the Pennsylvania Fish and Boat Commission (PFBC). The Licensee shall then cooperate with the Commission and the agencies to evaluate the low DO reading(s).

Following the notification, if then requested by the WVDEP, and subject to Commission review and approval, the Licensee shall within 6 months of the request, file with the Commission a plan to maintain a tailrace dissolved oxygen level of 5.0 mg/L or greater. The compliance plan shall consider possible reason(s) for the low dissolved oxygen reading(s), and evaluate such provisions as shutting down the hydropower operations, releasing spill flows, or artificial aeration of turbine and spillway flows.

The Licensee shall prepare the plan after consultation with the DOI, WVDNR, WVDEP, and the PFBC. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on site-specific conditions.

The Commission may require changes to the compliance plan, if needed. No land-disturbing or land-clearing activities shall begin until the Licensee is notified by the Commission that the plan complies with the requirements of this article.

Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 407. The Licensee shall, within 1 year of license issuance, fund the installation of one (1) United States Geological Survey (USGS) flow gauging station on the Cheat River down-stream of the dam but up-stream of the river's confluence with Grassy Run. The Licensee shall consult with USGS and the Department of Interior (DOI), the West Virginia Division of Natural Resources (WVDNR), the West Virginia Division of Environmental Protection (WVDEP), and the Pennsylvania Fish and Boat Commission (PFBC) about appropriate location. The gauging station shall be equipped with telemetry to allow the Licensee to adjust minimum reservoir releases daily in low flow periods.

Article 408. The Licensee shall, within 6 months of license issuance, consult with the Albert Gallatin Municipal Authority

(AGMA), the Cheat Neck Water Company (CNWC), and the Lakeview Resort on notification requirements during extreme reservoir water level changes. The Licensee shall, within 2 years of license issuance, prepare, execute, and file with the Commission formal agreements of notification with all companies that request notification.

Article 409. If on the basis of its turbidity data the Albert Gallatin Municipal Authority (AGMA) contends that a relationship exists between high turbidity at its new intake and project operations, the Licensee shall consult with and cooperate with AGMA regarding the nature of that relationship. If the monitoring data demonstrate that turbidity problems are caused by project operations, the Licensee shall cooperate with AGMA in identifying potential alternatives to reduce turbidity in the intake water. Alternatives to be considered shall include relocating or shielding the AGMA intake and/or notifying AGMA of project startup and operations. (Notification may allow AGMA to temporarily cease withdrawals during high turbidity conditions.) In the event that the water intake is relocated or otherwise physically modified, the Licensee shall cooperate reasonably with AGMA during any construction.

Article 410. The Licensee shall, within 6 months of license issuance, prepare, execute, and file with the Commission a formal and mutually acceptable agreement with the U.S. Army Corps of Engineers (COE) regarding notification of operating plans. The agreement must include notification procedures and flow release schedules to adequately address the COE's concern about sudden water level changes down-stream in the Monongahela River at the Maxwell Lock and Dam facility.

Article 411. Within 1 year of license issuance, the Licensee shall file with the Commission, for approval, a biological monitoring plan for the Lake Lynn project waters, including the main reservoir, reservoir embayments, tailrace area, and the Cheat River down-stream of the dam extending to the backwater segment of Monongahela River. This plan shall be prepared in consultation with the Department of Interior (DOI), the West Virginia Division of Natural Resources (WVDNR), and the Pennsylvania Fish and Boat Commission (PFBC). The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The intent of the plan will be to monitor aquatic resources, including fish and benthic organisms. The biological monitoring plan shall also consider, in general, the status of upland and wetland habitat areas and the possible effects resulting from implementing minimum flows and target reservoir levels.

The biological monitoring plan shall be updated every three years. The Licensee shall also arrange to meet at least every three years with the DOI, WVDNR, and PFBC (coordinated with triennial water quality meetings and recreational plan revision) to review the effect of the project on biological resources.

Article 412. Within 2 years of license issuance, the Licensee shall file with the Commission, for approval, a fishery enhancement plan. The plan shall include a schedule for: (1) implementation of the plan; (2) consultation with the Department of Interior (DOI), the West Virginia Division of Natural Resources (WVDNR), and the Pennsylvania Fish and Boat Commission (PFBC); and (3) filing the results, agency comments, and Licensee's response to agency comments with the Commission.

The enhancement plan shall include plans to submerge brush piles, cribbing, weighted half-logs, and/or other fish attractant devices on hard substrate to provide more usable habitat and enhance fisheries resources in the reservoir. The types and locations should be developed in consultation with the DOI, WVDNR, and PFBC. Proposed locations for the devices shall include the Rubles Run and Morgan Run embayments, located about one mile up-stream of the dam. The exact placement of such devices shall be based on the objectives of providing additional cover, food resources, and spawning substrate and to offset loss of habitat from reservoir drawdowns, particularly the 13-foot winter drawdown.

The fishery enhancement plan shall also consider the potential use of fish attractant devices such as inverted V-deflectors or wing deflectors to provide additional refuge, flow protection, and benthic habitat in the upper segment of the Cheat River at least 200 yards down-stream of the dam.

The Licensee shall prepare the plan after consultation with the Department of Interior (DOI), the West Virginia Division of Natural Resources (WVDNR), and the Pennsylvania Fish and Boat Commission (PFBC). The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the three fisheries agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 413. The Licensee shall, within 6 months of license issuance, file a plan to minimize any adverse aesthetic impacts associated with the West Penn Beach site development. The plan shall be filed as a component of the revised recreation plan required by Article 415 and must include, at a minimum, specific proposals to:

- (1) Minimize destruction of the area's natural vegetation
- (2) Blend the recreational development into the existing landscape character
- (3) Revegetate, stabilize, and landscape new construction areas and slopes damaged by erosion (see also Article 401)
- (4) Light the recreation area at night so as to provide reasonable safety and convenience—but also to minimize adverse impacts from the lighting to adjacent property owners

The Licensee shall prepare the plan after consultation with the Department of Interior (DOI) and the West Virginia Division of Natural Resources (WVDNR). The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the DOI and WVDNR, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission may require changes to the plan. No land-disturbing or land-clearing activities shall begin until the Licensee is notified by the Commission that the plan is approved.

Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 414. The Licensee shall take the following actions for the protection of cultural resources before engaging in any ground disturbing activities, or if cultural properties are found during operations or construction:

- (1) Consult with the WV State Historic Preservation Office (SHPO).
- (2) Based on consultations with the WV SHPO, prepare a plan describing the appropriate course of action and a schedule for carrying it out.

- (3) File the plan for Commission approval.
- (4) Take the steps necessary to protect the properties until notified by the Commission that all these requirements have been satisfied.

Article 415. The Licensee shall, within 6 months of license issuance, revise and refile the existing recreation and land management plan.

The Licensee shall prepare the plan after consultation with the Department of Interior (DOI), the West Virginia Division of Natural Resources (WVDNR), the Pennsylvania Fish and Boat Commission (PFBC), Monongalia County, law enforcement officials, and agencies having land management or planning/zoning authority in the area. The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the revised recreation and land management plan, which shall reflect the following recreation enhancements:

(1) West Penn Beach Recreation Area. This shall be a multi-purpose recreational facility encompassing about 46 acres on the West Penn Beach peninsula between Morgan Run and Rubles Run, as illustrated on Attachment T, filed by the Licensee April 26, 1993. The proposal shall accommodate about 400 peak-period visitors and include the following facilities:

- a. A main parking lot for about 50 vehicles, an overflow lot for 30 more vehicles, and a 5-space parking lot for the disabled with a drop-off area near the tip of the peninsula.
- b. A picnic area loop, to be located farther inland beyond the overflow parking lot. The hillside loop will include 30 picnic sites, each with room for 2 or 3 vehicles for a total of 60 to 90 additional parking spaces. Each picnic site shall include a table and fire grill.
- c. Three modern rest room buildings, a children's play area, 5 to 10 picnic tables, and 4 to 8 benches.

- d. Two carry-in boat launch docks to be located (1) at the tip of the peninsula, and (2) along a nearby area inside Rubles Run.

(2) Hiking and Biking Trail. The hiking and biking trail shall be barrier-free and about 4 miles long and shall connect with areas north and south the West Penn Beach peninsula. The trail shall also be accessible from the peninsula in accordance with requirements of the Americans with Disabilities Act (ADA). The trail shall follow the former grade of the Baltimore and Ohio Railroad along the reservoir shore and terminate down-stream about 600 feet from the dam, and up-stream at the Cheat Haven Peninsula. The trail shall be posted for use by non-motorized vehicles only. A stairway shall be provided at the down-stream end of the trail (near the dam) that will provide access between the trail and a public parking area for at least 15 cars to be located above the grade of the trail near the project substation.

Pedestrian bridges shall connect main shore areas to segments of trail built along the former railroad grade causeways while also allowing boat access into the embayments. Improvements to the causeways shall include 5 to 10 picnic tables, 6 to 12 park benches, and about 500 feet of fishing jetties. The causeways shall be adequately lit for nighttime use.

(3) Wildlife Habitat/Nature Viewing Areas. Four wildlife habitat/nature viewing areas shall be provided and maintained on Licensee-owned land as follows, with locations corresponding to those indicated in the land management plan filed with the license application:

- a. The area known as "Cheat Haven" shall be managed as a day use wildlife habitat/nature viewing area. Cheat Haven shall be accessible either from the hiking and biking trail or by boat.
- b. "Area 12" shall be generally preserved as a natural area. Area 12 shall be accessible by boat.
- c. "Area 18" shall include 20 day-use dock slips, a rest room building, and 4 to 10 picnic sites in the area adjacent to the proposed hiking and biking trail. Each picnic site shall include a table and fire grille. The remainder of Area 18 shall be left undeveloped, with the exception of several primitive camp sites. The revised recreation plans shall describe the number of primitive campsites to be developed, how camper information will be provided, and measures to prevent overuse, security problems, and conflicts between camping and other recreation uses. The Licensee shall also provide fire rings at each primitive campsite and

provide convenient access to firewood and refuse/recycling receptacles.

- d. "Area 26" shall be designated as a wildlife habitat/nature viewing and hunting area. The Licensee shall mark and/or develop a primitive trail system, provide refuse/recycling receptacles and collection, and ensure reasonable parking by monitoring use and expanding parking area capacity if needed.

(4) Public Boat Launch. The Licensee shall designate and manage a public boat launch site at the Sunset Beach harbor. The Licensee shall provide adequate parking at the Sunset Beach site to accommodate average demand for all users during an off-peak summer weekend (i.e., parking may reach or exceed capacity on holiday weekends).

(5) Tailrace Fishing Recreation Area. The Licensee shall provide a shore-fishing recreation area in the project tailrace area. This development shall, at minimum, include the following features:

- (1) a 100-foot fishing platform to be located along the east side of the tailrace accessible according to the standards of the Americans with Disabilities Act (ADA);
- (2) a public parking area for 15 vehicles;
- (3) a pedestrian ramp, containing rest areas with benches, connecting the parking area to the fishing platform;
- (4) portable toilets or a rest room; and
- (5) a system of visual and audible alarms to furnish sufficient notification of increased or decreased flow releases from the project.

(6) Other Recreational Enhancements. The Licensee shall:

- a. Designate as enforceable no-wake boating zones the following areas: the Rubles Run and Morgan Run embayments and the entire area of the main reservoir extending from a point about 2,000 feet up-stream from the tip of the West Penn Beach peninsula to the dam about 1 mile down-stream of the peninsula. The Licensee shall develop a plan, in cooperation with state and local law enforcement, for posting and enforcing the no-wake zone. (The Licensee shall not be responsible for addressing law enforcement as it applies to boats under way on the reservoir.)
- b. Employ staff responsible for security on project lands

and for working with local law enforcement. The professional security staff shall be on duty (at minimum) during daylight hours on weekends and holidays beginning with the Memorial Day weekend and extending through Labor Day.

- c. Develop and maintain shore fishing access trails extending at least 1,000 feet along each side of the West Penn Beach Peninsula. These trails need not be ADA-compliant because reasonable access for the disabled will be provided elsewhere.
- d. Provide a fish cleaning station along one of the causeways convenient to the West Penn Beach Peninsula. The station shall be equipped with an independent waste disposal system to ensure that fish cleaning waste is physically removed from the area and properly disposed of. The Licensee shall include plans for building and operating this system.

Article 416. Within 2 years of license issuance, and after Commission approval of the revised recreation plan required by Article 415, the Licensee shall commence construction and provide for the operation and maintenance of (1) the West Penn Beach Recreation Area, (2) the hiking and biking trail, (3) the wildlife habitat/nature viewing areas, (4) the public boat launch facility at the Sunset Beach harbor, (5) the tailrace fishing recreation area, and (6) the other recreation enhancements described further in Article 415.

Article 417. The Licensee shall file a recreation plan update with the Commission every 3 years following issuance of the license. The plan update must be prepared in consultation with the Department of Interior (DOI), the West Virginia Division of Natural Resources (WVDNR), and the Pennsylvania Fish and Boat Commission (PFBC), Monongalia County, local communities, law enforcement, residents, local or regional interest groups, and any other agencies having land management or planning/zoning authority in the area.

The Licensee shall arrange to meet with the DOI, WVDNR, and PFBC every three years to evaluate recreational facilities in the project area. The Licensee shall, as part of the ongoing recreation planning process, monitor recreation use of the project area to determine whether existing recreation facilities are meeting recreation needs. Monitoring studies, at a minimum, shall include the collection of annual recreation use data.

The triennial recreation plan updates shall include:

- (1) annual recreation use figures;

- (2) a discussion of the adequacy of the Licensee's recreation facilities at the project site to meet recreation demand;
- (3) a description of the methodology used to collect all study data;
- (4) if there is a need for additional facilities, a recreation plan proposed by the Licensee to accommodate recreation needs in the project area;
- (5) documentation of agency consultation and agency comments on the report after it has been prepared and provided to the agencies;
- (6) consideration of the following project-specific issues:
 - a. safety and security;
 - b. navigational problems such as shallow water or heavy boat traffic;
 - c. swimming use, considering such issues as demand for swimming, commonly used sites, any problem areas, and the advantages and disadvantages of establishing permanent swimming sites;
 - d. user demand patterns for boat launching and other activities at Sunset Beach, Area 26, and other alternate boat launch site locations; if parking or capacity problems at Sunset Beach are not easily resolved, the Licensee shall evaluate development of alternate boat launch sites;
 - e. the viability of continuing the primitive camping and privileged permit lease lot programs (including modifications to address demand, user conflicts, or other issues); and
- (7) specific descriptions of how the agencies' comments are accommodated by the plan updates.

The Licensee shall include with the triennial recreation plan updates documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the DOI, WVDNR, and PFBC, and specific descriptions of how those agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a

recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the action items identified in the plan, including any changes required by the Commission.

Article 418. (a) In accordance with the provisions of this article, the Licensee shall have the authority to grant permission for certain types of use and occupancy of project lands and waters and to convey certain interests in project lands and waters for certain types of use and occupancy, without prior Commission approval. The Licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the Licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article. If a permitted use and occupancy violates any condition of this article or any other condition imposed by the Licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the Licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any non-complying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the Licensee may grant permission without prior Commission approval are:

- (1) landscape plantings;
- (2) non-commercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings;
- (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and
- (4) food plots and other wildlife enhancement.

To the extent feasible and desirable to protect and enhance

the project's scenic, recreational, and other environmental values, the Licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The Licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the Licensee shall:

- (1) inspect the site of the proposed construction;
- (2) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site; and
- (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline.

To implement this paragraph (b), the Licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the Licensee's costs of administering the permit program. The Commission reserves the right to require the Licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The Licensee may convey easements or rights-of-way across, or leases of, project lands for:

- (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained;
- (2) storm drains and water mains;
- (3) sewers that do not discharge into project waters;
- (4) minor access roads;
- (5) telephone, gas, and electric utility distribution lines;
- (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary;

- (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and
- (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir.

No later than January 31 of each year, the Licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed. If no conveyance was made during the prior calendar year, the Licensee shall so inform the Commission and the Regional Director in writing no later than January 31 of each year.

(d) The Licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for:

- (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained;
- (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained;
- (3) other pipelines that cross project lands or waters but do not discharge into project waters;
- (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained;
- (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina;
- (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and
- (7) other uses, if: (i) the amount of land conveyed for a particular use is five acres

or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d)(7) in any calendar year.

At least 60 days before conveying any interest in project lands under this paragraph (d), the Licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the Licensee to file an application for prior approval, the Licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:

- (1) Before conveying the interest, the Licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.
- (2) Before conveying the interest, the Licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.
- (3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to insure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee shall not unduly restrict public access to project waters.
- (4) The Commission reserves the right to require the

Licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the Licensee under this article shall not apply to any part of the public lands and reservations of the United States included within the project boundary.

Article 501. The Licensee, within 4 months of issuance of this license, shall file a Hydropower Compliance Management Program (HCMP) for Commission approval. The HCMP shall include the following elements for each license requirement:

(a) The identification of, and schedule for, each action necessary to complete the license requirement;

(b) A schedule for the start and completion of the consultation process with each resource agency required to be consulted for each action necessary to complete the license requirement; and

(c) The identification of specific individuals in each agency that need to be consulted on each action necessary to complete the license requirement.

Seven copies of all submissions under this article must be filed with the Secretary of the Commission. One copy of each submission must also be filed with any agency consulted under element (b) above.

The Commission reserves the right to require the Licensee to make modifications to the HCMP and to take other measures necessary to ensure compliance by the Licensee with the terms and

conditions of the license.

Article 502. If the Licensee's project was directly benefitted by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this new license.

(E) The Licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on these entities must accompany the filing with the Commission.

(F) This order is issued under authority delegated to the Director and constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 C.F.R. section 385.713. The filing of a request to rehearing does not operate as a stay of the effective date of this order or of any other date specified in this order, except as specifically ordered by the Commission. The Licensee's failure to file a request for rehearing shall constitute acceptance of this order.



Fred E. Springer
Director, Office of Hydropower Licensing

Form L-10
(October, 1975)

FEDERAL ENERGY REGULATORY COMMISSION

TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED
MAJOR PROJECT AFFECTING THE INTERESTS OF
INTERSTATE OR FOREIGN COMMERCE

Article 1. The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

Article 2. No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

Article 3. The project area and project works shall be in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

Article 4. The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands of the United States, shall be subject to the inspection and

supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

Article 6. In the event the project is taken over by the United States upon the termination of the license as provided in

Section 14 of the Federal Power Act, or is transferred to a new licensee or to a non-power licensee under the provisions of Section 15 of said Act, the Licensee, its successors and assigns shall be responsible for, and shall make good any defect of title to, or of right of occupancy and use in, any of such project property that is necessary or appropriate or valuable and serviceable in the maintenance and operation of the project, and shall pay and discharge, or shall assume responsibility for payment and discharge of, all liens or encumbrances upon the project or project property created by the Licensee or created or incurred after the issuance of the license: Provided, That the provisions of this article are not intended to require the Licensee, for the purpose of transferring the project to the United States or to a new licensee, to acquire any different title to, or right of occupancy and use in, any of such project property than was necessary to acquire for its own purposes as the Licensee.

Article 7. The actual legitimate original cost of the project, and of any addition thereto or betterment thereof, shall be determined by the Commission in accordance with the Federal Power Act and the Commission's Rules and Regulations thereunder.

Article 8. The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

Article 9. The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

Article 10. The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

Article 11. Whenever the Licensee is directly benefited by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement, the Licensee shall reimburse the owner of the headwater improvement for such part of the annual charges for interest, maintenance, and depreciation thereof as the Commission shall determine to be equitable, and shall pay to the United States the cost of making such determination as fixed by the Commission. For benefits provided by a storage reservoir or other headwater improvement of the United States, the Licensee shall pay to the Commission the amounts for which it is billed from time to time for such headwater benefits and for the cost of making the determinations pursuant to the then current regulations of the Commission under the Federal Power Act.

Article 12. The operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Commission may prescribe for the purposes hereinbefore mentioned.

Article 13. On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project

properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

Article 14. In the construction or maintenance of the project works, the Licensee shall place and maintain suitable structures and devices to reduce to a reasonable degree the liability of contact between its transmission lines and telegraph, telephone and other signal wires or power transmission lines constructed prior to its transmission lines and not owned by the Licensee, and shall also place and maintain suitable structures and devices to reduce to a reasonable degree the liability of any structures or wires falling or obstructing traffic or endangering life. None of the provisions of this article are intended to relieve the Licensee from any responsibility or requirement which may be imposed by any other lawful authority for avoiding or eliminating inductive interference.

Article 15. The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

Article 16. Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to

construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 17. The Licensee shall construct, maintain, and operate, or shall arrange for the construction, maintenance, and operation of such reasonable recreational facilities, including modifications thereto, such as access roads, wharves, launching ramps, beaches, picnic and camping areas, sanitary facilities, and utilities, giving consideration to the needs of the physically handicapped, and shall comply with such reasonable modifications of the project, as may be prescribed hereafter by the Commission during the term of this license upon its own motion or upon the recommendation of the Secretary of the Interior or other interested Federal or State agencies, after notice and opportunity for hearing.

Article 18. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 19. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 20. The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due

diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 21. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit for

use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 22. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 23. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

**FINAL
ENVIRONMENTAL ASSESSMENT
FOR HYDROPOWER LICENSE**

Lake Lynn Hydro Project

FERC Project No. 2459—West Virginia

**Federal Energy Regulatory Commission
Office of Hydropower Licensing
Division of Project Review
825 North Capitol Street, NE
Washington, D.C. 20426**

DEC 27 1994

Contents

	Page
SUMMARY	iv
INTRODUCTION	1
I. APPLICATION	1
II. PURPOSE AND NEED FOR ACTION	1
A. Purpose	1
B. Need for Power	2
III. PROPOSED ACTION AND ALTERNATIVES	2
A. Applicant's Proposal	2
1. Project Description	2
2. Proposed Environmental Measures	4
B. Modifications to Proposed Project Operations or Facilities	5
C. No-Action Alternative	6
D. Alternatives Considered but Eliminated from Detailed Study	6
IV. CONSULTATION AND COMMENTS	8
A. Agency Consultation	8
B. Interventions	8
C. Water Quality Certification	9
D. Scoping	13
E. Comments on the Draft Environmental Assessment	13
V. ENVIRONMENTAL ANALYSIS	14
A. General Description of the Locale	14
1. Cheat River Basin	14
2. Proposed and Existing Hydropower Development	15
B. Scope of Cumulative Impact Analysis	15
C. Proposed Action	15
1. Geological Resources	15
2. Water Resources	17
3. Fisheries Resources	33
4. Terrestrial Resources	43
5. Federally Listed Threatened and Endangered Species	44
6. Aesthetic Resources	45
7. Cultural Resources	46
8. Recreation and Other Land and Water Uses	47
9. Socioeconomics	69
D. No-Action Alternative	70

VI. COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE 70
 A. Recommended Alternative 71
 B. Developmental and Nondevelopmental Uses of the Waterway 73
 C. Pollution Abatement 79
 D. Consistency with Comprehensive Plans 80
 VII. CONSISTENCY WITH FISH AND WILDLIFE RECOMMENDATIONS 82
 VIII. FINDING OF NO SIGNIFICANT IMPACT 96
 IX. LITERATURE CITED 96
 X. LIST OF PREPARERS 99
 FERC Staff 99
 CH2M HILL Staff 99

Appendix A. Cheat River Flow Duration Data
 Appendix B. Staff Responses to Letters of Comment on the DEA

Tables

Number		Page
1	Projected electric power supply and demand	3
2	Consumptive uses at Lake Lynn water	18
3	Water surface area and storage volume data for the Lake Lynn reservoir	21
4	WPP proposed reservoir releases	23
5	Lake Lynn water balance	25
6	Down-ramping rates developed and evaluated by Commission staff	40
7	Primary purpose of trip by recreational groups interviewed at Cheat Lake and the Cheat River below Lake Lynn Hydro Station, 1990	52
8	Estimated total recreation use breakdown in Lake Lynn project area, 1990	52
9	Primary watercraft used for recreation at Cheat Lake, 1990	53
10	Comparison of potential recreation needs and applicant's proposed plan	55
11	Lake Lynn Hydro Project summary of economic analysis	76
12	Lost generation at Lake Lynn as a function of minimum flow based on data from 1987 through 1991	77
13	Dependable capacity for each economic case	79
14	Pollutants that would be produced by a coal-fired power plant providing energy generation equivalent to annual energy losses from environmental measures recommended for the Lake Lynn project	81
15	Analysis of fish and wildlife agency recommendations	83
16	Analysis of other agency and individual comments	94

Figures

Number		Follows Page
1	Lake Lynn Hydroelectric Project—Cheat River Basin . .	1
2	Lake Lynn Reservoir (Cheat Lake)	2
3	Lake Lynn Hydroelectric Project	3
4	Modeled 1992 daily pH in Cheat River 2,000 feet down-stream of Lake Lynn project	24
5	Water depth below Lake Lynn as a function of Lake Lynn operations	40
6	Minimum flow vs. annual generation	78
7	Project economics	78

SUMMARY

West Penn Power Company (WPP) proposes to continue operation of the Lake Lynn Hydroelectric project on the Cheat River in the north-central portion of West Virginia near the border of the Commonwealth of Pennsylvania (see Figure 1). The project has an installed capacity of 51.2 megawatts (MW), and produces an average of about 130 gigawatt-hours (GWh) annually.

In addition to WPP's proposal, the Federal Energy Regulatory Commission considered two alternatives: (1) WPP's proposal with additional environmental recommendations, and (2) no action. No action would consist of continued operation of the project under the terms and conditions of the existing license with no change to the environmental setting or project operation.

We recommend that WPP implement the project as proposed, incorporating the following additional measures:

- Provide a minimum reservoir release flow of 212 cfs when reservoir inflow is greater than or equal to 212 cfs. At other times the minimum release flow should equal inflow to the reservoir but should never be less than 100 cfs. Minimum release flows are proposed to apply regardless of reservoir evaporation and other withdrawals.
- Install and maintain three water quality monitoring stations—one on the reservoir, one in the tailwater area below the dam, and one at a site down-stream of the acid tributaries. The stations should continuously monitor pH, dissolved oxygen, conductivity, and temperature.
- Conduct a routine biological monitoring program, including reports every 3 years to the Commission and the resource agencies. The monitoring should include, at a minimum, fish and benthic organism sampling above and below the dam (including the tailrace area) and in the embayments at the West Penn Beach peninsula.
- If so ordered by the Commission, develop a plan in consultation with the U.S. Department of Interior (DOI), West Virginia Department of Natural Resources (WVDNR), and Pennsylvania Fish and Boat Commission (PFBC) concerning the need for fish entrainment and mortality evaluations or an enhancement program.
- Develop plans to evaluate and construct fish attractive/protective structures within an area 200 yards or more down-stream of the dam. This feature

would provide refuge for fish from high flows and enhance benthic habitat.

- Develop recreation enhancements similar to those originally proposed by WPP with only minor variations. (West Penn Beach Recreation Area, tailrace fishing area, trails, and a boat launch.)
- Provide consistent notification to AGMA of reservoir water level changes greater than 10 feet. If, after relicensing, AGMA contends that a relationship exists between high turbidity and project operations, we recommend that WPP consult with and cooperate with AGMA regarding the exact nature of that relationship. We also recommend that WPP cooperate with AGMA as appropriate in identifying potential alternatives to reduce turbidity in the intake water; however, WPP would not be required to modify its operations or to implement/fund any protective measures.
- Install one stream gage down-stream of the dam and a reservoir water level probe up-stream of the dam to ensure accurate monitoring of reservoir water level up-stream of the dam and minimum release flows below the dam.
- Continue to coordinate details of project operation with the U.S. Army Corps of Engineers (COE) by preparing a formal agreement. The agreement should address notification procedures regarding project startup or flow release schedules.

Under Section 10(a)(2) of the Federal Power Act (FPA), federal and state agencies filed 24 comprehensive plans that address various resources in West Virginia and Pennsylvania. Four of those plans are relevant to this project. The proposed project would not conflict with any of the plans.

Under Section 10(j) of the FPA, we made a preliminary determination that some of the recommendations of the federal and state fish and wildlife agencies are not consistent with the purposes and requirements of Part I of the Act. Section 10(j) of the Act requires the Commission to include license conditions, based on recommendations of federal and state fish and wildlife agencies, for the protection of, mitigation of adverse impacts to, and enhancement of fish and wildlife resources. We have addressed the concerns of the federal and state fish and wildlife agencies and made recommendations, some of which remain inconsistent with those of the agencies. All agency recommendations identified in Section VII of the Draft Environmental Assessment that were determined to be inconsistent with Section 10(j) were discussed at a meeting in an attempt to resolve differences (see Section VII--Consistency with Fish and Wildlife Recommendations).

Based on our independent environmental analysis, we conclude that issuance of a license for the Lake Lynn Project, with our additional environmental recommendations, is not a major federal action significantly affecting the quality of the human environment.

ENVIRONMENTAL ASSESSMENT

FEDERAL ENERGY REGULATORY COMMISSION OFFICE OF HYDROPOWER LICENSING DIVISION OF PROJECT REVIEW

Lake Lynn Hydroelectric Project
FERC Project No. 2459—West Virginia

INTRODUCTION

The Federal Energy Regulatory Commission issued the Lake Lynn project Draft Environmental Assessment (DEA) for comment on June 24, 1994. In response, we received eight comment letters. Those commentors are listed in Section IV.E—Comments on the Draft Environmental Assessment. Staff reviewed all timely-filed comment letters. The sections of the DEA that have been modified as a result of comments received are identified in the staff responses to the right of the letters of comment in Appendix B.

I. APPLICATION

On December 20, 1991, West Penn Power Company (WPP), filed an application for a new license for the existing Lake Lynn Hydroelectric Project, a major project that produces 51.2 megawatts (MW) of electricity. The project is located on the Cheat River, 8 miles northeast of Morgantown, West Virginia (Figure 1). It does not occupy any lands of the United States.

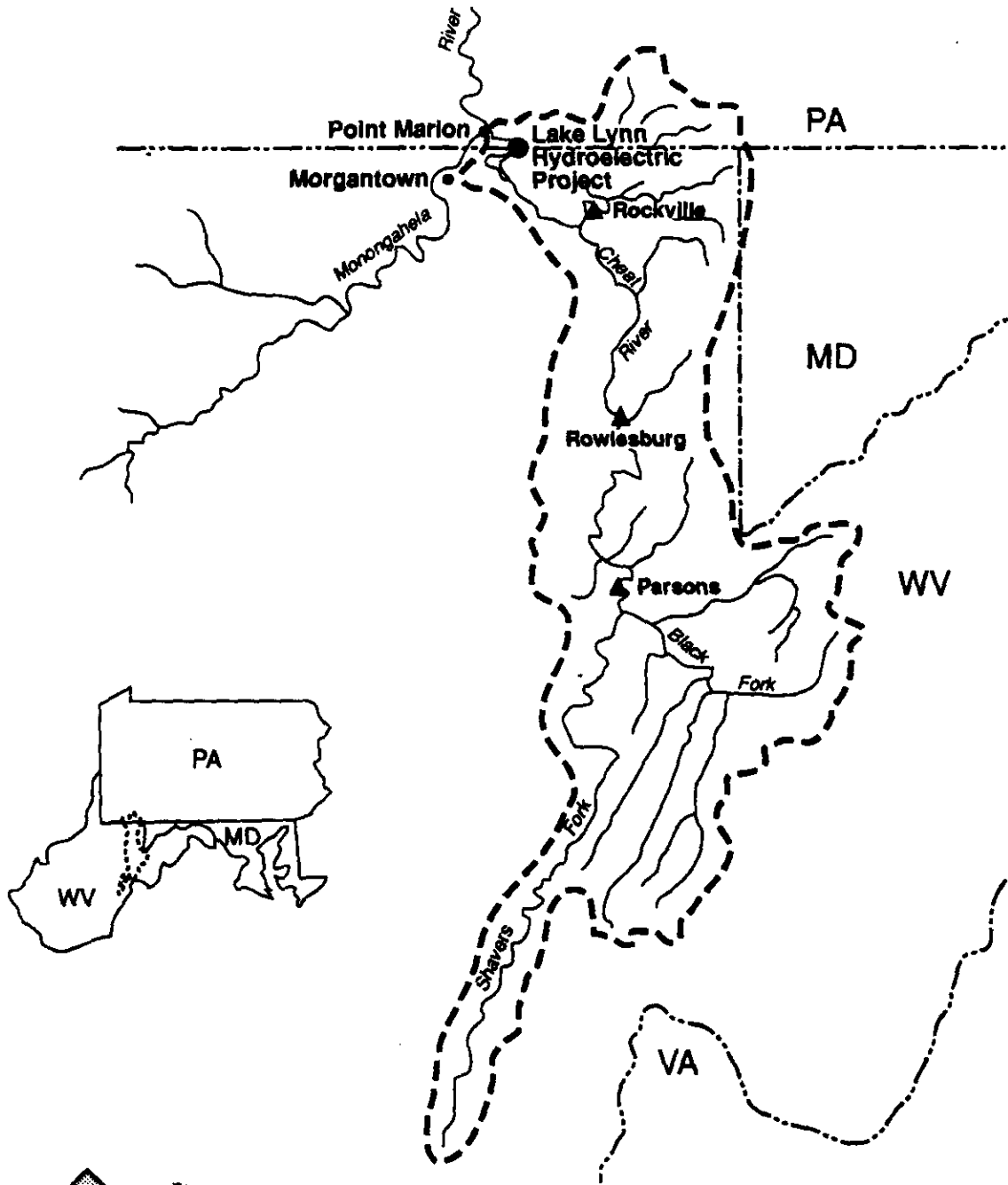
II. PURPOSE AND NEED FOR ACTION

A. Purpose

This environmental analysis assesses the impacts associated with construction and operation of the project, alternatives to the proposed project, and makes recommendations to the Commission on whether to issue a license, and if so, recommends terms and conditions to become a part of any license issued. The Federal Power Act provides the Commission with the exclusive authority to license nonfederal water power projects on navigable waterways and federal lands.

In deciding whether to issue any license, the Commission must determine that the project adopted will be best adapted to a comprehensive plan for improving or developing a waterway. In addition to the power and developmental purposes for which licenses are issued, the Commission must give equal consideration to the purpose of energy conservation, the protection, mitigation of damage to, and enhancement of, fish and wildlife (including related spawning grounds and habitat), the protection of

GLW70029_A0.02 Fig. 1 Cheat River 6-8-94 III



North

0 5 10 15



Scale in Miles

LEGEND

▲ USGS Monitoring Station

SOURCE: Allegheny Power Service Corp.

FIGURE 1
Lake Lynn Hydroelectric Project –
Cheat River Basin

SOURCE: Allegheny Power Service Corp.

recreational opportunities, and the preservation of other aspects of environmental quality.

B. Need for Power

The North American Electric Reliability Council (NERC) annually forecasts electric supply and demand for the region and nation. Each forecast covers a 10-year period. NERC published its latest forecast in *Electric Supply & Demand 1993-2002, Summary of Electric Utility & Demand Projections* (June 1993). NERC is divided into 9 regions encompassing the 48 contiguous states and Canada. Alaska constitutes the 10th region. The Lake Lynn project is within the East Central Area Reliability Coordination Agreement (ECAR) region. Table 1 summarizes the annual supply and demand projections for both ECAR and the 48 states over the next 10-year period.

Even with the Lake Lynn project operating, demand is projected to grow faster than generating capacity and capacity margins will decrease. The project provides average annual generation of 129,400 MWh to ECAR. The long-term contribution of the project, combined with the projected increase in load and decrease in capacity margin, confirm the need for the project's generating capacity.

The electricity generated by the project will benefit the region by providing some of the needed regional power. The continued economic operation of the Lake Lynn Hydroelectric Project will prevent potential increases in the use of fossil-fueled electrical generating plants. This will conserve nonrenewable energy sources and reduce the potential for increased air pollution (see Section VI).

WPP is a wholly owned subsidiary of Allegheny Power System, Inc. (APS). All power produced by the Lake Lynn Hydroelectric Project is dispatched as needed to serve more than 625,000 WPP customers and more than 1.25 million APS customers.

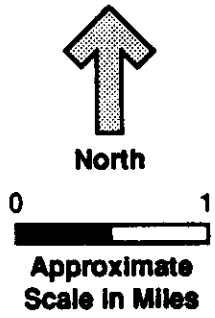
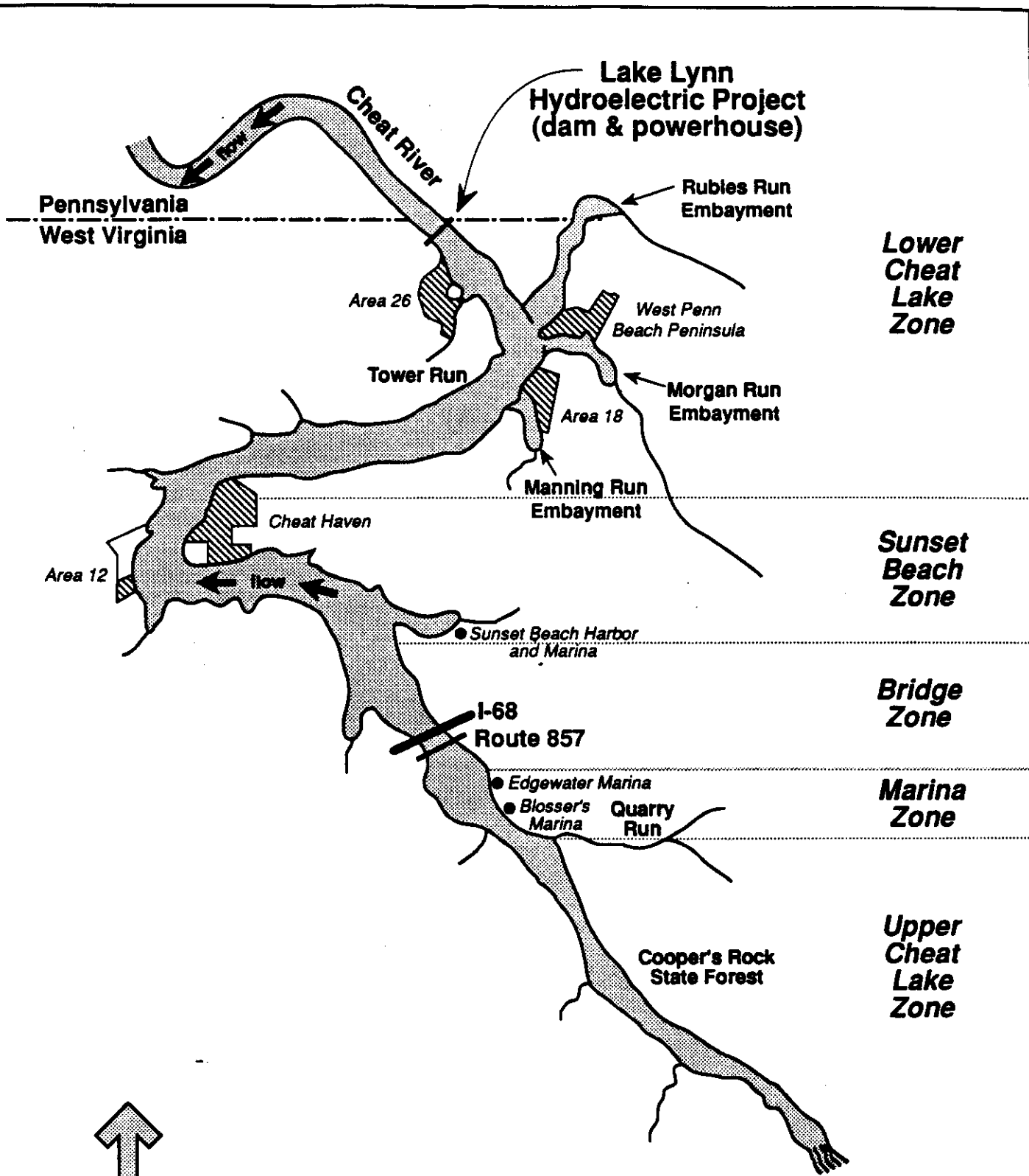
III. PROPOSED ACTION AND ALTERNATIVES

A. Applicant's Proposal

1. Project Description

The Lake Lynn Hydroelectric Project on the Cheat River was constructed between 1912 and 1926. Construction began in 1912, halted in July 1913, resumed 12 years later in 1925, and was completed in 1926. The reservoir, dam, and powerhouse are within Monongalia County, West Virginia, while most of the tailrace area is in Fayette County, Pennsylvania. The reservoir is about 13 miles long and is developed with residential and recreation-based uses (Figure 2).

GLW70029 AD 02 Fig. 2 Lake Lynn 6-8-94 III



LEGEND

- Existing Marina
- ▨ Proposed WPP Recreation Area

FIGURE 2
Lake Lynn Reservoir
(Cheat Lake)

SOURCE: Allegheny Power Service Corp. (modified by staff)

Table 1. Projected electric power supply and demand.

