Erosion Control Plan

for

PacifiCorp's Bigfork Hydroelectric Project

FERC Project No. 2652

Prepared by:

PACIFICORP

In Consultation with:

Montana Department of Environmental Quality

Montana Fish, Wildlife, and Parks

U.S. Fish and Wildlife Service

January 20, 2004

TABLE OF CONTENTS

1.0 Introduction 1
1.1 Purpose and Intent 1
1.2 Objectives 1
2.0 Planning, Coordination and Responsibilities 2
2.1 PacifiCorp Roles and Responsibilities 2
3.0 Identified Erosion Sites 2
3.1 Method Used to Identify Erosion Sites 2
3.2 Site Specific Erosion Control Measures 5
3.2.1 Erosion Site 1 5
3.2.2 Erosion Site 2 9
4.0 Erosion Remediation Program 10
4.1 Implementation Schedule 10
5.0 Erosion Prevention Program 10
5.1 Sediment survey 10
5.2 Routine Daily Monitoring by Operations Staff 10
5.3 Project Modifications 11

LIST OF FIGURES

Figure 1. Erosion Control Sites. 3
Figure 2. Erosion Control Site 1. 5
Figure 3. Erosion Control Site 1 Plan. 7
Figure 4. Erosion Control Site 1 Sections and Details. 8
Figure 5. Erosion Control Site 2. 9

ATTACHMENTS

Attachment A: Article 409. Federal Energy and Regulatory Commission Order Issuing New License for the Bigfork Hydroelectric Project (FERC Project No. 2652) (July 25, 2003)

Attachment B: Agency Consultation

This page left intentionally blank.

1.0 INTRODUCTION

PacifiCorp received a 50-year license for the 4.15 MW Bigfork Hydroelectric Project (FERC No. 2652) on July 25, 2003. Among the conditions of the FERC order, Article 409 requires PacifiCorp to prepare an Erosion Control Plan in consultation with Montana Fish, Wildlife, and Parks (MFWP), U.S. Fish and Wildlife Service (USFWS), and Montana Department of Environmental Quality (MDEQ). The plan is to be filed with FERC within 6 months of the date of license issuance. This plan satisfies the requirements contained in Article 409 of the Bigfork License.

1.1 PURPOSE AND INTENT

The purpose of the Erosion Control Plan (ECP) is to develop (in consultation with MFWP, USFWS, and MDEQ), methods to stabilize eroded drain channels along the Project's flowline. In the past, PacifiCorp released water from maintenance drains in the concrete flume section of the canal, allowing water to flow over-land from the drains into the bypassed reach. Periodic use of the drains resulted in two erosion gullies between the canal and bypassed reach. PacifiCorp no longer uses these drains to dewater the power canal. However, the unstable gullies that remain are a potential source of sediment and turbidity in the bypassed reach during natural runoff events.

The ECP presented below meets the intent of the License Article 409. Specifically the ECP includes a map showing the location of all eroded drain channels requiring stabilization, site specific erosion control measures needed to stabilize eroded drain channels, a schedule for implementing all specific erosion control measures.

1.2 OBJECTIVES

The ECP describes objectives for remediating Project–related erosion channels within the Project's-affected area. The Plan describes the identified erosion sites within the Project, the types of erosion control and remediation measures which will be employed, and the monitoring proposed to allow ongoing evaluation of erosion within the project area. Other objectives of the ECP include:

- Remediate identified erosion sites within the project according to a prescribed schedule set forth in the ECP; and

- Establish a monitoring program that identifies new erosion sites and the methodology for treatment of these sites.

The ECP is the result of consultation between PacifiCorp and MFWP, USFWS, and MDEQ.

2.0 PLANNING, COORDINATION AND RESPONSIBILITIES

An important element of the Plan over the term of the new license is ongoing coordination by PacifiCorp and others as conditions change over time. Section 2.0 describes the roles and responsibilities of PacifiCorp.

