



**Idaho Department of Environmental Quality**  
**§401 Water Quality Certification**

July 26, 2011

**NPDES Permit Number:** ID-0028444; Dworshak Reservoir Nutrient Enhancement Pilot Project

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Pursuant to the provisions of Section 401(a)(1) of the Federal Water Pollution Control Act (Clean Water Act), as amended, 33 USC Section 1341 (a)(1), and Idaho Code §§ 39-101 et.seq., and 39-3601 et.seq., the Idaho Department of Environmental Quality (DEQ) has authority to review National Pollutant Discharge Elimination System (NDPES) permits and issue water quality certification decisions.

Based upon its review of the above-referenced permit and associated fact sheet, DEQ certifies that if the permittee complies with the terms and conditions imposed by the permit along with the conditions set forth in this water quality certification, then there is reasonable assurance the discharge will comply with the applicable requirements of Sections 301, 302, 303, 306, and 307 of the Clean Water Act, including the Idaho Water Quality Standards (WQS) (IDAPA 58.01.02) and other appropriate water quality requirements of State law.

This certification does not constitute authorization of the permitted activities by any other state or federal agency or private person or entity. This certification does not excuse the permit holder from the obligation to obtain any other necessary approvals, authorizations or permits.

**CONDITIONS THAT ARE NECESSARY TO ASSURE COMPLIANCE WITH  
WATER QUALITY STANDARDS OR OTHER APPROPRIATE WATER  
QUALITY REQUIREMENTS OF STATE LAW**

1. The permittee shall submit to DEQ two copies of the Dworshak Reservoir Nutrient Enhancement Project Progress Report and Data Summary. At a minimum, this document shall include the following:
  - Description of the application activities;
  - Description of the environmental conditions (climate and hydrology);
  - Description of the monitoring methods and results (similar to the requirements in Part I.C.5 of the NDPES permit); and
  - Discussion of the results.

2. Within thirty days of receipt of the Dworshak Reservoir Nutrient Enhancement Project Progress Report and Data Summary, DEQ will respond with any questions, comments or requests for further information. If further information is required by DEQ, the permittee shall submit such information to DEQ within thirty days of DEQ's request.
3. If at any time during the period of nutrient enhancement activities agency notification is required, the permittee shall notify the Department of Environmental Quality Lewiston Regional Office at (208) 799-4370 or email [John.Cardwell@deq.idaho.gov](mailto:John.Cardwell@deq.idaho.gov).
4. Any equipment operated adjacent to waters of the State shall be maintained in a good state of repair in order to prevent an unauthorized release of pollutants into waters of the State. If an above ground spill or overflow of petroleum results in a release that exceeds 25 gallons or causes a sheen on nearby surface water, the responsible person must make an effort to contain the spill and notify the Emergency Response System at 1-800-632-8000.
5. The permittee shall be responsible for obtaining the required agreements necessary to implement the nutrient enhancement activities.

#### **MIXING ZONES**

Pursuant to IDAPA 58.01.02.060.01.f, DEQ authorizes a mixing zone for nitrogen that is limited to ten percent (10%) of the epilimnion of Dworshak Reservoir.

#### **ANTIDEGRADATION**

The antidegradation provision in Idaho's WQS provides that existing uses and the water quality necessary to protect the existing uses shall be maintained and protected (IDAPA 58.01.02.051.01). In addition, where water quality exceeds levels necessary to support uses (high quality water), that quality shall be maintained and protected unless DEQ finds, after intergovernmental coordination and public participation, that allowing lower water quality is necessary to accommodate important social or economic development in the area in which the waters are located (IDAPA 58.01.02.051.02).

The NPDES permit authorizes the U.S. Corps of Engineers to discharge liquid 32:0:0 urea-ammonium nitrate fertilizer into Dworshak Reservoir. Implementation of the project is designed to secure long-term improvements in water quality by restoring the natural nutrient balance necessary to support the associated uses within Dworshak Reservoir. The effluent limitations and requirements of the permit ensure that the state's numeric and narrative criteria will be met and are set at levels that will not result in degradation. Furthermore, the project is expected to enhance the aquatic life communities in the reservoir. The NPDES permit requires implementation of best management practices. As such, DEQ has concluded that changes in water quality may be allowed without an antidegradation review (IDAPA 58.01.02.052.02).