Year	Load (Thousand MWh)	Peak Demand (MW)	Planned Capacity (MW)	Capacity Margin (%)
ECAR Region				
1993	468,804	82,409	100,027	19.5
1994	478,768	84,151	101,122	18.9
1995	486,736	85,488	101,164	17.9
1996	495,107	86,764	101,895	17.4
1997	502,779	87,957	102,573	16.8
1998	511,017	89,116	103,916	16.8
1999	518,893	90,402	104,916	16.5
2000	526,057	91,636	106,672	16.7
2001	533,452	92,910	108,137	16.7
2002	540,936	94,291	109,882	16.6
AAGR %	1.6	1.5	1.0	
United States (48)				
1993	3,059,969	571,074	697,432	20.8
1994	3,124,750	581,765	707,942	20.6
1995	3,184,591	592,142	716,548	20.2
1996	3,239,741	602,074	726,565	20.0
1997	3,294,811	612,668	734,826	19.6
1998	3,354,889	623,062	743,437	19.3
1999	3,423,124	633,538	753,438	19.0
2000	3,479,197	644,796	762,774	18.7
2001	3,542,291	655,636	769,891	18.1
2002	3,603,399	667,260	778,783	17.6
AAGR %		1.7	1.2	
AAGR = Average Annual Growth Rate				

The Lake Lynn hydroelectric project (Figure 3) consists of (a) a 125-foot-high by 1,000-foot-long concrete gravity-type dam with a 624-foot-long spillway controlled by 26 Taintor gates, each 17 feet high by 21 feet long; (b) a reservoir with a surface area of 1,700 acres and containing about 72,000 acre-feet of water at full pool elevation of 870 feet National Geodetic Vertical Datum (NGVD); (c) a log boom and trash racks at the intake facility; (d) eight 12-foot by 18-foot gated penstocks of reinforced concrete; (e) a 72-foot by 165-foot by 68-foot-high brick powerhouse containing four identical generating units with a total rated capacity of 51.2 MW; (f) dual 800-foot-long, 138-kV transmission lines; and (g) appurtenant facilities.

GLW70029 AO 03 Figure 3 - June 94 6-8-94 III

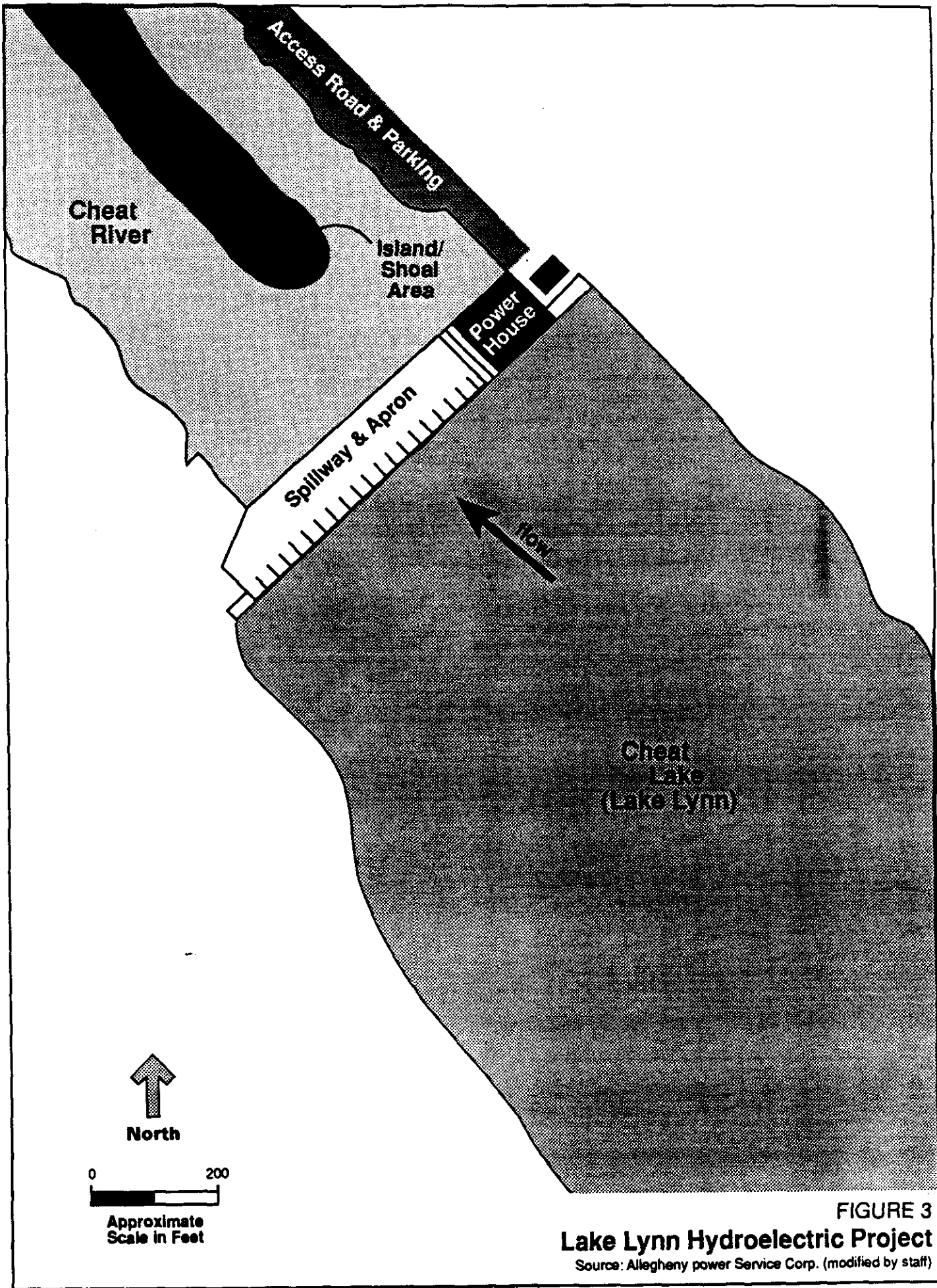


FIGURE 3
Lake Lynn Hydroelectric Project
Source: Allegheny power Service Corp. (modified by staff)

The Lake Lynn project is operated to optimize peak demand period generating. The plant is capable of responding to load changes more rapidly than other generating plants in the APS system. As APS's sole source of significant black-start capability, it is extremely valuable for restarting the system during a blackout. (A power plant with black-start capability may be started up without any electrical power available at the time of startup.) The plant also provides exceptional direct control load regulation capability and local voltage support. The ability to perform these functions gives the plant a high capacity value relative to other power plants in the system.

WPP owns the property surrounding the reservoir—about 450 to 500 acres. Much of the project boundary is coterminous with the reservoir, although there are some areas where land holdings extend beyond the project boundary. Lands outside the project boundary include the West Penn Beach peninsula, land along the shore up-stream and down-stream of that peninsula, a portion of the Cheat Haven peninsula, and land around the dam and powerhouse. WPP provides public access and lease agreements for the private use of its reservoir lands. Recreation opportunities include fishing, hunting, camping, and picnicking.

2. Proposed Environmental Measures

WPP proposes the following enhancements related to project operation:

- Provide a variable minimum flow release of 212 cubic feet per second (cfs), 100 cfs, or net reservoir inflow during nonoperating periods to enhance the quality of water, fish, and other aquatic life.
- Develop a 46-acre multiple-use barrier-free recreation facility and a 4-mile hiking/biking trail centered at the West Penn Beach peninsula, between the Rubles Run and Morgan Run embayments.
- Develop a barrier-free fishing area in the tailrace portion of the project.
- Install visual and audible alarms in the tailrace to notify recreationists of changes in operations (increased or decreased flow releases).
- Provide a barrier-free public boat launch and parking area on Cheat Lake at the Sunset Beach marina site.
- Designate four "wildlife habitat/nature viewing areas" on parcels owned by WPP.
- Submerge brush piles in the Rubles Run and Morgan Run embayments to enhance fish habitat during winter draw-downs.

We discuss these proposals in the individual resource sections.

B. Modifications to Proposed Project Operations or Facilities

The alternative to licensing the project as proposed is to license the project with modifications and other resource protection and enhancement measures. The following additional enhancement measures are proposed by various agencies and environmental groups:

- Continue project operation as a peaking power plant with a minimum release of 212 cfs at all times, regardless of reservoir inflow, from April 1 to October 31. [West Virginia Division of Natural Resources—WVDNR]
- Maintain a minimum release of 212 cfs from November 1 to March 31 if inflow is 212 cfs or more, with no accounting for evaporation or other reservoir withdrawals. [WVDNR]
- Provide a minimum release of 1,100 cfs when inflow equals or exceeds that amount, decreasing in 100-cfs increments in response to decreasing inflows to an ultimate minimum release of 212 cfs. [Pennsylvania Fish and Boat Commission—PFBC]
- Operate the project in an instantaneous run-of-river mode, [U.S. Department of Interior—DOI] or switch to a run-of-river operation following documentation of consistent reproduction and recruitment of fish in the Cheat River down-stream of the dam. [PFBC]
- Prepare a "drought contingency or water utilization plan" to establish priorities for water use to avoid future conflicts. [WVDNR]
- Maintain the reservoir pool at 868 to 870 feet NGVD from April 1 to October 31 and maintain it at 857 to 870 feet from November 1 to March 31. [WVDNR]
- Monitor the reservoir and tailwater pH, dissolved oxygen, and temperature. [DOI, WVDNR, PFBC]
- Address the potential for fish entrainment and mortality by completing detailed post-licensing studies. [DOI, WVDNR]
- Develop a plan to avoid, mitigate, or compensate the State of West Virginia for fish mortality impacts if and when turbine entrainment studies are completed and if negative impacts are documented. [WVDNR]

- Conduct biological monitoring studies to evaluate the effectiveness of the post-licensing minimum release flow and other environmental enhancements on aquatic organisms. [WVDNR]
- Implement various specific recreational improvements that do not warrant listing herein because, although they involve substantial investment, the estimated cost differences are negligible compared to the applicant's proposal. [WVDNR, PFBC, Cheat Lake Environmental and Recreation Alliance—CLEAR]
- Provide fish attraction structures in the tailwater near the fishing platform and other down-stream areas. These could consist of rock piles 15 to 30 feet from shore or stone deflectors extending out from shore. [PFBC]
- Provide consistent notification to the Albert Gallatin Municipal Authority (AGMA) of reservoir water level changes greater than 10 feet. Ensure adequate monitoring of up-stream reservoir inflow and all withdrawals. Address conditions causing turbidity up-stream of the dam at the water intake. [AGMA]
- Continue to coordinate details of project operation with the U.S. Army Corps of Engineers (COE), providing notification of planned flow releases. [COE]

We discuss each recommendation in the individual environmental resource section.

C. No-Action Alternative

Under the no-action alternative, the project would continue to operate under the terms and conditions of the existing license, and no new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative to establish baseline environmental conditions for comparison with other alternatives. We discuss the alternative of license denial and project decommissioning below in Section III.D.

D. Alternatives Considered but Eliminated from Detailed Study

We considered several other alternatives to the applicant's relicensing proposal but eliminated them from detailed study because they are not reasonable in the circumstances of this case. They are:

- Federal takeover and operation of the project
- Issuing a nonpower license
- Decommissioning the project
- Pondering and pulsing operation

We do not consider federal takeover pursuant to Section 14 of the FPA to be a reasonable alternative. Federal takeover and operation of the project would require Congressional approval. While that fact alone would not preclude further consideration of this alternative, there is no evidence to indicate that federal takeover should be recommended to Congress. No party has suggested federal takeover would be appropriate, and no federal agency has expressed an interest in operating the project.

Issuing a nonpower license would not provide long-term resolution of the issues presented. A nonpower license is a temporary license that the Commission will terminate whenever it determines another governmental agency will assume regulatory authority and supervision over the lands and facilities covered by the nonpower license. In this case, no agency has suggested its willingness or ability to do so. No party has sought a nonpower license, and we have no basis for concluding that the project should no longer be used to produce power. Thus, a nonpower license is not a realistic alternative to relicensing in these circumstances.

Project decommissioning could be accomplished with or without dam removal. Either alternative would involve denial of the relicense application and surrender or termination of the existing license with appropriate conditions. No participant has suggested that dam removal would be appropriate in this case, and we have found no basis for recommending it. The reservoir is an important recreational resource, and the dam is the critical civil structure required to maintain it. Thus dam removal is not a reasonable alternative to relicensing the project with appropriate mitigation and enhancement measures. Furthermore we believe that the operator should retain a reasonable economic incentive and a return on investment. This will secure a commitment to maintain the dam in good repair and ensure the reservoir's long-term management, including maintenance of recreation facilities, protection from flooding, and measures to enhance biological resources.

The second decommissioning alternative would involve retaining the dam and disabling or removing equipment used to generate power. Project works would remain in place and could be used for historic or other purposes. This would require us to identify another government agency willing and able to assume regulatory control and supervision of the remaining facilities. No agency has stepped forward, and no participant has advocated project decommissioning, nor have we found any basis for recommending it. Because the power supplied by the project is needed, a source of replacement power would have to be identified. In these circumstances, we do not consider removal of the electric generating equipment to be a reasonable alternative.

The DOI recommended that ponding and pulsing operations be considered as alternatives. The DOI provided no basis or

justification for its recommendation and did not include any further information concerning those alternatives. We believe those alternatives generally represent variations on a peaking mode of operation, and are therefore addressed in our detailed analyses of WPP's proposal and other peaking alternatives.

IV. CONSULTATION AND COMMENTS

A. Agency Consultation

The Commission's regulations require the prospective applicant to consult with the appropriate resource agencies before filing a license application. After an application is accepted, the Commission issues a public notice and seeks formal comments in accordance with federal statutes. All comments become a part of the record and are considered during analysis of the project.

The Commission issued public notice of WPP's application for new license for the project on July 27, 1993.

The following entities commented on the application by the March 28, 1994, deadline specified in our notice that the application was ready for environmental analysis.

Commenting Entity	Date of Letter
Mr. Richard Sabat	March 10, 1994
U.S. DOI	March 18, 1994
PFBC	March 23, 1994
WVDNR	March 24, 1994
League of Women Voters of Morgantown and Monongalia County	March 28, 1994

WPP responded to their comments and recommendations in its letter dated May 11, 1994.

B. Interventions

Besides providing comments, organizations and individuals may petition to intervene and become a party to any subsequent proceedings. The following entities filed a motion to intervene in the proceeding.

Intervenor	Date of Motion
Sierra Club, Monongahela Group	September 24, 1993
Cheat Lake Recreation and Environmental Association (CLEAR)	September 27, 1993
League of Women Voters	September 29, 1993
WVDNR	September 30, 1993
WVDEP	September 30, 1993

All five motions have been granted.

C. Water Quality Certification

Under Section 401(a)(1) of the Clean Water Act (CWA),^{1/} the Commission may not issue a license for a project unless either the license applicant obtains water quality certification from the certifying agency of the state in which the project discharge will originate, or the certifying agency waives certification. Section 401(a)(1) permits the Commission to deem certification waived if the certifying agency fails to act on a water quality certification request within a reasonable period of time, not to exceed 1 year.

On September 19, 1991, WPP filed with WVDNR an application for Section 401 water quality certification for the Lake Lynn Project. WVDNR denied the application for certification on March 9, 1992 for failure to comply with state regulatory requirements.

On May 11, 1992, WPP filed a second application for water quality certification. On June 8, 1992, WVDNR notified WPP that the second application was incomplete and requested that WPP provide more information. Effective July 1, 1992, authority to grant water quality certification in West Virginia was transferred from the WVDNR to the newly created West Virginia Department of Environmental Protection (WVDEP). In a letter dated May 10, 1993, WVDEP denied the second WPP application for certification.

WPP filed a third application for certification with WVDEP on June 23, 1993. In a subsequent letter to WPP dated October 18, 1994, WVDEP indicated that it had granted water quality certification for the project, subject to 15 specific conditions being included in any new Commission license for the project. However, because WVDEP did not act on the application within one year of its June 23, 1993 filing date, the certification requirements of Section 401 of the CWA for the Lake Lynn Project are deemed by the Commission to be waived.

^{1/}Commission staff is aware of PUD No. 1 of Jefferson County v. Washington Department of Ecology, (U.S. Sup. Ct. No. 92-1911, May 31, 1994). As appropriate, the license order in this proceeding will address the relevance of the issues discussed in Jefferson County.

Therefore, we do not consider inclusion in the license of the conditions proposed in WVDEP's October 18, 1994 letter to be mandatory. However, in the exercise of the Commission's responsibilities under FPA Section 10(a), the Commission staff has examined WVDEP's 15 proposed license conditions and recommended adoption or partial adoption of several of the proposed conditions. The Commission staff's findings with respect to WVDEP's proposed 15 proposed license conditions are discussed below.

Condition 1 recommends that WPP file an operating plan within one year of license issuance that would ensure the maintenance or improvement of dissolved oxygen levels in the Cheat River down-stream of the project. WVDEP recommends that this plan contain provisions to shut down the hydropower station, inject air/oxygen or take any other steps necessary to maintain dissolved oxygen concentrations at or above levels that would occur if the water was passed through the dam gates. We do not recommend that Condition 1 become a part of the license because, historically, there do not appear to have been any problems with low dissolved oxygen at the Lake Lynn Project. Instead, we propose that WPP notify the agencies and the Commission if tailrace dissolved oxygen levels should ever fall below the current state standard of 5.0 mg/L, and then file a compliance plan if required by the Commission (see Section V.C.2 and staff responses to DEA comment letters in Appendix B).

Condition 2 recommends that WPP operate a peaking power plant, with reservoir water level elevations to be maintained within the following ranges: 868 to 870 feet NGVD from May 1 to October 31; 857 to 870 feet NGVD from November 1 to March 31; and 863 to 870 feet NGVD from April 1 to April 30. We recommend that Condition 2 become a part of the license (see Section V.C.2).

Condition 3 recommends that WPP develop and implement a "project operation plan" within 1 year of license issuance to minimize impacts to the existing reservoir and down-stream uses. We do not recommend that Condition 3 become a part of the license because the overall plan of operation is set forth by the terms of the proposed license (see Section V.C.2); therefore, the filing of a general project operation plan is unnecessary. We also note that our recommendations include WPP's filing of several specific plans, including plans for water quality monitoring, biological monitoring, fisheries enhancement, erosion control, aesthetics, and recreation--as well as various reports, plan updates, and additional plans after relicensing.

Condition 4 recommends that WPP:

- Within 1 year of license issuance, develop and implement a plan to continuously monitor pH, dissolved oxygen, temperature, and conductivity in the reservoir and tailrace. We recommend this item become a part of the license (see Section V.C.2).

- Provide an absolute minimum release flow of 212 cfs during all times of the year to reduce the acidity of tailrace water and enhance biological production. We do not recommend that this item become a part of the license because of concerns about maintaining the reservoir water level elevation at the desired recreation pool. We recommend a 212 cfs minimum release, or reservoir inflow, whichever is less, with an absolute minimum release of 100 cfs (see Section V.C.2).
- Conduct biological studies within the first year after relicensing and every three to five (3 to 5) years thereafter, as deemed necessary by WVDEP, WVDNR, DOI, and other agencies. We generally recommend that this item become a part of the license; the initial biological monitoring plan is recommended for filing within 1 year of license issuance, with plan updates and agency meetings recommended every 3 years (see Section V.C.3).
- Schedule triennial meetings with the WVDEP, WVDNR, DOI, and other agencies to evaluate the effectiveness of the minimum release flow and water quality monitoring. We recommend that this item become a part of the license (see Section V.C.3).

Condition 5 recommends that WPP contact WVDEP relative to the requirements of the Construction Storm Water/Nonpoint Source Program, which requires a National Pollutant Discharge Elimination System (NPDES) permit for construction disturbances of greater than three acres. We do not recommend that Condition 5 become a part of the license because the NPDES permit process is separate from the project relicensing process. We agree that WPP should apply for an NPDES permit and any other applicable permits before undertaking major construction activities. However, a license article is not needed in this case because we recommend the filing of an erosion control plans before commencement of any construction activities (see Section V.C.1).

Condition 6 recommends that WPP design, coordinate, and implement a turbine entrainment study, if deemed necessary by the WVDNR and the DOI. We do not recommend that Condition 6 become a part of the license because the Commission would reserve authority to require a turbine entrainment study. The Commission may require such a study on its own or based on agency recommendations (see Section V.C.3).

Condition 7 recommends that WPP construct, operate, and maintain a permanent public fishing access/recreation site at the West Penn Beach area (see Figure 2), including several specific recreation features (listed in the October 18, 1994, letter). We recommend that Condition 7 become a part of the license. We believe that minor differences between the proposed license

Conditions and the WVDEP recommendations (i.e., parking capacity, placement of fish attractors) can be resolved through recommended consultations before site development (see Section V.C.8).

Condition 8 recommends that WPP develop the area identified as Area 26 (see Figure 2), for public recreation, including several specific recreation features (listed in the October 18, 1994, letter). We recommend that Condition 8 become a part of the license. We believe that minor differences between the proposed license conditions and the WVDEP recommendations (i.e., parking capacity, trail characteristics, fish attractors, and access for the handicapped) can be resolved through recommended consultations before site development (see Section V.C.8).

Condition 9 recommends that WPP construct, operate, and maintain a free public boat launch, or make provisions to provide this service. The October 18, 1994, letter specifically states that this or another boat ramp must also be usable by fishermen in the winter when the reservoir water level elevation fluctuates between 857 and 870 feet NGVD. We partially recommend that Condition 9 become a part of the license. We would not require that any ramp provided by WPP be usable by fishermen in the winter. There is no evidence that this need exists (see Section V.C.8); furthermore, it is our understanding that WVDEP's recommendation may include an interest in providing access to the reservoir's ice, which we consider an unsafe form of recreation.

Condition 10 recommends that WPP conduct a reservoir recreation use survey within 3 years of completing the recreational developments, with survey design to be approved by the WVDNR. The WVDEP also recommends that reviewing agencies be given authority to require additional improvements based on this survey. We recommend that Condition 10 become a part of the license, except that we would not give the agencies sole authority to require additional improvements; the Commission would retain that authority, with consideration of input from the agencies (see Section V.C.8).

Condition 11 recommends that WPP, after consulting with WVDNR and DOI, and within 6 months of license issuance, file a reservoir recreation development plan for resource agency approval. We recommend that Condition 11 become a part of the license; specifically, we recommend that one recreation development plan (i.e., for all facilities specified in the license) be filed with the Commission for approval within 6 months of license issuance, including documentation of consultation with resource agencies (see Section V.C.8).

Condition 12 recommends that WPP construct, operate, and maintain permanent public fishing access/recreation site at the project tailrace area, including several specific recreation features (listed in the October 18, 1994, letter). We recommend that Condition 12 become a part of the license. We believe that minor differences between the proposed license conditions and

the WVDEP recommendations (i.e., shore walkways, fish attractors, and boating access) can be resolved through recommended consultations before site development (see Section V.C.8).

Condition 13 recommends that WPP construct and maintain a parking lot for at least 15 cars on a site located adjacent to the project substation/transformer yard, with stairs connecting to the main reservoir trail (to be developed along the former railroad right-of-way). We recommend that Condition 13 become a part of the license (see Section V.C.8).

Condition 14 recommends that WPP conduct a tailrace area recreation use survey within 3 years of completing the recreational developments, with survey design to be approved by the WVDEP and WVDNR. The WVDEP also recommends that reviewing agencies be given authority to require additional improvements based on this survey. We recommend that Condition 14 become a part of the license, except that we would not give the agencies sole authority to require additional improvements; the Commission would retain that authority, with consideration of input from the agencies (see Section V.C.8).

Condition 15 recommends that WPP, after consulting with WVDEP, WVDNR, DOI, and PFBC, and within 6 months of license issuance, file a tailrace area recreation development plan for resource agency approval. We recommend that Condition 15 become a part of the license; specifically, we recommend that one recreation development plan (i.e., for all facilities specified in the license) be filed with the Commission within 6 months of license issuance, including documentation of consultation with resource agencies (see Section V.C.8).

D. Scoping

We issued a Scoping Document on September 15, 1993, describing the environmental issues we felt should be analyzed in detail, as well as issues that should not be analyzed based on input received through the project application process. We visited the site and conducted scoping meetings on October 4, 5, and 6, 1993. The site visit was attended by resource agencies, environmental, and citizen groups. About 43 people attended the agency scoping meeting held Tuesday afternoon, October 5, 1993, in Morgantown. The public meeting was held that evening in Morgantown, and 47 people attended.

Twenty-five letters were received from agencies and individuals in response to the Scoping Document. Comments from those entities have been considered and are discussed in this EA as appropriate.

E. Comments on the Draft Environmental Assessment

Respondents commenting on the DEA were:

Respondent	Date of Letter
West Penn Power Company	August 5, 1994
U.S. Fish and Wildlife Service	August 4, 1994
Pennsylvania Fish and Boat Commission	August 23, 1994
West Virginia Division of Natural Resources	August 22, 1994
West Virginia Division of Environmental Protection	August 1, 1994
Cheat Lake Environment and Recreation Association	August 4, 1994
Sierra Club	August 4, 1994
Coopers Rock Foundation	August 6, 1994

V. ENVIRONMENTAL ANALYSIS

A. General Description of the Locale

1. Cheat River Basin

The Cheat River Basin is about 100 miles long with an average width of about 15 miles and a drainage area of 1,411 square miles. The second largest tributary to the Monongahela River, the Cheat River is formed by the merging of Shavers Fork and Black Fork rivers. The Cheat River flows between relatively steep slopes on either side, rising from 870 to 1,200 feet. The hydroelectric project is about 3.7 miles up-stream of the confluence of the Cheat River with the Monongahela River, forming a 13-mile reservoir (Figure 2).

The climate of the region is characterized by moderately cold winters and moderately hot, showery summers. Average annual precipitation for the region is about 40 inches. July temperatures range from 62°F to 84°F, and January temperatures from 22°F to 39°F.

Monongalia County (West Virginia) and Fayette County (Pennsylvania), where the project is located, have a combined 1990 population of 220,860. With a population of about 26,000, Morgantown is the largest city near the project. Its population has declined about 6 percent since 1980. The river basin is primarily rural, with residential and recreation development around the lake. Several large residential subdivisions are adjacent to the project. There are also some working coal mines and abandoned strip mines in the area.

WPP typically holds property rights up to the normal high water mark, and often owns a strip of additional land (10 to 15 feet elevation beyond the normal high water mark). In total we estimate that WPP owns more than 500 acres of land around the project dam and reservoir. This includes several large tracts for general public recreation use (see Section V.C.8). WPP has also issued about 200 privilege permits to individuals for use of lease plots of WPP-owned reservoir shore property, where many

individuals construct docks. Several adjacent property owners have also negotiated dock/shore easements to cross and use the applicant's property.

2. Proposed and Existing Hydropower Development

There are no other existing or proposed hydropower projects in the Cheat River Basin.

B. Scope of Cumulative Impact Analysis

Water quality is important to regional fisheries and recreation. Furthermore, historic coal mining activities have resulted in the discharge of untreated mine waste and highly acidic water in some Cheat River tributaries. The acidic mine drainage has had a detrimental effect on productivity and diversity of aquatic life in both the reservoir and the down-stream reach of the Cheat River. Because of the importance of water quality to the river's aquatic environment, it is an issue that warrants a cumulative impact analysis (see Section V.C.2).

C. Proposed Action

In this section, we describe the general environmental setting in the project locale and the effects the project may have on environmental resources, and make recommendations to enhance the affected environmental resources.

1. Geological Resources

Affected Environment: The project lies within the Appalachian Plateau Physiographic Province. The area's ridge-and-valley topography is formed by a series of bedrock folds. The Lake Lynn dam is near the axes (low point) of one such fold, known as the Connellsville Syncline. As a result, the area's bedrock generally dips down toward the river valley from both sides. Bedrock structures are generally more horizontal down-stream of the dam. The local bedrock consists primarily of sandstone and shale, with intermittent coal beds and some limestone. Much of the bedrock is covered with alluvium composed of sand, gravel, silt, and clay. Even so, several outcrops are seen along the reservoir's shore, including very high cliffs found along the steep slopes of upper Cheat Lake. Unconsolidated cobbles and some boulders are common along both the reservoir shoreline and within the river bed down-stream of the dam.

Slopes on each side of the reservoir rise from a few hundred to more than 1,200 feet total elevation above the water, with much steeper and higher slopes found in the area farthest up-stream. The only flat land in the project area is found along the Cheat River flood plain down-stream of the dam and along reservoir shore terrace areas near the Sunset Beach harbor and marina.

Only a few shoreline areas on Cheat Lake or down-stream of the dam exhibit erosion. This is generally due to the natural protection provided by bedrock or cobbles along the shore in most of the shoreline areas. The small amount of reservoir shoreline erosion that does exist results in locally unstable slopes and increased suspended sediment concentrations. Most of the erosion observed by Commission staff during a site visit occurs along developed shoreline areas on the east side of the reservoir, especially at the Sunset Beach peninsula on the south side of Sunset Beach harbor (see the discussion of land use, Section V.C.8). Erosion of a soil bank there exposed tree roots and bare soil along a sheer bank about 10 feet high. A flat grassy terrace with residences on it is located on top of the bank. A few residences have elaborate retaining or protective walls and docks along the shore to protect against further erosion.

The West Penn Beach peninsula (see Figure 2) is an area of stable, well-vegetated land with moderate or steep slopes. Shoreline erosion is not prominent there, but some bare soil is exposed on shore because of frequent recreation use (see the discussion of land use, Section V.C.8).

Periods of very high river flow will result in riverine erosion up-stream and deposition down-stream. This process causes formation of exposed or shallow sandy areas in the upper reservoir.

Environmental Impacts and Recommendations: Wind- and boat-generated waves are primary factors creating the observed erosion along the shoreline. This is evidenced by the most noticeable erosion at the tip of the Sunset Beach peninsula. Active erosion of the slope occurs when it is exposed to a combination of waves generated from a prevailing westerly wind and boat wakes. Water level fluctuations caused by peaking project operation also contributes to erosion by occasionally increasing the water level to its maximum on days when waves can cause shoreline erosion.

Because of WPP's plan to develop a major recreation area, the West Penn Beach peninsula is another key location with potential for bank erosion. Development of the recreational area would involve land clearing, grading, and revegetation. The proposed no-wake zone would help to reduce long-term shoreline erosion if properly enforced (Section V.C.8).

The Pennsylvania Department of Environmental Resources (PDER) recommended that an erosion and sedimentation control plan be filed for construction of the West Penn Beach recreational development. The PDER and the WVDEP stated that this is required by the National Pollutant Discharge Elimination System (NPDES) permit application process per Section 402(p) of the Clean Water Act. We recognize WPP's requirement to comply with the NPDES permitting process. Under that program, for any earth disturbance greater than 3 acres, WPP must apply for and obtain a

NPDES permit from WVDEP. For disturbances of less than 3 acres, an erosion and sediment control plan must be submitted to WVDEP for review.

Mr. Richard Sabat suggested that WPP participate in dredging an area of the reservoir near the bridges to ensure navigable water depths.

To minimize erosion effects during construction of the 46-acre West Penn Beach Recreation Area or before the start of any other land-disturbing or land-clearing activities, we recommend that WPP file a plan to control erosion, slope instability, and sedimentation. The Commission's review and approval of the erosion control plan would be separate from the NPDES permit application process. However, the plan could be used in the NPDES process.

We further recommend that WPP visually survey the following areas for erosion and slope instability and report findings to the Commission according to these schedules: (1) the West Penn Beach area shoreline extending from the dam to the Cheat Haven peninsula, to be surveyed annually; and (2) the remainder of the reservoir shoreline, to be surveyed every 3 years. If specific areas of active shoreline erosion are identified, we recommend that WPP cooperate with WVDNR, WVDEP, and property owners to address adverse effects such as unstable slopes or suspended sediments. We will recommend that WPP be required to participate fully in funding and implementing appropriate shore protection measures along the West Penn Beach Recreation Area shoreline, but that WPP not be required to fund or implement shore protection measures at other locations. We will also recommend that WPP be required to provide the results of its surveys to WVDNR, other agencies, and property owners upon request.

We have not found sufficient evidence that dredging is needed at any specific location in the reservoir. Most areas are easily navigated, and shallow water is rare when the reservoir is at full pool (868 to 870 feet NGVD). Therefore, we will not recommend that dredging be required as a condition of the license.

Unavoidable Adverse Impacts: Some continued minor erosion is expected in the Sunset Beach harbor area. Construction of the West Penn Beach Recreation Area will also result in some temporary erosion and sedimentation, but it will be minimized by implementing an erosion and sedimentation control plan.

2. Water Resources

Affected Environment: The maximum depth of the Lake Lynn project reservoir is 106 feet. At full pool (870 feet NGVD), Lake Lynn (Cheat Lake) has a surface area of 1,729 acres and a storage capacity of 72,000 acre-feet. The Cheat River flows about 3.7 miles down-stream of the dam to its confluence with the

Monongahela River. The Cheat River is typically 400 to 500 feet wide below the dam.

At the project site the Cheat River has a drainage area of 1,411 square miles. The terrain is fairly steep, which produces flashy hydrologic responses to precipitation. The lower lake area has three flooded embayments: Rubles Run, Morgan Run, and Manning Run.

a. River Flow and Project Operations

Mean monthly inflow to Lake Lynn is 3,454 cfs. Mean monthly flows vary from a low of 1,110 cfs in September to 5,588 cfs in March. Appendix A contains a table that summarizes the mean, 20 percent, and 80 percent exceedance flows for the Cheat River at Lake Lynn and a graph of the annual flow duration data.

The Lake Lynn Hydroelectric Project is operated in a peaking mode. The minimum flow required to operate one unit for power generation is 1,100 cfs. Maximum hydraulic capacity through four turbines is 9,700 cfs. Leakage through the units is about 12 cfs. Water is withdrawn for power generation from a depth 45 feet below full pool.

Water diverted through the hydropower units is used exclusively for hydropower generation and then returned to the Cheat River. Table 2 lists three other entities that withdraw water from Lake Lynn and their annual water consumption.

Table 2. Consumptive uses of Lake Lynn water (Source: WPP Response to Schedule A, AIR of June 21, 1993).

Withdrawal Source	Withdrawal
Albert Gallatin Municipal Authority	77 mg ^a (0.33 cfs) ^b
Cheat Neck Water Company	66 mg (0.28 cfs)
Lakeview Resort	40 mg (0.17 cfs)

^a Annual volume, million gallons.

^b Average withdrawal rate, cubic feet per second.

b. Flooding

The Cheat River has exhibited the potential for producing major floods. The flood of record occurred in 1985 and had an estimated peak flow of 150,000 cfs. The largest previous flood occurred in 1954 with an estimated peak flow of 131,000 cfs. The estimated probable maximum flood (PMF) is 477,000 cfs. Because of the presence of both commercial and residential development in

the Cheat River valley, the potential for loss of life and significant property damage is high for any near PMF magnitude flood.

c. Water Quality Standards

The Cheat River is subject to West Virginia water quality standards up-stream of the dam, including the dam discharge and immediate tailwaters; therefore West Virginia is the Section 401 certification state for the dam discharge. Pennsylvania water quality standards apply to the river farther down-stream. Water quality in the reservoir and in the Cheat River down-stream of the dam is greatly influenced by acid mine drainage from tributaries and drainages on the west shore of the reservoir and on both sides of the Cheat River down-stream of the dam. The acid mine drainage has very low pH levels. Based on surveys conducted in 1990 and 1991 as a part of WPP's application, reservoir and tailrace water quality meets both West Virginia and Pennsylvania standards for all parameters except pH in the reservoir and down-stream of the dam and dissolved oxygen in the reservoir hypolimnion (uniform temperature) in summer and fall.

d. Temperature

The reservoir stratifies between May and September, with temperatures at the reservoir bottom being about 15°F less than water temperature at the surface. There is a slight (1° to 3°F) increase in water temperature between the up-stream limits of the reservoir and the main reservoir. Data provided by WPP indicate that hydropower operations do not affect water temperature in the tailrace (RMC 1992).

e. Dissolved Oxygen

Dissolved oxygen levels in the reservoir and tailrace were above 5.0 mg/L (the West Virginia and Pennsylvania state standard) except in the reservoir hypolimnion. During the 1990 survey, dissolved oxygen in the reservoir ranged from 6.2 mg/L in late summer to 13.1 mg/L in mid-winter. Dissolved oxygen was generally well-mixed throughout the water column except from mid-summer to mid-fall when the reservoir was stratified. Bottom and near-bottom dissolved oxygen (typically more than 50 feet deep) was below 1.0 mg/L 40 percent of the time in late August through early October. Other than in the hypolimnion in summer and fall, dissolved oxygen concentrations were typically much greater than the 5.0 mg/L standard. There was no discernable difference between headwater dissolved oxygen and surface dissolved oxygen in the main reservoir (RMC 1992).

Dissolved oxygen concentrations in the tailrace are in compliance with the state standard. Mean dissolved oxygen ranged from 6.1 to 11.2 mg/L in the 1990 survey (RMC 1992). Dissolved oxygen in the tailrace displays typical seasonal and daily variations. Although operation of the Lake Lynn project affects

tailrace dissolved oxygen, it was never below 5.0 mg/L during the 1990 and 1991 surveys. Tailrace dissolved oxygen tends to increase slightly during winter and spring when power generation begins. However, it tends to decrease during summer and fall during power generation when the reservoir is stratified and the release water has a depressed dissolved oxygen.

Typical daily power plant operation also affects tailrace dissolved oxygen. Dissolved oxygen in penstock water is typically lower than in the reservoir because of stagnation or warming as the water stays in the penstock for many hours to allow startup when demand warrants. Therefore dissolved oxygen concentrations down-stream typically decrease when the water is released (RMC 1992). Changes in dissolved oxygen resulting from operations can be up to 2.5 mg/L, but the changes did not drop tailrace dissolved oxygen below 5.0 mg/L during the 1990 and 1991 water quality surveys (RMC 1992).

f. pH Levels

The 1990 and 1991 water quality surveys demonstrated that pH in the lake, most tributaries, and the tailrace is often below the minimum state standard of 6.0. Reservoir pH typically is in the 5.0 to 6.0 range, with higher values in the embayments (5.8 to 7.4) and lower values in the upper lake. Seasonal pH is lowest in summer and fall and highest in spring. Tributaries along the west shore of the reservoir contribute most of the acidic water to the reservoir. Western shore tributaries exhibit pH values as low as 1.5 to 2.0.

Down-stream of the dam, Cheat River pH is generally lower than in the reservoir because of the low pH tributaries below the dam. This is especially apparent when no flow is released. Down-stream pH was lowest in the spring and summer and highest in the fall. Hourly pH values are less than 5.0 20 percent of the time in summer and 14 percent of the time in spring. Spring and summer pH display wide daily fluctuations—as much as 2.3 units within a day. Condenser release and water released for power generation both tend to raise pH in the tailrace because the releases dilute the effects of low pH tributary flows below the dam.

Environmental Impacts and Recommendations:

a. Reservoir Level

Table 3 summarizes water surface area and storage volume data for several key reservoir elevations:

Table 3. Water surface area and storage volume data for the Lake Lynn reservoir (Source: WPP application).

Elevation (ft NGVD)	Approximate Water Surface Area (acres)	Approximate Storage Volume (acre-ft)
857	1,550	54,000
863	1,600	60,000
868	1,700	70,000
870	1,729	72,000

The storage volume produced by the historical maximum winter draw-down (857 feet NGVD) provides an incidental flood control benefit by allowing WPP to capture peak flows in the reservoir, thereby reducing peak flow releases down-stream of the dam. The historical draw-down has also simplified operations during the spring flood season because the reservoir is drawn down to the crest of the dam, allowing the spillway gates to remain fully open during this period.

WPP proposes to maintain minimum reservoir elevations of 868 feet NGVD from May 1 to October 31 and 857 feet from November 1 to March 31. WPP proposes to maintain a minimum reservoir elevation of 863 feet from April 1 to 30, recognizing the potential benefit of higher water levels on early reservoir fish spawning (see Section V.C.3.a.) while still providing storage capacity to capture typically higher April flows. WPP also proposes to retain its ability, following notification of reservoir marinas, to draw the reservoir down to 857 feet at any time during the year because of the rare but foreseeable event of extremely high inflows, or because of an emergency need for power generation.

DOI recommends that the facility be operated in a strict run-of-river mode (instantaneous outflow equals instantaneous inflow) in an effort to reestablish reservoir and Cheat River fisheries. WVDNR recommends a modified peaking operation, with reservoir level fluctuations from 857 to 870 feet allowed from November 1 to March 31 and reservoir levels of 868 to 870 feet from April 1 to October 31.

We conclude that WPP's proposed minimum April elevation would adversely affect WPP's ability to manage flood flows in two ways: (1) it would eliminate about 6,000 acre-feet, or about 1/3 of the usable storage between elevations of 857 and 870 feet, and (2) it would require that spillway gates be kept closed or partially closed during periods of normal inflow, requiring WPP to manually open some gates in response to flood emergencies. From April 1 to 30, Cheat River inflow is still fairly high (see

Appendix A). April has the highest 80 percent exceedance flow of any month.

Recommendations by DOI and WVDNR would have even greater impacts on flood control operations at the project. DOI's run-of-river recommendation would eliminate all excess capacity to capture peak flows, and the incidental flood control benefits. WVDNR's recommendation for April would eliminate 90 percent of the storage between elevations 857 and 870 for that month.

b. Minimum Flow Releases

WPP proposes to release 200 cfs (plus 12 cfs leakage) when reservoir level is greater than 870 feet NGVD, except when net reservoir inflow is less than 212 cfs. In that case, WPP proposes to release net reservoir inflow. When reservoir level is less than 870 feet, WPP proposes to release either 100 cfs or net reservoir inflow according to the schedule shown in Table 4. DOI recommends run-of-river operation. WVDNR recommends a minimum flow of 212 cfs at all times regardless of reservoir inflow. Therefore WVDNR recommends sacrificing stable reservoir levels in the summer to provide the minimum 212-cfs instream flow. PFBC recommends a minimum release of 1,100 cfs or inflow, whichever is less, down to an absolute minimum release (regardless of inflow) of 212 cfs. Further, PFBC recommends that WPP be required to operate in a run-of-river mode "upon documentation of consistent fish reproduction and recruitment in the Cheat River down-stream of the dam."

Table 4. WPP proposed reservoir releases (Source: WPP letter May 11, 1994).