2.1 PACIFICORP ROLES AND RESPONSIBILITIES

PacifiCorp's primary responsibility as licensee is to implement the Plan to the specifications set forth in Article 409. Below are the basic roles and responsibilities of PacifiCorp in ECP implementation:

- Responsible for implementing the Plan, including funding or implementing specific erosion control actions.
- Responsible for coordinating with other Project-related resource management plans as applicable, including the Flow Monitoring Plan (Article 403), Water Quality Management Plan (Article 404), Recreation Resources Management Plan (Article 411), and the Cultural Resource Management Plan (Article 412).
- Responsible for funding and/or conducting environmental compliance and permitting on erosion control projects as needed.

3.0 IDENTIFIED EROSION SITES

This ECP identifies and describes two erosion sites needing remediation, thus satisfying PacifiCorp's obligation under Article 409 of the FERC license. The following sections describe each erosion site identified and the remediation techniques proposed at each site.

3.1 METHOD USED TO IDENTIFY EROSION SITES

During preparation of the license application, preliminary site reconnaissance was performed with representatives of MFWP and USFWS in the area between the power canal and bypass reach to identify eroded drain channels formerly used to dewater the power canal. FERC consultants also visited the site during preparation NEPA compliance activities, and identified two erosion sites. Following license issuance, a resource team comprised of a PacifiCorp engineer, operations representative, and environmental specialists performed a detailed site reconnaissance.

Each site had the following characteristics:

- The site was formerly used to dewater the power canal,
- Active erosion may be occurring and sediment from the site may enter the bypass reach during natural runoff events.

Two sites have been identified for remediation. Their locations are identified on Figure 1.

Erosion Site 1

Erosion Site 2

Commerce St
Electric Ave
Chickadee Ln
Monroe St
Cascade Ave
Swan River Nature Trail
Grand Dr
River St
Electric Ave
Osborn Ave
Cascade Ave
Mill St
Montana Highway 209
Montana Highway 209
Tall Pines Ct
Bay Dr
Montana Hwy 35
Bridge St
Village Ln
Montana Hwy 35
Harry Harm Rd

BIGFORK

Figure 1: Erosion Control Plan

N
W
E
S

0 250 500 1,000 1,500 2,000 Feet

January 12, 2004
S:\Property_Management\GIS\Geodatabase\MXD\client\WillShallenberger\03-137\Big Fork Base.mxd

There were additional sites identified that had been historically used to dewater the canal since its construction in 1910. However these sites have been inactive for many years and natural revegetation has stabilized previously eroded slopes.

3.2 SITE SPECIFIC EROSION CONTROL MEASURES

This section describes the erosion sites and measures employed to stabilize them. The sites are located in a wooded recreation area that is too difficult to access with traditional construction equipment. Prior to implementation, PacifiCorp will meet onsite with representatives of MFWP, USFWS, and MDEQ to refine the measures to determine what type of equipment to use and the appropriate remedial measures to implement.

3.2.1 Erosion Site 1

This site is located immediately below an abandoned gate valve that was previously used to drain the concrete flume (Figure 2). Historic use of this drain resulted in erosion gullies as deep as 8 feet that extend downslope approximately 200 feet to the river. A single channel extends from the valve approximately 25 feet where a smaller secondary channel branches off for about 100 feet and rejoins the main channel prior to discharging in the river as shown on Figure 3.

Figure 2. Erosion Control Site 1.

The valve is no longer operable but some leakage discharges water into the drainage channel. As part of the remediation, the gate will be sealed permanently.

To stabilize the eroded drain channel, steep side banks will be flattened to approximately 1½ horizontal to 1 vertical (1½H:1V). Slopes may be locally steeper to avoid trees near the steep edge. The removed material will be placed in the channel to provide a fertile growing medium over the exposed gravels. Bare soil surfaces will be covered with native seed and a biodegradable erosion control mat. Native plantings will be placed through the coir mats to provide additional stabilization.

A series of check dams will be installed to trap sediment that may be dislodged during precipitation events. Each dam will be installed approximately every 25 feet apart as shown on Figure 4. Check dams will consist of rock and woody debris obtained from on-site materials as shown on Figure 4. The work will be performed with a small excavator or spider hoe to minimize impacts to the landscape.