**OTHER CONDITIONS**

This certification is conditioned upon the requirement that any material modification of the permit or the permitted activities, including without limitation, any modifications of the permit to reflect new or modified TMDLs, wasteload allocations, site specific criteria, variances, or other new information, shall first be provided to DEQ for review to determine compliance with Idaho WQS and to provide additional certification pursuant to §401.

**RIGHT TO APPEAL FINAL CERTIFICATION**

The final Section 401 Water Quality Certification may be appealed by submitting a petition to initiate a contested case, pursuant to Idaho Code § 39-107(5), and the Rules of Administrative Procedure Before the Board of Environmental Quality, IDAPA 58.01.23, within 35 days of the date of the final certification.

Questions regarding the actions taken in this certification should be directed to John Cardwell, Surface Water Manager at (208) 799-4370 or [John.Cardwell@deq.idaho.gov](mailto:John.Cardwell@deq.idaho.gov).



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Clayton Steele  
Regional Administrator  
Lewiston Regional Office

**ANTIDegradation REVIEW**  
**NPDES Permit # ID-0028444**  
**Dworshak Reservoir Nutrient Enhancement Pilot Project**

Idaho Department of Environmental Quality  
July 26, 2011

*Antidegradation Overview*

In March 2011, Idaho incorporated new provisions addressing antidegradation implementation in the Idaho Code. The new antidegradation provisions are in Idaho Code § 39-3603. At the same time, Idaho adopted antidegradation implementation procedures in the Idaho Water Quality Standards (“WQS”). DEQ submitted the antidegradation implementation procedures to EPA for approval on April 15, 2011.

The WQS contain an antidegradation policy providing three levels of protection to water bodies in Idaho (IDAPA 58.01.02.051). The first level of protection (Tier 1 protection) applies to all water bodies subject to Clean Water Act jurisdiction and assures that existing uses of a water body and the level of water quality necessary to protect the existing uses will be maintained and protected (IDAPA 58.01.02.051.01; 58.01.02.052.01). A Tier 1 review is performed for all new or reissued permits or licenses (IDAPA 58.01.02.052.05). The second level of protection (Tier 2 protection) applies to those water bodies that are considered high quality and assures that no lowering of water quality will be allowed unless it is deemed necessary to accommodate important economic or social development (IDAPA 58.01.02.051.02; 58.01.02.052.06). The third level of protection (Tier 3 protection) applies to water bodies that have been designated outstanding resource waters and requires activities to not cause a lowering of water quality (IDAPA 58.01.02.03; 58.01.02.052.07).

DEQ is employing a water body by water body approach to implementing Idaho’s antidegradation policy. This approach to antidegradation implementation means that any water body fully supporting its beneficial uses will be considered high quality (Idaho Code §39-3603(20)(b)(i)). Any water body not fully supporting its beneficial uses will be provided Tier 1 protection for that use, unless specific circumstances warranting Tier 2 protection are met (Idaho Code §39-3603(2)(b)(iii)). The most recent federally approved Integrated Report and supporting data are used to determine support status and the tier of protection (Idaho Code §39-3603(2)(b)).

*Pollutants of Concern*

The Corps of Engineers (Corps) proposes to discharge liquid 32:0:0 urea-ammonium nitrate fertilizer to the epilimnion (upper 33 feet) of Dworshak Reservoir from a barge that is fitted with a delivery tank. Nitrogen is the specific nutrient of concern. The EPA National Pollutant Discharge Elimination System (NPDES) permit allows a maximum of 3,100 gallons of 32:0:0 urea-ammonium nitrate to be added to the reservoir epilimnion on a weekly basis from April 1<sup>st</sup> to September 30<sup>th</sup> of each year of the pilot project.

### *The Dworshak Nutrient Enhancement Project is a Restoration Project*

Idaho's antidegradation implementation provisions in the WQS provide that changes in water quality may be allowed by DEQ without an antidegradation review where determined necessary to secure long-term water quality improvement through restoration projects designed to trend toward natural characteristics and associated uses to a water body where those characteristics and uses have been lost or diminished. Such restoration projects must implement best management practices per IDAPA 58.01.02.052.02.