Period ¹	Reservoir Level (ft NGVD)	Net Reservoir Inflow (cfs) ^a	Minimum Release (cfs)
May 1 to October 31	870	212 or more	212
		less than 212	net reservoir inflow ^a
	868-870	not a factor	100
	868 or less	more than 100	100
November 1 to March 31	870	212 or more	212
		less than 212	net reservoir inflow ^a
	857-870	212 or more	212
	857 or less	more than 100	100
April 1 to April 31	870	212 or more	212
		less than 212	net reservoir inflow ^a
	863-870	212 or more	212
	863 or less	more than 100	100
		100 or less	net reservoir inflow ^a

^a WPP defines net reservoir inflow as total reservoir inflow minus evaporative losses and water withdrawals.

COE recommends that WPP notify the operator at the Maxwell Lock and Dam on the Monongahela River every day (preferably late afternoon) regarding Lake Lynn's anticipated operating schedule for the next day. AGMA recommends that WPP notify water withdrawal companies when reservoir water level changes exceeding 10 feet are expected.

WPP's proposed minimum release plan is dependent on season, reservoir level, inflow, evaporation, and water withdrawals. The

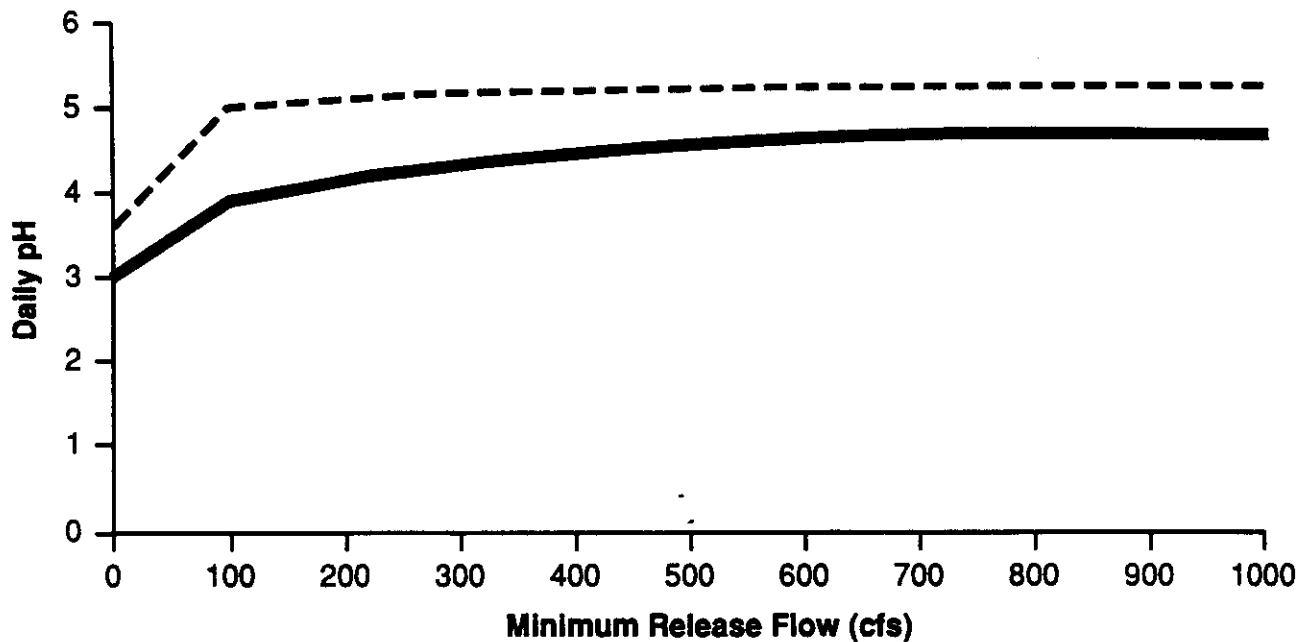
complicated nature of this proposal would make compliance monitoring difficult. The plan would also allow WPP to dictate the minimum release by controlling the reservoir levels (i.e., by generating power) to keep the pool elevation below certain set points. We do not concur with WPP that maintaining the reservoir water level elevation as close as possible to 870 feet is necessary for "emergency capacity" (868 to 870 feet is historically the highest range for normal operations, with power generation possible well below that range). For these reasons we do not agree with WPP's proposed plan.

One of the principal reasons for considering minimum flows down-stream of the dam is that higher pH reservoir water would dilute lower pH tributary inflows to the Cheat River down-stream of the dam, leading to improved pH conditions in the river. WPP commissioned a computer modeling study on the effect of flow releases on pH in the Cheat River down-stream of the dam (EEM 1993). Figure 4 summarizes predicted results of increasing minimum release flows on pH in the Cheat River just down-stream of Grassy Run (about 2,000 feet down-stream of the dam).

The modeling analysis demonstrated that pH would improve substantially by providing minimum flow releases as low as 100 cfs. Median pH would increase slowly with increasing minimum release flows for flows greater than 200 cfs. However, minimum daily pH would improve measurably with minimum flow releases up to 1,000 cfs. The incremental benefit of higher minimum release flows would decrease significantly above 500 cfs. Up to 500 cfs, every 100-cfs increase in minimum release flows would increase the minimum daily pH by at least 0.1 unit. Above 500 cfs, a 100-cfs increase in minimum flow release would raise the minimum daily pH by an average of 0.03 unit. Based on water quality alone, a minimum release rate of 1,000 cfs would provide the greatest benefit to pH values in the Cheat River down-stream of the dam. This release rate would allow WPP to generate power while releasing because 1,000 cfs is the minimum flow required to operate one unit. Considering the relative improvement in pH per unit of flow released, a release rate of 400 to 500 cfs would optimize the improvement in water quality per unit flow released (Figure 4).

Under certain conditions (Table 4), WPP proposes to subtract water withdrawals and evaporation from the proposed minimum release rate to determine the minimum release flow for a given day. Table 5 summarizes rainfall volume directly on the reservoir, evaporation from the reservoir, and water withdrawals from the reservoir on an average monthly basis. In an average precipitation year, the volume of rainfall directly on the lake annually exceeds the volume lost to withdrawal and evaporation. For July, August, and September the sum of net water into the lake (excluding runoff from the river basin) is zero. Although July and September show net losses of water, the amount is small and within the limits of accuracy of the approximations used in this analysis. Further, when the volumes of withdrawal and

GLW70029 AQ.03 FIGURE 3 6-9-94



LEGEND

- Minimum Daily pH
- - -** Median Daily pH

FIGURE 4
Modeled 1992 daily pH in Cheat River
2,000 ft. down-stream of Lake Lynn project
(Source: Energy & Environmental Management, Inc. October 1993).

evaporation (i.e., further excluding direct rainfall input) are subtracted from 212 cfs, the resulting minimum release flows range from 202 to 209 cfs. The level of flow control accuracy with Taintor gates does not allow WPP to distinguish between 202 and 212 cfs. Therefore, we conclude there is little merit in subtracting evaporation and withdrawal losses from total inflow.

Table 5. Lake Lynn water balance.

Month	Rain Volume (mg) ^a	Evaporation Volume (mg)	Water Withdrawals (mg)	Net Water to Reservoir (excluding inflow)	Sum of Evaporation and Withdrawal (cfs)
January	172	52	9	110 mg (5.5 cfs)	-3.0
February	160	60	9	91 mg (5.0 cfs)	-3.6
March	206	83	9	114 mg (5.7 cfs)	-4.6
April	173	111	12	50 mg (2.6 cfs)	-6.3
May	237	150	20	66 mg (3.3 cfs)	-8.5
June	197	156	25	16 mg (0.8 cfs)	-9.3
July	190	169	25	-4 mg (-0.2 cfs)	-9.7
August	194	158	25	11 mg (0.5 cfs)	-9.1
September	157	146	18	-7 mg (-0.4 cfs)	-8.6
October	163	119	11	33 mg (1.6 cfs)	-6.5
November	174	88	9	77 mg (4.0 cfs)	-5.0

Month	Rain Volume (mg) ^a	Evaporation Volume (mg)	Water Withdrawals (mg)	Net Water to Reservoir (excluding inflow)	Sum of Evaporation and Withdrawal (cfs)
December	244	69	9	165 mg (8.2 cfs)	-3.9
Total	2,268	1,361	183	724 mg (3.1 cfs)	-6.5

Notes:

Rainfall—NOAA monthly precipitation at Coopers Rock State Forest adjusted to annual precipitation total of 48.3 inches at Lake Lynn reported in WPP's Final License Application, December 1991.

Evaporation—Annual evaporation of 29 inches reported in Final License Application, December 1991 and surface area of 1,729 acres; monthly distribution based on USGS data for a comparable lake (USGS 1973).

Water withdrawal data from WPP Schedule A response to AIR of June 21, 1993; monthly distribution assumed by staff.
*million gallons.

We do not recommend allowing WPP to subtract evaporation and withdrawal from the minimum reservoir releases. Although this might result in some draw-down in extreme drought years below our recommended summertime minimum reservoir water level at 868 feet NGVD, the result of draw-down would be minor because of the low magnitude of evaporative losses and withdrawals. In addition, any future proposal to withdraw 1 million gallons per day (mgd) or more from the reservoir would require Commission approval (current withdrawals are well below 1 mgd). In the event that a proposal requests a withdrawal from the reservoir of 1 mgd or more, the Commission may recommend a drought contingency plan, which could include modified operational parameters for the Lake Lynn project.

We understand that WPP is informally notifying the COE at Maxwell Lock and Dam of operating plans. We recommend that WPP and COE prepare a formal agreement that is mutually acceptable to both parties. The agreement should address notification procedures concerning project startup and flow release schedules. We also recommend that WPP consult with AGMA, CNWC, and Lakeview Resort on notification requirements during extreme reservoir water level changes. A formal agreement of notification should be arranged with companies that request notification.

Based on balancing water quality, fisheries, power production, and economic considerations (see Section VI), we recommend a minimum reservoir release of 212 cfs when inflow is greater than or equal to 212 cfs. At all other times, the minimum release should equal 100 cfs or inflow to the reservoir whichever is greater.

c. Ramping Rates

WPP proposes no ramping rates, citing the economic losses it would incur if ramping were required. The DOI requested that the EA consider ramping as one alternative to the proposed operation. The COE requested ramping in early correspondence but has since stated that ramping is not critical as long as minimum releases are provided and WPP continues to notify Maxwell Lock and Dam daily regarding anticipated operating plans. No other resource agencies requested ramping recommendations. Our recommendation for a formal agreement between WPP and COE regarding notification will adequately address the COE's concern about sudden level changes down-stream in the Monongahela River. The primary potential benefit of ramping would be for enhancement of fisheries resources in the Cheat River down-stream of the project. This issue is discussed in detail in Section V.C.3.d.

d. Water Quality Monitoring

WPP continuously monitors pH, dissolved oxygen, temperature, and conductivity of reservoir outflow during nonwinter months. The DOI recommends that WPP validate the water quality model that predicted benefits of various minimum releases. The DOI also recommends that WPP establish, operate, and maintain three permanent water quality monitoring stations at the forebay, the upper riverine portion of the Cheat River below the dam, and the lower Cheat River segment in the Monongahela River backwater zone. WVDNR recommends that WPP develop a plan to continuously monitor pH, dissolved oxygen, and temperature in the reservoir and tailwater, to develop a plan to address future potential measures for raising dissolved oxygen if it becomes a problem, and to schedule biennial meetings with the resource agencies to evaluate the effectiveness of minimum releases on water quality. PFBC recommends that WPP develop a plan to monitor the reservoir and river at four locations, require a minimum dissolved oxygen release, and meet with resource agencies annually. AGMA expressed concern regarding reservoir turbidity near the generating units (the location of its consumptive water intake) when the project is operating.

Water quality in the reservoir and tailwater is very good with the exception of pH and hypolimnetic dissolved oxygen. No violation of state dissolved oxygen standards occurred during the 1990-91 water quality studies. However, because water is withdrawn from a depth of 45 feet, there is potential for released water to fall below 5.0 mg/L when the reservoir is strongly stratified. Values of pH in the reservoir and

tailwaters continue to be below both West Virginia and Pennsylvania standards. Because the water quality in the reservoir and tailwaters does not meet all water quality standards, we agree that water quality monitoring is warranted. However, we do not recommend that WPP implement measures to prevent dissolved oxygen degradation down-stream at this time because there are no documented tailwater dissolved oxygen problems.

The COE has a water quality monitoring station on the lower Cheat River in the Monongahela River backwater section. In addition, data on reservoir and Cheat River backwater water quality are also available from EPA's STORET data retrieval system, although there is no continuous monitoring station at either location. A water quality monitoring station in the reservoir and a station immediately down-stream of the dam would provide the necessary information for the resource agencies to assess effects of operation on water quality. We recommend that WPP install and maintain three water quality monitoring stations: one on the reservoir, one in the tailwater area, and one at a site below the tailwater area and down-stream of the acid tributaries. Data from the existing WPP monitor down-stream of the dam do not adequately characterize the effect of operations on water quality. Data should be collected both up-stream and down-stream of the dam to assess the effect on water quality, especially dissolved oxygen. The stations should continuously monitor pH, dissolved oxygen, conductivity, and temperature. We recommend that WPP prepare a monitoring plan, in consultation with the WVDNR, WVDEP, PFBC, and DOI, before establishing the continuous monitoring stations.

The water quality monitoring plan must include measures to help determine if dissolved oxygen levels below state standards are present and under what circumstances such low levels may occur. If any sampling shows dissolved oxygen below 5.0 mg/L of dissolved oxygen (the current West Virginia and Pennsylvania standards), we recommend that WPP be required to notify the resource agencies and the Commission within 10 days. If then requested by the WVDEP (and subject to Commission review and approval) WPP would be required to file with the Commission a plan to maintain a tailrace dissolved oxygen level of 5.0 mg/L or greater. WPP would be required to develop the compliance plan in consultation with DOI, WVDEP, WVDNR, and PFBC. Following Commission review and approval, WPP should be required to implement the plan.

We also recommend that WPP summarize the water quality data and provide flow release data in an annual report to the Commission and WVDNR, WVDEP, PFBC, and DOI. WPP should meet once every 3 years with the agencies (coordinated with triennial fisheries and recreational meetings) to review the effect of operations on water quality and fisheries. The Commission may, at any time, adjust the schedule for subsequent water quality reports and meetings.

We believe that continuous water quality monitoring in the reservoir and below the dam will provide the resource agencies with sufficient data to determine the effect of minimum releases on water quality. We reviewed WPP's modeling study and conclude the methods and results are appropriate and reasonable. Therefore, an independent validation study of WPP's water quality modeling is unnecessary.

AGMA states that occasional increases in turbidity in its raw water are related to operation of the hydroelectric facility. AGMA further stated that it is lowering the elevation of its intake to better accommodate water level fluctuations in the reservoir. AGMA did not provide any specific operating or turbidity data to substantiate the frequency or severity of this problem. Given the proximity of the AGMA intake to the powerhouse, it is possible that localized hydraulic conditions related to plant startup or operation could resuspend bottom sediments, leading to localized increases in turbidity. To date, data are not available to document relationships between project operations and turbidity conditions.

In its comments on the DEA, WPP stated that AGMA extended its water intake another 20 feet into the lake, periodically monitors intake water turbidity, and is upgrading to a new larger-capacity water treatment plant. AGMA completed these improvements after it filed the referenced comments. Therefore, if on the basis of its own turbidity data AGMA still contends that a relationship exists between high turbidity at its new intake and project operations, we recommend that WPP consult with and cooperate with AGMA regarding the nature of that relationship. If the monitoring data demonstrate that turbidity problems are caused by project operations, we further recommend that WPP cooperate with AGMA in identifying potential alternatives to reduce turbidity in the intake water. Alternatives could include relocating or shielding the AGMA intake or notifying AGMA of project startup and operations.

We recommend that WPP notify AGMA of project startup, draw-downs, or other relevant operations that may affect turbidity at the intakes. Notification would allow AGMA to temporarily cease withdrawals during high turbidity conditions. This might be a reasonable resolution to AGMA's concerns if AGMA has sufficient raw or finished water storage capacity to allow it to temporarily cease withdrawal from the reservoir. Regardless of the possible relationship, we currently do not believe that WPP should be required to file a plan, modify its operations, or implement/fund any protective measures.

e. Chemical Treatment of Reservoir Releases to Improve pH

WPP stated that treating reservoir releases to raise the pH of released water would be prohibitively costly and thus infeasible. DOI recommended in early correspondence that WPP treat reservoir releases to raise the pH.

Several techniques are available to restore acidic lakes (EPA 1990). Tributary water could be treated directly to raise the incoming pH both to the reservoir and down-stream of the dam. The reservoir itself could be treated with limestone alum to raise the reservoir pH. Flow releases from the reservoir could be treated at the dam. And finally, the watershed could be treated with limestone to neutralize the acidic runoff before it reaches tributaries.

We do not recommend requiring WPP to treat either the watershed or the tributaries because the Lake Lynn hydroelectric plant does not adversely affect pH in the reservoir. In addition, the sources of acid inflow are located outside the project boundary. The lake itself could be treated by adding limestone to the surface water. The limestone would dissolve slowly, causing a gradual increase in reservoir pH. The effects typically last about twice the retention time, but the retention time in Cheat Lake is only 10 days on average. Therefore, we do not recommend this treatment method because the effects would only be short-term. Repeated treatment of the lake would be prohibitively costly and could negatively affect recreation if the lake had to be closed periodically for lime treatment. Direct treatment of reservoir releases would be prohibitively costly because of the large volume of flow released.

Hydropower operations do not adversely affect pH in the reservoir. Acidic water will continue to enter the reservoir until the sources (abandoned and active mines) are controlled. WPP will improve down-stream pH considerably by providing minimum release flows. We do not recommend that WPP be required to provide chemical treatment of the watershed, tributaries, reservoir, or the lake.

f. Compliance Monitoring

WPP proposed no specific measures for compliance monitoring. DOI, WVDNR, and PFBC also recommend no specific compliance monitoring. AGMA recommends an up-stream flow gage on the Cheat River to measure inflow.

There are two USGS gages on the Cheat River: one 40 miles up-stream of Lake Lynn near Rowlesburg, West Virginia, and one 80 miles up-stream of Lake Lynn near Parsons, West Virginia. There is also a USGS gage at Rockville, West Virginia, on Big Sandy Creek, the largest tributary to the Cheat River between Rowlesburg and Cheat Lake. To estimate inflow, WPP adjusts and adds flows at the Rowlesburg and Rockville gages.

During low flow conditions when reservoir releases would be determined daily based on inflow to the reservoir, a more accurate measurement of Cheat River inflow to the reservoir would be needed. We recommend that WPP develop a low flow release system based on reservoir levels, down-stream flow in the Cheat River, and controlled Taintor gate operation. Specifically, we

recommend that WPP fund the installation, maintenance, and data storage for one USGS flow gauging station on the Cheat River down-stream of the dam but up-stream of the Grassy Run confluence. WPP should consult with USGS, DOI, WVDNR, WVDEP, and PFBC concerning the exact down-stream gauge location. The gauging station should be equipped with telemetry to allow WPP to adjust minimum reservoir releases daily during low flow periods.

WPP obtained minimum reservoir releases of 200 and 450 cfs during the 1992 IFIM study through Taintor gate manipulation. Before the IFIM study, WPP calibrated the Taintor gates to the low flows. WPP obtained minimum releases of 1,100 cfs by operating one generating unit at the lowest feasible gate setting. We recommend that WPP monitor down-stream flows at the recommended new USGS gage rather than using Taintor gates to measure minimum recommended flow releases. Taintor gates have a much lower accuracy than down-stream flow gauging. The release flow at times would be less than 100 cfs. It is difficult to assure accuracy with the Taintor gates at such low flows. The down-stream flow gage can be used to adjust the Taintor gate setting until the desired minimum release is achieved.

Because of the limited storage volume of the reservoir and the potential for rapid, substantial flow increases in the Cheat River, reservoir levels fluctuate rapidly. To ensure compliance with reservoir level limitations and to monitor fluctuations during low flow periods when a minimum release must be maintained, we recommend that WPP install a level monitor that records reservoir level hourly. The reservoir level information should be made available to DOI, WVDNR, WVDEP, and PFBC when requested and should be summarized in an annual report to those agencies and the Commission.

The DEA had recommended, in addition to the down-stream USGS gaging station, an up-stream USGS gage to be located on the Cheat River as close to the headwaters as possible. In its comments on the DEA, WPP raised concerns about the reasonableness of the up-stream gauge. When asked to provide additional information, WPP, in a letter dated September 26, 1994, explained that the total estimated cost to install an up-stream gage would be about \$760,000 (including the cost to rebuild about 2.5 miles of access road to reach the most feasible site). WPP also expressed concern about the reliability and the usefulness of the up-stream flow gage for project operations and compliance monitoring (for more information, see WPP's letter commenting on the DEA in Appendix B).

We have concluded that WPP has considerable experience operating the reservoir and regulating highly variable reservoir inflows (in the past, without the benefit of an up-stream flow gage). Therefore, given the alternative compliance monitoring methods described above, we concur with WPP that an up-stream gage is not needed for compliance monitoring, and that it would be prohibitively expensive compared to our new recommendations.

Cumulative Impacts:

Historically, acid mine drainage adversely affected the water quality of the Cheat River basin. Abandoned mines are thought to contribute to this problem more so than a limited number of active mines because discharges from active mines are now more tightly regulated. Today, anecdotal evidence such as reports of improved sport fishing in Cheat Lake suggests that water quality is improving, although the water is still more acidic than normal. For example, acidic discharges from tributaries down-stream of the dam adversely affect water quality down-stream of the dam, particularly without release flows of less acidic reservoir water. Our recommended minimum reservoir releases would improve Cheat River water quality down-stream of the dam, thus enhancing aquatic habitat and expanding opportunities for recreation and fishing in the Cheat River basin.

Unavoidable Adverse Impacts:

Provision of the recommended minimum releases at the dam, including a 100-cfs absolute minimum release, could cause lower reservoir levels in drought years compared to historical operations. We considered this potential effect based on historical data showing the maximum number of days in any month from May through October where reservoir inflow dropped below 100 cfs. For this analysis, we assumed a starting reservoir water level elevation of 868 feet NGVD.

Historical daily river flow data in the license application (1978 through 1990) show that reservoir inflow can often be expected to drop below 100 cfs between July and September. Assuming a 100-cfs minimum release, the estimated minimum reservoir water level elevations for record dry periods are:

<u>Month</u>	<u>Estimated Min. Reservoir Level</u>
July	867.7 feet NGVD
August	867.5
September	867.1

Additional draw-down may be expected if a monthly drought occurs that is more severe than any on record. The primary adverse effect of such draw-downs would be on boating in the marinas. Specifically, WPP has stated that a draw-down to 867 feet NGVD would impede navigation at the Sunset Beach Harbor. Even so, we believe that such draw-down effects would be rare and that the predicted water level elevations would remain within an acceptable range for the assumed drought condition.

Run-of-river operation would eliminate draw-down effects but increase flooding impacts by reducing spring flood storage capacity. WPP's proposed April minimum reservoir elevation would

also increase flooding, but to a much lesser extent than the run-of-river and modified peaking operations recommended by DOI, WVDNR, and PFBC.

3. Fisheries Resources

Affected Environment: About 33 fish species inhabit Cheat Lake (RMC 1991). Dominant species are bluegill, brook silverside, bluntnose minnow, and largemouth bass. Primary gamefish are rainbow trout, northern pike, channel catfish, rock bass, green sunfish, pumpkinseed, bluegill, smallmouth bass, largemouth bass, black crappie, and yellow perch. Other fish known to inhabit the reservoir are gizzard shad, central stoneroller, common carp, river chub, golden shiner, emerald shiner, spottail shiner, spotfin shiner, mimic shiner, creek chub, white sucker, northern hogsucker, silver redhorse, golden redhorse, yellow bullhead, brown bullhead, rainbow darter, johnny darter, and logperch. The greatest numbers and biomass were collected from the three embayment areas (RMC 1991).

About 30 fish species inhabit the lower Cheat River below the hydroelectric facility (RMC 1991). Dominant species are bluegill, gizzard shad, and yellow perch. Primary gamefish include northern pike, channel catfish, rock bass, green sunfish, pumpkinseed, warmouth, bluegill, smallmouth bass, spotted bass, largemouth bass, black crappie, yellow perch, walleye, sauger, and freshwater drum. Other fish known to inhabit this reach of the river are common carp, golden shiner, emerald shiner, spottail shiner, spotfin shiner, mimic shiner, bluntnose minnow, silver redhorse, golden redhorse, yellow bullhead, brown bullhead, brook silverside, and johnny darter.

Aquatic habitat characteristics in Cheat Lake are principally lacustrine (relating to, formed in, or growing in lakes). Steep banks preclude the development of littoral areas (shallow waters sometimes found between the shore and open water) within the main channel. The aquatic vegetation that grows in littoral areas contributes significantly to the productivity and metabolism of the entire lake ecosystem. Usable protective habitat is generally sparse except in the embayment areas. Embayments support large littoral habitat areas with substantial growths of submerged vegetation. Predominant vegetation in the embayments is pipewort, sago pondweed, brittle naiad, and water starwort. Other cover available includes limited woody debris, deadfalls, and private boat docks.

Aquatic habitat in the lower Cheat River is limited. Substrate in the upper 1.1 miles is relatively uniform consisting of small to large cobbles (RMC 1993). Minor deposits of finer alluvia occur at the mouth of Grassy Run. Aquatic vegetation is sparse in the upper reach with the principal type being water starwort. Aquatic habitat in the lower 2.6 miles varies considerably. Upper portions are relatively shallow (less than 8 feet deep) with a cobble/boulder bottom. Several small shoals

with occasional boulders are interspersed along the right bank. Some submerged vegetation occurs along each shoreline. The central portion of the lower reach 2.6 miles is up to 21 feet deep. Gravel/cobble shoals exist adjacent to and down-stream of tributaries. Submerged aquatic vegetation, principally burreed, is present along shallower shore zones. The Cheat River becomes relatively deep near its confluence with the Monongahela River. A large gravel shoal spans the channel southwest of a large island. Patches of yellow cowlily extend along the left bank of the river up-stream of this shoal. Mid-river depths approach 20 feet down-stream of the island. Left-bank near-shore areas below the island are heavily vegetated with milfoil and starwort. The narrow, vegetated littoral areas are bordered by steep drops to the main river channel. The right-bank shoreline is deeper and lacks vegetation.

Core (1959) reviewed historical information on aquatic biota within the project area, considering investigations of Cheat Lake from 1926 through 1957. Results indicated degradation of water quality and biota from acid mine drainage. Research conducted by West Virginia University in the 1970's documented continued acid mine drainage water quality problems. Little information is available on fish and benthic macroinvertebrates in the reservoir before 1970. Information from recent surveys conducted by WVDNR is not available at this time. Historical information on the biota of Cheat River below Lake Lynn Hydro project is also scarce. Schwartz (1957) collected 50 species of fish throughout the Cheat River basin, but none was collected below the Lake Lynn dam.

Primary benthic (i.e., bottom-dwelling) organisms in Cheat Lake and the lower Cheat River include aquatic worms, midges, alderflies, and biting flies. The benthic community is very limited and dominated by organisms that are tolerant of poor water quality conditions because of the low pH.

Water quality has limited aquatic life production in Cheat Lake and the river down-stream of the project (see Section V.C.2.b.). Embayment pH has been much higher, above state standards, resulting in greater fish populations. Baker (1990) reported the effects of pH changes on fish communities. In general, a change from 6.5 to 6.0 decreases reproductive success in acid-sensitive species such as fathead minnows. A further reduction from 6.0 to 5.5 will cause a loss of sensitive species of minnows and dace and reduce reproductive success in other species such as walleye. Reduction from 5.5 to 5.0 causes a loss of major fish species such as walleye, rainbow trout, smallmouth bass, and nongame species such as creek chub. Finally, reduction from 5.0 to 4.5 causes loss of most fish species. Few fish species are able to survive and reproduce below 4.5 (e.g., central mudminnow, yellow perch, and in some waters, largemouth bass). Thus, fish and benthic production in the main lake and the river below the dam are limited by pH.

Environmental Impacts and Recommendations: Operation of the Lake Lynn project potentially affects the aquatic organisms of the Cheat River in several ways:

- Daily fluctuations and winter draw-down of the reservoir water levels affect resident fish and benthic populations by dewatering some of the littoral habitat, particularly in the embayments.
- Passage through the project turbines may affect the reservoir's resident fish populations by unnaturally displacing or killing individuals.
- Lack of continuous flow below the dam other than leakage reduces potential fish habitat.
- Rapid fluctuations or cessation of discharge may affect resident instream fish and benthic populations by reducing available habitat, and alternately scouring and dewatering the river bottom and stranding fish.

a. Reservoir Fluctuations and Late Winter Draw-downs

WPP proposes to operate the project within a 2-foot water level fluctuation (868 to 870 feet NGVD) in Cheat Lake from May 1 through October 31. Water sometimes may be drawn down further to avoid rare but foreseeable flood impacts. WPP has agreed to maintain a pool elevation between 863 and 870 feet NGVD between April 1 and 30. WPP also plans to include a late-winter draw-down of the impoundment that would decrease the water level 13 feet to capture spring runoff and reduce potential flooding. DOI recommends strict run-of-river operation to minimize potential effects of water level fluctuations on fish and other aquatic resources in the reservoir. WVDNR recommends a modified peaking operation, where pool elevation is maintained between 868 and 870 feet NGVD from April 1 through October 31, and between 857 and 860 feet from November 1 to March 31.

Fluctuating water levels can affect fish populations by altering the abundance, type, and availability of prey or habitat (Ploskey 1983). Small short-term fluctuations in water level have little effect on nutrients, plants, or benthic organisms. A small percentage of total lake shore area would be exposed by the daily fluctuations (about 30 acres or 2 percent of total acreage at full pool, see Table 3). In the main lake, little usable littoral habitat would be affected because of steeply sloped reservoir banks. Littoral areas of embayments, the most productive fish habitat in the reservoir, could have a higher proportion of habitat affected. These areas provide increased food resources, protective habitat, and potential spawning areas for fish. Thus the relatively small fluctuations (within 2.0 feet) that occur daily in the reservoir would not have

significant adverse effects on fisheries resources in the main lake but could have a greater effect on embayment fisheries.

Winter draw-down to 857 feet exposes about 180 acres of additional shoreland compared to the full pool of 868 feet. This reduces the total reservoir water surface area by about 11 percent of total acreage at full pool (see Table 3). Maximum draw-down also substantially reduces available fish and benthic habitat in the embayments by dewatering spawning substrate and reducing aquatic vegetation used for nurseries by larval fish and benthic organisms.

Addition of fish attractor devices such as submerged brush piles (proposed by WPP), cribbing, or weighted half-logs on hard substrate would provide more usable habitat and enhance fisheries resources in embayments. Placement of such devices adjacent to littoral areas would offset some loss of habitat from summer and winter draw-downs. Use of such structures in the main lake would be impractical because of the steep topography along the main channel banks. Placement and maintenance of these devices in the main lake would be difficult. To reduce the adverse effects of draw-downs on the resident fish population, we recommend that these types of structures be placed in embayments at depths greater than the maximum 13-foot winter draw-down. The types and locations should be developed in consultation with the DOI and WVDNR, and a plan should be submitted to the Commission for review and approval.

WPP's proposed April minimum water level elevation of 863 feet NGVD would enhance early fish spawning habitat (i.e., provide an additional 50 acres of water surface area), while retaining two-thirds of the reservoir storage volume between the elevations of 857 and 870 feet. WVDNR's recommended minimum April elevation of 868 feet would provide 100 acres of water surface area in addition to WPP's proposal but would eliminate 90 percent of the reservoir's storage volume between those elevations. The WVDNR proposal would also require that WPP leave the Taintor gates closed during a month with very high flood potential (see Section V.C.2.a.). Considering the competing needs for increased spawning habitat and the real potential for flood flows in April, we recommend WPP's proposed April minimum water level elevation of 863 feet NGVD.

b. Minimum Flow Releases Below the Lake Lynn Dam

The Cheat River channel down-stream of the Lake Lynn dam is a potentially valuable aquatic resource that could be enhanced by maintaining a minimum instream flow. Lack of continuous flow down-stream of the dam eliminates potential spawning and rearing habitat for resident fish and benthic organisms in that reach of the river. Water quality (pH less than 6.0) is also an important aspect to be considered in relation to minimum flows and fishery enhancement (see Section V.C.2.b.).

Depending on time of year, water level elevation, and net reservoir inflow, WPP proposes a minimum flow release of 200 cfs (plus 12 cfs leakage), 100 cfs, or net reservoir inflow (see Table 4). The DOI, WVDNR, and PFBC propose other minimum flow releases as described in Section V.C.2. In addition, PFBC specifically recommended restriction of peaking during the fish spawning and fry periods.

We considered two key issues in our analyses of minimum flow releases to the lower Cheat River. First, providing instream flows at all times would increase usable habitat for fish and aquatic life in the river. Second, the minimum releases would also provide relief from acid mine water drainage and low pH. Our analyses regarding pH are provided in Section V.C.2.b. Our fisheries habitat analysis is provided below.

WPP conducted instream flow incremental method (IFIM) studies to derive an optimum flow that would enhance the availability of fisheries habitat (RMC 1993). The results of the IFIM study show that improvement in available habitat for important species (smallmouth bass, sauger, channel catfish, and gizzard shad) would be optimized for all life stages as minimum flow is increased from zero to 212 cfs.

In preparing this FEA we considered in more detail the potential fisheries benefits of various flows and of a run-of-river operation. Specifically, we looked at how restriction of peaking during the fish spawning and fry periods might enhance the fishery by providing flows that would correspond to optimum flows for the spawning and fry life stages of target species (based on results of the IFIM study). In doing so, we decided that the greatest restriction of peaking would be to operate the project in a run-of-river mode for a part of the year.

We have found that operating the project in an instantaneous run-of-river mode would help ease the rate of flow change as compared to peaking. It would not, however, eliminate widely variable flows and flows much greater than the optimal range for the key spawning and fry life stages. Our review of historic Cheat River flow data showed that reservoir inflows often shift upward or downward by several hundred cfs—or even several thousand cfs—within 1 day. Furthermore, anticipated normal spring flows are often far above the optimum for the spawning and fry life stages of target species. Such high flows (which would sometimes exceed those released by the peaking operation) would result in a flushing effect that would negate any gains that might be made during periods of low flow. It is also important to note that this flow-based limitation of the river's habitat below the dam would be in addition to the substantial limitations imposed by pH. The limitations posed by low pH would remain even with the benefits of minimum release flows intended, in part, to increase pH (as discussed further below).

A peaking mode of operation appears to be consistent with managing the wide range of natural river flows experienced at the Lake Lynn project. And although continued peaking would result in rapid release flow fluctuations, it would help moderate the adverse effects of the extremely high flows that must be released more often under a run-of-river operation, as well as extremely low flows (which would insufficiently dilute the acid runoff).

Although WPP- and agency-proposed minimum flows would improve physical habitat availability, pH conditions would continue to limit aquatic life productivity until the effects of acid mine drainage were reduced in the watershed. For example at a flow of 212 cfs, pH would improve dramatically over existing base flow values but would still be below the minimum level of 5.7 for smallmouth bass (Clady 1977; Paragamian 1979), below the optimum range of 7.9 to 8.1 for sauger and walleye (Funk and Pflieger 1975), and below 6.0, which induces reproductive failures (Anthony and Jorgensen 1977) and reduces recruitment (Spangler 1977). The pH would also remain too low for perch, which can function in low pH as adults but exhibit reproductive failure at pH less than 5.5 (Ryan and Harvey 1979). Increases in minimum flow up to 1,000 cfs would improve the median pH in the Cheat River to 5.28, but that would still be below minimum pH levels for reproduction and recruitment of important fish species.

In conclusion, we recommend increased minimum release flows for the purpose of diluting acid and enhancing the river's general habitat potential down-stream of the dam. However, we do not recommend modified flows specifically aimed at enhancing the spawning and fry life stages because there is little potential for additional benefit. For further discussion, refer to our responses to comments received from DOI and PFBC in Appendix B.

The economic effects of each of the minimum instream flow releases investigated and the run-of-river operations and the relative effectiveness of each alternative minimum flow in protecting fishery resources are presented in Section VI.B. We recommend, based on all these factors, a minimum release of 212 cfs or reservoir inflow when inflow is less than 212 cfs, with an absolute minimum release flow of 100 cfs.

c. Rapid Fluctuations or Cessation of Discharges

Rapid fluctuations in discharge down-stream from hydroelectric projects can adversely affect fish and aquatic communities (Bain et al. 1988). Rapidly fluctuating flows create alternating flowing and stagnant habitat conditions that may cause localized loss of habitat for resident fish species. The effects of fluctuations on adult fish is probably small because adult fish can readily avoid unfavorable conditions. Young fish, fish eggs, and benthic organisms can be subjected to scouring flows during startup and stranding in dewatered shallow areas during shutdown periods. Even larger fish can be stranded in

stagnant pools during shutdown periods. Fish stranded in stagnant pools can be subject to stress from increasing temperatures and lowering dissolved oxygen, and also to increased predation by birds or other riparian wildlife.

WPP's proposed peaking operation would continue to cause scour effects at high flows. When the project operated at or near full hydraulic capacity, the scouring effects described above would occur in the upper 1.1-mile reach regardless of the rate of change of flow released (i.e., regardless of ramping provisions). Effects in the lower 2.6 miles are and would remain much less severe compared to the upper reach. The lower reach has more refuge habitat for all life stages of key fish species. Thus, fish and other aquatic organisms displaced from the up-stream reach would tend to populate the lower reach.

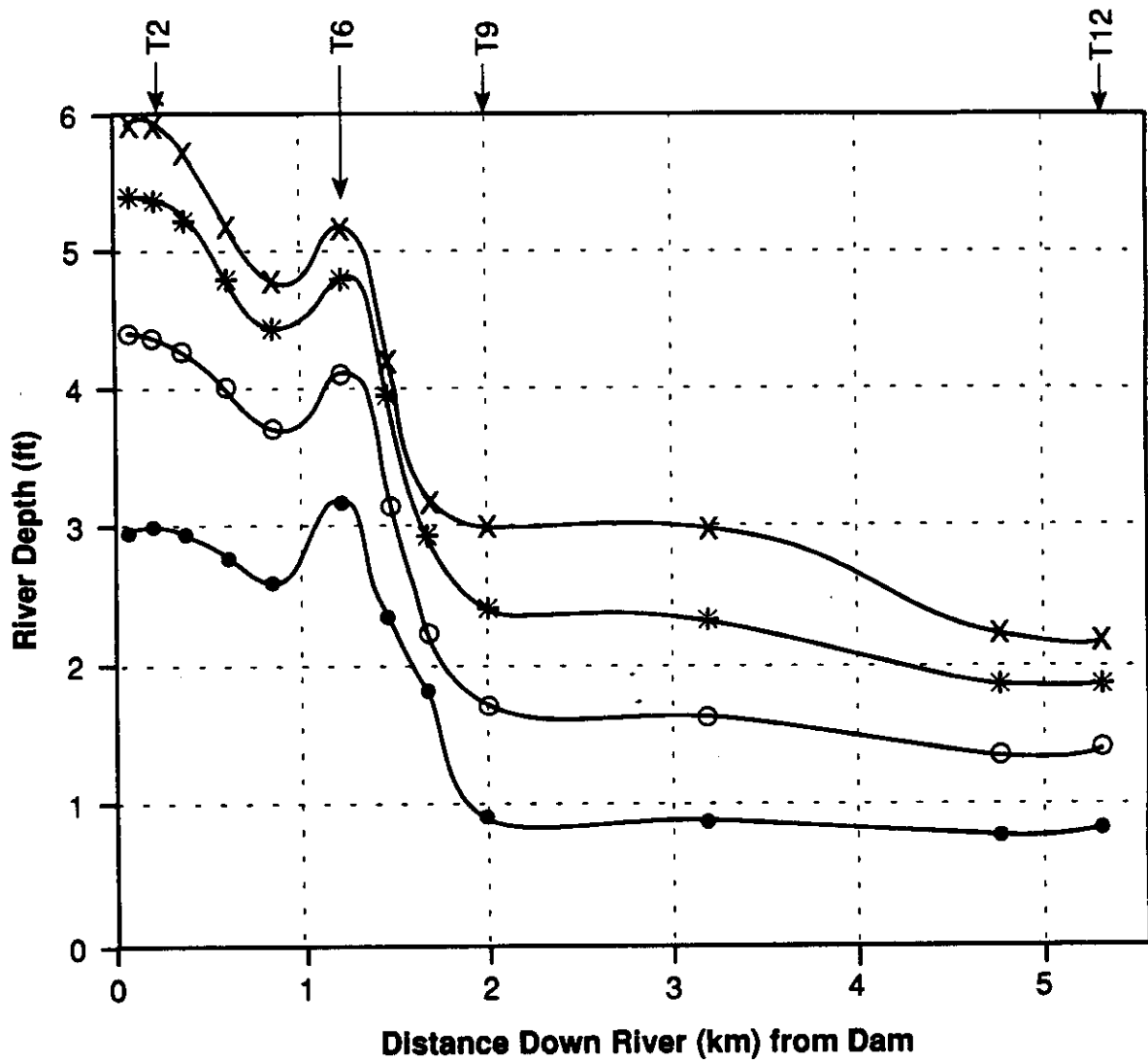
When the Lake Lynn project turbines are not operating, several large shoals are left exposed. The tailrace area remains filled with water to a depth of 10 to 12 feet at current base flow conditions when the turbines are shut down, and several other small isolated pools may contain fish stranded by a sudden decrease in flow. WPP's proposed operation would minimize adverse effects during receding flows. The reduced effect during receding flow would be due to the minimum release of 100 to 212 cfs, which would prevent stagnation of pools and keep most of the river channel wetted during nongenerating periods.

DOI recommends that the Lake Lynn project be operated in a run-of-river mode to reduce sudden changes in water flow and to stabilize habitat conditions to enhance fish and benthic production. PFBC also recommends that, upon documentation of consistent reproduction and recruitment of fish in the Cheat River down-stream of the dam, the hydroelectric facility be operated in a run-of-river mode.