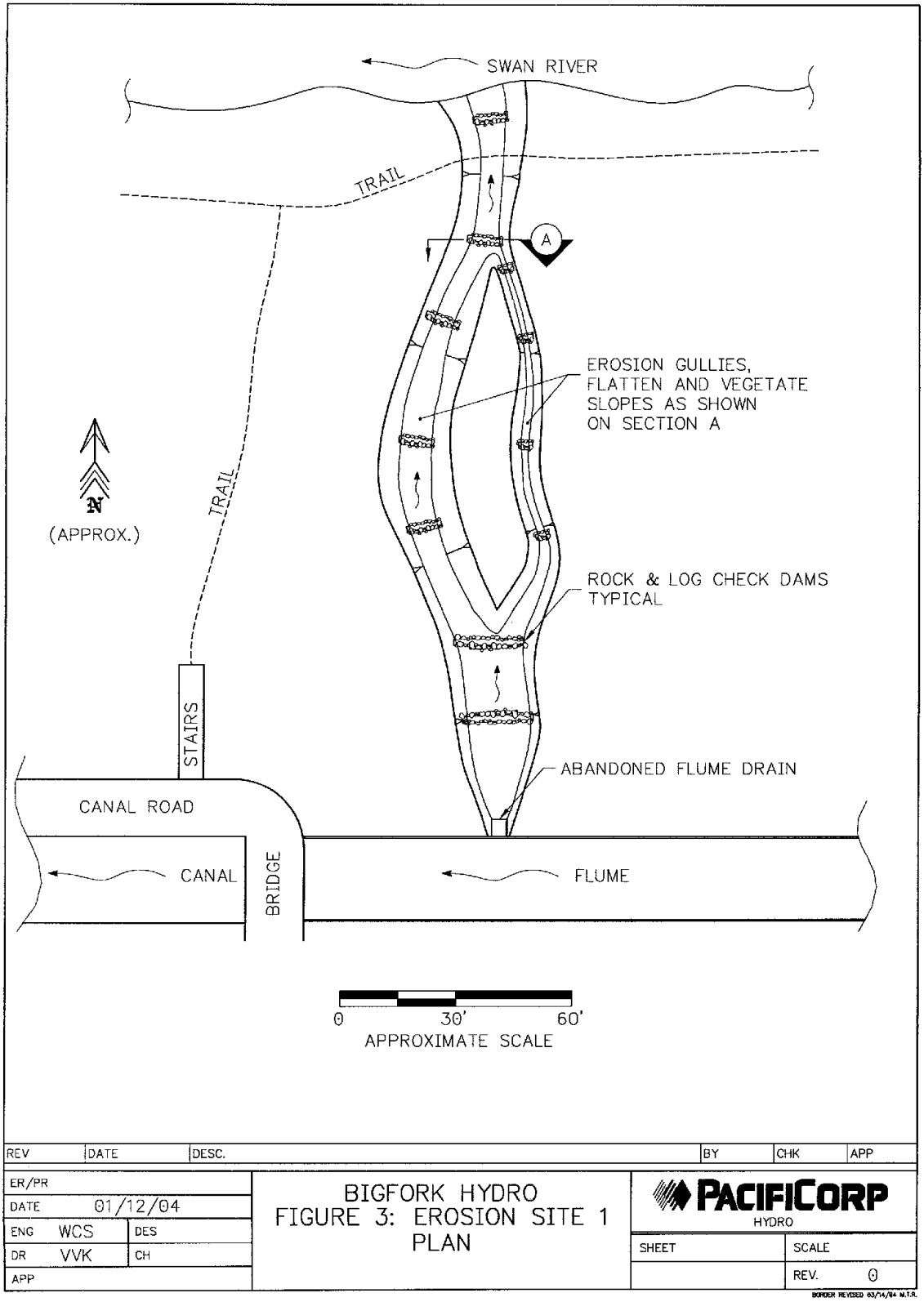

Figure 3. Erosion Control Site 1 Plan.