The implementation of the Dworshak Nutrient Enhancement Project is designed to secure long-term improvements in water quality by restoring the natural nutrient balance necessary to support the associated uses within Dworshak Reservoir. Based on a review of historical limnological data, it was determined that Dworshak Reservoir was experiencing a nutrient imbalance. Nitrogen limitation was promoting the production of an inedible blue-green algae community and limiting edible algal, thereby short circuiting the food web or green algae carbon pathway of the reservoir. The goal of the project is to improve the carbon flow within the reservoir, which should result in an increase of the phytoplankton community. Consequently, this will promote a stronger zooplankton community that will become an abundant forage base for kokanee, rainbow trout, and small mouth bass fry. The secondary goals of this project are to decrease blue-green algae abundance and to improve the late season water clarity. Kokanee will be the primary species to benefit from this project; however, other resident fish throughout the entire ecosystem will also be beneficiaries. An improved kokanee population provides forage for the reservoir's bull trout and small mouth bass. Also, having 300,000 adult kokanee migrate up tributary streams and die each fall will add nutrients to these stream systems; thereby, enhancing the biological integrity of the waters located above Dworshak Reservoir.

The NPDES permit requires implementation of best management practices. As such, the Dworshak Nutrient Enhancement Project is a restoration project as described in IDAPA 58.01.02.052.02. DEQ believes there will be no adverse change in water quality as a result of this project. However, even assuming there is short-term adverse change in water quality, such a change is allowed in order to secure long-term water quality improvements without conducting an antidegradation review under IDAPA 58.01.02.052.02. Although the Dworshak Nutrient Enhancement Project is a restoration project for which no antidegradation review is needed, DEQ has reviewed the impacts of the project as described below.

### *Receiving Water Body Level of Protection*

The Corps project discharges to Dworshak Reservoir (assessment unit ID17060308CL002\_06). Dworshak Reservoir is designated for the following beneficial uses: cold water aquatic life; salmonid spawning; primary contact recreation; domestic, industrial, agricultural water supply; wildlife habitat; and aesthetics. There is no available information indicating the presence of any existing beneficial uses aside from those that are already designated. According to the federally approved 2008 Integrated Report, this assessment unit is un-assessed. Water bodies that are un-assessed are provided an appropriate level of protection on a case-by-case basis using information

available at the time of a proposal for a new or reissued permit or license (Idaho Code §39-3603(2)(b)(ii)). There is insufficient data currently available to determine the support status of uses of Dworshak Reservoir. Although this project is a restoration project as discussed above, DEQ evaluated Dworshak Reservoir as a high quality water body to ensure protection of state water quality. DEQ will reevaluate the level of antidegradation protection afforded to Dworshak Reservoir based on available information when preparing future 401 certifications for federally-permitted activities that may affect the water body.

**Protection and Maintenance of Existing Uses (Tier 1 Protection)**

As noted above, a Tier 1 review is performed for all new or reissued permits or licenses, applies to all waters subject to the jurisdiction of the CWA, and requires a showing that existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected. In order to protect and maintain designated and existing beneficial uses, a permitted discharge must comply with Idaho WQS. The numeric and narrative criteria in the WQS are set at levels to ensure protection of designated beneficial uses. The discharge limitations and associated requirements contained in the Dworshak Reservoir Nutrient Enhancement Pilot Project permit are set at levels that ensure compliance with WQS. Additionally, there is no available information indicating the presence of existing uses other than the designated uses discussed above. Therefore, the permit ensures that the level of water quality necessary to protect both designated and existing uses is maintained and protected, in compliance with IDAPA 58.01.02.051.01, IDAPA 58.01.02.052.05, and 40 CFR 131.12(a)(1).

**High Quality Waters (Tier 2 Protection)**

The permit authorizes the Corps to discharge liquid 32:0:0 urea-ammonium nitrate fertilizer to Dworshak Reservoir. As such, the quality of the reservoir must be maintained and protected, unless it is deemed appropriate and necessary to allow a lowering of water quality.

The Dworshak Nutrient Enhancement Project has been conducted since 2007 under the terms of a Consent Order and a Short Term Activity Exemption authorized by DEQ pursuant to the WQS, IDAPA 58.01.02.080.02. In order to determine whether a change in water quality will occur for this existing discharge, the WQS provide DEQ must compare water quality resulting from the current discharge with water quality that would result from the activity as proposed under the new permit (IDAPA 58.01.02.052.04.a). The quality of the existing discharge is to be determined, for pollutants not currently limited, by available discharge quality data, and the proposed discharge quality is determined by the proposed discharge limits (IDAPA 58.01.02.052.04.a.i and ii). The proposed permit does not authorize any increase in the amount of nitrate fertilizer discharged as compared to the existing discharge. Therefore, there will be no adverse change in water quality and no degradation in Dworshak Reservoir as a result of the project.