WPP does not propose to ramp its turbines, citing the economic losses it would incur if ramping were required. DOI requested that the EA consider ramping as an alternative to the proposed peaking operation. The COE requested ramping in early correspondence but has since stated that ramping is not critical as long as minimum releases are provided and WPP continues to notify Maxwell Lock and Dam daily regarding anticipated operating plans. No other resource agencies specifically addressed ramping recommendations.

Because of continued scouring effects at high flows, we conclude that ramping during increasing flow periods would not significantly benefit the fisheries if a peaking operation is maintained. Up-ramping would also have significant economic impact because it would preclude the load-following characteristics of the existing peaking operation. This would eliminate much of the usefulness of the Lake Lynn project, which provides a cost-effective source of power within APS's own system for periods of peak demand (see Sections VI.A and VI.B).

GLW70029.A0.03 Figure 5 6-8-94 III



Legend

- 1 Units Unit No. 1 flow = 2,040 cfs
- 2 Units Units No. 1 & 2 flows = 4,000 cfs
- *—* 3 Units Units No. 1, 2 & 3 flows = 5,920 cfs
- X—X 4 Unit Units No. 1, 2, 3 & 4 flows = 7,910 cfs

FIGURE 5
Water depth below Lake Lynn
as a function of Lake Lynn operations

Source: WPP

However, flow could be ramped down after the turbines are shut down by operating the spillway gates. This does not inhibit the plant's ability to follow and respond to load changes and thus the economic loss is much less than with up-ramping (see Section VI.B.). We developed a down-ramping plan based on the following analyses and criteria:

- River depth down-stream of the dam is a function of discharge and distance from the dam (Figure 5). In the upper mile the river channel is relatively narrow and depth is more sensitive to flow changes than farther down-stream.
- River depth changes are important when depth is less than 2 feet.
- When depth is less than 2 feet, depth should not change faster than 1 foot per hour.
- At flows above 4,500 cfs, river depth is always more than 2 feet and flow thus can be varied at any rate.
- If the flow rate is between 500 and 4,500 cfs, depths will be less than 2 feet in the lower reach and control the rate at which depth may vary. Flow change of 2,000 cfs will change depth by about 1 foot in the reach; therefore, flow can be decreased from 4,500 to 500 cfs in a period of 2 hours, or at the rate of 2,000 cfs per hour.
- At flows less than 500 cfs, depths in the upper reach below the dam will fall below 2 feet and begin to control the allowable rate of decrease. A decrease of 300 cfs in that reach will change the depth by 1 foot; therefore reducing flow from 500 to 200 cfs should be accomplished over a period of 1 hour.

The ramping plan we developed and evaluated is summarized in Table 6.

Table 6. Down-ramping rates developed and evaluated by Commission staff.

Operating Mode	Release Flow (cfs)	Maximum Change
Increasing Flow	All	No restriction
Decreasing Flow	500-200	300 cfs/hr
	4,500-500	2,000 cfs/hr
	Above 4,500	No restriction

Because the effects of scour at high flow would continue with any peaking operation, we recommend that WPP develop an enhancement plan in consultation with WVDNR, PFBC, and DOI if this operating mode is to be maintained. This plan should explore the potential use of fish attractant devices such as inverted V or wing deflectors to provide additional refuge, flow protection, and benthic habitat in the upper segment of the river. Such devices should not be installed within 200 yards of the dam because of potential hydraulic complexities that could develop, leading to shoreline erosion and eddying of rocks that could cause structural damage to project facilities. (This process would consist of eddying of the high-velocity tailrace discharge because of the fish attractors, in turn moving rocks that would serve to worsen erosional effects.)

From a fisheries perspective, run-of-river operation would provide a greater enhancement of the Cheat River down-stream of the project than a modified peaking operation. If the peaking operation is maintained, our ramping plan would enhance the fisheries but would have minimal incremental benefit because most down-ramping impacts would be reduced substantially by the minimum reservoir release during nongenerating periods.

Considering all project factors, including project economics, water quality, and fisheries enhancement, we recommend that there be no ramping requirements. We conclude that the fishery down-stream of the dam is limited primarily because of low pH. The recommended fish attractant structures will provide protection from the highest flows, while the minimum flows will enhance pH conditions (see Section VI.B).

d. Biological Monitoring Plan

WPP proposes to develop a biennial biological monitoring plan. That plan would be submitted to the DOI, WVDNR, and PFBC for comment before implementation.

The WVDNR recommends a biological monitoring program to evaluate the effectiveness of a minimum release flow, including its effect on reservoir pH. The PFBC recommends that WPP develop a biological monitoring plan to document fish reproduction, recruitment, population changes, and abundance and diversity of benthic macroinvertebrates in the Cheat River down-stream of the dam.

We recommend that a fisheries monitoring plan be developed and implemented for Lake Lynn Project waters, including the main reservoir, reservoir embayments, tailwater area, and farther down-stream in the Cheat River. The plan should be prepared in consultation with the DOI, WVDNR, and PFBC and submitted to the Commission for review and approval. The intent would be to monitor aquatic resources, including fish and benthic organisms. Future improvements in aquatic resources would serve as the basis

for other potential enhancements, including evaluation of potential turbine entrainment and fish mortality.

e. Fish Entrainment and Turbine Mortality

No studies exist that specifically consider the fish entrainment and mortality impacts resulting from the Lake Lynn project. We have concluded that low fish populations (particularly in the reservoir area nearest to the dam) and low susceptibility of the dominant species make fish entrainment unlikely and make prelicensing entrainment studies unwarranted. But WPP also states that it would be willing to discuss entrainment issues at triennial meetings with fish and wildlife agencies (DOI, WVDNR, PFBC), particularly if resident fish populations continue to improve.

WVDNR recommended that a prelicensing turbine entrainment study be conducted if deemed necessary by WVDNR and DOI. WVDNR also recommended that if negative impacts are documented, WPP develop a plan to avoid, mitigate, or compensate the State of West Virginia for fish mortality impacts. DOI recommended that WPP adequately address the fish entrainment issue in full detail to ensure that existing and potential fishery resources will be protected from injury/mortality in the future due to entrainment. We believe that an entrainment study at this time would not provide useful information because of poor existing conditions, and therefore recommend that entrainment studies be deferred until lake and river water quality (i.e., pH) and fisheries show measurable improvement.

If water quality conditions improve and the lake's fisheries respond with comparable improvement, we recommend that the Commission then order WPP to prepare a plan to evaluate the effects of turbine entrainment on the lake and Cheat River fisheries. The Commission may require this plan on its own or based on a recommendation from WVDNR, DOI, or PFBC. To determine whether lake conditions improve sufficiently, we recommend that WPP develop and implement monitoring plans for water quality and fisheries (see Sections V.C.2.d. and V.C.3.d.).

Unavoidable Adverse Impacts: Continued peaking operation and winter draw-down of the reservoir would adversely affect aquatic resources in comparison to agency-recommended run-of-river operation. Such effects would be minor if the pH of project waters remained at levels that inhibit biological productivity. Our analyses also show that highly variable river flows occur naturally within the Cheat River at the Lake Lynn project. These characteristics, which would have to be maintained under an instantaneous run-of-river operation, highlight the importance of comparing peaking and run-of-river based on season and fisheries impacts, looking at specific species and life stages.

4. Terrestrial Resources

Existing Environment: Flora near the project area is typical of the region. The predominant vegetation is mixed mesophytic forest, with large undisturbed areas visible along the reservoir and river shore areas. Wetlands in Cheat Lake are generally found in small pockets and are primarily confined to tributaries and the three large embayments. Several areas down-stream of the dam are palustrine forested wetlands dominated by broad-leaved deciduous trees.

Wildlife resources in the project area include white-tailed deer, fox, beaver, and other small mammals. The State of West Virginia is also introducing otter to the region as part of its wildlife management plan. Commonly hunted game birds include turkey, grouse, woodcock, wood duck, mallard, and geese. Many species of reptiles and amphibians are also found throughout the area.

Eight state rare plant species are recorded in the project area (seven in West Virginia, one in Pennsylvania). Five state special concern bivalves (clams) are recorded in nearby riverine areas of Pennsylvania and may be present down-stream of the dam.

Environmental Impacts and Recommendations: WPP has not proposed any specific measures intended to preserve or enhance upland habitat areas. There are also no specific resource agency or public recommendations relating directly to protection of upland and wetland habitat areas or wildlife. The project, as proposed by WPP, would result in some loss of upland habitat along with some provisions to protect areas from future development. Development of the West Penn Beach Recreation Area would fragment the upland habitat of about 46 acres of land. However, establishment of wildlife habitat and nature viewing areas such as Cheat Haven and Area 26 will help to preserve and protect those other areas.

While we have no specific recommendations related to upland habitat, a standard license article would require that WPP retain ownership of its project lands unless the Commission approves changes in ownership. This would help to limit land development and further loss of natural habitat. We also recommend measures to minimize destruction of the area's natural vegetation in the interest of aesthetics at the West Penn Area Beach Recreation (see Section V.C.6).

a. Minimum Release Flows

As discussed previously, the recommended minimum release flow (212 cfs or reservoir inflow, with an absolute minimum of 100 cfs) would have a positive effect on the down-stream fishery because of improved water quality and greater availability of water. This enhancement measure would also apply to small areas of wetland vegetation down-stream of the dam and secondarily

enhance habitat for other plants and animals, including state concern bivalves.

b. Reservoir Water Level

The proposed increased minimum reservoir level in April would provide more water in the embayments and other inlet areas where wetland vegetation establish in the spring and summer. This would improve the probability of early wetland area growth and increase feeding and brood habitat for waterfowl.

Unavoidable Adverse Impacts: The upland habitat losses associated with the proposed West Penn Beach Recreation Area development are minor considering the amount of remaining upland habitat within the project boundary.

5. Federally Listed Threatened and Endangered Species

WVDNR identified one federally listed threatened species, the flat spired three-toothed land snail, near Cheat Lake. The eastern small-footed bat and the green salamander also occur near Cheat Lake and are under review by DOI for threatened and endangered status.

The flat spired three-toothed land snail is found only in Preston and Monongalia Counties, West Virginia, near Coopers Rock. It generally inhabits leaf litter at the base of the cliffs along the gorge on both sides of the river (in the upper Cheat Lake area).

The green salamander is a cliff-dwelling species whose habitat includes narrow crevices on rock faces. The rocks need to be damp but not wet and situated where the atmosphere is humid and well protected from the sun and direct rain. Green salamanders can also be found under stones, logs, or loose bark and occasionally inhabit trees. The eastern small-footed bat can be found in caves, mine-tunnels, crevices in rocks, or buildings in or near forested areas. It feeds while flying low among trees or over brush.

Because the habitats of the three species identified above are terrestrial in nature and not directly associated with project waters (reservoir or river), the habitats and consequently the species themselves would not be affected by project operations. The only land-disturbing activities associated with this project would be associated with development of the West Penn Beach Recreation Area and the hiking and biking trail. Because those areas do not include rocky areas and cliffs (as are found along upper Cheat Lake), the habitats of the three species would not be affected.

Unavoidable Adverse Impacts: None.

6. Aesthetic Resources

Affected Environment: The project area lies in a deep valley of northern West Virginia well known for its scenery. Coopers Rock State Forest, along the reservoir's up-stream shore to the east, is so named because it features a well-known main rocky overlook from which visitors enjoy panoramic views of the Cheat River valley. According to WPP, nearly 400,000 persons visited Coopers Rock State Forest in 1984. This makes it one of the most popular of West Virginia's State Forests (estimated total visits to all eight state forests are in the range of 800,000 to 1 million per year).

Views of Cheat Lake are also prominent along I-68 as it descends into the valley and crosses a segment of the reservoir that elicits high viewer interest (see Figure 2). The bridge crossing area's most vivid features are its topography, dense woodlands, and the concentration of attractive buildings and the marinas all located along the east shore.

As discussed in Section V.8, Cheat Lake is highly desired for boating, and access to reservoir views is probably a key reason. Without a boat, most of the reservoir shoreline is inaccessible. Thus boaters have a unique opportunity to observe the variety of scenes offered by the reservoir. These vary from the deep canyon-like setting in upper Cheat Lake to the more open and gentle topography down-stream in the lower reservoir and embayments. While many shoreline areas are completely undeveloped, residences, marinas, and lease lot docks provide points of interest for boaters viewing the shoreline.

The area down-stream of the dam is characterized by very little land development and activity. Lack of river flow during normal periods of project nonoperation changes the area's aesthetics compared to the same scene with flowing water. The effects of acid water are also apparent, with rocks along the river often discolored by a yellowish-orange film, sometimes referred to as "yellow boy" staining.

Environmental Impacts and Recommendations: WPP proposes to manage the reservoir water level within the same summer and winter ranges as the existing operation (summer, 868 to 870 feet; winter, 857 to 870 feet), except in April when the proposed minimum water level (863 feet) is 6 feet above WPP's current April minimum.

The proposed higher April water level would enhance springtime reservoir aesthetics compared to the existing operation by reducing areas of dewatered shoreline. We concur with WPP's recommended summertime minimum water level elevation of 868 to 870 feet based on fishery, recreation, and aesthetic considerations.

The recommended minimum flow release of 212 cfs (or reservoir inflow if less than 212 cfs, with an absolute minimum of 100 cfs) would noticeably enhance the Cheat River's aesthetics down-stream of the dam. River flow would be more constant throughout the year and generally equal reservoir inflow during low-flow periods, thus simulating a more natural run-of-river flow. The Cheat River down-stream of the dam would continue to receive far less recreation use than the reservoir, based in part on a less scenic environment. Therefore, we find no reason to modify the recommended minimum flow release because of aesthetics.

WPP's proposal to develop the proposed 46-acre West Penn Beach Recreation Area would have the most prominent visual impact associated with the proposed project. The development would replace a lightly used rustic site with a fully developed and intensively used public park. However, we recommend its development based on the area's many recreation needs (see Section V.C.8).

The West Penn Beach development would be visually compatible with its environment, but the aesthetics of the development should be explored further before construction. We recommend that WPP file a plan to minimize the adverse aesthetic impacts of the West Penn Beach site development. The plan may be filed as a component of the revised recreation plan and should include specific proposals to:

- Minimize destruction of the area's natural vegetation
- Blend the recreational development into the existing landscape character
- Revegetate, stabilize, and landscape new construction areas and slopes damaged by erosion (also, see Section V.C.1)
- Light the recreation area at night so as to provide reasonable safety and convenience, but also to minimize adverse effects on adjacent property owners

The Commission may require that similar planning be applied to other proposed developments as identified through revised recreation plans.

Unavoidable Adverse Impacts: The visual change associated with the West Penn Beach Recreation Area development is unavoidable. However, that change would be offset by improved recreation and management of the improved recreation site.

7. Cultural Resources

Affected Environment: In its letter of May 22, 1990, the West Virginia State Historic Preservation Office (SHPO) indicated

that continued operation of the project would not affect any known historic or archaeological sites within the project area. It stated that although the Lake Lynn powerhouse and dam are eligible for the National Register of Historic Places, they would not be affected because no changes are proposed that would alter them.

Environmental Impacts and Recommendations: The powerhouse and dam would not be affected by the proposed changes to project operations. However undiscovered properties in the project area could be affected adversely by future activities. The SHPO requested that it be notified if there is any ground disturbance for boat ramps or other construction activities.

We recommend that WPP take the following actions before undertaking construction of the West Penn Beach Recreation Area or engaging in any other ground disturbing activities, or if cultural properties are found during construction or operations:

- Consult with the SHPO.
- Based on consultations with the SHPO, prepare a plan describing the appropriate course of action and a schedule for carrying it out.
- File the plan for Commission approval.
- Take the steps necessary to protect the properties until notified by the Commission that all these requirements have been satisfied.

8. Recreation and Other Land and Water Uses

Existing Environment: About 60 percent, or 234,000 acres of Monongalia County is forested, and most of that land is classified as commercial forest. Until about 50 years ago, the area was generally rural and the land adjacent to the lake consisted of small farms and forest. Today most of the farmland is gone, generally because of residential growth, but much of the reservoir shore remains forested.

Cheat Lake is one of 11 reservoirs in West Virginia larger than 500 acres. Of the other 10, only Mt. Storm Lake shares the problems of acidic mine drainage (WVDNR 1975). Cheat Lake is also unique because of its proximity to major cities, including Morgantown and Pittsburgh.

West Virginia's *Statewide Comprehensive Outdoor Recreation Plan 1993-1997* (SCORP) evaluates a region that includes Monongalia County and 5 contiguous counties in northern West Virginia. The SCORP planning region includes a total 1990 population of 253,304. It contains 111 county and local parks, 5 state parks, 9 state wildlife areas (including 7 fishing sites), 1 state forest (Coopers Rock), 1 COE recreation site

(Tygart River Lake), and part of 1 national forest (Monongahela). The SCORP also reports that the region is served by 797 camping sites, 12 PGA-certified golf courses, and 4 licensed whitewater boating companies.

a. Reservoir Land Use and Recreation

Cheat Lake is the largest lake in Monongalia County, providing recreational opportunities for about 381,000 persons in the county and seven contiguous counties. The major recreational facilities on the reservoir are the Lakeview Resort and Conference Center and three marinas that serve primarily motorboats. The reservoir provides a very attractive residential and leisure area setting, with a variety of residential sites clustered around its northern half and occasional residences found along the upper Cheat Lake shoreline. WPP typically owns shoreland up to the normal high water mark, and in some places owns additional land. Most adjacent private owners have dock/shore easements with WPP, allowing them rights to cross and use WPP property.

The following paragraphs generally describe Cheat Lake's existing recreation and other uses identified by five different zones within the project area beginning at the up-stream end of the reservoir (see Figure 2).

The upper Cheat Lake zone features a narrow canyon area and Coopers Rock State Forest along the eastern 3 miles of shoreline between the headwaters and Quarry Run. There is no residential development in the state forest along the east shore, whereas the west shore includes several private homes within the first mile up-stream of Quarry Run. The 12,713-acre state forest is managed for timber, forestry research, and watershed and wildlife protection. It also offers a scenic overlook as its main attraction as well as hiking, camping, and picnicking. The steep shore area of the state forest has no official trail system and is rarely accessed by hikers. The area is used for recreation primarily by boaters who stop to picnic and swim along the east shore. This activity sometimes results in intensive but generally nonregulated recreation use, and particularly at a beach/sandbar formed by the 1985 flood just up-stream of Quarry Run along the east side of the lake.

The marina zone includes the Edgewater Marina and Blosser's Marina along the east shore. There are several private residences on the east shore as well. The Mont Chateau building is south (up-stream) of the marinas and overlooks the reservoir from high on the ridge. Formerly a state park lodge, Mont Chateau is now a state office building. The shore area at Mont Chateau is used regularly for public swimming. The west shore of the reservoir in the marina area is developed much less densely than the east shore and includes several private home sites and at least one cluster of small cabins.

The bridge zone is easily recognized because the State Route 857 and I-68 bridges cross the reservoir there. The State Route 857 bridge clears the normal full-pool water surface by no more than 8 to 10 feet. This may account for why very large boats are generally not seen on the reservoir. The lake shore slopes are more gentle in the bridge area, providing a good location for the bridges and for the most intensive development area along the reservoir shore. A condominium or townhouse development stands on the east shore between the two bridges, and almost all available land along the east shore north of the I-68 bridge to Sunset Beach Harbor is developed with single family homes on 1/2- to 1-acre lots. The Lakeside Resort and public golf course is just east of the residential area along the lakeshore. Development is more scattered along the west shore and is often not visible from the reservoir. Many of the private properties along the shoreline include boat docks, but virtually none of the shore in the area is developed for public recreation.

The Sunset Beach zone features a harbor lined with residential sites along the reservoir's east side. It includes a marina, a boating products and boat rental store, and a restaurant. Most of the land adjacent to Sunset Beach harbor is rather flat compared to other reservoir shore areas and almost entirely developed with residences of various types. New condominiums (some recently constructed) overlook the harbor from the south side. The land area north of the harbor slopes steeply upward to a broad peninsula featuring several large hillside houses in the Greystone Estates residential development and golf course.

The tip of the peninsula includes an undeveloped wooded area known as Cheat Haven. WPP owns most of the area, the exception being a small, treeless area along the reservoir shore—a former industrial slate dump site (according to USGS mapping) at the south terminus of the former Baltimore and Ohio Railroad route. The former dump area appears to be completely overgrown with native grasses and some small trees. The shoreline opposite the Sunset Beach harbor (along the reservoir's west shore) is mostly undeveloped.

The lower Cheat Lake and embayment zone includes the Lake Lynn dam and hydroelectric plant and three embayments along the reservoir's east side (Rubles Run, Morgan Run, and Manning Run). The West Penn Beach Peninsula is between the two larger embayments (Rubles Run and Morgan Run) and forms the center of WPP's proposed West Penn Beach Recreational Area development.

There are few permanent buildings along the east shoreline between Cheat Haven and Manning Run. The shoreline does, however, include several WPP-owned lease lots. The lease lots are divided into small lake frontage plots identified by posted numbers. While conditions vary, some lease lots include fairly elaborate docks. The lease areas are accessible by boat only, as road access is either inconvenient or nonexistent, and they are

used primarily for day use recreation and camping. The former grade of the Baltimore and Ohio Railroad is prominent in this area and runs behind the small lease lot areas along the shore. WPP proposes to improve the railroad grade for use as a public hiking and biking trail.

The lower Cheat Lake zone is not as developed as the up-stream zones, but it is subject to regular recreation use, particularly by boaters. The former railroad grade was constructed along causeways in front of each embayment, with openings that provide water flow. Rubles Run may be accessed easily by most boats used on Cheat Lake, whereas Morgan Run is accessible only to smaller boats. Manning Run is connected to the reservoir through a culvert under the former railroad grade passable only by canoe. Visitors may also reach the embayments along minor roads—particularly the West Penn Beach peninsula, where 10 to 15 cars can be parked informally on WPP property. The site access road is connected to State Route 857, the main secondary (two-lane) highway along the northeast shore of the reservoir.

About 10 to 20 residences are scattered along the Morgan Run and Rubles Run shore and bluff areas. A private campground at the head of Morgan Run appears to serve mostly long-term trailer camp sites. WPP also provides for several dock lease sites along the north shore of Morgan Run. The Morgan Run lease sites are easily accessed by car, and there is reasonable room for parking along the adjoining access road.

The peninsula between Rubles Run and Morgan Run is an area that shows evidence of regular, unmanaged recreation use. It includes several well-worn paths and fire pits found at locations both next to the water and up on the bluff.

b. Cheat River Land Use and Recreation

Access to the Cheat River below the dam is gained on a local road that runs parallel along the east side of the river and then north to Highway 119 in Point Marion, about 3 miles down-stream. A local road also connects along a winding route toward the east, linking with State Route 857 about 5 miles from the dam. The former grade of the Baltimore and Ohio Railroad continues along the river's east shoreline down-stream of the dam. The former railroad grade area next to the dam is secured by fence. WPP uses the area for project operation and maintenance. The project substation is well above the railroad grade area and farther east.

There are only a few buildings immediately adjacent to the Cheat River below the dam. However, the villages of Lake Lynn and Nilan are just above the east river bank and about 1/2 and 2 miles down-stream of the dam, respectively. Point Marion is at the Cheat River's confluence with the Monongahela River, about 3 miles down-stream of the dam. During a site visit (October

1993), we noted evidence of recreation use in several areas below the dam, including well-worn paths, fire pits, and pullouts along the road. WPP has maintained several no trespassing and operational warning signs. About 1 mile below the dam, the riverbed widens to nearly 1,000 feet and is very rocky. We estimate this segment of river (the most shallow area below the dam) may be navigated by canoe only when release flows exceed about 4,000 cfs.

There are no designated recreation areas in the project area down-stream of the dam. Information compiled by WPP indicates that normal, unmanaged recreation uses include fishing, boating and swimming. Most of these activities are likely to occur in the Monongahela River backwater closer to Point Marion.

c. Project Area Recreational Use and Needs Data

In 1990, WPP completed a recreation use study consisting of four components. Three of the components relied on interviews with active recreation groups and individuals in the project area, while the fourth used a mail survey sent to WPP reservoir lease holders. In early 1993, WPP supplemented the 1990 use information in response to a Commission request.

The Cheat Lake Environment and Recreation Association (CLEAR) prepared the *Cheat Lake Needs Assessment* (preliminary report February 1993). That study used statistical techniques to collect and analyze data from randomly selected respondents. CLEAR collected data for the study using in-home interviews and mail-back questionnaires.

We reviewed the WPP and CLEAR reports and summarize some of the information obtained below. Table 7 lists the primary purpose of recreation groups interviewed in the project area in 1990. Pleasure boating and water skiing are seen as important recreation activities and together accounted for about 63 percent of the planned recreation hours reported in the WPP user surveys. In 1993, WPP analyzed the 1990 data further, estimated total use, and then broke that down into reservoir use by private land owner (20 percent) and reservoir and down-stream river use by the general public (80 percent). These estimates (see Table 8) further highlight the importance of boating activities.

Table 9 lists the primary types of watercraft by recreation group and shows predominant use of larger motorized boats. However, while about 93 percent of surveyed WPP leaseholders reported motorboats or pontoon boats as primary watercraft, 49 percent reported a canoe as secondary watercraft. Also, 27 percent of leaseholders reported jet skis for secondary use, with 20 percent reporting jon boats (fishing dinghies).

are for
the
the

Table 7. Primary purpose of trip by recreational groups interviewed at Cheat Lake and the Cheat River below Lake Lynn Hydro Station, 1990 (Source: APS 1991).

Purpose	Recreation Groups		People			Planned Recreational Hours		
	No.	%	No.	No./Group	%	No.	Hours/Group	%
Pleasure boating	161	47.6	517	3.2	45.6	617	3.8	43.9
Water-skiing	70	20.7	260	3.7	22.9	265	3.8	18.9
Fishing	29	8.6	58	2.0	5.1	132	4.6	9.4
Swimming	12	3.6	36	3.0	3.2	34	2.8	2.4
Picnic	11	3.2	52	4.7	4.6	68	6.2	4.8
Camping	7	2.1	21	3.0	1.8	134	19.1	9.5
Other	48	14.2	189	3.9	16.7	155	3.2	11.0
Totals	338		1,133	3.4		1,405	4.2	

Table 8. Estimated total recreation use breakdown in Lake Lynn project area, 1990 (Source: APS 1993).

Activity	Private Use (Lake Only)		Public Use (Lake and Downstream Cheat River)		Combined Public and Private Use	
	No. of Visitors	% Usage	No. of Visitors	% Usage	No. of Visitors	% Usage
Boating	36,800	46	182,400 (900)	57	219,200	55
Water-skiing	8,800	11	73,600	23	82,400	21
Swimming	8,000	10	9,600 (960)*	3	17,600	4
Relaxing	16,000	20	---	0	16,000	4
Nature observation	1,600	2	---	0	1,600	~0
Fishing	1,600	2	16,000 (1,362)	5	17,600	4
Picnicking	3,200	4	16,000	5	19,200	5

Activity	Private Use (Lake Only)		Public Use (Lake and Down- stream Cheat River)		Combined Public and Private Use	
	No. of Visitors	% Usage	No. of Visitors	% Usage	No. of Visitors	% Usage
Camping	0	0	6,400	2	6,400	2
Other	4,000	5	16,000	5	20,000	5
Total	80,000		320,000 (3,222)		400,000	

Note: Numbers in parentheses represent public use of Cheat River below the dam.

^a Includes estimated use by Point Marion residents of Cheat River near its confluence with Monongahela River.

Table 9. Primary watercraft used for recreation at Cheat Lake, 1990 (Source: APS 1991).

Boat Type	Number	%
Motorboat	258	82.4
Pontoon boat	32	10.2
Canoe	9	2.9
Jet ski	8	2.6
Jonboat (motorized or rowable dinghy)	5	1.6
Sail boat	1	0.3
Total	313	100

Some of the other areas of interest addressed through user survey data and estimates include:

- **Recreation User Place-of-Residence.** About 57 percent of the recreation user hours estimated by WPP in 1990 involved West Virginia residents, nearly all from the Morgantown area. Pennsylvania residents accounted for about 39 percent of the remaining use, with roughly half from the Pittsburgh area. Only about 4 percent of the project area's use is believed to stem from residents of other states.
- **Cheat Lake Fishing Preferences.** About 42 percent of the leaseholders had no preference for fish species while fishing on Cheat Lake, but 29 percent

specifically sought largemouth bass. Of those remaining 22 percent sought bullhead, crappie, sunfish, or channel catfish, and 7 percent had no response (WPP 1990).

- **Boating "Problem Areas."** About 69 percent of users reported "too many boats" as an adverse condition on Cheat Lake. About 85 percent of those who cited this problem specifically want to avoid the marinas and upper Cheat Lake (the narrow canyon area) because of excessive boat traffic (WPP 1990).
- **Marina Slip Usage.** In 1992, WPP reported marina boat slip capacity and occupancy as follows:

Marina	Total Slips	Occupied Slips	Percent Occupied
Sunset Beach	160	79	49%
Edgewater	170	120	71%
Blossers	108	85	79%
Total	438	264	60%

WPP estimated that overall boating use declined about 11 percent from 1990 to 1992, reflecting unfavorable weather and a poor economy (WPP 1993).

- **Opposition to a New Fishing Boat Launch Site.** About 59 percent of those who oppose a new boat launch site oppose it because they feel it would either add to or cause overcrowding. About 13 percent oppose the plan because they feel there are too few fish in the reservoir. About 7 percent feel existing access is adequate, and about 21 percent offer no reasons to oppose the plan or no comment (WPP 1990).
- **Location of a New Fishing Boat Launch Site.** About 35 percent of those surveyed feel that a new boat launch site should be provided in the bridge or marina areas, 19 percent feel it could be anywhere, 13 percent favor backwaters, and 11 percent favor a site near the dam. Most of the remaining 22 percent offered no comment (WPP 1990).
- **Willingness to Pay for Recreation Facilities.** The CLEAR surveys included questions about willingness to support user fees for use of Cheat Lake recreational facilities. The data definitely indicate a willingness to pay modest user fees. For example, about 60 percent of respondents were very likely to support a \$10 to \$20 annual user fee for development of reservoir

recreational areas, and about 20 percent were somewhat likely. In addition, about 60 percent were either very likely or somewhat likely to support an annual fee of \$21 to \$30. The CLEAR survey also showed good potential to support daily user fees, with about 63 percent very likely to support a \$1 day-use fee and 59 percent very likely to support \$2.

The information compiled by WPP and CLEAR concerning general recreational needs show several similarities concerning recreational problems and needed facilities and services. These studies also concur that overall recreation demand will increase. Another source, the West Virginia SCORP, forecasts a slight (1 percent) decline in the area's resident population between 1990 and 1997, but it also predicts an older population base and a modestly increasing demand for developed recreational facilities. The SCORP states that priority recreational activities in the region include several that are especially relevant to the reservoir, including boating access, bicycling, developed campgrounds, and freshwater swimming.

Table 10 shows the specific recreational needs considered in the CLEAR Needs Assessment along with WPP's proposed enhancements as identified in the license application and discussed further below. According to CLEAR, the 10 recreational facilities or measures with the highest perceived importance (listed in order) are:

- Security/safety patrols
- Public rest rooms
- Swimming/beach access
- Picnic areas/facilities
- Quality access roads
- Wildlife refuge areas
- Hiking trails
- Nature preserve areas
- Canoeing/paddleboating
- Boat launch facilities

Table 10. Comparison of potential recreation needs and applicant's proposed plan (Sources: CLEAR and WVU Travel Research Group 1993; APS 1991-93).

Recreational Facility	Significant Gap Between High Importance Rating and Low Availability Rating ^a	WPP Proposes New or Expanded Facility(ies)	Comments
Boat launch facilities		•	Respondents indicated high availability.

Recreational Facility	Significant Gap Between High Importance Rating and Low Availability Rating ^a	WPP Proposes New or Expanded Facility(ies)	Comments
Boat dock facilities		•	Respondents indicated high availability.
Swimming/ beach access	•		
Cycling trails	•	•	WPP proposes a main reservoir trail.
Hiking trails	•	•	WPP proposes a main reservoir trail.
Concession areas			
Camping facilities	•	•	WPP proposes primitive campsites.
Canoeing/ paddle- boating	•	•	WPP proposes a carry-in boat access.
Wildlife refuge	•	•	WPP proposes preservation of natural areas.
Public rest rooms	•	•	
Picnic areas/ facilities	•	•	WPP proposes more than 30 picnic sites.
Hotel/lodge facilities			

Recreational Facility	Significant Gap Between High Importance Rating and Low Availability Rating ^a	WPP Proposes New or Expanded Facility (ies)	Comments
Fishing areas		•	WPP proposes a variety of shore fishing opportunities.
Recreational facilities	•	•	WPP proposes a wide variety of facilities.
Water-skiing			Respondents indicated high availability.
No-wake zones	•	•	WPP proposes no-wake zone for the embayments and adjacent reservoir.
Nature preserve	•	•	WPP proposes preservation of natural areas.
Quality access roads	•		
Security/safety patrols	•		

^a Based on the Cheat Lake Needs Assessment prepared by CLEAR and WVU, February 1993. FERC staff labeled a difference in rating scores "significant" if it equaled 10 percent or more.

Comments received during public scoping for this EA reinforced, in particular, the perceived need for safety and security patrols and a public boat launch site.

Environmental Impacts and Recommendations: WPP proposed several recreational enhancements in its license application, including development of the West Penn Beach Recreation Area

(with a main reservoir trail), a public boat launch site, a fishing area at the dam's down-stream tailrace, and four wildlife habitat/nature viewing areas. The proposals and general land management issues discussed below include expected impacts, agency and public input, and staff recommendations.

a. Land Use Planning and Management

In its application, WPP filed detailed recreation use data and enhancement plans, including maps, drawings, and descriptions of various proposals. WPP proposes to install, operate, and maintain all proposed recreational facilities. However, WPP states that it may in time turn operation of its recreational facilities over to an outside entity. In addition, WPP proposes to update the current recreation plans every 3 years throughout the term of the license, with review to be provided by interested agencies.

WVDNR recommends that WPP file reservoir and tailrace recreation area plans for Commission approval within 6 months of relicensing. WVDNR wants the plans to include detailed drawings of all permanent recreation features; locations of fish attractor devices along the reservoir and river shores; trail system details; construction schedules; and comments from the WVDNR and other agencies consulted. WVDNR also recommends that WPP design and conduct reservoir and tailrace area recreation use surveys within 3 years of completing all proposed recreational developments, with the survey design to be approved by WVDNR. WVDNR recommends that it and other reviewing agencies be given authority to require additional improvements based on the results of the recreation use survey.

PFBC recommends that revised recreation plans be required, as necessary, to accommodate increasing use, with the results (i.e., recreation surveys and revised recreation plans) provided to resource agencies for review.

The League of Women Voters of Morgantown and Monongalia County recommends formation of a master plan and planning authority, and public review of any WPP proposal to transfer land ownership within the project boundary. In scoping comments, CLEAR recommends that WPP establish an identifiable management entity to assume responsibility for the operation and overall safety and security of all lake users. CLEAR also recommends that WPP work with the Monongalia County Commission, state and local agencies, and various interest groups in the development of a master plan that will address quality-of-life factors in the Cheat Lake area. The WVU Student Administration and the Sierra Student Coalition recommend formation of an advisory board for managing the reservoir.

J. Weems, a local resident, recommends that WPP contribute to an endowment or trust fund to subsidize law enforcement on and around the reservoir.

We acknowledge the importance of continuous and coordinated planning to the long-term management and enjoyment of Cheat Lake and the river down-stream of the dam. Potential overuse and overdevelopment of the reservoir shoreline are fundamental concerns, with such secondary adverse impacts as reduced boater safety, general congestion, and reduced security and enjoyment of the reservoir resource. As a result, we encourage WPP's continued involvement in community and regional planning forums. But, as conditions of the new license, we specifically recommend that WPP:

- Revise and refile the existing recreation and land management plan within 6 months of relicensing (per WVDNR's recommendation). The revised plan should reflect additional recreation enhancement details as required by the license.
- Update the recreation plan and submit it to the Commission every 3 years. The plan must report on recreation survey results, problem areas, and any WPP recommendations. The plan must demonstrate efforts to coordinate and cooperate with DOI, WVDNR, PFBC, Monongalia County, local communities, law enforcement, residents, any other agencies having land management or planning/zoning authority in the area, and local or regional interest groups. The Commission may, at any time adjust the schedule for plan updates.
- Retain ownership of all lands owned within the project boundary (i.e., the Commission must approve any proposed changes of ownership).
- Employ staff responsible for security at various WPP recreation sites and for working with local law enforcement. The professional security staff should be on duty at least during daylight hours on weekends and holidays beginning with the Memorial Day weekend and extending through Labor Day. The ongoing recreation planning process should specifically address security issues and recommend adjustments to WPP staff to meet the needs identified at shore recreation areas operated by WPP. This recommendation is not intended to address law enforcement as it applies to boats under way on the reservoir, except for assisting local law enforcement in posting the proposed no-wake zone (see further discussion under Subsection b. below).

A mandated leadership role for WPP in master planning would be beyond the scope of WPP's responsibility in managing recreational resources. (WPP will remain responsible for managing only those lands within the project boundary.) Our recreation management recommendations would ensure that WPP is actively and appropriately engaged in ongoing resource planning and management in the project vicinity.

b. West Penn Beach Recreation Area

WPP proposes to develop a multi-purpose recreational facility encompassing about 46 acres on the West Penn Beach peninsula. The \$3.27 million WPP proposal should accommodate about 400 peak-period visitors. The plan includes:

- **Auto Access and Parking.** A main parking lot for about 50 vehicles is proposed for the top of the bluff overlooking the reservoir and embayments, with a second remote overflow lot for 30 more vehicles. The main parking lot would connect to a 5-space parking lot and dropoff area near the tip of the peninsula; its use would be restricted to the disabled and those loading or unloading car-top boats. Parking would also be developed within the hillside picnic area loop, planned for a site farther inland beyond the overflow parking lot. The hillside loop would include 30 picnic sites, each with room for 2 or 3 vehicles for a total of 60 to 90 additional parking spaces.

Thus WPP proposes 145 to 175 parking spaces at the West Penn Beach Recreation Area. Without the picnic area parking, the number of parking spaces is 85, including the 5 reserved exclusively for the disabled at the peninsula's tip.

- **Peninsula Recreation Facilities.** The peninsula between Morgan Run and Rubles Run would include modern rest rooms with running water, a children's play area, and numerous picnic tables and benches.
- **Picnic Area.** A hillside road loop is planned for an inland area (beyond the overflow parking lot) and would provide 30 picnic sites, each with parking and its own table and fire grill. A second modern rest room building would also be provided.
- **Main Trail and Shore Fishing Access.** WPP would construct a 4-mile hiking and biking trail, connecting with areas north and south of the West Penn Beach peninsula. It would follow the former railroad grade and terminate down-stream about 600 feet from the dam and up-stream at the Cheat Haven Peninsula. WPP wants to maintain a secure work area along the former railroad grade next to the dam's east side. However, WPP also plans to provide a public parking area above the trail next to the substation, connected to the trail by a stairway.

The main trail would be land-accessible only from the West Penn Beach peninsula and would be posted for use by nonmotorized vehicles only. Pedestrian bridges would connect main shore areas to segments of trail

built along the former railroad grade causeways while allowing boat access into the embayments. Improvements to the causeways would include numerous picnic tables, park benches, and about 500 feet of fishing jetties. WPP plans to enhance fish habitat by bundling and submerging brush cleared during construction of the facility.

Although primarily a day-use area, the causeways would be adequately lit for nighttime use. WPP would also provide a fish cleaning station in the area.

- **Day-use Boat Dock.** WPP plans to provide 20 day-use dock slips, a third modern rest room building, and picnic sites along the abandoned railroad bed just south of the Morgan Run embayment. This plan is contingent upon reaching a final acquisition agreement with a private property owner at the proposed site.
- **No-wake Zone.** WPP proposes that the Rubles Run and Morgan Run embayments and the area extending across the lake from a point about 2,000 feet up-stream from the tip of the West Penn Beach peninsula and extending down-stream to the dam be designated as a no-wake zone. That zone represents roughly the entire down-stream 1 mile of the reservoir.

WPP estimates the proposed West Penn Beach Recreation Area would provide accommodations for about 300 picnickers, 175 vehicles, and 20 power boats at a time. Accommodations also include provisions for about 100 people to fish from the jetties and additional opportunities for bank fishing and dispersed activity along the main trail. The area includes access for the physically disabled through van-accessible designated parking spots located near the tip of the peninsula. From that small paved lot, disabled visitors would gain access to rest room facilities and paved paths leading to picnic sites, fishing jetties, and the car-top boat courtesy dock in accordance with the guidelines of the Americans with Disabilities Act (ADA).

WVDNR's recommendations are similar to WPP's proposal, but WVDNR does not suggest a picnic area loop. WVDNR recommends trails for fishing access along the embayments and that an independent waste disposal system be used at the fish cleaning station. WVDNR also recommends that WPP extend the main reservoir trail to connect the West Penn Beach Area with the tailrace fishing recreation site.

CLEAR recommends that WPP attempt to improve water quality in the northwest portion of Cheat Lake and designate an area there or some other site that might be used as a swimming beach where conditions support bathing. The WVU Student Administration recommends development of a supervised swimming area as water quality allows.

The League of Women Voters of Morgantown and Monongalia County recommends that WPP provide swimming at several sites, a small boat launching site in Morgan Run Bay, and additional picnic area capacity.

We generally concur with WPP's proposed development plan for the West Penn Beach Recreation Area (i.e., auto access and parking, recreation facilities, picnic areas, main trail and shore fishing access, day-use boat dock, and the no-wake zone as previously described). In the following paragraphs, however, we discuss our findings with regard to agency recommendations or other proposed modifications to the West Penn Beach Recreation Area plan.