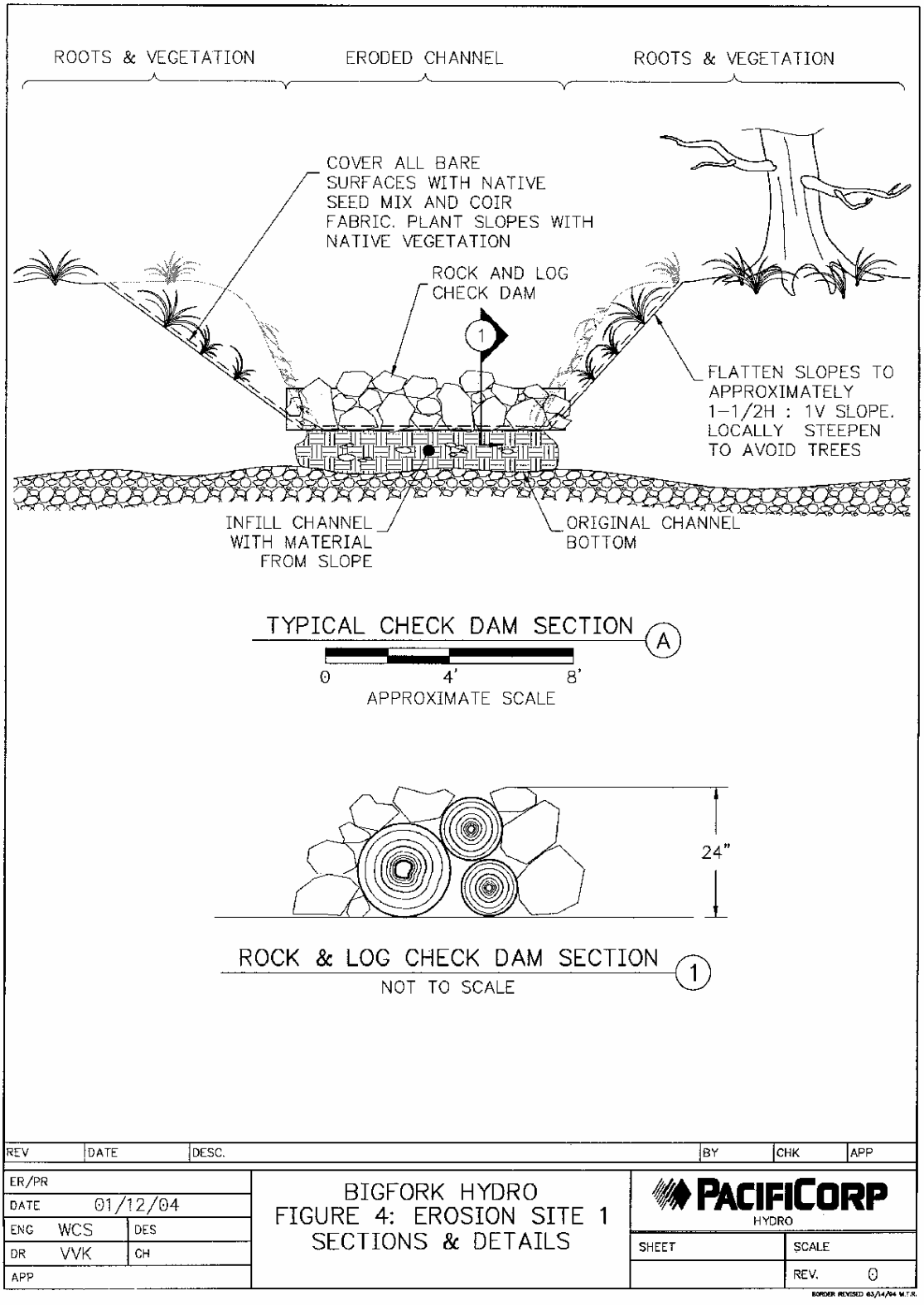

Figure 4. Erosion Control Site 1 Sections and Details.

3.2.2 Erosion Site 2

This site is located immediately below a drain valve at the rock trap in the forebay (Figure 5). A drain pipe is connected to the valve that runs down to the river approximately 400 feet. The pipe has become separated at a number of joints, causing the pipe to leak when the valve is open. Leakage has resulted in localized erosion pockets along the alignment of the pipe that are typically less than 10 square feet in extent.