Moreover, a comparison of data collected prior to the implementation of the project to data collected from 2007 to 2010 indicates there has been no adverse change in nitrogen

levels in the reservoir. Bio-available nitrogen has been added to Dworshak Reservoir in the epilimnion layer from April 2007 to July 2010. Baseline water quality monitoring was conducted for approximately 3 years prior to implementation of the pilot project. Comparing data collected during the pilot project to the baseline water quality data does not indicate there is an increase in the nitrite + nitrate concentrations within the reservoir. In fact, there appears to be a decrease in the nitrite + nitrate concentrations since the pilot project was initiated (Table 1). This could be due to an increase in the uptake efficiency of the system (Scofield, et al. 2010). A simple mass-balance of this addition with the entire volume of the lake indicates there could be an increase in the nitrite-nitrate concentration; however, such an increase is not expected to be measurably different from background concentrations. Furthermore, it is likely that the nitrogen will be utilized by the algal community, reducing the water column concentrations of nitrogen.

**Table 1: Comparison of nitrate + nitrite nitrogen levels measured in mg/L.**

Year	Median	Mean	LCL	UCL
2004	0.010	0.011	0.010	0.013
2005	0.010	0.010	0.010	0.010
2006	0.013	0.026	0.023	0.031
Pre-supplementation		0.016		
2007	0.010	0.011	0.010	0.013
2008	0.010	0.018	0.014	0.023
2009	0.010	0.012	0.011	0.013
2010*	0.010	0.015	0.012	0.019
Supplementation		0.014		

Summary statistics for nitrate plus nitrite nitrogen levels measured in mg/L for Dworshak Reservoir from May through November at the same four monitoring stations (RK-2, RK-31, RK-56 and RK-72) from 2004 through \*July 2010. All values were first corrected to a minimum detection level of 0.010. All values below the detection level were considered at the detection level for the purpose of calculating statistics. Values for 2004 are for nitrate only. 95% confidence levels were derived by bootstrapping.

Based on these considerations, DEQ has concluded that this pilot project should not result in a lowering of water quality in the Dworshak Reservoir. As such, the proposed permit is expected to maintain the existing water quality in the reservoir.

## **References**

IDAPA 58.01.02. Water Quality Standards and Wastewater Treatment Requirements.

Brandt and Scofield, 2009. Dworshak Reservoir Nutrient Enhancement Project: 2009 Progress Report and Data Summary. Prepared by TG Eco-Logic, LLC, 10905 E. Montgomery Drive, Suite 3, Spokane, WA 99206, and John G. Stockner, Eco-Logic Ltd, West Vancouver, B.C. V7V2J4. Prepared for the U.S. Army Corps of Engineers, Walla Walla District, WA, and the Idaho Department of Fish and Game, Lewiston, ID.

Scofield, et al. 2010. Draft: Dworshak Reservoir Nutrient Enhancement Project: 2010 Progress Report and Data Summary. Prepared by TG Eco-Logic, LLC, 10905 E. Montgomery Drive, Suite 3, Spokane, WA 99206; Darren Brandt, Advanced Eco-Solutions Inc., 1324 North Liberty Lake Road, #124, Liberty Lake, WA, and John G. Stockner, Eco-Logic Ltd, West Vancouver, B.C. V7V2J4. Prepared for the U.S. Army Corps of Engineers, Walla Walla District, WA, and the Idaho Department of Fish and Game, Lewiston, ID.

Stockner and Brandt, 2008. Dworshak Reservoir Nutrient Enhancement Project: 2008 Progress Report and Data Summary. Prepared by Terra Graphics Environmental Engineering, Inc., 10905 Montgomery Drive, Suite 3, Spokane, WA 99206. Prepared for the U.S. Army Corps of Engineers, Walla Walla District, WA, and the Idaho Department of Fish and Game, Lewiston, ID.

TerraGraphics, 2008. Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) for Dworshak Reservoir Nutrient Enhancement Project. Prepared by TerraGraphics Environmental Engineering, Inc., 108 W. Idaho Avenue, Kellogg, ID 83837 and Idaho Department of Fish and Game, Lewiston ID; for the U.S. Army Corps of Engineers, Walla Walla District and the U.S. Environmental Protection Agency, Region X, Seattle, WA.