We concur with the WVDNR recommendation to develop shore fishing access trails along embayments because the areas would be used even without trails. We recommend that WPP clear and maintain embayment shoreline trails extending at least 1,000 feet along each side of the West Penn Beach Peninsula. We would not require that the embayment trails be ADA-compliant because reasonable access for the disabled would be provided to the main 4-mile shoreline trail.

We recommend that WPP continue to maintain a secure work area next to the dam. We also recommend that WPP provide a parking area at the down-stream end of the trail and stairway access to improve trail access and allow hikers to gain access to the tailrace area from the main trail.

We recommend an independent waste disposal system at the fish cleaning station. This is necessary to ensure that fish cleaning waste is removed from the area and properly disposed of. The revised recreation plan should explain WPP's plan for building and operating this system.

We do not recommend that WPP develop or improve a swimming area at the West Penn Beach site, the Mont Chateau shore area, or any other location—primarily because of safety concerns. We also believe the need for swimming access and the many related factors warrant further discussion. We note, for example, that most areas of Cheat Lake are very deep—even close to shore—and boating use is heavy, causing several safety and access concerns. We acknowledge that swimming is a priority recreation need and agree with continued efforts to evaluate swimming area supply and demand. Specifically, we recommend that WPP describe areas commonly used for swimming, including estimates of the number of persons participating in swimming, within its revised recreation plans. These plans should address the roles of both informal and formal swimming sites in meeting the area's demand and should identify known problems at these locations (i.e., safety, access, littering, water quality). We recommend that WPP be required to document the advantages and disadvantages of providing permanent swimming areas in its revised plans; however, we do not see the

need to establish or maintain public swimming areas unless required in the future by the Commission.

We do not recommend any additional picnic area capacity beyond that proposed by WPP. The WPP plan provides an adequate number of picnic sites, and measures to monitor use and revise the recreation plan would sufficiently address any future capacity problems. While we would not require a small boat launching area in Morgan Run Bay, we concur that there will be a need for a more sheltered boat launch area. Instead of Morgan Run, we recommend expanding WPP's proposed carry-in boat launch site to also include an area inside Rubles Run. This would ensure shelter from waves (especially with a northwesterly wind) for those who wish to launch in this area while continuing to provide a launch on the main reservoir for convenience and additional dock space. We also believe the additional dock space in Rubles Run would enhance shore protection, provide good access to the embayment itself, and help reduce potential conflicts between carry-in boaters and those hiking or biking on the main trail.

c. Public Boat Launch Site

WPP proposes a boat launch ramp with a parking area for free public use on Cheat Lake. Late in 1993, WPP reported having reached a tentative agreement with the owner of the Sunset Beach Marina to use the existing facilities. WPP plans to expand the existing Sunset Beach site parking as needed to meet demand. The boat launch site would be equipped to accommodate the disabled in accordance with ADA guidelines.

The proposed free boat launch at the Sunset Beach site would meet the public demand for expanded—and free—boater access to Cheat Lake. The site would take advantage of the existing harbor, which offers a safe protected area for launching boats and navigating in traffic. Use of the Sunset Beach site would also result in a minimal change in land use and aesthetics compared to a new site. The Sunset Beach site offers excellent linkage to support facilities (i.e., the fuel dock, marine supply store, boat maintenance services, and restaurant) and is convenient to main highways (State Route 857 and I-68). Potential negative impacts at the Sunset Beach site would stem from a likely overall increase in recreation use. If not properly addressed, overuse of the site would result in:

- Regular problems with over-capacity parking and road facilities, resulting in conflicts between different parking needs and potential traffic and safety problems, including connections to State Route 857
- Conflicts between various users, including marina slip renters, boat launch users, restaurant/retail customers, and nearby residents

- Difficulty in expanding parking and launch ramp capacity as demand warrants. (The overall site is constrained by private ownership and has limited opportunities for expansion without high cost or affecting existing residences and businesses.)

WVDNR recommends, as a possible alternative to Sunset Beach, the Area 26 parcel, which WPP plans as a wildlife habitat/nature viewing area (see Figure 2). Specifically, WVDNR recommends that WPP develop sufficient free parking for 50 vehicles and boat trailers, provide (or make provisions to provide) a free public launching area for large boats, and develop trails that connect the road to the shoreline. WVDNR also recommends that the Area 26 development include all appropriate public safety measures and provide for barrier-free access.

The Area 26 parcel is not highly constrained by land ownership and existing development. A large plot of applicant-owned land (about 25 acres) is available there, compared to almost none at the Sunset Beach site. Therefore, new parking and other use areas may be developed by clearing forest land. Moderate to steep slopes may pose a disadvantage, but they should not preclude development of a reasonable boat launch site. A key advantage of the Area 26 boat launch site compared to Sunset Beach is the minimal potential for capacity problems and conflicts between various users. The key disadvantages are poor linkage to support facilities (i.e., fuel dock, marine supply store, boat maintenance services, and restaurant) and very poor roadway access compared to the Sunset Beach site. The adverse effects of building the Area 26 boat launch site (compared to Sunset Beach) are:

- Greater initial cost to construct the parking area and boat launch ramp
- Destruction of woodland habitat and potential loss of a designated wildlife habitat/nature viewing and hunting area
- A major change in land use, replacing a passive, generally undeveloped public recreation site with a developed and active recreation site with a high potential for growth and diversification (some demand for ancillary land-based recreation activities should be expected, including picnicking, hiking, and shore fishing)
- Aesthetic impacts and other conflicts for existing residences (i.e., trespassing, noise, and security/privacy issues)

Based on these comparisons, we recommend that WPP provide a public boat launch at the Sunset Beach site. The Sunset Beach site is superior to Area 26 in terms of roadway access, support

facilities, and addressing preferences of those surveyed concerning possible locations for a new boat launch site.

Capacity problems are almost certain to arise at the Sunset Beach marina site, unless WPP expands the parking area as proposed, modifies the overall site layout, or otherwise acts to limit demand. As a guideline for parking capacity, we recommend that WPP provide adequate parking at the Sunset Beach site to accommodate average demand for all users during an off-peak summer weekend (i.e., parking may reach or exceed capacity on holiday weekends).

We recommend that user demand patterns at Sunset Beach, Area 26, and other alternate boat launch site locations be surveyed regularly. We recommend that WPP evaluate alternative sites every 3 years and consider whether more boat launching capacity is needed. If WPP finds that the anticipated parking capacity problems at Sunset Beach are not easily resolved, we recommend that WPP assess alternative sites, including Area 26. Future plans may call for evaluating the possible advantages of developing a boat launch site restricted to smaller boats (i.e., by trailer weight or boat length). This would be consistent with previous WPP investigations of a "fishing boat" launch site and would provide greater flexibility in proposing alternate sites. (We understand, for example, that locations near the I-68 bridge may be feasible for a small boat launch site.)

d. Tailrace Fishing Recreation Area

WPP proposes a tailrace fishing platform along the shore on the east side of the dam at an estimated cost of \$290,000. Access to the platform would be gained from the public road along the river. An existing parking area would be used to accommodate about 25 vehicles. A 330-foot-long pedestrian ramp, containing two rest areas with benches, would connect the parking area to the 100-foot-long fishing platform.

The platform would be lit for nighttime use and would accommodate about 20 anglers at a time. The platform would be cantilevered about 18 inches over the water to reduce the possibility of fish being abraded against the wall during landing. A flight of stairs would allow easy access from the tailrace platform to the riverbank area immediately down-stream. An ADA-compliant portable chemical toilet would be provided for the convenience of users of the area. Additionally, a self-registration box would be placed to assess the needs of area users. Should sufficient need develop, WPP proposes to install a fish cleaning station convenient to the tailrace parking lot. However, should the area remain unused, WPP reserves the right to eventually eliminate the portable toilet.

In addition to the portable toilet, visitors with disabilities would be accommodated by one van-accessible parking spot. Both the pedestrian ramp and fishing platform would

conform with ADA guidelines. The fishing platform handrails would be constructed with breaks to allow fishing from wheelchairs.

To enhance safety for recreational users in this area, WPP would provide both visual and audible alarms to furnish sufficient notification of increased or decreased flow releases from the project. Directional sirens would be installed upon the dam and down-stream riverbank capable of being heard at least 1 mile down-stream. The sirens would sound two tones, one for turbine operation and another for releases from the dam's Taintor gates. To accommodate the hearing impaired, large red flashing lights would be mounted adjacent to each siren. WPP envisions placing the siren/light combinations about 1,000 feet apart. Recreational users would never be more than 500 feet from the nearest warning device. According to WPP, such a system should permit deaf individuals, with a measure of prudence, to wade safely. The warning devices would be operated for a period of 5 minutes before a significant increase or decrease in flow from the dam would occur.

WPP also plans to remove the "no trespassing" signs and to erect new signs that would provide information about the operation of the warning devices. The signs would warn recreational users of potential hazards associated with the tailrace area.

WVDNR's and PFBC's recommendations for the tailrace fishing recreation site are similar to the WPP proposal. WVDNR also proposes that WPP provide walkways along the river shore and drinking water. Both WVDNR and PFBC recommend that WPP provide an instream reef or fish attracting structures in the tailrace area. PFBC specifies that these could consist of rock piles 15 to 30 feet from shore or stone deflectors extending out from shore. Both agencies recommend a small boat access site for an area below the parking lot.

In the DEA, we recommended that WPP defer development of its proposed tailrace fishing recreation area until biological monitoring provides adequate evidence that it is warranted. However, during recent consultations with DOI, WVDNR, and PFBC, we confirmed those agencies' strong consensus to proceed with tailrace development based on the area's good potential for shore fishing and other recreation. Therefore, we conclude that the tailrace development should be planned and implemented according to the same schedule as all other project recreation enhancements, with construction to begin no later than 2 years after license issuance. This will ensure that the recreation enhancements are implemented concurrently with the potential improvements to the down-stream fishery due to minimum release flows.

Regarding details of the tailrace development, we generally concur with WPP's proposal. We do not recommend additional

walkways along the shore or the proposed small boat access because these features would only add to potential safety and maintenance problems with few additional benefits. The walkways may encourage recreation use in areas affected by rapidly increasing flows and water depths without increasing potential fishing access for users. Boating access to this river segment should not be encouraged because of changing flows that would cause safety problems during periods of rapidly increasing flow and because boats would be stranded in shallow water during periods of minimum flow. The recommended fish attractant structures, to be located about 200 yards down-stream of the dam, would also add to boating safety concerns. Furthermore, boating opportunities on the Cheat River below the dam would be very limited because of changing flows and shallow water about 1 mile down-stream, where about 4,000 cfs is needed to navigate a canoe. Finally, considerable opportunities to enjoy boating are available in the reservoir and in the Cheat River backwater and Monongahela River down-stream of the project area.

Based on the limitations of down-stream boating, we concur with WPP's proposal to place signage adjacent to the uppermost of the fish attractant structures, designating the river segment between it and the dam a boat exclusion zone. In addition, we recommend that WPP's recreation plan updates describe and evaluate any demand for boating down-stream of the dam, as well as any existing and potential future problems related to boating.

We recommend that WPP develop plans and construct the fish attractive/protective structures within an area about 200 yards or more down-stream of the dam. This feature would provide refuge from high flows and rapid flow increases and enhance invertebrate habitat (see Section V.C.3). We do not recommend that a fish attracting structure be located in the tailrace because such structures tend to increase eddying, which could in turn lead to bank erosion and undermining of the dam.

We expect a fairly low initial level of recreation use at the tailrace fishing area; therefore, we will not require that drinking water be provided.

e. Wildlife Habitat/Nature Viewing Areas and Other Recreation

WPP plans to designate and preserve natural habitat in four separate land areas to be known as wildlife habitat and nature viewing areas. The four areas are identified in WPP's current land management plan as Area 18, Cheat Haven, Area 12, and Area 26 (see Figure 2).

Area 18 consists of more than 40 acres of land, some of which would be occupied by the main reservoir trail, boat slips, picnic sites, and rest rooms along the reservoir shore. WPP proposes to designate the rest of this parcel, between the Morgan and Manning Run embayments, as a wildlife habitat/nature viewing

and primitive camping area. WPP states that the Manning Run embayment, because of its inaccessibility by motorized boats, provides an excellent habitat for waterfowl and wading birds, as well as a quiet spot for wildlife viewing.

Cheat Haven is a 140-acre parcel on the large peninsula 3 miles up-stream of the West Penn Beach Peninsula. WPP proposes Cheat Haven as the up-stream limit of the main trail and as a day-use wildlife habitat/nature viewing area. Cheat Haven would be accessible either from the hiking/biking trail or by boat.

Area 12 is the smallest of WPP's proposed wildlife habitat/nature viewing areas (about 12 acres) and is located across the lake from the Cheat Haven parcel. It is accessible only by boat and is planned for preservation as a natural area.

Area 26 is on the west side of the reservoir opposite the West Penn Beach Peninsula and just down-stream, on the far side of Tower Run. WPP proposes to designate Area 26 a wildlife habitat/nature viewing and hunting area. The 25-acre parcel is generally wooded and includes an unpaved public road on which current users may park, and an unimproved trail system. Three seasonal residences are located on private property next to Area 26 along the northwest side of Tower Run Bay, and several year-round private residences are located along the opposite side of the bay. Based on future use, WPP plans to consider expanded parking.

WVDNR recommends that WPP provide parking and develop trails at Area 26 that connect the road to the shoreline.

In scoping comments, CLEAR and the WVU Sierra Student Coalition recommend that WPP assist with efforts to establish a trail system in the Cheat Canyon/Coopers Rock area. Specifically, CLEAR and the Sierra Student Coalition believe WPP should consider an exchange of land or an alternate site for the Cheat Haven wildlife habitat and nature viewing area. Instead they recommend trail development in the canyon area of upper Cheat Lake—possibly to include the Coopers Rock State Forest. The WVU Student Administration recommends that WPP provide firewood for camping areas, refuse/recycling receptacles, and sustainable wildlife areas.

We concur with WVDNR's general recommendation for Area 26. Because automobile access is available, adequate parking and regular site maintenance should be provided in the future. Therefore, we recommend that WPP mark or develop a primitive trail system, provide refuse/recycling receptacles and collection, ensure reasonable parking by monitoring use, and slowly expanding parking capacity if needed. This type of management would ensure that Area 26 is maintained as a site with good long-term potential as a nature preservation and hunting area. We also recommend that WPP continue to evaluate the need

for a public boat launch site, with Area 26 to be considered as one possible location.

We believe the proposed trail system and wildlife habitat and nature viewing areas (including Cheat Haven) constitute a reasonable coordinated plan that would help to preserve wildlife habitat and provide for the enjoyment of the public. In addition, we find that the trails proposed by WPP may be developed much more easily and with less impact on and better access for the disabled than a trail system in the canyon area could be. A standard license article would require that WPP retain ownership of lands within the project boundary unless the Commission approves changes in ownership. As such, we specifically recommend against WPP selling or otherwise transferring ownership of land for the purposes of installing a trail system within the canyon area, as proposed by CLEAR and the WVU Sierra Student Coalition.

We agree that WPP should supply firewood and provide refuse/recycling receptacles for its proposed primitive camping facility in Area 18. Fire rings should also be provided at each campsite. Recreation plan updates should include more information on the primitive campsites, including the number of sites, camper information services, and measures to prevent overuse, other user conflicts, or security problems. We also recommend that updated plans address the viability of continuing the primitive camping and privileged permit lease lot programs (including modifications to address demand, user conflicts, or other issues).

Unavoidable Adverse Impacts: The recreational improvements would provide benefits by enhancing recreational use of the reservoir and probably in the tailrace area over time. This would increase recreational access, including boater access to already heavily used boating facilities.

The proposed recreational developments would replace existing unmanaged recreational uses with more highly developed and managed recreational facilities, particularly near the West Penn Beach peninsula. This would result in some loss of passive recreational opportunities and reduced privacy for some land owners and lease lot permit holders. Impacts would include locally increased boating activity in some shoreline areas, more traffic along access roads (especially at the West Penn Beach Peninsula), and an influx of hikers and bicyclists using the main reservoir trail and some secondary trail systems.

9. Socioeconomics

Existing Environment: Monongalia and Fayette counties, where the project is located, have a combined 1990 population of 220,860. The City of Morgantown, with a population of about 26,000, is the largest city near the project. Its population has declined about 6 percent since 1980.

WVU is the largest employer in the City of Morgantown, employing about 6,700 people. Other major employers in the area include Consolidation Coal Company (mining), the County Board of Education, and the Monongalia Health System, Inc. Tourism is a fast-growing industry in Monongalia County and the Northern West Virginia region. Some of the major tourism attractions in or near Monongalia County include Coopers Rock State Forest, whitewater rafting, and WVU football games.

Many residential developments and recreation sites are clustered around Cheat Lake. There are several areas near the lake where new homes are under construction or were recently completed (October 1993). The growth near the reservoir can be attributed to the attractiveness of waterfront living. The recreational opportunities and scenic values have attracted both permanent and summer residents from outside the area to this locale.

Environmental Impacts and Recommendations: The socioeconomic impacts of WPP's proposed project include:

- Anticipated improvements in water, fishery, and recreational resources, with secondary benefits for the area's economy, possibly to include increased tourism
- Continued economic operation of the Lake Lynn hydropower project, providing many benefits for the local and regional economy and contributing to the project area's long-term stability

These effects are discussed further within other appropriate sections of this EA. Neither WPP nor the agencies or the public propose specific measures related to general socioeconomics.

Unavoidable Adverse Impacts: None.

D. No-Action Alternative

As stated, under the no-action alternative, the project would continue to operate under the terms and conditions of the existing license, and no new environmental protection, mitigation, or enhancement measures would be implemented. We use this alternative to establish baseline environmental conditions for comparison with other alternatives.

VI. COMPREHENSIVE DEVELOPMENT AND RECOMMENDED ALTERNATIVE

Sections 4(e) and 10(a)(1) of the FPA require the Commission to give equal consideration to all uses of the waterway on which a project is located. When the Commission reviews a hydropower project, the recreational, fish and wildlife, and other nondevelopmental values of the waterway are considered equally

with its electric energy and other developmental values. In deciding whether and under what conditions to issue a hydropower license, the Commission must weigh the various economic and environmental tradeoffs involved in the decision.

A. Recommended Alternative

From our evaluation of WPP's proposal, reviewing recommendations from resources agencies and the public, and assessing the environmental and economic effects of the project and its alternatives, we conclude that the proposed project—with our recommended enhancement measures would offer the greatest public benefits from the waterway.

The existing project with the recommended enhancement measures would provide several benefits. An estimated 125,830 MWh of relatively low-cost electricity worth about \$4.86 million² would continue to be generated annually from a clean, domestic, reliable, and renewable energy resource. The electricity generated by our recommended modified peaking operation would be equivalent to the energy produced by burning about 209,000 barrels of oil or about 58,300 tons of coal annually in a steam-electric power plant.

We recommend the following additional measures to protect and enhance the environment:

- Provide a minimum reservoir release flow of 212 cfs when reservoir inflow is greater than or equal to 212 cfs. At all other times the minimum release flow should equal 100 cfs or inflow to the reservoir, whichever is greater. These minimum release flows are proposed to apply regardless of reservoir evaporation and other withdrawals.
- Install and maintain three water quality monitoring stations—one on the reservoir, one in the tailwater area below the dam, and one at a site down-stream of the acid tributaries. The stations should continuously monitor pH, dissolved oxygen, conductivity, and temperature. We recommend that WPP (1) prepare a monitoring plan, with review and input from the DOI, WVDNR, WVDEP, and PFBC before establishing the stations; (2) summarize the results, including flow release data, in an annual report to the Commission, DOI, WVDNR, WVDEP, and PFBC; and (3) meet once every 3 years with those agencies (coordinated with triennial fisheries and recreational meetings) to review the effect of operations on water quality and fisheries.

²125,830 kWh at 38.6 mills/kWh.

- Conduct a routine biological monitoring program, including reports every 3 years to the Commission and the DOI, WVDNR, and PFBC. The monitoring should include, at minimum, fish and benthic organism sampling above and below the dam (including the tailrace area) and in the embayments at the West Penn Beach peninsula.
- If so ordered by the Commission after the license is issued, develop a plan in consultation with the DOI, WVDNR, and PFBC concerning the need for fish entrainment and mortality evaluations or an enhancement program. The timing and need for a plan would be triggered by an agency request to the Commission based on results of the water quality and biological monitoring programs.
- Develop a plan to evaluate the effectiveness of fish attractive/protective structures within an area 200 yards or more down-stream of the dam. This would provide refuge for fish from high flows and enhance benthic habitat. We specifically do not recommend fish attractive devices in the tailrace area because of the potential for such devices to alter hydraulic conditions near the dam or powerhouse that may in turn lead to erosion or other damage to project structures.
- Develop recreation enhancements similar to those originally proposed by WPP. (We recommend only minor variations of the applicant's proposal.) Defer construction of the tailrace fishing recreational area only if so ordered by the Commission after the license is issued.
- Provide notification to AGMA of all planned reservoir water level changes greater than 10 feet. If, after relicensing, AGMA contends that a relationship exists between high turbidity and project operations, we recommend that WPP consult with and cooperate with AGMA regarding the exact nature of that relationship. As appropriate, we also recommend that WPP cooperate with AGMA in identifying potential alternatives that AGMA can implement to reduce turbidity in the intake water.
- Install one stream gage down-stream of the dam and a reservoir water level probe up-stream of the dam to ensure accurate monitoring of reservoir water level up-stream of the dam and minimum release flows below the dam.
- Continue to coordinate details of project operation with the COE by preparing a formal agreement. The agreement should address notification procedures concerning project startup and flow release schedules.

B. Developmental and Nondevelopmental Uses of the Waterway

In making our recommendations we weighed economic and developmental values against environmental and other nondevelopmental values of the Cheat Lake reservoir and the Cheat River. We analyzed the economic effects of the following seven alternatives (Alternatives 3-A, 3-B, and 3-C were added to our analysis because of resource agency comments on the DEA):

- **Alternative 1.** No action.
- **Alternative 2.** WPP's proposal—this is based on minimum releases equivalent to 100 cfs or net reservoir inflow (whichever is less) 50 percent of the time and 212 cfs or net reservoir inflow (whichever is less) 50 percent of the time.
- **Alternative 3.** Staff proposal A—release 212 cfs or reservoir inflow (if inflow is less than 212 cfs) and develop recreational enhancements (including the tailrace fishing area). The release of 212 cfs is based on providing maximum improvement of the fisheries habitat area per unit of flow.
- **Alternative 3-A.** Same as Alternative 3 except it would require an absolute minimum release flow of 100 cfs. The 100-cfs absolute minimum release is proposed to ensure that acid inflows from tributaries below the dam would continue to be reasonably diluted when reservoir inflow is less than 100 cfs.
- **Alternative 3-B.** Same as Alternative 3-A except it would also require absolute minimum release flows of 450 cfs for April and May, and 212 cfs for June. The higher minimum release flows are proposed for further dilution of acid to benefit the down-stream fisheries during a key portion of the fish spawning and fry life stages.
- **Alternative 3-C.** Same as Alternative 3-A except it would require run-of-river operation in April, May, and June. The run-of-river operation is proposed to benefit the down-stream fisheries during a key portion of the fish spawning and fry life stages.
- **Alternative 4.** Staff proposal B—release 212 cfs or reservoir inflow (if inflow is less than 212 cfs), add down-ramping, and develop recreational enhancements (including the tailrace fishing area). This alternative is based on providing flow down-ramping to reduce adverse fisheries impacts from rapidly decreasing water depths.

- **Alternative 5.** PFBC proposal—release 1,100 cfs or reservoir inflow (if inflow is less than 1,100 cfs) and develop recreational enhancements (including the tailrace fishing area).
- **Alternative 6.** DOI/PFBC proposal—operate the project in an instantaneous run-of-river mode (reservoir instantaneous outflow equals instantaneous inflow) and develop recreational enhancements (including the tailrace fishing area).
- **Alternative 7.** Staff proposal C—release 450 cfs or reservoir inflow (if inflow is less than 450 cfs), include down-ramping, and develop recreational enhancements (including the tailrace fishing area). This alternative is based on providing maximum improvement in pH per unit of flow released.

The results of our economic analysis, taking into consideration the environmental enhancements, are summarized in Table 11.

Alternative 1 is the baseline no-action case, with no required minimum release flow, no ramping, and no recreational development. Alternatives 2 through 7 represent different operating plans based on WPP's proposed enhancements (Alternative 2), resource agency recommendations (Alternatives 5 and 6), and Commission staff proposals (Alternatives 3, 4, and 7). Alternatives 2 through 7 include the full complement of recreation development as recommended by WPP, the agencies, and the Commission staff. We did not evaluate alternative cases without the recreation development because we agree that the total amount of capital investment in recreation facilities (\$3.56 million for all cases) is appropriate to provide for a variety of recreation needs within the project boundary. Furthermore, minor changes in the recreation investment, such as deleting the estimated cost of the tailrace fishing development (about \$290,000), have minimal effect on overall project economics.

The energy generation effects of alternative minimum flow releases are summarized in Table 12. This shows that annual generating capacity and net benefits decrease as the amount of the flow release increases. Our recommended flow release scenario (Alternative 3-A) provides an annual levelized net benefit of \$10.9 million compared to \$12.1 million for the existing project under the no-action alternative. Our recommended flow release provides the best balance between power generation and the enhancement of aesthetic, recreation, wildlife, and fishery resources.

Alternative 1 (no action), which assumes no changes (i.e., environmental or recreational enhancements), provides the highest net benefit. The existing Lake Lynn project does not have a high

undepreciated debt relative to revenue that would make it economically beneficial.

Alternative 2, WPP's proposal, has additional fixed costs of about \$3.6 million for recreation facilities and decreased generation of 2.5 GWh. These factors would combine to increase the cost of energy by about 6.4 mills/kWh or 20 percent.

Alternative 3, which assumes a minimum release flow of 212 cfs or reservoir inflow (whichever is less), would result in decreased generation of 3.6 GWh. This would raise the cost of energy by about 7.0 mills/kWh or 22 percent.

Alternative 3-A adds an absolute minimum release flow of 100 cfs. This would have a minimal effect on project economics, resulting in decreased generation of about 50 MWh. The overall economics would be essentially the same as under Alternative 3. Our analysis also shows that maintaining flows down-stream of the dam above 100 cfs would measurably benefit water quality by preventing very low pH from occurring during periods of low flow.

Alternative 3-B adds absolute minimum release flows of 450 cfs in April and May and 212 cfs in June. This would result in decreased generation of 4.6 GWh and would raise the cost of energy 7.8 mills/kWh or 25 percent. As discussed in Section V.C.3, however, the potential benefits of this option are minimal because median pH levels are still expected to be below the minimum levels for reproduction and recruitment of important fish species.

Alternative 3-C adds run-of-river operation during April, May, and June. This alternative would result in decreased generation of 5.0 GWh and would raise the cost of energy 9.7 mills/kWh or 31 percent. As with Alternative 3-B, this alternative would not clearly provide benefits to fish down-stream of the dam during the fish spawning and fry life stages. The limitations of variable flows, including extreme high flows (as well as pH limitations) would not be resolved.

Alternative 4 adds flow down-ramping to Alternative 3. This alternative would reduce generation by about 10.2 GWh and would require purchase of more replacement power at a cost of \$315,000 a year above Alternative 1. The effect would be to raise the cost of generation by 11.4 mills/kWh or 36 percent. With a continued peaking operation, the down-ramping considered under Alternative 4 would enhance the fisheries, but it would have minimal incremental benefit because most down-ramping benefits would be reduced substantially by the minimum reservoir release during nongenerating periods. In addition, the effects of scour at high flow would continue.

Table 11. Lake Lynn Hydroelectric Project summary of economic analysis (Source: Staff).

Alternative	Present Value of Cost	Present Value of Power	Net Benefits
1	38,530	152,599	114,069
2	45,401	149,829	104,428
3	45,803	148,627	102,824
3-A	45,815	148,398	102,583
3-B	46,310	130,450	84,150
3-C	48,430	120,800	72,370
4	48,367	140,232	91,865
5	51,810	38,798	-13,012
6	57,705	37,744	-19,961
7	50,277	93,675	43,398

Note: All costs in \$1,000 1994 dollars

Short-term construction cost escalation:

2.5 percent

Long-term operations and maintenance escalation:

3.0 percent

Discount rate (cost of money): 10 percent

Economic life: 30 years

Table 12. Lost generation at Lake Lynn as a function of minimum flow based on data from 1987-91 (Source: Staff).

Minimum Flow (cfs)	Annual Lost Generation (MWh)
212 ^a	3,570
212/100 ^{a,b}	3,620
450/212/100 ^{a,c}	4,620
450 ^a	7,045
1,100 ^a	15,345
Run-of-River ^d	18,400

^a Assumes that operation of the facility reflects maintaining minimum flow releases at the set value. When inflow exceeds the minimum flow, the project is operated as in the past; i.e., ponding the excess water within the seasonal pool elevations constraints and releasing flow in excess of the minimum flow to generate electricity.

^b Assumes absolute minimum release of 100 cfs.

^c Assumes absolute minimum releases of: 450 cfs in April and May; 212 cfs in June; and 100 cfs from July through March.

^d Assumes all inflow is passed through the lake. Generation occurs when inflows exceed 1,100 cfs. No excess water exists for pondage. With outflow and inflow set equal, then little or no change occurs in the lake pool elevation.

Under Alternative 5, the minimum flow of 1,100 cfs would reduce the dependable capacity to zero since no generation would be possible for about 72 percent of the time according to the annual flow-duration curve. In addition to energy replacement, load regulation costs would also be incurred by the utility and rate payers. These costs would raise the cost of generation by 16.6 mills or 52 percent. In this case, the cost of operation would exceed income, reducing the project's net benefit to less than zero.

Under Alternative 6, run-of-river operation would further raise energy replacement and load regulation costs and reduce energy generation. This would raise the cost of generation by about 75 percent. This case would also result in negative net benefits.

Under Alternative 7, the minimum flow of 450 cfs with down-ramping would reduce generation by 13.6 GWh and dependable capacity from 51.2 to 25.6 MW. The net effect would raise the cost of generation by 14.5 mills/kWh, or 46 percent.

Alternative 7 assumes a minimum down-stream flow of 450 cfs when reservoir inflow is equal to or greater than 450 cfs and also includes down-ramping.

Under Alternative 7, the 450-cfs minimum flow is in the range of flows where generation and net present value decrease rapidly with increases in minimum flow. Figure 6 shows that annual generation drops from 129 to 116 GWh between zero and 450 cfs. The relationships between minimum flow and present value of power, cost, and net value are shown in Figure 7. These figures represent the long-term project benefits (in terms of power produced), the costs of operating the project, and the difference between the two, or the net benefit. The levelized annual net benefit decreases from \$12.1 million to \$10.9 million (\$1.2 million or about 10 percent) between zero and 212 cfs. The levelized net benefit drops from \$12.1 million to \$4.6 million (\$7.5 million or 62 percent) between zero and 450 cfs. Most of the drop occurs between 212 and 450 cfs (\$6.3 million). Therefore it can be seen that increasing minimum flow from 212 to 450 cfs would reduce the project's levelized net annual benefit by about \$6.3 million, or 52 percent.

Conversely, it can be seen from Figure 4 that the greatest incremental increase in pH in the Cheat River below the dam occurs as minimum flow increases from zero to 100 cfs. Furthermore, even with the highest release flows, pH conditions will continue to limit aquatic life productivity until such time as acid mine drainage impacts are reduced in the watershed. For example, while increasing the minimum flow up to 1,000 cfs would improve the median pH to 5.28, this would still be below minimum pH levels for reproduction and recruitment of target fish species (5.5 to 6.0). Another key factor related to minimum flow releases is the effect on usable fisheries habitat, which will improve most as flows increase from the 12 cfs leakage to 212 cfs. Lesser improvements are derived as flows increase beyond 212 cfs.

Table 13 summarizes the project's dependable capacity for each alternative considered. We conclude that based on the assumptions and method of analysis used, Alternatives 1, 2, 3, 3-A, 3-B, 3-C, and 4 all appear economically beneficial. Alternatives 5 and 6 cannot be justified economically. Alternatives 3-B, 3-C, 4, and 7 do not sufficiently balance developmental and nondevelopmental uses of the waterway because they would result in incrementally substantial economic costs with very little incremental environmental enhancement.

6147200-33 Figure 7 6-8-94 #1

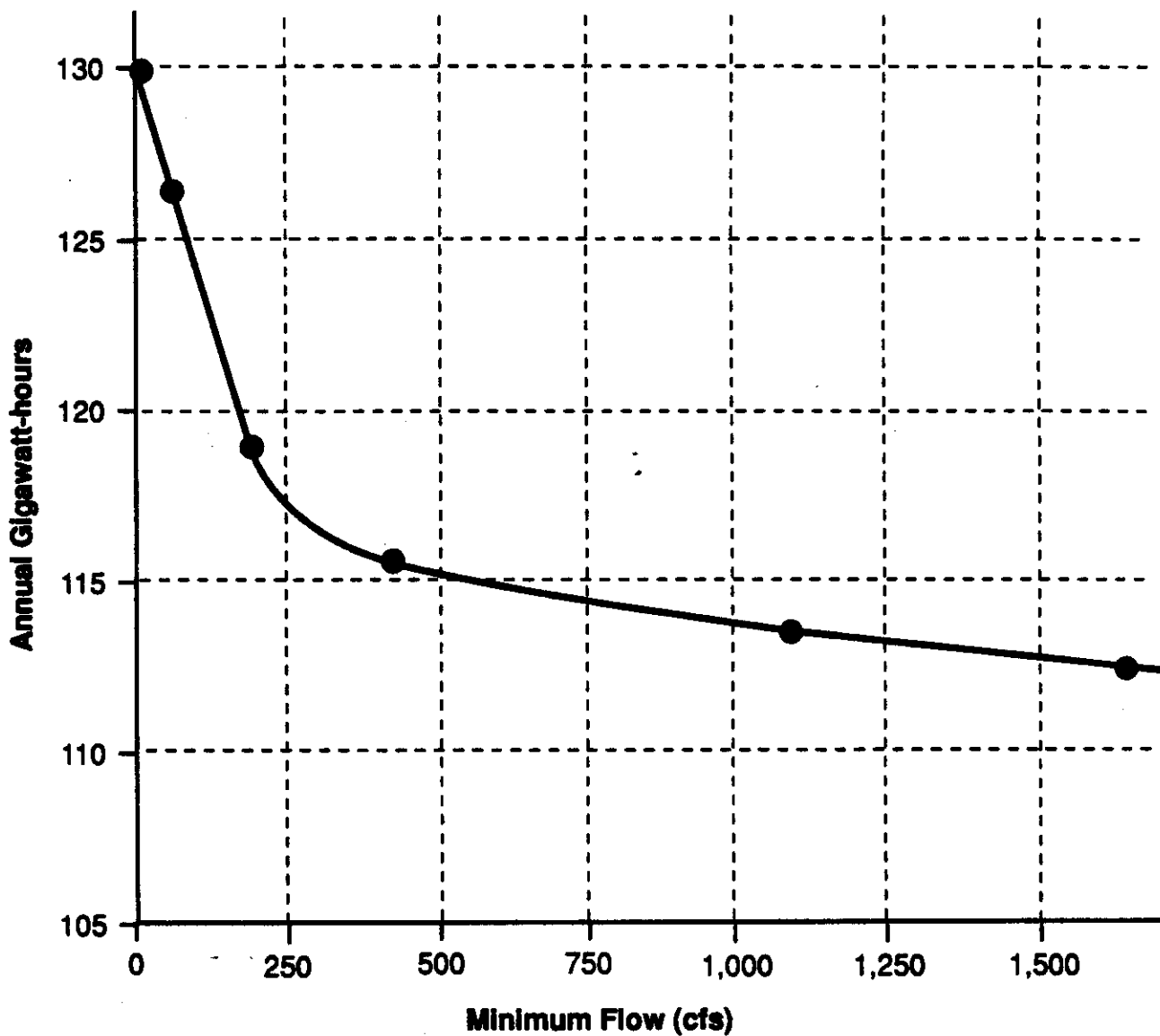
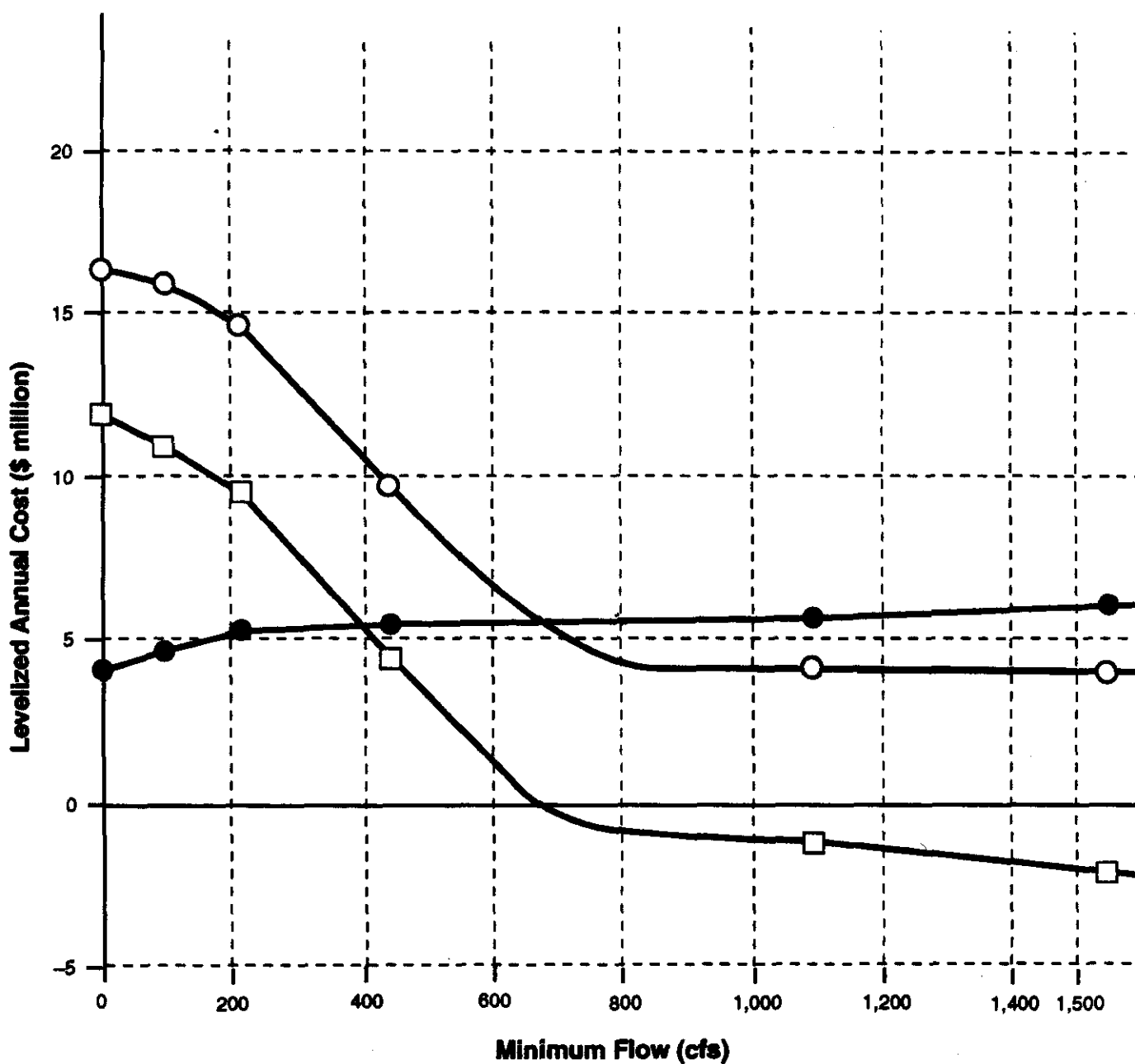


FIGURE 6
Minimum flow vs. annual generation

Source: Commission Staff

GLW70029.A0.04 Figure 7 11-8-94 8U/mms



- Annual Levelized Value of Power
- Annual Levelized Cost
- Annual Levelized Net Benefit

FIGURE 7
Project economics
 Source: Commission Staff

Table 13. Dependable capacity for each alternative.

Alternative	Dependable Capacity (MW)
1. No action	51.2
2. WPP's proposal	50.3
3. Release 212 cfs or reservoir inflow	49.9
3A. Add 100 cfs absolute minimum release	49.9
3B. Release 450 cfs April and May; 212 June	41.5
3C. Run-of-river in April, May, and June	37.0
4. Add down-ramping to Alternative 3	47.0
5. Release 1,100 cfs or reservoir inflow	0
6. Instantaneous run-of-river	0
7. Release 45 cfs or reservoir inflow (with down-ramping)	25.6

We conclude that, at a levelized annual cost of \$6.3 million, or 52 percent of the current annual levelized benefit it would not be beneficial to increase minimum flows from 212 to 450 cfs for the purpose of diluting the acidic mine drainage. We recommend Alternative 3-A, which provides a minimum flow of 212 cfs or reservoir inflow (if inflow is less than 212 cfs) without ramping, and with an absolute minimum release flow of 100 cfs.

C. Pollution Abatement

The Lake Lynn project annually generates about 129.4 GWh of electricity on average. This amount of hydropower generation, when contrasted with the generation of an equal amount of energy by fossil-fuel facilities, avoids the unnecessary emission of substantial quantities of atmospheric pollutants. Assuming that the 129.4 GWh of hydropower generation would be replaced by an equal amount of coal-fired generation, generating electric power equivalent to that produced by the Lake Lynn project would require the combustion of about 54,300 tons of pulverized bituminous coal annually.