Figure 5. Erosion Control Site 2.

To stabilize the eroded drain channel, the locally eroded areas would be stabilized with coir matting, woody debris, and other standard erosion Best Management Practices. The steepness of this site requires that all work be performed with manual labor.

To prevent future erosion impacts at this site, a new, more durable pipe would be installed and routed approximately 50 feet to discharge in the adjacent emergency spillway structure.

4.0 EROSION REMEDIATION PROGRAM

4.1 IMPLEMENTATION SCHEDULE

Prior to beginning work, a site visit will be performed in spring of 2004 as discussed in Section 3.2 to finalize the erosion control measures. Remediation of erosion site 1 would be performed in the summer of 2004 in conjunction with installation of the fish screen at the intake structure. Remediation of erosion site 2 would be in summer of 2005.

5.0 EROSION PREVENTION PROGRAM

The following program is proposed to ensure compliance with Article 409 of the Bigfork license. It includes daily monitoring of the canal.

5.1 SEDIMENT SURVEY

A sediment survey will be performed within 1 year of installation of the erosion control measures. The survey will be performed after a major precipitation period (snowmelt or rainfall). It will consist of PacifiCorp personnel performing a visual survey for sediment entering the south bank of the bypass reach of the Swan River. The source of identified sediment plumes will be investigated. Representatives of MFWP, USFWS, and MDEQ will be invited to participate in the survey.

If remediation of newly identified sediment sources or modification to previously remediated sites are necessary, new measures will be developed. MFWP, USFWS, and MDEQ would be provided and opportunity to comment on the remediation plans prior to implementation.

5.2 ROUTINE DAILY MONITORING BY OPERATIONS STAFF

Operations personnel visually monitor project waterways as part of their routine daily/weekly facility O&M duties. Operations personnel will contact the PacifiCorp Implementation Program Manager, Production Manager or Control Center if a potential erosion hazard is noted or an erosion event discovered. The Implementation Program Manager will contact the Federal and State agencies.

Observations made during routine daily monitoring include flowline water levels and conditions of structural and control elements of the waterways. If potential erosion features are observed, the operator will alert operations staff and the Implementation Program Manager. PacifiCorp staff will conduct an inspection of identified sites and develop a remediation plan. MFWP, USFWS, and MDEQ will be provided an opportunity to comment on the remediation plans prior to implementation.

5.3 PROJECT MODIFICATIONS

Future modifications to facilities may require installation of new drainage structures to discharge water from the water conveyance system to the bypass reach. PacifiCorp reserves the right to install these measures within the framework of the Erosion Control Plan. Implementation of these measures will comply with the Erosion Control Plan as well as all applicable regulations.

This page left intentionally blank.

ATTACHMENT A

Article 409 - Federal Energy and Regulatory Commission Order Issuing New License for the Bigfork Hydroelectric Project (FERC Project No. 2652) (July 25, 2003)

Article 409. Within 6 months from the date of this license, the licensee shall file, for Commission approval, a plan to stabilize eroded drain channels formerly used to dewater the power canal. The plan shall contain measures to minimize any sediment from these eroded channels which may enter the bypassed reach during natural runoff events.

The plan shall include, at a minimum:

(1) a map showing the location of all eroded drain channels requiring stabilization;

(2) site specific erosion control measures needed to stabilize eroded drain channels shown in item (1); and

(3) a schedule for implementing all specific erosion control measures.

The licensee shall prepare the plan after consultation with Montana Fish, Wildlife, and Parks, U.S. Fish and Wildlife Service, and Montana Department of Environmental Quality. The licensee shall include with the plan documentation of agency 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 site-specific information.

The Commission reserves the right to require changes to the plan. The plan shall not be implemented 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.

This page left intentionally blank.