Without pollution control and assuming the sulfur content of the coal to be 1.0 percent, the following approximate quantities of atmospheric pollutants would be produced annually:

Oxides of sulfur	1,100 tons
Oxides of nitrogen	500 tons
Carbon monoxide	25 tons
Carbon dioxide	125,000 tons

Removing the oxides of sulfur and nitrogen from the flue gas produced by the combustion of fossil fuels increases the cost of generating electricity. State-of-the-art pollution technology is capable of removing about 95 percent of the oxides for sulfur and 60 percent of the oxides of nitrogen from the uncontrolled flue gases. Estimates of these control costs are about \$500 per ton for oxides of sulfur and \$385 per ton for oxides of nitrogen removed. The cost of removing 95 percent of the 1,100 tons of oxides of sulfur would be about \$550,000. The cost of removing 60 percent of the 500 tons of oxides of nitrogen would be about \$193,000.

Table 14 shows the pollutants that would be produced by a coal-fired power plant generating power equal to the amount of energy lost annually by implementing alternative environmental measures recommended for the Lake Lynn project. It includes reference to various minimum release flows and down-ramping, as discussed above in Section VI.B. Other recommendations provided by the agencies (not included in Table 14) included run-of-river operation (DOI and PFBC) and a minimum release of 1,100 cfs. Those recommendations would render the Lake Lynn project economically infeasible; therefore, we may assume the existing project's entire annual capacity of 129.4 GWh would be lost, with a corresponding release of air pollutants as described above.

D. Consistency with Comprehensive Plans

Section 10(a)(2) of the FPA requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. Under Section 10(a)(2), 25 comprehensive plans were filed by federal and state agencies that address various resources in West Virginia and Pennsylvania. Of those, we identified four as being relevant to the project.³ The project complies fully with these comprehensive plans.

³West Virginia Division of Water Resources, *Monongahela River Basin Plan, 1982*, Charleston, WV; West Virginia Governor's Office of Economic and Community Development, *Statewide Comprehensive Outdoor Recreation Plan, 1980-1985 and 1988-1992*, Charleston, WV; West Virginia Division of Natural Resources, *Today's Plan for Tomorrow's Wildlife: a Strategic Plan for Fish, Game, and Nongame Management, 1975-1985*, Charleston, WV; Pennsylvania Department of Environmental Resources, *Pennsylvania's Recreation Plan, 1986-1990*, Harrisburg, PA.

Table 14. Pollutants that would be produced by a coal-fired power plant providing energy generation equivalent to annual energy losses from environmental measures recommended for the Lake Lynn project.

Recommended by	Annual Energy Cost in GWh	Tons of Coal Required	Pollutants Released (Tons)			
			Oxides of Sulfur	Oxides of Nitrogen	Carbon Monoxide	Carbon Dioxide
Staff (212 cfs)	3.57	1,500	29	13	1	3,450
Staff (212 cfs with down-ramping)	10.17	4,300	83	38	2	9,800
Staff (450 cfs with down-ramping)	13.60	5,700	111	51	3	13,100

VII. CONSISTENCY WITH FISH AND WILDLIFE RECOMMENDATIONS

Under the provisions of the FPA and as amended by the Electric Consumers Protection Act of 1986, each hydroelectric license issued by the Commission shall include conditions based on recommendations provided by federal and state fish and wildlife agencies for the protection, mitigation, and enhancement of such resources affected by the project.

Section 10(j) of the FPA states that whenever the Commission believes any fish and wildlife agency recommendation is inconsistent with the purposes and the requirements of the FPA or other applicable law, the Commission and the agency shall attempt to resolve any such inconsistency, giving due weight to the recommendations, expertise, and statutory responsibilities of such agency.

In July 1994, Commission staff made a preliminary determination that certain fish and wildlife agency recommendations were outside the scope of Section 10(j) and that they should be considered under Section 10(a) of the FPA. In response to the determinations, staff received comment letters from DOI, WVDNR, PFBC, and WPP. All of the resource agencies requested, and subsequently attended, a negotiation meeting with Commission staff on September 13, 1994, in Ligonier, Pennsylvania. Representatives from WPP also participated. All fish and wildlife concerns and other concerns discussed in their comment letters were addressed at the meeting. The issues that remain unresolved with the agencies are discussed below.

Pursuant to Section 10(j) of the FPA, we are making a preliminary determination that some of the recommendations of the federal and state fish and wildlife agencies (or parts thereof) are inconsistent with the purpose and requirements of Part I of the FPA or other applicable laws because they conflict with the comprehensive planning and public interest standards of Section 4(e) and 10(a) of the FPA. This is because these recommendations, or parts of these recommendations, would cost more to implement than the value of their potential benefits. Following negotiations, the following 12 resource agency recommendations remain at least partially inconsistent with Section 10(j):

- Run-of-river operation [DOI]
- Run-of-river operation [PFBC]
- Study the effects of peaking and lake level fluctuations [DOI]
- A plan to prevent dissolved oxygen degradation [WVDNR]
- A proposed minimum release [WVDNR]

- Minimum reservoir water levels for April [WVDNR]
- A fish entrainment and mortality plan [WVDNR]
- Measures to address fish entrainment and mortality [DOI]
- A water quality monitoring plan [PFBC]
- A minimum dissolved oxygen level requirement [PFBC]
- A minimum release requirement [PFBC]
- A plan to eliminate or restrict peaking operation during spawning and fry periods [PFBC]

Recommendations considered to be outside the scope of Section 10(j) are considered under Section 10(a) of the FPA and are addressed in the specific resource sections of this report. Table 15 summarizes all the fish and wildlife agency recommendations, shows whether they are within 10(j), and whether they are adopted under the staff-recommended alternative.

Table 15. Analysis of fish and wildlife agency recommendations (Source: Staff).

Agency	Recommendation	Within Scope of 10(j)	Conclusion
DOI	Compare in the EA impacts of existing operation, peaking, R-O-R, ponding, pulsing, and ramping.	No. Not specific measure to protect fish and wildlife	Partially adopted—EA considers these alternatives.
DOI	Modify Section 4.1 of Scoping Document.	No. Not specific measure to protect fish and wildlife.	Not adopted.
DOI	Compare impacts of project operations.	No. Not specific measure to protect fish and wildlife.	Partially adopted—EA discusses and compares alternatives.

Agency	Recommendation	Within Scope of 10(j)	Conclusion
DOI	Validate water quality model results through field studies.	No. Not specific measure to protect fish and wildlife.	Not adopted- Completed modeling is reasonable.
DOI	Establish at least three permanent pH water quality monitoring stations.	Yes.	Adopted.
DOI	Study effects of peaking and lake level fluctuations and develop a plan to mitigate adverse impacts.	Yes.	Partially adopted—EA discusses project impacts. Monitoring will help document future project impacts.
DOI	Address the fish entrainment issue in full detail to ensure that existing and potential future fishery resources will be protected from injury/mortality.	Yes.	Partially Adopted— Monitoring will help determine potential for an entrainment problem.
DOI	Run-of-river operation.	Yes.	Not adopted because economic costs would exceed benefits.
WVDNR	Monitor dissolved oxygen and develop plan to prevent its degradation.	Yes.	Partially adopted— recommend DO monitoring; develop a plan to bring the project into compliance if state standards not met.

Agency	Recommendation	Within Scope of 10(j)	Conclusion
WVDNR	Develop a plan for continuous monitoring of pH, dissolved oxygen, and water temperature in the reservoir and tailrace.	Yes.	Adopted.
WVDNR	212-cfs minimum release from 4/1 to 10/31. Maintain from 11/1 to 3/31 if inflow is 212 cfs or more.	Yes.	Partially adopted— Maintain 212 cfs or reservoir inflow (whichever is less) with absolute minimum of 100 cfs.
WVDNR	Releases below minimum allowed only if prescribed in a WVDEP- and WVDNR-approved water quality plan.	No. Reserv. of authority.*	Not adopted— Allowance for lesser discharge is provided for.
WVDNR	Evaluate effect of 212 cfs on reservoir pH.	Yes.	Adopted.
WVDNR	Evaluate reservoir pH every 3 to 5 years as prescribed and approved by F&W agencies.	No. Reserv. of authority.*	Not adopted— Commission will approve any changes in reporting requirements.
WVDNR	Schedule meetings with F&W agencies and others every 2 years to evaluate effectiveness of minimum flow release, pH, and dissolved oxygen monitoring plans.	No. Not specific measure to protect fish and wildlife.	Partially adopted— recommend meetings every 3 years.
WVDNR	Minimum reservoir levels—868 to 870 ft NGVD from 4/1 to 10/31, 857 to 870 ft from 11/1 to 10/31 with a minimum flow of 212 cfs.	Yes.	Partially adopted— Recommend April reservoir level of 863 to 870 ft.

Agency	Recommendation	Within Scope of 10(j)	Conclusion
PFBC	Adopt run-of-river operation.	Yes.	Not adopted because economic costs would exceed benefits.
PFBC	Require a minimum dissolved oxygen level consistent with previously licensed hydroelectric projects in the Upper Ohio River Basin.	Yes.	Not adopted—Low DO has not been a problem. DO will be monitored, and compliance plan filed if needed.
PFBC	Develop a biological monitoring plan.	Yes.	Adopted.
PFBC	Meet annually with resource agencies to review water quality and monitoring results.	No. Not specific measure to protect fish and wildlife.	Partially adopted—Annual water quality report; meet every 3 years.
PFBC	1,100-cfs minimum release when inflow equals or exceeds that amount, and decreasing in 100-cfs increments in response to decreasing inflows to an absolute minimum of 212 cfs.	Yes.	Not adopted because economic costs would exceed benefits.
PFBC	Prepare plan to restrict or eliminate peaking during the fish spawning and fry periods.	Yes.	Not adopted—economic costs would exceed potential benefits.
PFBC	Revise recreation plans, as necessary, to accommodate increasing use.	No. Not specific measure to protect fish and wildlife.	Partially adopted—Revise plans every 3 years.

Agency	Recommendation	Within Scope of 10(j)	Conclusion
WVDNR	Prepare a drought contingency or water utilization plan.	No. Not specific measure to protect fish and wildlife.	Not adopted- Plan is not needed given current withdrawals; Commission must review any new plan to withdraw 1 mgd or more.

* Recommendations made by fish and wildlife agencies that call for reserved authority to regulate areas within Commission jurisdiction under the license are outside the scope of Section 10(j).

Our reasons for not adopting Section 10(j) recommendations are explained in the individual resource sections and summarized below.

DOI and PFBC recommend that the project operate in a run-of-river mode. Run-of-river would provide greater environmental benefits than continued peaking. However, under the present project facilities configuration and economics, the costs associated with run-of-river operations outweigh the environmental benefits. Run-of-river operation would not allow economically feasible operation of the project. We recommend a modified peaking operation with limits on reservoir fluctuation and minimum flows (see Section V.C.2).

DOI also proposes that WPP study the effects of peaking and lake level fluctuations and develop a plan to mitigate adverse effects. DOI suggests that a run-of-river alternative would constitute such a plan. As discussed above, we believe run-of-river operation is inconsistent with the comprehensive planning standard of Section 10(a) of the FPA. Furthermore, we believe the effects of peaking and lake level fluctuations are fully discussed in this EA. We also recommend continuous water quality and biological monitoring, which will help document the effectiveness of our recommended enhancements and further identify any adverse project effects (see Sections V.C.2 and V.C.3).

The WVDNR recommendation that WPP develop a plan to prevent dissolved oxygen degradation is inconsistent with the comprehensive planning standard of Section 10(a) because dissolved oxygen degradation is not currently a problem. Therefore, the cost of developing such a plan, given currently

acceptable dissolved oxygen levels, would exceed the level of benefits provided. We note, for example, that while Lake Lynn operations affect dissolved oxygen in the tailrace, dissolved oxygen was never below the 5.0 mg/L West Virginia and Pennsylvania state standard during the 1990 and 1991 water quality surveys commissioned by WPP. We recommend no immediate measures to address dissolved oxygen degradation; but we do recommend continuous monitoring of dissolved oxygen and other water quality factors, and would require notification of agencies and the Commission if any dissolved oxygen levels of less than 5.0 mg/L are detected. Then, if requested by WVDEP, and subject to Commission approval, WPP would file a plan to bring the project into compliance with a 5.0 mg/L dissolved oxygen level (see Section V.C.2).

We did not adopt WVDNR's constant 212-cfs minimum release flow because of its potential to result in draw-down of the reservoir below the minimum target elevation (868 feet NGVD) during key months of the recreation season. Historically, it is not uncommon for WPP to release only about 12 cfs leakage for several consecutive days in July, August, or September and still create little or a very slow increase in reservoir water level. During a drought, reservoir inflow may be much less than 212 cfs and depending on the drought's duration the reservoir could be drawn down below the target elevation with a 212-cfs minimum release.

Releasing a flow equal to reservoir inflow when inflow drops below 212 cfs (roughly 10 percent of the time, on average, throughout the year) represents a reasonable plan for balancing impacts on various resources. This would result in a river flow below the dam that simulates the river's natural flow during dry periods while also maintaining the reservoir water level. We also evaluated an absolute minimum release flow of 100 cfs. Our analysis of that alternative shows that this additional measure would result in some added risk of reservoir draw-down, but we believe the draw-down will still be within an acceptable range. Therefore, because of the importance of maintaining the target reservoir water level for recreation, we consider the WVDNR minimum release flow inconsistent with Section 10(a) of the FPA and recommend release of 212 cfs or reservoir inflow, whichever is less, and an absolute minimum release flow of 100 cfs (see Section V.C.2).

We did not fully adopt WVDNR's proposed minimum water level elevations because the proposed April minimum water level (868 feet NGVD) would reduce flood storage capacity to near zero and provide only a minimal increase in wetted surface area. Therefore the 868-foot minimum water level is not in the public interest and is inconsistent with Section 10(a). We recommend a minimum of 863 feet for April to balance environmental enhancement effects with a need for springtime flood control (see Section V.C.2).

The fish entrainment and mortality avoidance, mitigation, or compensation plan proposed by WVDNR is inconsistent with Section 10(a) because the need to proceed with such a program has not yet been determined. There is no substantial evidence to support the development of such a plan, and the WVDNR did not raise objections to this conclusion during the 10(j) negotiations.

Similarly, we have concluded that the DOI's recommendation to adequately address the fish entrainment issue in full detail is inconsistent with Section 10(a). We maintained during the 10(j) negotiations that there is no merit in detailed studies of the entrainment issue until there is more data available about the reservoir fishery. Proceeding with detailed entrainment studies now would substantially delay relicensing, with a corresponding delay in the benefits to be provided by a minimum release flow and the other enhancements. Furthermore, we note that DOI's original recommendation was not specific as to the types of studies to be undertaken.

Therefore, staff concluded that DOI's recommendation (which was clarified during negotiations to mean a delay in the license issuance) would unnecessarily prevent achievement of other beneficial use objectives. Staff maintained that the project should be relicensed without completion of further studies. Section V.C.3 discusses this issue and notes that the license could be reopened in the future to address the entrainment issue based on the results of the biological monitoring program.

The PFBC recommendation for water quality monitoring at four locations in the reservoir and river is inconsistent with Section 10(a) of the FPA because it would not result in any additional potential fish and wildlife benefits. While we agree that water quality monitoring is warranted, existing monitoring may be effectively supplemented by three new WPP water quality monitoring stations, which we do recommend. The proposed water quality monitoring plan will allow for an improved understanding of the water quality benefits of minimum release flows, particularly the effects on pH. Such effects may be adequately determined with the recommended three water quality monitoring stations--one to be located in the reservoir, one in the tailrace area, and one to be located down-stream of the acid tributaries. A fourth water quality monitoring station is not needed (see Section V.C.2).

The PFBC recommendation to require a minimum dissolved oxygen level of 6.5 mg/l is inconsistent with Section 10(a) because it would result in unnecessary costs. Dissolved oxygen degradation is currently not a problem, and dissolved oxygen levels in the tailrace should be enhanced by the proposed minimum release flow. We recommend continuous monitoring of dissolved oxygen; but we do not recommend an operating plan to prevent dissolved oxygen degradation. The monitoring program will alert the PFBC of any future problems, and if dissolved oxygen levels

fall below 5.0 mg/L, we would require a plan to bring the project into compliance with that standard (see Section V.C.2).

The PFBC 1,100-cfs minimum flow was not adopted because its costs would exceed its benefits making it inconsistent with the comprehensive planning and balancing provisions of Section 10(a). The PFBC recommendation that the project operate in a run-of-river mode upon documentation of consistent fish reproduction and recruitment down-stream of the dam is also inconsistent with Section 10(a) because the increased energy costs are not justified by the questionable benefits to fish down-stream of the dam. This makes the recommendations inconsistent with the comprehensive planning and balancing provisions of Section 10(a) (see Section VI.B).

The PFBC proposal to prepare a plan to eliminate or restrict peaking operations during the fish spawning and fry periods is inconsistent with both Section 10(a) and Section 4(e). In summary, the desired benefits to fish spawning cannot be produced under any operating plan because of low pH, which is the major controlling factor over the potential for fish spawning. We have also concluded that operating the project in a run-of-river mode would not eliminate widely variable flows and flows much greater than the optimal range for the spawning and fry life stages of key fish species. Our analyses of water quality, fisheries, and economics show that releasing higher minimum flows would not improve pH or flow conditions sufficiently to provide a clear benefit for fish spawning and fry habitat (Sections V.C.2, V.C.3, VI.B, and our responses to agency comments in Appendix B). This would remain true even with the highest considered minimum release flow of 1,100 cfs (or reservoir inflow if less than 1,100 cfs). Therefore, we recommend that peaking operations continue with a minimum release flow and continuous water quality monitoring.

Furthermore, we recommend the installation of fish attractant structures down-stream of the dam to provide additional refuge, flow protection, and benthic habitat in the upper segment of the Cheat River. We recognize that there is some potential for pH to improve in the future with corresponding benefits for the fishery. If such improvement occurs, the proposed water quality and biological monitoring programs will confirm it. Reopening the license to reevaluate the potential fishery benefits of minimum release flows and alternative operations may then be considered.

Fish and wildlife agency recommendations considered outside the scope of Section 10(j) and not fully adopted are summarized below.

The WVDNR recommended that WPP meet with resource agencies every two years to evaluate the effectiveness of the minimum flow release and the results of water quality monitoring. The PFBC recommended meeting every year to review water quality monitoring

and biological monitoring results. We recommend that WPP prepare and file a report on water quality annually. Furthermore, we recognize the comprehensive nature of ongoing resource planning associated with this project and the need for reasonable time to implement monitoring programs, environmental enhancements, and the recreation program. For example, we anticipate it will take several years to finalize plans and implement the proposed fish attractive structure down-stream of the dam, or to develop the West Penn Beach Recreation area. Therefore, we recommend meetings every three years, which also corresponds to the triennial filing of revised recreation plans. Of course, the agencies and WPP are also free to meet at any mutually agreeable interval, but we recommend that the license require meetings every three years. The Commission may change the frequency of the recommended meetings at any time, based on project-specific issues.

The DOI recommends that the EA compare the impacts of various operational alternatives, including the existing operation, alternate peaking operations, run-of-river, ponding, pulsing, and ramping. The DOI also recommends modifying Section 4.1 of the Scoping Document to reflect these alternatives. We partially adopted these recommendations because the EA discusses and compares the alternatives to varying degrees. We did not revise Section 4.1 of the Scoping Document because that document was issued to solicit early input on the DEA and was not intended for revision and reissuance (see Sections III and VI.A-B).

The DOI recommendation to validate water quality results through field studies was not adopted because our review of WPP's modeling study indicated that the methods used were appropriate and reasonable. Furthermore, we found that pH values from samples collected in the field may be highly variable. Maximum pH values from field samples should not be compared to the maximum daily mean pH values produced by the model. We conclude the water quality model is sufficient for comparing alternatives and predicting pH values. As a license condition, we will recommend a continuous water quality monitoring program that will provide data showing the effects of minimum release flows and other operational changes (see Section V.C.2).

The WVDNR recommends that WPP evaluate reservoir pH every three to five years as prescribed by fish and wildlife agencies and that WPP be allowed to provide release flows below the minimum only if prescribed in a WVDEP- and WVDNR-approved water quality plan. These recommendations were not adopted because Section 10(j) does not allow fish and wildlife agencies to reserve the authority to prescribe the terms for project monitoring and operations. We recommend continuous water quality monitoring with reports due annually and coordination meetings with DOI, WVDNR, and PFBC every three years. Our recommendations would allow for release flows below the 212 cfs minimum when reservoir inflow is less than 212 cfs (see Section V.C.2).

The WVDNR recommendation that WPP conduct a turbine entrainment study if requested by fish and wildlife agencies was partially adopted. If water quality improves, the fish and wildlife agencies may file a request with the Commission to proceed on a plan to evaluate the effects of turbine entrainment. The Commission will retain authority to require and monitor such an evaluation (see Section V.C.3).

Although recreational recommendations are beyond the scope of Section 10(j), the specific WVDNR and PFBC recommendations for recreational improvements were considered under Section 10(a) and partially adopted. While we agreed with almost all the agencies' specific recreational recommendations, some aspects are refined. The key recommended fish and wildlife agency recreation details that are not adopted are as follows (see Section V.C.8):

- We do not recommend requiring a boat launch facility in the tailrace area as recommended by WVDNR and PFBC because of safety concerns and because of limited potential for boating down-stream of the project based on water depths.
- We do not recommend requiring that WPP provide trails along the shore as recommended by WVDNR because fishing access will be adequately provided for at the tailrace and because of potential trail safety and maintenance problems due to fluctuating flows and water levels.
- We do not recommend requiring that WPP provide drinking water in the tailrace fishing area as recommended by WVDNR because of anticipated limited recreational demand, at least initially (we recommend that WPP monitor recreation use and make additional improvements as warranted or as directed by the Commission).
- We do not recommend requiring development of a boat launch facility at Area 26 as recommended by WVDNR because WPP's proposed Sunset Harbor boat launch would provide for reasonable public boat launch access with minimal capital cost.
- We do not recommend allowing WVDNR or PFBC to authorize or mandate WPP-sponsored recreational planning efforts or implementation of recreation improvements because this authority is reserved to the Commission.

We believe these recreation resource inconsistencies are minor. Based on our recommendations, WPP would be required to prepare revised recreation plans and to consult with DOI, WVDNR, PFBC, and the Commission every three years. That ongoing planning process will provide ample opportunity for input and allow for modifications of the current plan in response to changing needs (see Section V.C.8).

We did not adopt the WVDNR recommendation that WPP prepare a drought contingency or water utilization plan. Such plans to ration water for consumptive uses are not specific measures to protect fish and wildlife. Our analysis shows that current reservoir withdrawals for consumptive use are minimal. Furthermore; the recommended minimum release flow of 212 cfs or reservoir inflow, with an absolute minimum release of 100 cfs, is responsive to periods of low flow because 212 cfs is exceeded more than 90 percent of the time. In addition, the Commission must approve any proposed additional withdrawal from the reservoir exceeding 1 mgd. In such a case, the Commission may require a drought contingency plan, which could include modified operational parameters for the Lake Lynn project (see Section V.C.2).

Recommendations submitted by other agencies or individuals (i.e., not state or federal fish and wildlife agencies) are listed in Table 16. Our corresponding conclusions are listed in the table and addressed in the appropriate resource sections. These recommendations are not subject to evaluation under Section 10(j) of the FPA, but we have considered them under Section 10(a).

Table 16. Analysis of other agency and individual comments.

Agency or Individual	Recommendation	Conclusion
Richard Sabat	Dredge an area near the bridges.	Not adopted—Insufficient evidence that dredging is needed.
League of Women Voters, Morg./Mon. Co.	Make recreational improvements.	Partially adopted (see Section V.C.8).
Albert Gallatin Muncip. Authority	Provide notification of all planned reservoir water level changes greater than 10 feet. Ensure adequate monitoring of up-stream reservoir inflow and all withdrawals. Address conditions causing turbidity up-stream of the dam at the water intake.	Partially adopted (see Section V.C.2).

Agency or Individual	Recommendation	Conclusion
PDER	Construct WPB Rec. Area (requires an NPDES permit per Section 402(p) of the CWA).	Not adopted—erosion and sedimentation control plan required. NPDES is a separate process.
Jonathon Weems	Maintain current practice limiting draw-down to 2 feet from 5/1 to 11/1, based on recreation use (boating).	Adopted (see Sections V.C.2 and V.C.8).
Jonathon Weems	Contribute to an endowment or trust fund to subsidize law enforcement on and around the lake.	Partially adopted—WPP to employ security staff (see Section V.C.8).
CLEAR	Establish a management entity responsible for the operation and overall safety and of lake users.	Not adopted—insufficient authority over private marinas and state-owned land.
CLEAR	Assist efforts to establish trail system in the Cheat Canyon/Cooper's Rock area; consider opportunity to exchange land, such as land at Cheat Haven for involvement in the Cheat Canyon trail development.	Not adopted—WPP's overall plan is adequate.
CLEAR	Evaluate reservoir water quality for swimming. Improve water quality in the northwest portion of Cheat Lake, and designate a swimming beach when conditions will support bathing.	Partially adopted—Commission staff does not recommend development of a swimming area. We recommend that WPP continue to evaluate swimming needs (see Section V.C.8).

Agency or Individual	Recommendation	Conclusion
CLEAR	Assist Monongalia County in development of a master plan.	Partially adopted—WPP is to consult with the County when updating the recreation plan.
WVU Student Admin. and Sierra Student Coalition	Recreational improvements; formation of an advisory board for managing the reservoir.	Partially adopted—advisory board participation will not be mandated (see Section V.C.8).
COE	Coordinate details of project operation with the COE, providing notification of planned flow releases.	Adopted.

VIII. FINDING OF NO SIGNIFICANT IMPACT

Implementing the protection and enhancement measures described in this EA would ensure that the environmental effects of continued project operation would be insignificant.

On the basis of our independent analysis, issuance of a license for this project, with our environmental recommendations, would not constitute a major federal action significantly affecting the quality of the human environment.

IX. LITERATURE CITED

- Anthony, D. D., and C. R. Jorgensen. 1977. Factors in the declining contribution of walleye *Stizostedion vitreum vitreum* to the fisheries of Lake Nipissing, Ontario 1960-76. *J. Fish. Res. Board Can.* 34(10): 1703-09.
- Bain, M. B., J. T. Finn, and H. E. Booke. 1988. Streamflow regulation and fish community structure. *Ecology* 69(2):382-92.
- Baker, J., et al. 1990. Biological effects of changes in surface water acid-base chemistry. State-of-Sci/Technol. Rep. 13, Natl. Precipitation Assessment Program, Washington, DC.

- Clady, M. 1977. Abundance and production of young largemouth bass, smallmouth bass, and yellow perch in two infertile Michigan lakes. *Trans. Am. Fish. Soc.*, 106:56-63.
- CLEAR, WVU Travel Research Group. 1993. Cheat Lake Needs Assessment—Preliminary Report. 36 pp. February 1993.
- Core, E. L. 1959. Biological investigations of Cheat Lake. WVU, Morgantown. 39 pp.
- Energy & Environmental Management, Inc. 1993. *Computer Modeling of Effectiveness of Flow Releases on Water Quality Below Lake Lynn Hydro Station*. October 1993.
- Funk, J. L., and W. L. Pflieger. 1975. Courtois Creek, a smallmouth bass stream in the Missouri Ozarks. In H. Clepper, ed. *Black Bass Biology and Management*. Sport Fish Inst. Washington, DC. Pp. 224-37.
- Paragamian, V. L. 1979. Population dynamics of the smallmouth bass in Maquoketa River and other Iowa streams. Iowa Conserv. Comm. Annu. Rep. Project F-89-R-2, No. 602-1. 56 pp.
- Pennsylvania Department of Environmental Resources. 1986. *Pennsylvania's Recreation Plan, 1986-1990*.
- Ploskey, G. R. 1983. *A Review of the Effects of Water-Level Changes on Reservoir Fisheries and Recommendations for Improved Management*. Technical Report E-83-3, prepared by the Fish and Wildlife Service, U.S. Department of Interior, for the U.S. Army Engineer Waterways Experiment Station, CE, Vicksburg, Mississippi.
- RMC (RMC Environmental Services, Inc.). 1993. *Results of an Instream Flow Study for the Lower Cheat River at the Lake Lynn Hydro Project*.
- _____. 1992. *Report on the Water Quality of the Lake Lynn Hydro Station Forebay and Tailrace during 1991*. Prepared for Allegheny Power Service Corporation. June 1992.
- _____. 1991. *Report on Aquatic Studies and Recreation Relative to Relicensing of Lake Lynn Hydro Station*. FERC project No. 2459. 144 pp.
- Ryan, P. M., and H. H. Harvey. 1979. Growth responses of yellow perch, *Perca flavescens* (Mitchell) to lake acidification in the La Cloche Mountain lakes of Ontario. *Env. Biol. Fish.* 5(2): 97-108.
- Schwartz, F. J. 1990. *Depth and Storage Capacity Changes in Cheat Lake, West Virginia during the 64-Year Period 1926-1990*. Institute of Marine Science, University of North

Carolina, Morehead City, NC. Unpublished manuscript.
16 pp.

- _____. 1957. *The Cheat River Basin: Past, Present, and Future*. West Virginia University, Morgantown. Unpublished manuscript. 145 pp.
- Spangler, G. R., N. R. Payne, and G. K. Winterton. 1977. Percids in the Canadian waters of Lake Huron. *J. Fish. Res. Board Can.* 34(10): 1839-48.
- U.S. EPA. 1990. *The Lake and Reservoir Restoration Guidance Manual*. Prepared by the North American Lake Management Society for the U.S. EPA, EPA-440/4-90-006. August 1990.
- USGS. 1973. *Evaporation from Lake Michie, North Carolina 1961-1971*. Water Resources Investigation 38-73.
- West Penn Power Company (WPP). 1993. Report correcting deficiencies and providing additional information, Lake Lynn Hydroelectric Project, FERC No. 2459. November 1993.
- _____. 1993. Report correcting deficiencies and providing additional information, Lake Lynn Hydroelectric Project, FERC No. 2459. April 1993.
- _____. 1993. Report correcting deficiencies and providing additional information, Lake Lynn Hydroelectric Project, FERC No. 2459. February 1993.
- _____. 1992. Report correcting deficiencies and providing additional information, Lake Lynn Hydroelectric Project, FERC No. 2459. August 1992.
- _____. 1991. Application for a New License for a Major Water Power Project. Lake Lynn Hydroelectric Project. FERC No. 2459. December 1991.
- West Virginia Governor's Office of Community and Industrial Development. 1993. *West Virginia State Comprehensive Outdoor Recreation Plan*. 93 pp.
- WVDNR. 1975. *Today's Plan for Tomorrow's Wildlife: A Strategic Plan for Fish, Game, and Nongame Management, 1975-1985*. 60 pp.
- _____. 1982. *Monongahela River Basin Plan*. 416 pp.

X. LIST OF PREPARERS

FERC Staff

Tom Dean—Task Monitor (Civil Engineer, B.S., Civil Engineering; 19 years' experience).

CH2M HILL Staff

Doug Abere—Assistant Project Manager, Geology and Soils, Aesthetic Resources, Recreation/Land Use (Environmental Planner, B.S., Geology; M.U.P., Urban Planning; 8 years' experience).

Tom Dupuis—Deputy Project Manager, Water Resources, Water Quality (Environmental Engineer, B.S.C.E., Environmental Engineering; M.S., Environmental Engineering; 18 years' experience).

Jill Farrenkopf—General Team Support and Planning Analyses (Environmental Planner, B.S., Political Economy of Natural Resources; M.U.P., Urban Planning; 1 years' experience).

Linda Hoehne—Terrestrial Resources, Threatened and Endangered Species (Terrestrial Ecologist, B.S., Biological Aspects of Conservation; M.S., Botany/Zoology; 14 years' experience).

Larry Martin—Senior Reviewer (Environmental Planner, B.A., Urban Planning; 25 years' experience).

Mike Mischuk—Fishery Resources (Aquatic Biologist, B.A., Biology; M.A., Biology; 18 years' experience).

Paul Otter—Need for Power, Economics (Civil Engineer, B.S., Civil Engineering; 33 years' experience).

Marie Strum—Water Resources (Water Resources Engineer, B.S., Civil Engineering; M.S., Environmental Systems Engineering; 9 years' experience).

Christine Washburn—Socioeconomics, Cultural Resources (Environmental Planner, M.U.P., Urban Planning; 8 years' experience).

APPENDIX A
CHEAT RIVER FLOW DURATION DATA

**APPENDIX A
CHEAT RIVER FLOW DURATION DATA**

This appendix presents flow duration data for the Cheat River at the Lake Lynn Hydroelectric Project. Table A-1 summarizes the mean, 20 percent, and 80 percent exceedance flows. Figure A-1 is a graph of the annual flow duration data.

Table A-1. Cheat River flow at Lake Lynn (Source: APS Final License Application, December 1991).

Month	Mean	20% Exceedance	80% Exceedance
January	3,645	5,114	1,025
February	5,223	7,443	1,226
March	5,588	7,890	2,115
April	4,850	6,612	2,363
May	4,221	5,865	1,524
June	2,673	4,009	635
July	2,215	2,748	489
August	1,465	1,946	205
September	1,110	1,667	261
October	1,945	2,727	304
November	3,935	5,210	1,036
December	4,684	6,100	1,716

20% exceedance flow: 20% of the time in a given month the Cheat River flow will exceed the value reported.

GLW70029.A0.03 Figure A-1 10-11-94 MW/ERS

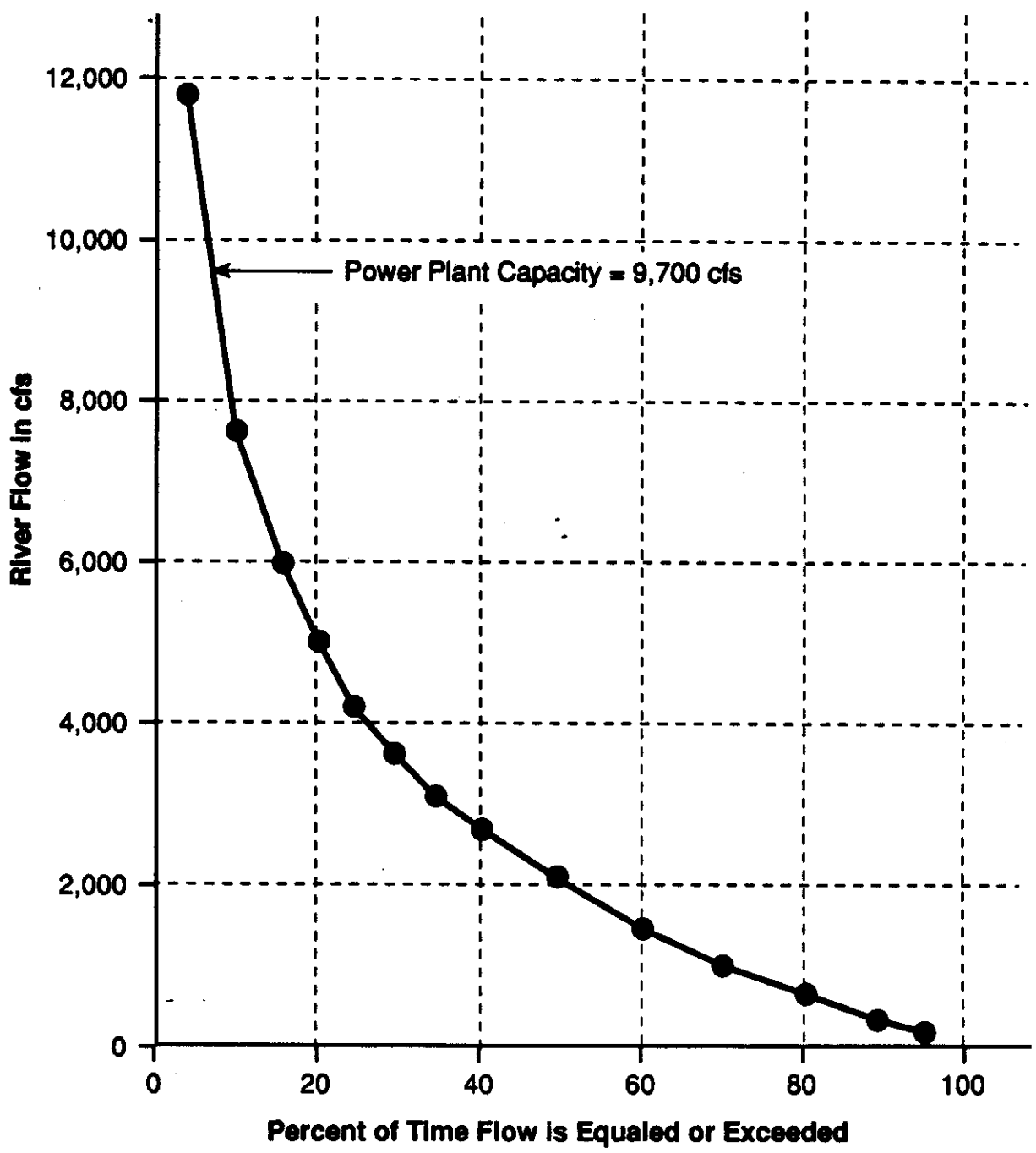


FIGURE A-1
Cheat River at Lake Lynn
Annual Flow Duration 1977-1990

APPENDIX B
STAFF RESPONSES TO LETTERS OF COMMENT ON THE DEA

FILED
OFFICE OF THE SECRETARY
Allegheany Power System

WILLIAM E. COSTELNOCK
Director, Power Engineering

94 AUG -8 AM 11:39

Suite Power Supply
800 Cabin Hill Drive
Greensburg, PA 15601-1689 (412) 838-6728

FEDERAL ENERGY
REGULATORY
COMMISSION

August 5, 1994

Lois D. Cashell, Secretary
Federal Energy Regulatory Commission
Mail Code: DPCA, HL 21.3
825 North Capitol Street, N.E.
Washington, DC 20426

Dear Ms. Cashell:

WEST PENN POWER COMPANY
LAKE LYNN HYDRO STATION
FERC PROJECT NO. 2459-005
COMMENTS ON DRAFT ENVIRONMENTAL ASSESSMENT

The Federal Energy Regulatory Commission (FERC), by letter dated June 24, 1994, distributed the Draft Environmental Assessment for West Penn Power Company's (WPP) Lake Lynn Hydro Station, FERC Project No. 2459-005, and solicited public comment on it. Allegheany Power Service Corporation, as agent for WPP, hereby files its comments regarding the above document.

This submittal consists of the original and eight copies of this letter and attached comments. By copy of this letter, all agencies on the attached Lake Lynn mailing list have received this submittal.

If you have any questions regarding this submittal, please contact Mr. William E. Cannon at our Cabin Hill office, telephone (412) 830-5609.

Very truly yours,



W. E. Costelnock

WC:slb
Attachment

- CC: T. K. Henderson
J. Hunter - FERC, Washington, DC
D. L. Shumway - FERC, Washington, DC
A. J. Sidoti - FERC, New York, NY
Agencies on Attached List

Letter from West Penn Power, dated August 5, 1994

WEST PENN POWER COMPANY
 LAKE LYNN HYDRO STATION
 FERC PROJECT NO. 2459-005
COMMENTS ON DRAFT ENVIRONMENTAL ASSESSMENT

The Federal Energy Regulatory Commission (FERC), by letter dated June 24, 1994, distributed the Draft Environmental Assessment (DEA) prepared relative to West Penn Power Company's (WPP) license renewal application for the Lake Lynn Hydro Station, FERC Project No. 2459, and solicited comments on it. This document provides the comments of Allegheny Power Service Corporation (APSC), as agent for WPP, regarding the DEA. These comments are as follow:

1. Page 3, Section II.B, Paragraph 2, WPP is one of the three operating companies which make up what is commonly referred to as the integrated Allegheny Power System (APS). APSC is another subsidiary which provides services to the three APS operating companies. As such, Paragraph 2 should be changed to read "WPP is a wholly owned subsidiary of the Allegheny Power System, Inc. All power produced by the Lake Lynn Hydroelectric Project is dispatched as needed to serve WPP's more than 625,000 customers and the Allegheny Power System's more than 1.25 million customers".
2. Page 3, Section III.A.1, Paragraph 3, Sentence 2, should read "As APS's", not "As APSC's".
3. Page 4, Section A.1, Paragraph 4, should read "a portion of the Cheat Haven peninsula", not "the Cheat Haven peninsula".
4. Page 10, Section V.A.1, Paragraph 1, second and fourth sentences, should read "Monongahela River", not "Monongalia River". Monongalia is, however, the name of the county.
5. Page 13, Section V.C.1, Paragraph 12, reads "We will require that WPP participate fully in funding and implementing appropriate shore protection measures at the West Penn Beach Recreation Area, but we will not require that WPP implement shore protection measures at the Sunset Beach harbor". Throughout the life of Cheat Lake, all private landowners, lessees, and licensees occupying the lake's shorelines have traditionally maintained their shoreline frontages, if work was even needed, at their own expense. Those individuals located within the Sunset Beach harbor (cove), have been no different, and WPP has no reason to believe that this ethic will not continue in the future. WPP therefore does not feel it is appropriate for the FERC to now order WPP to assist these private lakeside occupants with funding for shoreline protection and therefore requests that Paragraph 12 be changed to read "We will require that WPP participate fully in funding and implementing appropriate shore protection measures at the West Penn Beach Recreation Area, but we will not require that WPP fund or implement shore protection measures at the Sunset Beach harbor".

Response 1. We modified text in Section II.B. to indicate that West Penn Power is a wholly owned subsidiary of Allegheny Power System, Inc.

Response 2. We corrected appropriate text throughout the document.

Response 3. We modified text in Section III.A.1. to reflect that WPP's land holdings include part of the Cheat Haven peninsula.

Response 4. We corrected text in Section V.A.1 to say "Monongahela River."

Response 5. We modified text in Section V.C.1 to clarify our recommendation that WPP would be required to participate fully in funding and implementing appropriate shore protection measures at the West Penn Beach Recreation Area but would not be required to fund or implement shore protection measures at the Sunset Beach harbor.

Letter from West Penn Power, dated August 5, 1994

Response 6. The DEA may have overstated the importance of the project for flood control, which is an incidental function of the hydroelectric project. Thus we have made several minor changes in the FEA text.

Response 7. We have reviewed WPP's proposed method of operation and concur that it would be sufficient for compliance with a new license. The proposed license articles will include specific flow and water level parameters that must be monitored to ensure compliance with required minimum releases and reservoir water level elevations.

We support our previous analysis in Section V.C.2 of both the DEA and the FEA and continue to recommend that WPP not subtract estimated reservoir evaporation and withdrawal from the minimum release.

Pages 16 and 17, Section a., Reservoir Level, alludes to the flood control capabilities of the Lake Lynn Dam. Similarly, Page 30, Section a., Paragraph 5, refers to "flood storage volume", and Page 80, Paragraph 1 discusses "flood storage capacity". While acknowledging that the dam could play a limited role in minimizing downstream flows, WPP must point out that the dam was not designed for, nor can it reasonably be utilized for, flood control purposes.

Page 20, Section b., Paragraph 6, and Page 25, Section f., recommend that WPP's compliance with the minimum flow requirements be maintained through WPP's funding of two new United States Geological Survey (USGS) gauging stations. The reason given for these installations is that "it is difficult to assure accuracy with the taintor gate at such low [minimum] flows". FERC envisions a system in which "the [upstream and downstream] gauging stations should be equipped with telemetry to allow WPP to adjust minimum reservoir releases daily in low flow periods". The theory behind such a system is that the difference between the upstream and downstream USGS gauges can be used to adjust one of the station's taintor gates to comply with the minimum flow requirements. To ensure compliance with lake level limitations, FERC also recommends the installation of a probe to monitor and record lake level hourly.

APSC has had previous experience interconnecting a USGS gauging station with a data acquisition system as a means of providing minimum flow information at The Potomac Edison Company's Millville Hydro Station, FERC Project No. 2343. This system, which utilized only one USGS gauge, was constantly troublesome, usually inaccurate, and eventually abandoned in favor of a revised system based upon a level probe located near the dam. The problem was not with the USGS gauge, but rather in devising a reliable system to transfer the signal, interpret the data, then control flow rates. APSC anticipates similar problems trying to devise a system using two gauges. Because the most critical issue here is WPP's compliance with the minimum flow requirement during periods when the river inflow is less than 212 cfs, APSC also has concerns relating to the ability of stream gauging stations to accurately measure such low flows in the bed of such a large river.

APSC hereby offers an alternative system it contends will serve the multiple needs of accurately providing the required minimum flow, simplicity, ease of maintenance, and cost effective operation. We agree with the need to monitor lake level elevation. This can be done using a WPP provided level probe located on the dam. Should WPP fund the installation, maintenance and data storage of a new USGS gauging station downstream of the dam but upstream of the first tributary, Grassy Run, flows released from the reservoir to the lower Cheat River can be quantified. Should the station, regardless of whether it was generating or merely passing a minimum flow, be providing greater than 212 cfs, as measured by the downstream gauge, then it would be in compliance with the minimum flow requirement. The only time that WPP's compliance with the minimum flow requirement could be in question would be if the downstream USGS gauge was recording less than 212 cfs. There would be only three possible reasons that the USGS gauge would be recording less than 212 cfs:

(1) there was less than 212 cfs of river inflow available for release to the Cheat River below the dam; (2) the station was failing to provide the required minimum flow; or (3) the gauge was disabled. The best way to document compliance would be to assess lake level. If the lake were rising, that would logically indicate that the station was holding back an excessive amount of water, but if the lake level were stable or possibly falling, then the station could not possibly be failing to provide the required minimum flow. Should WPP's compliance be in question, a side-by-side analysis of the downstream USGS stage level data and the data from WPP's proposed dam-mounted lake level probe could be compared. The lake level probe could record hourly.

WPP feels that the above plan can provide minimum flow control as accurately or more so than that which would be provided by the FERC recommended plan based upon the installation of two USGS gauges. WPP's plan would eliminate the need for placing a gauge in the rugged Cheat Canyon upriver of the lake, but below other tributaries. Access problems would constantly hamper the installation and maintenance of a gauge in the Cheat Canyon.

It is known that operation of the station's turbines can produce a small surging effect within portions of the lake near the dam. This could produce an inaccurate probe reading. However, during the extremely dry periods when the full minimum flow could not be provided, it is unlikely that the station would be operating, given WPP's previously stated desire to maintain lake levels for the purpose of emergency capacity. Waves driven across the fetch of the lake could also occasionally produce false lake level readings, but we contend that any reasonable average of lake level probe readings would serve to document compliance. WPP's plan does effectively discount any water losses due to evaporation or consumptive withdrawals from the lake. WPP quantified these losses in its Response to Schedule A of June 21, 1993, submitted to FERC by APSC letter dated November 17, 1993. Current total losses sum to an approximate maximum of 6.8 cfs. However, the Cheat Neck Water Company may soon cease withdrawing approximately 66 million gallons per year from the lake for reasons to be discussed later in this document. Page 20, Section b., Paragraph 6 of the DEA states that, by FERC's own assessment, "... we conclude there is little merit in subtracting evaporation and withdrawal losses from total inflow". Conversely, WPP also feels that there should be little detriment to subtracting evaporation and withdrawal losses from total outflows either.

The DEA states "Taintor gates have a much lower accuracy than downstream flow gauging". WPP contends that the required taintor gate openings, being of controlled, fixed dimensions, can be easily calculated using the variables of lake level (head) and desired flow rate to an equivalent or higher level of accuracy than can be achieved by the use of USGS gauges alone. Although desiring to keep its options open regarding the specific method for providing the required minimum flow, WPP currently proposes to use an automated taintor gate, adjusted daily, in conjunction with the downstream USGS gauge and lake level probe systems. In summation, WPP feels this will provide both the most accurate, reliable, and cost-effective minimum flow control system.

Letter from West Penn Power, dated August 5, 1994

8. Page 21, Section V.b., Paragraph 7, states "If water withdrawal increases substantially in the future, it may become necessary to develop alternative drought contingency plans". This issue was first raised by the West Virginia Department of Natural Resources' (WVDNR) recommendation that WPP prepare a drought preparedness plan for Lake Lynn. WPP reiterates its response to that recommendation, as previously stated by its Response to Schedule A of June 21, 1993, submitted to FERC by APSC letter dated November 17, 1993. WPP stated that "WVDNR does not have the legal authority to regulate utilization of water or to cause others to develop or implement such a plan for public waters. Various legislative bills have been introduced in the West Virginia Legislature over the past years to grant WVDNR the authority to regulate water consumption and utilization. Enactment of such authority has never occurred in part because the Legislature, WPP believes, does not feel that water consumption needs to be regulated within the State. WPP therefore reiterates its contention that the company does not have the legal authority to develop or implement a water utilization plan for public waters".

9. Page 21, Section b., Paragraph 8, and Page 24, Section d., Paragraph 6, discuss the periodic turbidity problems experienced by the Albert Gallatin Municipal Authority (AGMA). AGMA has reported that it feels the turbidity level of its raw intake water has sometimes been affected by WPP's operation of the hydro station. FERC recommends that WPP periodically monitor turbidity in the vicinity of AGMA's intakes and, should the data indicate hydro station operations do in fact influence AGMA's turbidity levels, that a plan be developed to minimize the problem.

AGMA has recently indicated that they currently collect turbidity samples from their raw intake water a minimum of two to three times per day. Should the intake water be particularly turbid, such as following major storms, they may even sample hourly. The requirement that WPP monitor turbidity in the vicinity of AGMA's intakes would simply result in a duplication of effort, and WPP therefore requests that this not be required by the license articles.

AGMA also indicated that it has recently extended its intakes another 20 feet into the lake and is currently engaged in starting up a new, larger capacity water treatment plant. As their previous treatment plant was operating beyond its capacity, it is quite likely that the new plant will solve any turbidity related problems they may have experienced. Additionally, AGMA can store approximately two days worth of water.

The Cheat Neck Water Company (CNWC), similar to many other small, rapidly growing municipal water systems, is currently exploring the possibility of interconnecting with a larger municipal water authority, in this case, the Morgantown Utility Board. If such an arrangement can be finalized, it is anticipated that Cheat Neck would no longer withdraw water from Lake Lynn.

Response 8. We have modified the text in Section V.C.2 to clarify that withdrawals greater than 1 million gallons per day (mgd) from the reservoir would require Commission approval. In such a case, the Commission could require a drought contingency plan that may in turn include modified operational parameters at the Lake Lynn project, but would not regulate other withdrawals.

Response 9. We have revised text in Section V.C.2 to reflect that we expect AGMA (not WPP) will continue to collect intake water samples and test for turbidity. Given AGMA's recent extension of its intakes another 20 feet into the lake and the start-up of a new water treatment plant, we recommend that WPP consult with AGMA only if (on the basis of its turbidity data) AGMA still contends a relationship may exist between high intake turbidity and project operations. Those consultations would attempt to resolve the nature of the relationship, if any, between Lake Lynn Project operations and intake water turbidity. We further recommend that WPP cooperate with AGMA toward identifying potential alternatives to reduce turbidity in the AGMA intake water.

Letter from West Penn Power, dated August 5, 1994

9
Cont.
WPP will continue to inform AGMA, CNWC, and the Lakeview Resort of any lake drawdowns which may jeopardize their intakes. WPP does not propose to modify its operations to accommodate improperly located intake structures.

10
Page 32, Section 6., Paragraph 6, Sentence 3, should read "within APS's own", not "within APSC's own".

11
Page 33, Section 6., Paragraph 8, and Page 59, Section d., Paragraph 9, require WPP to develop an enhancement plan in consultation with the agencies leading to the potential installation of fish attractant/protection structures within the uppermost 1.1 miles of the tailrace area. WPP requests that the FERC further define the designs, materials, and total number of structures it feels would be appropriate.

12
Page 52, Section a., Paragraph 6, Point 4, recommends that WPP "Employ staff responsible for security on project lands and for working with local law enforcement". WPP has continuing concerns regarding the potential liabilities and costs of providing a "project lands" security force. WPP will, however, provide for security at the planned West Penn Beach recreation area. This security will be provided during daylight hours on weekends and holidays from Memorial Day weekend through Labor Day only. Now that the scope of the planned recreational enhancements has been reasonably defined, it is WPP's intention to seek an appropriate management entity for them. This entity will be expected to provide the required security measures.

13
Page 55, Section b., Paragraph 8, recommends the installation of a separate waste disposal system for the fish cleaning station WPP proposed for the West Penn Beach development. WPP, having concerns for the safety of such cleaning stations, desires retention of the ability to explore all possible options for the safe, sanitary disposal of fish wastes prior to finalizing an agreement to install such a system.

14
Page 59, Section d., recommends deferring the tailrace fishing area, which WPP has previously offered, until such time as adequate evidence verifies the existence of a fishery able to tolerate reasonable levels of fishing pressure. To aid in the development of such a fishery, the FERC has recommended that WPP install fish attractant/protection structures in the tailrace area starting approximately 200 yards downstream of the dam. WPP feels this is a logically derived approach. WPP intends to place signage adjacent to the uppermost of these structures to designate the river area between it and the dam as a boat exclusion zone. WPP requests that the final license articles specifically designate WVDNR and the Pennsylvania Fish and Boat Commission (PFBC) with the responsibility for enforcing this exclusion zone.

15
Page 60, Section e., Paragraph 1, which reads "Cheat Haven, Area 2, ..." should be changed to "Cheat Haven, Area 12, ..."

Response 10. As noted in Response 2, we corrected the appropriate text throughout the document.

Response 11. As stated in the FEA (Section V.C.3), we recommend that WPP develop a plan for the reservoir and down-stream fish attraction structures in conjunction with DOI, WVDNR, and PFBC and submit it to the Commission for approval.

In PFBC's letter to WPP of August 25, 1994, PFBC addresses the issue of placement of the fish attraction/protection structures in the Cheat River down-stream of the Lake Lynn Hydro Station. We believe that letter is a reasonable foundation for further action (i.e., development of a fish enhancement plan).

Response 12. The recommended security force is primarily intended for security at the West Penn Beach Recreation Area, including the associated hiking/biking trail. However, we intend that the security force also be available for oversight at the tailrace fishing recreation area, the Sunset Beach boat launch, and the Wildlife and Nature Viewing Areas. We will not require that security personnel be present at all locations at all times; therefore, there will be some flexibility for security personnel to move between various WPP recreation sites.

Response 13. We believe our recommendation for an independent waste disposal system is consistent with public safety. Therefore we did not modify the text.

Response 14. Based on our meeting of September 13, 1994, with WVDNR, PFBC, DOI, and WPP, we have changed our recommendation to defer development of the tailrace fishing area. We now recognize the merit of developing the tailrace fishing for a recreation area as soon as possible after relicensing for a variety of public recreation uses (see Section V.C.8). As stated in the FEA, we will not require any accommodation of boating in the tailrace area, and we concur with WPP's concerns about boating safety and its proposal to establish a down-stream boating exclusion zone.

WPP will have the primary responsibility to enforce the boat exclusion zone, which can be achieved in part by the proposal to place signage adjacent to the fish attractant structures. We recognize that WVDNR and PFBC are generally responsible for boating regulations in the respective states and expect that WPP may notify them of specific problems with boating safety.

Response 15. We corrected the referenced text in Section V.C.8.

Page 2: CRF /Lake Lynn Hydroelectric Project No. 2459

1

Cont.

It is proposed that the Cheat Haven property could be the key to the successful purchase of the west side of the Cheat Canyon. More specifically, it is proposed that proceeds from the sale of the Cheat Haven property be used to help secure this much larger piece of property for public use. This action will create a great deal of public goodwill and do far more for the public good than retaining the Cheat Haven property. This proposal is supported by CLEAR, the WVDNR, The Nature Conservancy and this Foundation. The transaction could be undertaken directly by West Penn Power or the land could be transferred to the Coopers Rock Foundation with a clause that it would be used only for this purpose.

This proposed reduction of the total holdings of WPP would better allow WPP to focus their energies and monies on their remaining holdings, while helping create a major increase in public lands around the lake. It was noted in the Assessment that WPP should not consider any changes in land holdings. It is our belief that this is an unduly severe limit to the potential of WPP doing the most good for the greatest number of people.

We appreciate the opportunity to make this proposal and hope it will receive positive consideration.

Sincerely,



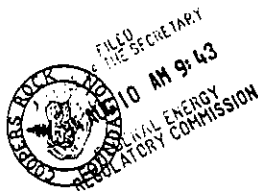
George W. Longenecker
President

Letter from Coopers Rock Foundation, Inc., dated August 6, 1994

Response 1. We believe that the Cheat Haven parcel is an integral part of the proposed recreational development along the shoreline surrounding the West Penn Beach peninsula. Although it may not share the characteristics of the upper canyon in terms of natural habitat, it has high recreational value in a location where public access to reservoir shorelands is at a premium. We will not recommend that the Commission require WPP to contribute to the Foundation's cause as a condition of relicensing; but this does not preclude the foundation from pursuing WPP's assistance.

We recognize your interest in maintaining the natural environment of the west side of Cheat Canyon. But we do not believe it is reasonable for the Commission, in the context of this hydropower relicensing action, to require WPP to transfer parcels/portions of its land holdings to secure the referenced west side of the canyon property. We will continue to recommend that WPP retain ownership of all lands currently owned within the project boundary, unless changes are specifically approved by the Commission.

11\ea\apx_b.wp5



COOPERS ROCK FOUNDATION, INC.

POST OFFICE BOX 505
MORGANTOWN, WV 26507-0505

August 6, 1994

ORIGINAL

Lois D. Cashell, Secretary
Federal Energy Regulatory Commission
825 North Capitol Street, N.E.
Washington, DC 20426

RE: Lake Lynn Hydroelectric Project No. 2459

Dear Ms. Cashell:

I am writing on behalf of the Coopers Rock Foundation Board of Directors.

On pages 40-41 under a. Reservoir Land Use and Recreation, in the paragraph describing the "Upper Cheat Lake zone," there is an obvious omission of any description of the west side of the canyon. This four mile area along the lake to the confluence of the river is presently undeveloped. There is no road or railroad traversing the canyon. The west side of the canyon is immediately opposite the Coopers Rock overlook and constitutes a major portion of its immediate watershed. A conservative estimate indicates that in excess of 400,000 people come to experience this view annually, making the view a major recreational feature. On the west side are three major rock outcroppings equaling or superior to the Coopers Rock overlook. Located on this property are several colonies of the flat-spined three-toothed land snail which has been identified as a threatened species. It is found nowhere else in the world except in the Cheat Canyon. The majority of the area on the west side of the canyon is part of a 2500 acre tract which is in a single private ownership. This tract is presently for sale. If this land were purchased by a developer, many negative impacts could occur. Development of this area would create a reduction in the numbers of those who now find Coopers Rock State Forest a desirable place to visit. Such development would add significantly to the siltation of the lake and a lowering of water quality. Development in this area could also contribute to the extinction of the threatened snail species.

Our Foundation, The Nature Conservancy, the West Virginia DNR and the Governor's office have all been pursuing the possible purchase of this property in order to protect it and allow public use of the land. The State of West Virginia has appropriated \$400,000 to go toward this purchase. The Coopers Rock Foundation has raised about \$70,000 in contributions and pledges from private individuals in the region for this purpose. The State has identified some excess land which could possibly be swapped to help effect the deal. However all this will not be enough to meet the asking price.

The goals of the Environmental Assessment for Hydropower License include "the protection, mitigation of damage to, and enhancement of, fish and wildlife... the protection of recreational resources and the preservation of other aspects of environmental quality." The Coopers Rock Foundation is in agreement that most of the proposals are appropriate for meeting these goals. We wish to make an additional proposal concerning the property known as Cheat Haven.

Letter from the Sierra Club, West Virginia Chapter, dated August 4, 1994

3

acquisition or land swaps should be evaluated to enhance the recreational and environmental status of the area.

Cont.

4

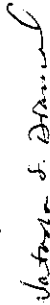
A recreation management plan should be part of EA in order to assure adequate recreational opportunities are provided before a license is issued. Such a recreation plan should emphasize public access and expanded nonmotorized use of land and water areas. It should also emphasize cooperation with appropriate state and local authorities in the management of these recreation facilities.

5

Lack of an existing management authority or denial of responsibility by WPP is not sufficient reason for not constructing a recreational beach at the so-named West Penn Beach. WPP should evaluate, and if needed take measures to improve, water quality at various locations along West Penn Beach so that swimming can occur. We recommend that WPP, in cooperation with state and local regulatory authorities, work to achieve this goal.

Thank you for the opportunity to comment on this EA.

Sincerely,



Natasha Diamond
Conservation Chair
Monongahela Group

Response 4. We recommend (Section V.C.8) that WPP revise and refile the existing recreation and land management plan within 6 months of relicensing. The recreation management plan was filed with the project application and is discussed in the DEA. The revised plan reflects additional recreation enhancement details as required by the license. The plan must also demonstrate efforts to coordinate and cooperate with DOI, WVDNR, PFBC, Monongalia County, local communities, law enforcement, residents, and local or regional interest groups.

Response 5. We recognize your interest in developing a swimming area at the West Penn Beach Recreational Area. However, because of safety and access concerns we do not recommend that WPP immediately develop or improve a swimming area. We believe that the need for swimming access and the many related factors require further discussion. We recommend that WPP describe areas commonly used for swimming within its revised recreational plans, and continue to evaluate swimming potential.

Letter from the Sierra Club, West Virginia Chapter, dated August 4, 1994

Response 1. We believe that the DEA adequately addresses water quality and erosion issues. We will recommend that WPP be required to install three new water quality monitoring stations: one in the reservoir, one in the tailrace area, and one at a site down-stream of the acid tributaries. The monitoring stations, in coordination with responsible agencies and a number of other reporting and enforcement mechanisms, will be used to evaluate and regulate water quality.

We understand your concern for boat generated waves that may be a factor in creating shoreline erosion, but WPP is not the party responsible for the regulation of boat size and speed on Cheat Lake. We have recommended that WPP conduct an annual shoreline erosion survey of the West Penn Beach area, and a triennial survey of the entire reservoir shoreline during the first 9 years following issuance of the license. We do not recommend that WPP be required to participate in the funding of shore protection measures, except where required for the West Penn Beach development area or at other sites affected by construction activities.

Response 2. Based on an independent and comprehensive evaluation of alternatives, we believe that Alternative 3-A (minimum release of 212 cfs or reservoir inflow, with an absolute minimum release of 100 cfs) as explained in the FEA provides the most reasonable balance between efficient power production and environmental enhancements.

Response 3. Based on staff's experience with recreation enhancements associated with hydropower relicensing, we conclude that WPP has taken on an ambitious future role in the recreation planning and the development of shore areas along Cheat Lake. That role will be mandated by the new license. We will not, however, recommend that the Commission require WPP to extend trails to public lands beyond the trail system recommended in the FEA. We have recommended that WPP monitor recreation use and update the recreation plan and submit it to the Commission every 3 years for at least the first 9 years after relicensing. As stated in our response to the Cooper's Rock Foundation, we will recommend that the project license require WPP to retain ownership of all lands currently owned within the project boundary, unless changes are specifically approved by the Commission (Section V.C.8 of the FEA).

SIERRA CLUB

WEST VIRGINIA CHAPTER

P.O. Box 4142
Morgantown, WV 26504

Lois Cashell, Secretary
Federal Energy/Regulatory Commission
825 North Capitol Street, NE
Washington, DC 20426

FILED
IN THE OFFICE OF THE SECRETARY
94 AUG 11 AM 9:55
FEDERAL ENERGY
REGULATORY COMMISSION

ORIGINAL

RE: Lake Lynn Hydroelectric Project No. 2459

Dear Ms Cashell:

Please consider the following comments regarding the above project.

Water quality is inadequately addressed in the draft Environmental Assessment. Lake shore erosion should be controlled over the entire lakefront, not just on WPP owned properties. WPP can control bank erosion from boat wakes by management of boat motor size and speed. Waste water effluents and acid mine drainage should be monitored to protect drinking water drawn from the lake. WPP should control sources of these pollutants coming from WPP properties.

We support the adoption of Alternative 7 (maintenance of 450 cfs plus ramping) to assure safety of down river users and to optimize water quality and fisheries.

We support the proposed recreation facilities at West penn beach, the wildlife viewing areas, and the trail from West Penn Beach to the Cheat Haven area; however, these facilities under utilize the outstanding recreational possibilities of the Cheat Lake area. The EA should more fully evaluate opportunities to extend trails to other public lands, eg. Coopers Rock State Forest, and to acquire additional public access recreational lands. In order to fully develop a prime recreational facility, a foot trail should be developed around the entire lake front. Since this lakefront is owned by WPP, such a trail is a reasonable component of a long term recreation plan. Land

"Not blind opposition to progress, but opposition to blind progress."

Letter from Cheat Lake Environment and Recreation Association, dated August 4, 1994

Response 4. We continue to support our analysis that the trails proposed by WPP may be developed much more cost effectively and with less adverse effect on the environment, and with better access for the disabled, than a trail system in the canyon area (DEA p. 61). Furthermore, trail construction in the canyon area raises concerns about slope stability and protection of sensitive natural habitat in the canyon area, as well as potential for higher construction costs and less trail safety than will be offered by the West Penn Beach development and associated trails.

Response 5. The environmental assessment is an independent analysis that evaluates the economics of power generation to ensure that electric power can be provided economically. We cannot always put dollar benefits on some environmental enhancements, because we do not have good dollar values for all types of enhancements. However, we do describe these benefits in qualitative terms throughout the EA.

While it is sometimes difficult to put a numeric value on something like enhanced access to public recreation, the costs of these enhancements (i.e. the 3.27 million West Penn Beach Recreation Area) may be representative of at least some of the value of the benefits. Therefore, we believe there is no conflict between the analysis provided and the balancing of economics. The environmental enhancements that we evaluated have necessarily reduced the power benefits; and this applies to the recommended alternative (Alternative 3-A), which reduces levelized annual net benefits by about \$1.2 million compared to Alternative 1--the existing project (see Section VI.B of the FEA).

trail system up the Cheat Canyon, as a major effort toward eco-tourism. Working in concert with environmental groups, state and county government, West Penn Power should assess, as part of its master plan, the opportunity to exchange land resources when such exchange can increase the overall recreational and ecological opportunities of the area. This position statement refers to the concern over limited access and habitat potential for the Cheat Haven peninsula.

FERC Conclusion: "Not adopted-WPP's overall plan is adequate"

We continue to view the area assigned by WPP as the "Cheat Haven Wildlife Habitat & Nature Viewing Area" as being nothing more than an effort by WPP to label this acreage in an attempt to avoid discussion of its value relative to other reasonable options. We feel that we have made the case as to why this is not realistically a "nature area" primarily due to its relatively small acreage and isolated location from large tracts of natural woodlands. Furthermore, WPP's proposed single, dead-end trail design--to and from a given point, is generally considered as the least favored method of trail design by planners of parks and nature preserves.

We ask that FERC reconsider their position of rejecting out-of-hand the possibility that this property might be exchanged for other suitable acreage when such a transfer would increase the overall net recreational and environmental opportunities of the Cheat Lake area. We call attention to a statement in the *FERC Hydroelectric Project Relicensing Handbook*, page 54: "The Commission will be looking at comprehensive resource planning. Opportunities may exist for basin wide as well as site specific mitigation and enhancement. Enhancement refers to that set of measures that utilizes the projects potential to increase resource values beyond the level that exists at the time of the application."

- Consider land trade alternatives to improve the overall recreational and ecological value of the total project.
- Plans for managing this and other wildlife viewing areas need to identify the desired wildlife and habitat type; how these habitats will be developed, and how the areas will be maintained for users.
- Consider connectivity of trail systems and enhanced access to other public lands as part of land-trade alternatives.

ADDITIONAL COMMENTS

In addition to the above, previously-stated positions, we believe the environmental assessment should include a revised economic impact analysis of the alternatives. Table 11 of the DEA identifies the costs of each of the alternatives that are evaluated. However, the only benefit considered is power generation. Economic benefits from fisheries, recreation, water supplies, tourism, etc. are not considered in the analysis but are essential to properly evaluate the alternatives. FERC Hydroelectric Project Relicensing Handbook, page 17, states that "FERC's decision will strike a balance between maintaining economically provided electric power to rate payers and providing other public benefits."

CLEAR Page 5

Letter from Cheat Lake Environment and Recreation Association,
dated August 4, 1994

Response 3. We continue to support the recommendation (DEA p. 55) not to develop or improve a swimming area at this time because of safety and access concerns. We will recommend that WPP, however, evaluate water quality throughout the reservoir, including its appropriateness for swimming. We also recommend that WPP describe areas commonly used for swimming and estimate the number of swimmers using various sites within its recreation plan updates and continue to evaluate the potential for swimming enhancements.

• The impact of sewage discharges on lake water quality and subsequent recreational potential from West Penn recreational developments and from other non-WPP development in the region must be adequately addressed. These impacts directly contribute to dissolved oxygen deficiencies and impair fisheries. This concern includes the obvious discharge of dishwasher, garbage and human waste within close proximity to the water at the privileged permit holder campsites.

• Management of boating density should be the responsibility of WPP because of their provision of a free public boat launch site. While we should support expanded public access, boating density should be better managed to assure safety and if necessary, limited to prevent conflicts with other lake users or prevent environmental impacts such as noise pollution, oil pollution, wakes, etc.

WEST PENN BEACH RECREATION AREA DEVELOPMENT

CLEAR Position: (Adopted November 1, 1993 by the Board of Directors) West Penn Power should evaluate water quality throughout the lake as to the suitability for swimming. If possible, and needed, WPP should attempt to improve the water quality of the Northeast portion of Cheat Lake, and designate an area that might be used as a swimming beach when such conditions will support bathing. As an alternative, or in addition to this beach, WPP should establish a more appropriate swimming beach area elsewhere on the lake and develop it for this purpose.

FERC Conclusion: "Partially adopted-Commission staff does not recommend development of a swimming area. We recommend that WPP continue to evaluate swimming needs".

Broadwater areas attract swimmers. Cheat Lake is, in fact, a popular swimming area. Although there is very limited access for swimmers, considerable demand for this type of activity can be witnessed on any warm day, and especially during weekends in June, July, and August. Drowning accidents seem to be an almost annual occurrence in Cheat Lake. By failing to provide for supervised swimming areas, WPP and FERC are not acting in a responsible manner.

Safe swimming is best realized at a designated bathing facility, with a safe area, and with lifeguards enforcing good discipline. Swimming will continue to grow in popularity at Cheat Lake, with or without a designated area. However, the best interest of public safety will be addressed by the property owners—West Penn Power, when they realize the need to plan and supervise this activity at designated bathing areas.

Swimming is clearly a key element of water-based recreation and provides a focus for tourism, and hence economic development of the region. The environmental assessment fails to consider the economic significance and recreational importance of swimming to the local tourism industry in its evaluation of recreational enhancements.

• WPP should establish an appropriate swimming beach area on the lake and develop it for this purpose. The headwaters have natural sandbars and higher water quality, and should be evaluated as alternatives for use as swimming areas.

CHEAT HAVEN WILDLIFE HABITAT AND VIEWING AREA

CLEAR Position: (Adopted November 1, 1993 by the Board of Directors) West Penn Power has the opportunity to assume an environmental leadership role in assisting with efforts to establish a

CLEAR Page 4

Letter from Cheat Lake Environment and Recreation Association,
dated August 4, 1994

FERC Conclusion: "Not adopted-applicant need only concentrate on recreational uses within the project boundary."

There was no intent in our position that WPP should assist the county in the development of a county-wide master plan. Our concern is that because the Cheat Lake area represents a considerable portion of the county's overall recreational demand and use, it is appropriate and prudent that WPP recognize that its development plans impact the overall county-wide recreational scheme. Appropriate interaction between WPP and the County Commissioners and county planning officials, regarding WPP plans for development, is a responsible approach, and should be encouraged, rather than discouraged, by FERC. In fact the FERC Hydroelectric Project Relicensing Handbook, page 92 specifically directs the applicant "with agencies having land management or planning/zoning authority in the area."

Particular concerns remain as to West Penn Power's unwillingness to adequately address many planning areas. Their history of inaction in this regard reinforces our concern over their willingness to cooperate in planning activities and should be recognized by FERC. We recommend the following changes in the Draft EA:

- A master plan should be approved prior to issuance of a long term license.
- Camping: FERC Hydroelectric Project Relicensing Handbook, page 89 states that the applicant must provide: "Evaluation of recreational needs in the area and a determination of whether the need can be accommodated by existing facilities or by additional recreational facilities at the project." The CLEAR NEEDS ASSESSMENT conducted in 1993 determined camping needs were not being adequately met in the project boundaries.
- 1. Primitive recreation sites (privileged permit holders) should be incorporated in the overall recreation master plan. The designation of certain sites for exclusive long-term use by permit holders is an inappropriate land use strategy to address public demands for camping.
- 2. The Primitive camping plan is unsuitable at area 18 due to excessive slope. Camping should be relocated to a site with better access and topography, and modified to consider other opportunities.
- Planning for erosion control such as boat wakes and bankside development within the project boundaries is totally inadequate and must be extended to include the effects on the shoreline lakewide. The claim that erosion is a problem in only two locations is incorrect. Weekend boating activities cause extensive regions of high turbidity from shore erosion through much of the lake area. In addition, stumping of shoreline is a problem along extensive stretches. The FERC Hydroelectric Project Relicensing Handbook, page 86 states "if there are existing areas of continuing erosion or slope instability, include a plan to stabilize these areas. This plan should include a narrative describing the type of control measures to be used, and a topographic map showing the specific locations of the proposed control measures."
- West Penn Power must address remediation of water quality problems. e.g.: sedimentation, acid drainage, sewage loading, especially from current and future developments on West Penn Power lands.
- West Penn Power should identify and propose measures to mitigate excessive noise and aesthetic impacts from recreational usage on the lake.
- Current and future public water supply needs should be addressed, particularly during periods of droughts and excessive draw downs.

CLEAR Page 3

authority, and when WPP proposes or implements plans, it is in turn regulated by the Commission and others. In the FEA we specifically clarify that we will recommend that WPP be required to evaluate and minimize adverse water quality impacts associated with its recreational developments.

We will not recommend that WPP be required to comprehensively regulate boating density on Cheat Lake. WPP will be responsible for managing the free public boat launch site to be provided at Sunset Beach. Until more capacity is developed, limitations on the Sunset Beach parking supply and similar capacity limits at other marinas and boat launches should keep boat usage at the historic peak level. In consultation with agencies and interest groups, we will recommend that WPP also be required to report on boating use patterns and propose or report on changes in periodic recreation plan updates.

Letter from Cheat Lake Environment and Recreation Association,
dated August 4, 1994

Response 2. A requirement that WPP consult "with agencies having land management or planning/zoning authority in the area" is reasonable for future consultations and that language has been added to the FEA and we will also recommend that it be included in the license. To the extent that the relicensing process itself requires consultation with appropriate agencies, we are satisfied that WPP completed such preconsultation.

WPP's history with regard to recreation development and planning prior to this relicensing is irrelevant to the current environment because the previous license did not require such recreational development and planning activities. (Refer to Section V.C.8. for a detailed description of the recreation development and planning activities that would be required after relicensing).

Several details of the post-license project operation may be adjusted to respond to changing circumstances. Therefore, we will not delay issuance of the license until completion of a master plan. The enhancements to be implemented after relicensing will address several well-established needs of the area and therefore are generally consistent with local plans. Several of the details listed in your comments will be addressed through the required recreation plan update process. This will include reviewing the viability of privileged permit holdings and the primitive camp sites in Area 18 or elsewhere. Section V.C.8 of the FEA now includes these as specific points to evaluate in plan updates.

Commission staff have considerable experience with shoreline erosion issues at hydroelectric projects and the associated reservoirs. Considering the slopes along much of Cheat Lake, we are generally impressed with the shore's stability and specifically noted a scarcity of bare soils or actively eroding shoreline. We have modified our recommendation from the DEA (Section V.C.1) to provide a broader picture of erosion issues associated with the reservoir. Specifically we will require WPP to conduct (1) an annual shoreline erosion survey of the West Penn Beach area and (2) a triennial survey of the entire reservoir shoreline during the first 9 years following issuance of the new license. We were previously unaware of slumping shoreline at numerous locations, and we believe the required surveys will help to clarify this issue. We will not recommend, however, that WPP be required to participate in the funding of shore protection measures, except where required for the West Penn Beach development area or at other sites affected by WPP construction activities.

We do not recommend that WPP comprehensively address acid mine drainage, sewage loading, noise impacts, aesthetic impacts, or public water supply issues. These issues are beyond WPP's

visitor safety are inadequate and do not address even the existing safety issues. Safety is a fundamental responsibility of a managing authority and should be discussed as such in the EA.

As to the statement in the Draft Environmental Assessment suggesting that WPP has "insufficient authority over private marinas and state-owned land", we suggest that this is not consistent with the current trend toward cooperative operation and management that might be possible via establishment of a governmental/private sector management entity. It also is contrary to the following statement in the FERC Hydroelectric Project Relicensing Handbook (1990): "The applicant must provide a description of the shoreline and reservoir management plans, and their relation to adjacent uses of land and resources." Page 92.

Certainly the creation of a special Park District or Environmental Authority as a political subdivision of the State of West Virginia is a possibility. This type of entity could have considerable control of the geographic area assigned to it, so far as regulation and enforcement. It could also have the authority to tax the property within its geographic jurisdiction to assist with its ongoing operating expenses. Further, it would be assigned legal responsibility for the safe operation of activities at Cheat Lake—addressing a current concern of WPP as to the provision of supervised swimming areas. It seems that such a special district or authority would fit in well at Cheat Lake, and it appears logical that WPP would be very interested in becoming involved in initial discussion of this process. If WPP were to be an active part of this type of management structure, it would, by its very governmental nature, permit a broad approach to solving many of the identified problems of the area. It could also be established to undertake the management of the recreational aspects of Cheat Lake without any authority involving production of power. It is a concept that is worth pursuing, and we feel that discussion of this alternative should be incorporated into the EA by FERC.

Notwithstanding, we feel that unless West Penn addresses the manner in which they intend to manage Cheat Lake, CLEAR will actively promote the creation of a special district or authority, which will have considerable authority and impact on the area. We would invite West Penn's input and cooperation, and hope that FERC will be inclined to support interactive discussion between WPP and parties involved in this activity.

Our concerns about WPP's proposed "management plan" are:

- Concept for management authority is inadequate and should be addressed in detail, to include:
 1. Identify the entity that will promulgate rules and regulations for use.
 2. Identify proposed management structure, such as primary site manager, on site staff, and maintenance requirements
 3. Provide plans for visitor safety, both on land and water.
 4. Identify possible integration with other management entities.

MASTER PLANNING

CLEAR Position: (Adopted November 1, 1993 by the Board of Directors) West Penn Power and the Monongalia County Commission should work together in addressing the many social, economic, environmental, educational, recreational, and other related variables that affect the quality of life of the Cheat Lake area in the development of a master plan. This effort should include cooperation with appropriate state agencies, citizens groups, concerned environmental groups, and adjacent governmental agencies having jurisdiction in the watershed.

CLEAR Page 2

Letter from Cheat Lake Environment and Recreation Association,
dated August 4, 1994

Response 1. The general recommendations made in the DEA are consistent with WPP's scope of responsibility and adequately address the need for administration and management of project lands. We recognize your concerns for identifying a management authority and, as stated in the DEA, WPP will be responsible for managing its lands and recreational uses on its lands (p. 52). The recreation management requirements outlined in the DEA will ensure that WPP is actively and appropriately engaged in ongoing resource planning and management in the project area. However, although we endorse the goal of government and private sector cooperation, we will not recommend that WPP be required to establish a political subdivision of the state or a pseudo-governmental authority as a term of its hydropower license.

As stated in the DEA (p. 52), we will recommend that WPP be required to revise and refile the existing recreation and land management plan within 6 months of relicensing and update the plan every 3 years, with plan updates to include information about recreation use, any problem areas, and recommendations. We will also recommend that WPP be required to provide staff responsible for recreation area security and for working with local law enforcement. These requirements would make WPP responsible to the Commission for demonstrating continuous and cooperative efforts in the area of recreation management; however, these requirements are not expected to eliminate the need for other recreation management authorities. (The states of West Virginia and Pennsylvania, for example, are responsible for boater registration and enforcement of fishing regulations, giving them management authority in areas where WPP has none.) We recognize that you have several valid concerns about recreation and land management, and we will recommend that the license require WPP to coordinate and cooperate with local and regional interests groups when updating the recreational plan.

94 AUG -8 PH 3:24
RECEIVED
FEDERAL ENERGY COMMISSION
WASHINGTON, D.C. 20433

**CHEAT LAKE ENVIRONMENT AND RECREATION
(CLEAR) ASSOCIATION RESPONSE REGARDING
THE FERC COMMENTS OF WEST PENN POWER'S D E A**

"Congress signaled that it wants the FERC to give the environment, recreation, and fish and wildlife the same level of attention it gives to power and developmental objectives....."—FERC Hydroelectric Project Relicensing Handbook, April, 1990 page 57.

CLEAR is in total agreement with the Congress, as we hope FERC is inclined to be. We feel that our four position statements, as addressed below, are in complete concert with this policy statement.

MANAGING AUTHORITY FOR CHEAT LAKE

CLEAR Position: (Adopted November 1, 1993 by the Board of Directors) West Penn Power must address the administration and management of not just the West Penn Power owned lakeside facilities it plans to develop, but must establish an identifiable management entity to assume responsibility for the overall safety and security of all lake users. This administrative entity might be exclusively by the Power Company, or might include semi-government involvement via the establishment of a park district or park authority, in cooperation with county and/or state government.

FERC Conclusion: "Not adopted—insufficient authority over private marinas and state-owned land."

The only reference to addressing the management concern for Cheat Lake by West Penn Power in the Draft Environmental Assessment was that it currently plans to assume this responsibility itself. It does suggest that in the future, consideration might be given towards turning over this responsibility to some other entity.

We suggest that this is vague and very incomplete. A "management plan" usually consists of two distinct functions, and assigns responsibility for each of these. These functions are:

1. A *governing entity*—Identification of the person, or group of persons, responsible for the formulation of the policy and rules relating to the area. The Draft EA needs to address **WHO** will undertake this essential function and **WHERE** public concerns should be directed.
2. A *managing entity*—Identification of the person responsible for the day-to-day operation of the facility or area under the guidelines established by the governing entity. The public needs to know **WHO** will undertake this function **HOW** this person can be contacted.

These are the most basic of requirements of a management plan, and it is most unusual that at the very least FERC does not require WPP to address this, even if WPP chooses to self-operate the recreational aspects of Cheat Lake for the immediate future.

The Hydroelectric Project Relicensing Handbook specifically requires identification of safety features to protect the public engaged in recreation. (section 4.3, page 90). Provisions for

CLEAR
Cheat Lake Environment and Recreation Association
P. O. Box 211, Morgantown, WV 26507-0211

94 AUG -8 PM 3: 24
FEDERAL ENERGY
REGULATORY COMMISSION

August 4, 1994

ORIGINAL

Ms. Lois D. Cashell, Secretary
Federal Energy Regulatory Commission
Mail Code: DPCA, HL 21.3
825 North Capitol Street, N.E.
Washington, D.C. 20426

Dear Ms. Cashell:

Cheat Lake Environment and Recreation (CLEAR) Association
Lake Lynn Hydroelectric Project
FERC Project No. 2459-005
DEA REPLY COMMENTS

We are pleased to offer the following comments regarding the Draft Environmental Assessment of the Lake Lynn Hydroelectric Project.

In the environmental assessment the WVU Division of Forestry was listed as an intervenor. Please note that the request for intervenor status was made by Steve Hollenhorst, Ph.D. on behalf of CLEAR and not the WVU Division of Forestry. We request that CLEAR, not the WVU Division of Forestry, be listed in the future.