ATTACHMENT B

Agency Consultation

Article 409 of the Bigfork license requires the licensee to prepare an Erosion Control Plan in consultation with Montana Fish, Wildlife, and Parks (MFWP), U.S. Fish and Wildlife Service (USFWS), and Montana Department of Environmental Quality (Montana DEQ). On November 24, 2003, PacifiCorp submitted the draft Erosion Control Plan to the USFWS offices in Helena and Kalispell, Montana; to the MWFP office in Helena; and to the Montana DEQ office also in Helena. PacifiCorp requested comments and recommendations be returned by December 30, 2003. MWFP and Montana DEQ provided comments (attached); USFWS notified PacifiCorp by draft letter that it did not have any comments (attached).

This page left intentionally blank.

PacifiCorp's Response to MFWP Comments re: Erosion Control Plan

Note: MFWP comments in 12/19/03 and 12/30/03 letters to PacifiCorp are paraphrased below.

1. Two types of erosion sites were identified in the plan: historic canal dewater sites and their associated downslope gullies, and recent canal dewatering sites (Sites 1 and 2), all of which have some type of canal opening (gate or valve). The first course of action should include permanent closures of all canal openings to prevent future discharges. After the potential sources are eliminated, steps should be taken to permanently stabilize the existing erosion gullies.

   PacifiCorp response:

   The plan includes permanent sealing of the gate valve opening at Site 1. The valve at Site 2 is necessary to perform maintenance on the plant, but the drainline from the valve will be improved and re-routed. (See Section 3.2 – Site Specific Erosion Control Measures). The emergency spillway is constructed of concrete. Drainline flows down the spillway will not contribute sediment to the Swan River.

2. A more thorough plan should be developed to vertically and longitudinally stabilize the gullies surface with contouring and the installation of more suitable structures and extensive revegetation.

   PacifiCorp response:

   PacifiCorp has revised the plan to include flatter slopes, rock & log check dams, and revegetation to stabilize the erosion sites (See Section 3.2 – Site Specific Erosion Control Measures).

3. A sediment source survey should be conducted during a major spring snowmelt period and also during a significant rain event to detect additional sediment sources to the Swan River.

   PacifiCorp response:

   PacifiCorp has revised the plan to include a sediment survey within 1 year of installation of the erosion control measures. Surveys will be conducted immediately following a heavy rainfall event (See Section 5.1 – Sediment Reconnaissance for full description).

4. Montana DEQ should take the lead on additional stabilization and water quality issues due to their jurisdiction over water quality.

   PacifiCorp response:

   Noted.

5. Because MFWP has not seen all the specific sites discussed in the plan, it advised PacifiCorp that comments submitted on December 19, 2003 were preliminary until that an on-site inspection with all interested parties has occurred.

PacifiCorp response:

In a January 13, 2004 conference call between PacifiCorp and MFWP, PacifiCorp agreed to conduct an on-site inspection with representatives of MFWP, MDEQ and USFWS prior to implementing any actions as discussed in Section 3.2.

PacifiCorp's Response to Montana DEQ Comments re: Erosion Control Plan

Note: Montana DEQ comments in a 12/30/03 letter to PacifiCorp are listed below.

? Comments are based on limited knowledge of the erosion areas discussed and that additional comments may be made after a work plan for 2004 is written and possibly a site visit.

PacifiCorp response:
Noted. PacifiCorp revised the plan to allow for on-site inspections with representatives of MFWP, MDEQ and USFWS prior to implementation as discussed in Section 3.2.

? Vertical banks should be re-contoured to provide slopes that are conducive to re-vegetation.
? Bare soil areas should be either hydro seeded or faced with a coir fabric in areas where flows are concentrated.
? Re-vegetation should be accomplished using native species at a planting density that precludes future erosion.
? Rock and or woody debris local to the sites should be placed in the drainage ways to dissipate water run-off energy.
? To avoid additional damage to the surrounding area, reclamation work should be accomplished using manual labor or a "spider-hoe."

PacifiCorp response:

The plan has been revised to include these specific measures (See section 3.2 – Site Specific Erosion Control Measures).

This page left intentionally blank.