All entities on the Lake Lynn mailing list will be mailed a copy of this document. Should you have any questions regarding this submittal, please contact me at 304-293-2321.

Sincerely,



Ann Chester
President

AUG 6 1994

Letter from West Virginia Division of Environmental Protection, dated August 1, 1994

Response 9. We have revised Section V.C.2.f to include the WVDEP in consultation for gage station locations.

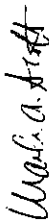
Ms. Lois Cashell
RE: Lake Lynn Hydropower Project, FERC No. 2459
August 1, 1994
Page 4

Page 23, Section V. C.2. Water Resources-Environmental Impacts and Recommendations.
f. Compliance Monitoring - WVDEP agrees with the FERC recommendation that WPP fund the installation, maintenance, and data storage for a USGS flow gaging station on the Cheat River in the reservoir headwaters and below the dam (upstream of Grassy Run). As mentioned above, minimum flow maintenance is directly related to water quality, therefore any license article written to include consultation requirements for gage station locations must include a requirement to also consult with WVDEP. Flow information and water level monitor data should be made available to WVDEP as well as the agencies discussed in the EA.

Thank you for the opportunity to provide comments on the EA. Should you have any questions, please feel free to contact Ms. Barbara Taylor (WVDEP, Office of Water Resources, 2006 Robert C. Byrd Drive, Beckley, West Virginia 25801-8320; 304/256-6850) of my staff.

Sincerely,

Office of Water Resources



Mark A. Scott, Chief

cc: WVDNR-Wildlife Resources, Elkins
WVDEP-Regulatory Review Program
WVDEP-Beckley
U.S. Fish and Wildlife Service, Elkins

Letter from West Virginia Division of Environmental Protection, dated August 1, 1994

Ms. Lois Cashell
 RE: Lake Lynn Hydropower Project, FERC No. 2459
 August 1, 1994
 Page 3

In the discussion regarding water quality monitoring it is indicated that WPP would not be required to implement any practices to prevent DO degradation downstream.

West Virginia's Code of State Rules, 46 C.S.R. 1, Requirements Governing Water Quality Standards, Section 2.4 defines High Quality Waters as "...those waters whose quality is equal to or better than the minimum levels necessary to achieve the national water quality goal uses..." WVDEP, in accordance with guidance from the U. S. Environmental Protection Agency and the West Virginia Environmental Quality Board, approaches a high quality water determination based on each individual water quality parameter.

As the RMC study has shown, DO is well above the minimum level (5.0 mg/l) necessary to achieve national goals. Consequently, when evaluating tailwater DO conditions the minimum state standard is not applicable as it is superseded by provisions of WV Code of State Rules, 46 C.S.R. 1, Section 4.1.e which state that "...the existing trout and other high quality waters of the state must be maintained at their existing high quality..." FERC must therefore evaluate maintenance of existing DO conditions. Therefore, WPP should be required to develop a plan to monitor DO and mitigate the occurrence of DO at levels that are less than existing conditions.

WVDEP agrees with FERC's recommendation that WPP prepare a water quality monitoring plan and consult with WV DNR, PFBC, and DOI before establishing the continuous monitoring stations. However, WVDEP is the state water quality regulatory and 401 water quality certifying agency, WV State Code §§22-1-7(5) and 22-1-6(6), and should therefore be party to any consultation regarding all aspects of water quality monitoring or management, including coordination with the licensee on monitoring stations. Further, WVDEP recommends that water quality monitoring equipment be installed at the U.S. Geological Survey (USGS) gaging station recommended for the reservoir headwaters. Once the expense is incurred to construct a gaging station that includes a telemetry component, the remaining cost to install a continuous water quality monitor is nominal. The continuous monitor should record DO, temperature, pH, and conductivity.

An upstream monitor will provide improved characterization of inflow to the reservoir and potentially allow the licensee to minimize downstream impacts should a critical condition occur above the lake (i.e. chemical spill, acid inflow, etc.). In early discussions on this issue, WPP was hesitant to construct a monitoring station solely for water quality due to access problems, vandalism, etc. However, that is no longer the case if a gage station will be constructed, access will be required and security will be part of the gage station structure. Information from all water quality monitoring locations should be readily available to resource and regulatory agencies either through electronic access or upon request.

Response 8. We have modified the text (Section V.C.2) to include WVDEP as a party to consultations regarding water quality monitoring and management.

As explained in the FEA (Section V.C.2), we will not require WPP to construct an upstream USGS gage station because of prohibitive cost and because not having it will not preclude WPP's ability to document compliance with minimum flow requirements. We recommend that WPP monitor flow compliance with a reservoir level probe and a USGS gage station downstream of the dam. Nevertheless, we continue to recommend that WPP install three water quality monitoring stations, one of which will be in the project reservoir. WPP will determine the location of the reservoir water quality monitoring station in consultation with the WVDEP and other appropriate agencies.

Letter from West Virginia Division of Environmental Protection, dated August 1, 1994

Response 3. We recommend (Section V.C.1) that WPP also cooperate with WVDEP to address adverse effects.

Response 4. We corrected the text (Section V.C.2) to reflect that water quality standards up-stream of the dam, the dam discharge, and immediate tailwaters are subject to West Virginia standards.

Response 5. We recommend in the FEA (Section V.C.2) that if any proposal is put forth to withdraw more than 1 mgd from the reservoir, the Commission may require a drought contingency plan that may include modified operational parameters for the Lake Lynn project.

Response 6. We modified the text as appropriate throughout the FEA to recommend a minimum release of 212 cfs or reservoir inflow, with an absolute minimum release of 100 cfs when inflow to the reservoir is less than 100 cfs.

Response 7. We recommend that WPP develop and implement a water quality monitoring plan. The plan would help to determine if low DO is an occasional problem and under what circumstances it may become a problem. Studies show that the dissolved oxygen conditions in the Cheat River stay well within applicable state standards. Furthermore the minimum release flow required by the new license should enhance DO down-stream of the dam. If any water quality monitoring results show that tailwater dissolved oxygen levels are below the state standard, WPP would be required to notify the Commission and the appropriate resource agencies to evaluate the low dissolved oxygen reading. Then if required by the Commission, WPP would develop and implement a plan in conjunction with WVDEP and other agencies to achieve compliance (see Section V.C.2).

Ms. Lois Cashell
RE: Lake Lynn Hydropower Project, FERC No. 2459
August 1, 1994
Page 3

West Virginia, consequently sediment control plans or NPDES permits are the jurisdiction of WVDEP.

The EA further includes a FERC recommendation that WPP cooperate with WVDNR to address adverse effects such as unstable slopes or suspended sediments. As stated in the EA, Section IV.C, water quality functions were transferred from WVDNR to WVDEP July 1, 1992. WVDEP - Office of Water Resources is responsible for water quality management including that of nonpoint source pollution. Agency evaluation and recommendations for remediation of unstable slopes resulting in water quality impacts must also include coordination with WVDEP.

Page 14, Section V.C.2.c. Water Quality Standards - The EA states that the Cheat River is subject to West Virginia water quality standards upstream of the dam and Pennsylvania water quality standards downstream of the dam. Some clarification of this statement is required. The reservoir as well as the dam discharge and immediate tailwaters lie within the boundary of West Virginia and are subject to compliance with West Virginia water quality standards. These standards will be reflected in the State's 401 Water Quality Certification.

Page 17-22, Section V.C.2. Water Resources-Environmental Impacts and Recommendations, b. Minimum Flow - The WVDEP agrees with the FERC recommendation to disallow WPP's proposal to substract vaporization and water withdrawal from total inflow. WVDEP encourages FERC to further consider a previous recommendation from WVDNR to require WPP to develop a drought contingency or water management plan. Development of such a plan would ensure maintenance of reservoir elevations as well as protect downstream resources with minimum impact on lake resources.

With respect to the 212 cfs minimum flow, WVDEP will consider the benefits of a minimum flow as compared to run-of-river prior to issuance of State 401 Water Quality Certification. However, WVDEP is concerned that 212 cfs as currently proposed will be required only when inflow to the reservoir is 212 cfs or greater. Studies conducted by RMC Environmental Services (RMC) for WPP resulted in recommendations that 100 cfs would result in substantial water quality benefits. In order to consider granting a minimum flow for the Lake Lynn project, WVDEP must consider the best circumstances for water quality and aquatic life improvement. For example, if establishment of a minimum flow of 212 cfs (for flows equal or greater than 212cfs) is to be acceptable, an absolute minimum of at least 100 cfs must be instituted.

Page 22-24, Section V.C.2. Water Resources-Environmental Impacts and Recommendations, d. Water Quality Monitoring - Page 15 of the Dissolved Oxygen (DO) discussion indicates that 1990 studies by RMC documented a mean DO range from 6.1 to 11.2 mg/l. WVDEP would contend that such conditions would likely represent existing conditions.

ORIGINAL



FILED
IN THE OFFICE OF THE SECRETARY

94 AUG -9 DEPARTMENT OF COMMERCE, LABOR & ENVIRONMENTAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION

1201 Greenbrier Street
Charleston, WV 25311-1088

Gaston Caperton, FEDERAL ENERGY REGULATORY COMMISSION
Governor, West Virginia
John M. Runkle, Cabinet Secretary

David C. Callaghan, Director
Ann A. Spamer, Deputy Director

August 1, 1994

Ms. Lois D. Cashell

Secretary
Federal Energy Regulatory Commission
Office of Hydropower Licensing
Division of Project Review
825 North Capitol Street, NE
Washington, DC 20426

RE: Draft Environmental Assessment
for Hydropower License,
Lake Lynn Hydropower Project,
FERC No. 2459 - West Virginia

Dear Ms. Cashell,

The West Virginia Division of Environmental Protection, Office of Water Resources (WVDEP) has reviewed the above-referenced environmental assessment (EA) and provides the following comments and recommendations. The comments are assembled to correspond with the EA outline.

Page 8, Section IV, B, Interventions - The West Virginia Division of Natural Resources (WVDNR) is listed as filing a motion to intervene on September 30, 1993. The motion to intervene filed by West Virginia and dated September 29, 1993 was a joint filing for both the WVDNR and WVDEP. WVDEP and WVDNR are two separate agencies which have been collectively represented by West Virginia's Attorney General. Consequently, both agencies should be referenced in the EA as intervenors and parties to any proceedings related to Federal Energy Regulatory Commission (FERC) Project No. 2459.

Page 12, Section V, C, L, Environmental Impacts and Recommendations - West Penn Power (WPP) will be required to apply for and obtain a National Pollutant Discharge Elimination System (NPDES) permit from WVDEP for any earth disturbance greater than 3 acres in size. For disturbances of less than 3 acres, an erosion and sediment control plan must be submitted to WVDEP for review and approval. West Penn Beach recreation area is within the boundaries of

FERC DOCUMENTED

AUG 9 1994

Letter from West Virginia Division of Environmental Protection, dated August 1, 1994

Response 1. We noted in the FEA (Section IV.B) that WVDEP filed a motion to intervene on September 30, 1993.

Response 2. We revised the text in the FEA (Section V.C.1) to reflect that for any land disturbances within the boundaries of West Virginia greater than 3 acres, WPP will need to apply for and obtain an NPDES permit from WVDEP; for disturbances less than 3 acres an erosion and sediment control plan must be submitted to WVDEP for review and approval.

Letter from West Virginia Division of Natural Resources, dated August 22, 1994

Response 4. We clarified the text in Section V.C.3 to state that a turbine entrainment study would be conducted if deemed necessary by the Commission, based on new information or a recommendation from WVDNR or DOI.

Mr. John H. Clements
Page 3
August 22, 1994


(describe in the EA) of maintaining an April pool level between elevations 863-870 instead of the 868-870 recommended in WVDNR's March 24, 1994 correspondence. We recognize the public's pressure on WPP to regulate flood flows whenever possible, and feel their proposal is appropriate and justified.

3
Cont.

4) Fish Mortality Impacts -- Contrary to the DEA (page 34, paragraph 7, sentence 1), the WVDNR did not request that a turbine study be conducted at the Lake Lynn project. WVDNR correspondence of March 24, 1994, did request, however, that WPP conduct a turbine entrainment study if deemed necessary by WVDNR and the U.S. Fish and Wildlife Service (FWS). It was further stated that the need for any such study should be decided after reviewing water quality and biological monitoring data (i.e., to be collected pursuant to a water quality monitoring plan) at biennial meetings. The WVDNR has no objection to the FERC's recommendation of making these review meetings triennially as long as emergency meetings may be scheduled at any time if felt necessary by FERC, WVDNR, and/or FWS.

4

Thank you for the opportunity to comment on these fish and wildlife related issues. We recommend that the FERC schedule a meeting with the pertinent parties as soon as possible so that these issues may be resolved.

Sincerely,

Charles B. Felton, Jr.
Director

CBF/mcw

cc: Dan Cincotta/WVDNR

Letter from West Virginia Division of Natural Resources, dated August 22, 1994

Response 2. We modified the text as appropriate throughout the FEA to recommend that the minimum flow not fall below 100 cfs when inflow to the reservoir is less than 100 cfs. Please refer to the discussion presented under "Unavoidable Adverse Impacts" in Section V.C.2 regarding potential effects on reservoir level.

Response 3. We have reviewed and noted your comment.

Mr. John H. Clements
Page 2
August 22, 1994

1
Cont.

stratified." The WVDNR contends that this is sufficient evidence to require the licensee to prepare a plan to investigate methods to preclude low DO conditions in the tailwater, including plant shutdown (i.e., passing water through the tainter gates). The WVDNR contends that your staff's alternative recommendations are not acceptable and maintains that the West Penn Power Company (WPP) should prepare such a plan.

2

2) Minimum Flow Releases -- The WVDNR reiterates a compromise discussion in our August 2, 1994 correspondence. The DEA states that West Penn Power Company (WPP) will be required to release a minimum flow greater than or equal to 212 cfs except when reservoir inflow is less than 212 cfs. In those instances, the minimum discharge shall equal the reservoir inflow. The WVDNR requested, in its March 24, 1994 correspondence, that 212 cfs be provided at all times to protect the biological integrity of the river below the dam. The WVDNR contends that FERC's requirement in the DEA will negate benefits derived from requiring minimum downstream flows because acid water conditions are most seriously impacting during low flow periods (as documented by WPP reports). In an effort to balance reservoir and downstream uses, the WVDNR recommends that the minimum flow not fall below 100 cfs during periods when inflow to the reservoir is less than 212 cfs. This discharge limit was chosen because it is the minimum value identified by WPP in their water quality modeling as providing substantial water quality benefits. The WVDNR contends that this recommendation will not significantly impact reservoir recreationists or aquatic communities and will maintain biological benefits obtained from minimum releases in the tailwaters.

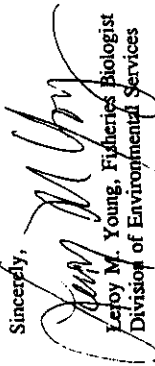
3

3) Recreation Pool Elevation During April -- The WVDNR did not respond to WPP's compromise proposal

John H. Clements, Acting Director
August 23, 1994
Page 5

- 1) The rationale behind the findings by FERC that the recommendations made by the PFBC and other agencies were inconsistent with the Federal Power Act.
- 2) Expansion of the water quality monitoring plan to allow reasonable evaluations of the effect of operation of the project on Cheat River water quality throughout the term of the license.
- 3) Additional alternatives analysis of minimum release requirement/operating modes including such things as:
 - a) varying minimum release levels (e.g. 450 cfs/212 cfs or 450 cfs/212 cfs/100 cfs) triggered by pool level/inflow,
 - b) varying release levels during spawning and incubation periods for fish, and
 - c) development of water quality/fish population criteria that would trigger operational/spill requirements more protective of the fishery.
- 4) Development of alternative conditions in the license which would be triggered by improvements of water quality and the fishery which would not necessitate the reopening of the license.
- 5) Issues outside of 10(j), such as development of the tailrace fishing area.

We look forward to your response to the above matters.

Sincerely,

 Jeffrey M. Young, Fisheries Biologist
 Division of Environmental Services

LMY:sth

cc: Service List
 Thomas Dean - FERC
 R. Polin - COE, Pittsburgh
 C. Kulp - USFWS
 C. B. Felton, Jr. - WVDNR
 W. Gast, T. Proch - DER
 Arway, Snyder, Lorson, Qualters, Ansell - PFBC

Letter from Pennsylvania Fish and Boat Commission, dated August 23, 1994

John H. Clements, Acting Director
August 23, 1994
Page 4

Response 4. In the FEA we evaluate options to restrict peaking or modify minimum releases in April, May, and June. Refer to Sections VI.A and VI.B of the FEA and our response to the DOI letter, comment No. 2 (regarding run-of-river operation).

Response 5. We consider reservoir recreation, and therefore maintenance of the summer recreation pool water level, a very important objective of any reasonable alternative. As explained in the FEA, we now recommend an absolute minimum release of 100 cfs when reservoir inflow is less than 100 cfs. Compared to releasing a flow equal to reservoir inflow when inflow is less than 100 cfs (as recommended in the DEA), our new recommendation adds some additional risk of draw-downs below the desired pool. Refer to the discussion presented under "Unavoidable Adverse Impacts," in Section V.C.1 of the FEA.

Response 6. We recognize your concern about identifying specific "triggers" that would result in changes in project operation, but the standard reopener is the mechanism the Commission uses to review the terms of project operation after a license is issued. As unforeseen circumstances may arise that affect various resources, we maintain that the standard reopener is preferable to specific triggers.

b) As pH improves to levels which may allow reproduction and recruitment of fish, continued peaking operation of the project will largely disallow the in-stream flow requirements of the earliest life stages of fish from being met.

Another alternative which we had proposed was restriction of peaking during the fish spawning and fry life stages. This alternative has not been evaluated by your agency, although we feel it is a viable option, particularly when water quality improves to a level to permit successful spawning and recruitment. Furthermore, we do not feel that peaking alternatives have been adequately evaluated. Superior to the proposed alternative would be variable minimum flows (e.g. 450 cfs, 212 cfs) which would be triggered by changes in reservoir pool level or inflow. An absolute minimum level for the releases must be established to prevent or greatly reduce the potential for severe water quality degradation during low flow events. It is obvious that pH declines rapidly at releases below 212 cfs, and particularly below 100 cfs. It is poor balancing, in our view, to allow flows to drop below such levels, even if only on relatively infrequent occasions.

There is no mention of how pool level fluctuations were taken into account in the balancing that was done. Is it the view of FERC that there is no flexibility in pool control during the relatively infrequent occasions that flows would drop below 212 cfs? What exactly is the magnitude and frequency of reductions in pool levels that the 212 cfs release and other alternatives would cause? How would these events affect recreation in the reservoir?

You have opined that if pH did improve in the future, the proposed water quality and biological monitoring programs would confirm it and "Reopening the license to reevaluate the potential fishery benefits of minimum release flows and alternative operations may then be considered". We feel this nebulous wording encourages much conflict in the future. Efforts should be made during this 10(j) process to specify the conditions under which reopening the license could occur. Actually, it would be better, in our view, to condition the current license to allow alternative operating conditions which would not require the license to be reopened.

Summary

As suggested in your letter, we feel a meeting and/or telephone conference call is in order to attempt to resolve the outstanding 10(j) issues. This meeting/conference call should address the following issues at a minimum:

Letter from Pennsylvania Fish and Boat Commission, dated August 23, 1994

Response 3. We modified the text as appropriate throughout the FEAs to recommend a minimum flow release of 212 cfs at reservoir inflow, with an absolute minimum release of 100 cfs. This new flow recommendation should help to maintain improved water quality downstream of the dam during periods of low flow.

John H. Clements, Acting Director
August 23, 1994
Page 3

growth of warm- and coolwater fish species. The dissolved oxygen levels were not only to be maintained immediately downstream of the licensed projects but also throughout the receiving pool downstream of each project. The obvious inconsistency between such requirements on those projects in the Upper Ohio River Basin licensed by FERC in 1989 and the requirements on this Upper Ohio River Basin project make no sense to us. We stand by our previous recommendations and request an explanation of the rationale for such disparate dissolved oxygen requirements for projects in the same river basin. One of these projects, the proposed Point Marion Lock and Dam Project, is located on the Monongahela River just five miles from Lake Lynn.

3 & 4. We had requested a variable minimum release flow beginning at 1,100 cfs, when reservoir inflow equalled or exceeded that amount, and decreasing in 100 cfs increments in response to decreasing inflows to an ultimate minimum release of 212 cfs. You have recommended a minimum release of 212 cfs when inflow is greater than or equal to this amount. At other times you have recommended a release equal to the inflow.

We are opposed to the alternative you have selected for the following reasons:

- a) Improvement of water quality downstream of the dam is critical to the restoration of an aquatic community which has been devastated in the past, in large part as the result of operation of the Lake Lynn Project. Since the effect of short term improvements on water quality can be negated by occasional low pH events, improvement of minimum pH levels should weigh heavily in decision making related to the relicensing of this project. This is especially important in the present case since the potential exists to raise pH to levels which are near the minimum values necessary for several fish species. As noted in the draft EA, minimum pH values increase by at least 0.1 unit for each 100 cfs increase in minimum flows up to about 500 cfs. You have indicated that a release rate of 400 - 500 cfs would optimize the improvement of water quality per unit flow released and that a release of 1,000 cfs would provide the greatest benefit to pH values. It is likely that pH could increase substantially over the term of the license as AMD problems abate. Your proposal not only provides significantly lower minimum pH levels compared to other alternatives over the long term, but also allows for the regular occurrence of acute pH events which will adversely impact the aquatic community any time inflows drop below 212 cfs.

Letter from Pennsylvania Fish and Boat Commission, dated August 23, 1994

John H. Clements, Acting Director
August 23, 1994
Page 2

monitoring program, one sample per month from the STORET program), coupled with continuous monitoring in the tailrace, will, you believe, provide the resource agencies with sufficient data to determine the effect of minimum releases on water quality.

Operation of the Lake Lynn Hydropower Project continuously results in abnormal flows in the Cheat River. These flows serve to influence water quality and adversely influence the aquatic community continuously in Pennsylvania's portion of the river. It is highly unlikely that 13 grab samples per year from the backwater of the Monongahela River coupled with continuous monitoring upstream of the AMD degraded tributaries downstream of the dam will allow the resource agencies to determine the effect of minimum releases on water quality. Among the reasons for this are the following:

- a) No monitoring will be conducted in the area most severely affected by the interaction of AMD and altered flows from Lake Lynn (area upstream of the Monongahela River backwater and downstream of the AMD impacted tributaries.
- b) The STORET and COE water quality monitoring efforts are not designed to monitor the effects of Lake Lynn releases on water quality. Many, if not all, of the 13 samples collected each year could occur when generation was occurring rather than during minimum releases. Thus little or no information on the effect of minimum releases on water quality would be provided.
- c) It is unreasonable to believe that 13 samples collected per year will adequately define water quality in such a dynamic system as the lower Cheat River.
- d) There is insufficient empirical data to validate the results of the water quality modelling predictions over the long term.

While the PFBC would entertain other alternatives to continuous monitoring in the strictest sense downstream of the tailrace, we feel that more sampling than that recommended in the EA is necessary and reasonable.

We had requested that a minimum dissolved oxygen level consistent with that prescribed by FERC for previously licensed projects in the Upper Ohio River Basin be prescribed for the Lake Lynn Project. This level (6.5 mg/l) was judged as recently as 1989 by FERC to be necessary to prevent adverse impacts on

Response 2. There are several differences between the Lake Lynn project and the Upper Ohio River Projects. Lake Lynn is an existing project whereas some of the Upper Ohio River projects referred to were new hydroelectric projects at existing dams when licensed by the Commission. Therefore there was concern about loss of spillway flows to turbines, whereas the Lake Lynn project is proposed for a new minimum spillway release flow during nonoperating periods, thus enhancing tailrace dissolved oxygen.

The recommended alternative for the Upper Ohio River projects was based in part on the goal of maintaining dissolved oxygen levels throughout the basin at pre-project conditions. This is accomplished by licensing each project in such a way that each would not cause dissolved oxygen concentrations to fall below 6.5 mg/L in river locations where individual projects could affect dissolved oxygen. That requirement specifically recognizes that there are several other factors causing depleted dissolved oxygen within the river basin, including major wastewater discharges in the Pittsburgh vicinity.

The Lake Lynn project was not evaluated within the basin-wide context of the other Upper Ohio River projects. We studied it based on the balance of all resources associated with the Lake Lynn project reservoir, the river down-stream of the dam, and the economic effects of enhancements on a single project. Therefore, we continue to recommend that if the tailwater dissolved oxygen drops below 5.0 mg/L (the state standards), WPP must notify the Commission and the appropriate resource agencies within 10 days to evaluate the low dissolved oxygen reading. Then if required by the Commission, WPP would develop a plan in consultation with PFBC and other agencies to achieve compliance, and implement the plan.



COMMONWEALTH OF PENNSYLVANIA
 PENNSYLVANIA FISH & BOAT COMMISSION
 Division of Environmental Services
 450 Robinson Lane
 Bellefonte, PA 16823-9616
 (814) 359-3747

August 23, 1994

John H. Clements, Acting Director
 Division of Project Review
 Federal Energy Regulatory Commission
 825 North Capitol Street, N.E.
 Washington, DC 20426

Re: Lake Lynn Hydroelectric Project
 (FERC Project No. 2459)
 10(f)

Dear Mr. Clements:

I am writing in response to your July 13, 1994 letter regarding relicensing of the Lake Lynn Hydroelectric Project (Project No. 2459) and resolution of issues related to Section 10(f) of the Federal Power Act. In this letter, you have indicated that you do not agree with four of the recommendations which were made by the Pennsylvania Fish and Boat Commission (PFBC) on the draft environmental assessment (EA) for the project and that some of our recommendations are, in your view, inconsistent with the comprehensive planning and public interest standards of Section 4(e) and 10(a) of the Act.

We will respond to each of the items you have raised, although we would at the same time request detailed information on the criteria which were used by your agency to make a determination that our recommendations were inconsistent with the Act.

1. We requested that a water quality monitoring plan be developed which would document, at a minimum, water temperature, pH, and dissolved oxygen levels in the reservoir, immediate tailrace, the free flowing region downstream of the acid mine drainage (AMD) impacted tributaries and the backwater from the Monongahela River. Your alternative recommendations are that the licensee install continuous monitors in the reservoir and tailrace, but not downstream of any of the AMD degraded tributaries. You note that the US Army Corps of Engineers (COE) has a water quality monitoring station in the lower Cheat River and data is also available from the lower Cheat from EPA's STORET data retrieval system. This information (one grab sample per year from the COE

Letter from Pennsylvania Fish and Boat Commission, dated August 23, 1994

Response 1. We modified the FEA (Section V.C.2) to include one additional water quality monitoring station to be placed at a site down-stream of the acid tributaries. This should address the concern for improved river pH data and help relate project operations to down-stream water quality.

Letter from the U.S. Department of the Interior, Fish, and Wildlife Survey, dated August 4, 1994

Response 3. The winter draw-down is necessary to maintain peaking power operation with below-normal but variable reservoir inflows. We acknowledge that the DEA may have overstated the importance of the project for flood control, which is an incidental function of the project. Nevertheless WPP has stated that it must retain its ability, following notification of reservoir marinas, to draw the reservoir down as much as 13 feet (to 857 feet NGVD) at any time partially because of the rare but foreseeable event of extremely high flows. Such flows, particularly if combined with ice, may pose a threat to the Lake Lynn project and to other improved property on the reservoir and below the dam.

WPP has rarely drawn the reservoir down as low as 857 feet because of the Cheat Neck Water Company's minimum intake elevation of 862 feet. In addition there is no economic incentive to draw the reservoir down to an extreme low elevation unless a major inflow is anticipated. In such a case, the inflow would quickly offset the draw-down, ensuring that the maximum draw-down would occur over a very brief period of time.

Response 4. We believe that both statements are reasonable. The first deals with fisheries benefit measured in terms of usable habitat area per unit of release flow below the dam (based on the IFIM study). The second deals with fisheries benefit based on comparison with a peaking mode of operation. Nevertheless, we modified the text in Section VII for clarity.

Response 5. We modified the text in Section V.C.3 as appropriate.

project has been and will be licensed in part, for flood control benefits, we request that FERC staff provide us with a description of what downstream resources have been and will be protected by fluctuating the pool 13 feet during late fall, winter and early spring periods. The FWS has never had much of a concern with the licensee's operation of the project that fluctuates Lake Lynn by two feet (870-868-870) because no adverse impact to the lake Lynn fishery has ever been demonstrated. Therefore, in lieu of a reasonable answer to the 13 foot pool fluctuation, the FWS recommends that the Lake Lynn Hydro Project be relicensed to only fluctuate the lake by no more than a two feet (870-868-870 NGVD) year-round. In addition, we agree with the FERC staff recommendation "... that a fisheries monitoring plan be developed and implemented for the Lake Lynn Project waters, including the main reservoir, reservoir embayments, tailwater area, and farther down-stream in the Cheat River."

We request that FERC staff explain the disparity between the statement on page 65 of the DEA "The release of 212 cfs is based on providing maximum improvement of the fisheries habitat area per unit of flow" and the statement on page 73 "Run-of-river provides the greatest environmental benefits."

DOI did not recommend that entrainment studies be deferred (page 35 DEA). DOI's letter of March 18, 1994 indicated that "the Service recommends that the licensee be required to adequately address the fish entrainment issue in full detail to ensure that existing and potential fishery resources will be protected from injury/mortality in the future due to entrainment."

Thank you for the opportunity to comment on the relicensing of this project at this stage of your process. We look forward to the first Section 10 (j) conference with your staff.

Sincerely,

Charles J. Kulp
Charles J. Kulp
Supervisor

Letter from the U.S. Department of the Interior, Fish, and Wildlife Survey, dated August 4, 1994

we must conclude that the proper habitat (deep holes with overhead cover) is simply not provided in the river segment down-stream of the Lake Lynn project.

Although a peaking mode of operation results in rapid release flow fluctuations, it will help moderate the adverse effects of extremely high flows (which must be released under a run-of-river alternative). The 100-cfs absolute minimum release (which we now recommend) would ensure continued dilution of acidic waters during periods of very low flow (i.e., when reservoir inflow is less than 100 cfs). A peaking operation will also allow for anticipation of high flows, which are sometimes absorbed in the reservoir and then released more gradually than is possible with a strict run-of-river operation. Put simply, a peaking mode of operation seems to be consistent with managing the wide range of natural river flows experienced at the Lake Lynn project. Run-of-river operation, in contrast, would require very frequent adjustment of release flows and power generation to match the highly variable natural river flow.

Finally, we believe both the DEA and the FEA sufficiently discuss the negative economic consequences of run-of-river operation. Given our findings and little potential for measurable benefits to the spawning and fry life stages (because of the combination of low pH and flows outside of the optimum ranges), we maintain that a strict run-of-river operation could not provide the best balance between continued efficient power generation and the enhancement of aesthetic, recreation, wildlife, and fishery resources at the Lake Lynn project. We also believe the results of the recommended biological monitoring program will help to further determine the relationship between the fishery and project operations.

In response to the comment about the fishery down-stream of the dam being limited by low pH, we cite several independent references regarding the limitations on aquatic life productivity imposed by low pH on p. 31 of the DEA. Of course, other factors also place limitations on the fishery; but in our conclusions, we are simply stating a fact that focuses on the viability of the existing fishery and the potential to enhance it.

As stated on p. 33 of the DEA, we recommend that WPP, in consultation with DOI, WVDNR and PRBC, develop a plan for the fish attractant structures down-stream of the dam.

Letter from the U.S. Department of the Interior, Fish, and Wildlife Survey, dated August 4, 1994

Response 2. We do not recommend an instantaneous run-of-river operation because it would result in an unacceptable balance between project economics and the expected benefits to the fishery down-stream of the dam.

In preparing this FEA we looked further at the potential fisheries benefits under a run-of-river operation. We found that releases equal to reservoir inflow would not prevent extreme high flows during the spawning and fry periods for target species. We found in our review of historical river flow data in the project application (1978 to 1990) that, each spring, Lake Lynn inflows can shift upward or downward by several hundred cfs--or even several thousand cfs--within 1 day. Therefore, although instantaneous run-of-river operation would help ease the rate of flow change as compared to peaking operation, it would not eliminate widely variable flows and flows much greater than the optimal range for spawning and fry in the key months of April and May.

Based on our review of Lake Lynn project hydrology and the IFIM study, the high natural river flow typical of April and May is a key constraint to providing benefits during the spawning and fry life stages. The 50-percent exceedance flow is about 4,000 cfs for April and 2,800 cfs for May. The 90-percent exceedance flow for April is about 1,800 cfs and 1,200 cfs for May. Our review of flow data for 1978 to 1990 showed record low flows of 922 cfs in April (April 23, 1983) and 771 cfs in May (May 14, 1983). Even those record low flows--and certainly normal and high flows--are well above the optimum flow of about 200 cfs for smallmouth bass spawning and fry in the upper river segment. The IFIM study also concluded that for smallmouth bass fry, the weighted usable area (WUA) declined to the same level as the base flow (12 cfs) WUA when flow exceeded only about 300 cfs.

Similar relationships hold for the other target species and life stages in both the upper and lower river segments. Channel catfish fry benefit from increased WUA up to about 700 cfs (the highest optimum level for fry of any target species), with loss of WUA as the flow increases further. In fact, the only target species that may benefit from the high range of spring season release flows under a run-of-river alternative in the upper river segment is sauger. The optimum WUA for sauger is about 2,000 cfs and WUA decreases gradually from there as flows go higher. Still, river flows well above 2,000 cfs would negate the sauger spawning benefits because of flushing effects; and this would certainly occur in the spring with a strict run-of-river operation (sauger tend to spawn early in the season). Even in June the 50-percent exceedance flow is about 1,400 cfs, which is still above the optimal spawning flow of about 300 cfs for the late-spawning gizzard shad. And although channel catfish may spawn in June or July,

profile of all steady state flow releases to determine project operation impacts on the lower Cheat River pH values.

2. FERC staff does not agree with the Department of the Interior's recommendation that the licensee should operate the Lake Lynn Project in a strict run-of-river mode. Licensee's IFIM Study results for the riverine segment of the lower Cheat River suggest that any peaking, ponding or pulsing mode of operation, including the licensee's proposal and FERC's staff recommendation of 212 cfs continuous flow, plus peaking, has a significant adverse impact on the spawning, fry and young juvenile life stages of the evaluation species. The habitat characteristics in Section 9 of the study report show the basic difference between the licensee's existing and proposed peaking operation and the run-of-river alternative. Transitions in the amount of effective WUA for the life stages of the evaluation species in the peaking mode are abrupt and the effective WUA is only available briefly during an operation cycle (figures 9-4 to 9-19). Conversely, the run-of-river mode shows that the transition between flows is smooth and the amount of effective WUA is available on a more constant basis providing greater habitat stability for evaluation species to fulfill their life stages (Figures 9-22 to 9-25).

In addition, the oval flow analyses in Section 10 of the study report show the significant adverse impact that the licensee's existing/proposed peaking mode of operation has on smallmouth bass/sauger spawning and fry life stages. As an example, Table 10-2 shows that for smallmouth bass spawning, the 212-2,040 cfs peaking cycle provides only 28.7 percent of the WUA available compared to the median May flow of 2,842 cfs, and that the 212-9,700 cfs peaking cycle provides only 2.3 percent of the WUA available at the same May median flow. For sauger spawning, the 212-2,040 cfs peaking cycle provides only 26 percent of the WUA available compared to a median April flow of 4,135 cfs. The 212-9,700 cfs peaking cycle provides only 1.7 percent of the WUA available at the same April median flow. Similar WUA non-suitability occur for smallmouth bass and sauger fry life-stages in the riverine segment of the Lower Cheat River as illustrated in Figures 10-21 A, and 10-22 A, of the study report. Based on available information, we do not believe there is much chance that any one of the four evaluation species used in the licensee's IFIM study will be able to fulfill their spawning and fry stages of their life cycle requirements in the riverine segment of the lower Cheat River if the project is allowed to continue operation in a peaking, ponding or pulsing mode. FERC staff concludes, considering all project factors, that the fishery downstream of the dam is limited primarily because of low pH and not aquatic habitat. The FWS requests empirical evidence that the fishery below the dam is primarily limited by low pH under steady state flow conditions from 100 cfs to 1,100 cfs in 100 cfs increments. In addition, FERC staff recommends fish attraction structures that would provide fish and other organisms protection from the highest flows (9700 cfs), while minimum flows (212 cfs) will enhance pH conditions. The FWS also requests the opportunity to review and comment on FERC staff's plans, designs, dimensions and locations for their recommended fish attractant structures in the Cheat River downstream of the dam.

3. FERC staff does not agree with the Department of the Interior's recommendation to require the licensee to study the effects of peaking and water level fluctuations and develop a plan (i.e., run-of-river) that will mitigate significant adverse impacts of project related operations on the reservoir fishery. To date, the FWS has not been given a reasonable answer(s) as why the licensee was allowed permission to fluctuate Lake Lynn 13 feet (870-857-870 MGVVD) from November 1 to April 30. If the Lake Lynn

Letter from the U.S. Department of the Interior, Fish, and Wildlife Survey, dated August 4, 1994

Response 1. We believe there is no conflict between the pH values from water samples collected in the field and the maximum daily mean value used in the model. Recognizing that field conditions may be highly variable, grab sample pH values of 7.12 or 7.6 should not be compared to a maximum daily mean pH value of 5.92. We evaluated the usefulness of the water quality model for comparing alternatives and predicting pH values and concluded that it was sufficient. Therefore we do not believe that further data validation is necessary.

We revised our water quality monitoring recommendations in Section V.C.2. We now recommend one additional water monitoring station to be placed at a site down-stream of the acid tributaries, possibly in the backwater segment of the lower Cheat River. The exact location will be determined based in part on agency comments on the water quality monitoring plan, which WPP must file after issuance of a new license. We believe the recommended pH monitoring will improve river pH data and help to relate project operations to down-stream water quality in the Cheat River.



United States Department of the Interior
FISH AND WILDLIFE SERVICE
Office of the Secretary
315 South Allen Street
State College, Pennsylvania 16801-4850
August 4, 1994

Ms. Lois D. Cashell, Secretary
Federal Energy Regulatory Commission
825 North Capitol Street, N.E.
Washington, D.C. 20426

Dear Ms. Cashell:

The United States Fish and Wildlife Service has reviewed the Federal Energy Regulatory Commission's June 24, 1994 Draft Environmental Assessment and the July 13, 1994 Section 10 (j) document regarding the relicensing of the Lake Lynn Hydroelectric Project No. 2455. We have the following comments.

1. FERC staff does not agree with the Department of the Interior's recommendation that the licensee should be required to establish, operate, and maintain a permanent pH monitoring station in the backwater segment of the lower Cheat River. FERC's letter of June 21, 1993 instructed the licensee to "... redesign your study, in consultation with the U.S. Fish and Wildlife (FWS), WVDNR, Pennsylvania Fish Commission (PFC), Pennsylvania Department of Environmental Resources (PDER) and the Corps, to address all important water quality parameters over a range of flows sufficient to evaluate operations with minimum flows and run-of-river operations." In response, the licensee's revised their report Computer Modeling of Effectiveness of Flow Releases on Water Quality Below Lake Lynn Hydro Station (October 1983) which indicated that "Time constraints did not allow for the collection of water quality data," but indicated that computer simulations can serve the same purpose and were used here to estimate in-stream pH values up to 8000 cfs. In addition, the licensee indicated that project releases above 100 cfs do not exhibit a significant pH water quality improvement. Moreover, the licensee suggested that increasing flows above their recommended 212 cfs release toward a run-of-river mode of operation would only marginally improve pH values and would not be cost efficient and is not recommended because of the high inefficiency.

We believe it is likely that the predicted model results have underestimated the benefits of an increased steady state flow mode of operation, at least up to a steady state flow of 1,100 cfs. The licensee's computer modeling of the 1992 Water Year predicted a maximum mean daily pH value of 5.97 in the backwater segment of the lower Cheat River at flows from 100 cfs to 8,000 cfs. In contrast, the Corps' Cheat River water quality station at river mile 0.3 in the backwater segment recorded pH values of up to 7.12. In addition, EPA's Data Retrieval System referenced in Table 4.1-8 of the licensee's 1991 Report on Aquatic Studies indicate that pH values of up to 7.6 have been monitored between river mile 0.1-0.5 in the backwater area. Therefore, we recommend that the licensee be required to validate their model by adequate pH field sampling under steady state flow conditions field studies. In addition to field study validation, we recommend that the licensee be required to establish, operate and maintain a pH monitoring station at an appropriate location in the backwater segment of the lower Cheat River. The station should be set up to monitor the cross-sectional

Letter from West Penn Power, dated August 5, 1994

Response 16. We clarified the text in Section V.C.8 of the FEA to include the clause "for the purpose of installing a trail system within the canyon area."

16. Page 61, Section e., Paragraph 9, states that "Therefore we do not recommend that WPP sell or otherwise transfer ownership of land within the project boundary (i.e., Cheat Haven for lands within the canyon area)". While understanding the intent of this statement, WPP requests that it be clarified by the inclusion of "... for the purposes of installing a trail system within the canyon area". There are other cases where such property transfers may be made in both the best interests of WPP and the public, such as the exchanges currently being negotiated to facilitate the installation of the proposed hiking/biking trail. The FERC required notification/approval process will continue to apply to all property transactions.

WPP and APSC reserve the right to modify, add to, or delete the comments provided herein prior to issuance of an acceptable final Environmental Assessment. Submittal of these comments is not intended as a waiver of any rights or privileges to which WPP and/or APSC may be entitled by law, equity, practice, or court order.

WPP appreciates the opportunity to provide these comments and knows that the FERC will give them serious and complete consideration before issuing the final Environmental Assessment.

Document Content(s)

8343997.tif.....1-190