12/3

Montana Fish, Wildlife & Parks

490 N. Meridian Road
Kalispell, MT 59901
(406) 752-5501
FAX (406) 257-0349
December 23, 2003
REF:SR024-03.doc

Dave Leonhardt, Program Manager
PacifiCorp
825 NE Multnomah, Suite 1500
Portland, OR 97232

Dear Dave,

RE: Bigfork Hydroelectric Project (FERC No. 2652) Comments

In a letter of December 19, 2003, I sent you preliminary comments pertaining to the project. Since then I have discussed the project with DEQ and realize that there are additional issues pertaining to the Draft Erosion Control Plan. Basically we have not seen all of the specific sites discussed in the plan and cannot provide final comments until that time. Please recognize that comments in my letter of December 19, 2003 are preliminary and general in context. After an on-site inspection is conducted with all the interested parties, a final plan can be drafted and reviewed.

Sincerely,

Scott Rumsey
Fisheries Biologist

/sj

12/30/03

Montana Fish, Wildlife & Parks

490 N. Meridian Road
Kalispell, MT 59901
(406) 752-5501
FAX (406) 257-0349
December 19, 2003
REF:SR022-03.doc

Dave Leonhardt, Program Manager
PacifiCorp
825 NE Multnomah, Suite 1500
Portland, OR 97232

RE: Bigfork Hydroelectric Project (FERC No. 2652) Comments

Dear Dave,

Enclosed are comments pertaining to the above project on: (1) Draft Erosion Control Plan; (2) Draft Flow Monitoring Plan, and the; (3) Draft Water Quality Monitoring Plan.

1. Draft Erosion Control Plan Comments

Two types of erosion sites were identified in the plan: historic canal dewater sites and their associated downslope gullies, and recent canal dewatering sites (Sites 1 and 2). All of these sites have some type of canal opening (gate or valve). The first course of action should include permanent closures of all canal openings to absolutely prevent future discharges. After the potential sources are eliminated, steps should be taken to permanently stabilize the existing erosion gullies.

The erosion control plan for Site 1 proposes the installation of erosion control fiber-log check dams anchored with wood stakes on 25-foot intervals down the gulley.

The proposed structures do not appear durable enough for long-term stabilization and sediment control. Leaving the deeply eroded gullies in place will likely continue to concentrate future runoff and transport sediment.

A more thorough plan should be developed to vertically and longitudinally stabilize the gullies surface with contouring and the installation of more suitable structures and extensive revegetation. Check-dams should include

large rock and large woody debris for stability and longevity. Drainage features may need to be installed and fill material imported. A spider hoe would be very useful for this work and would minimize disturbance.

At Site 2, I would recommend complete stabilization of eroded sites as outlined above. Routing of a durable pipeline to a permanent emergency spillway structure is appropriate as long as this structure is erosion-proof and does not contribute sediment to the Swan River.

As well as stabilize these sites, I recommend that a sediment source survey be conducted during a major spring snowmelt period and also during a significant rain event to detect additional sediment sources to the Swan River. I would first survey the area at the south bank of the Swan River below the project where turbidity plumes would be obvious, and then investigate sources.

The additional sites used to historically dewater the canal may also require restoration and stabilization.

Montana DEQ should take the lead on additional stabilization and water quality issues due to their jurisdiction over water quality.

2. Draft Flow Monitoring Plan Comments

   This plan as written is acceptable.

3. Draft Water Quality Monitoring Plan Comments

   This plan as written is acceptable.

Thank you for allowing me the opportunity to comment.

Sincerely,

Scott Rumsey
Fisheries Biologist

/sj

Montana Department of
ENVIRONMENTAL QUALITY
Judy H. Martz, Governor
P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • Website: www.deq.state.mt.us

29 December 2003

Dave Leonhardt
PacifiCorp
825 N.E. Multnomah, Suite 1500
Portland, Oregon 97232

RE: Bigfork Hydroelectric Project (FERC #2652) Water Quality Monitoring Plan and Erosion Control Plan comments.

Dear Mr. Leonhardt:

The Department of Environmental Quality received copies of the draft Water Quality Monitoring Plan and Erosion Control Plan on 28 November 2003 and have the following comments.

Water Quality Monitoring Plan

DEQ has only the general comment that the quality and usefulness of temperature and dissolved oxygen monitoring data are very susceptible to sampling errors and bias and stresses the need for a good quality control plan and careful consideration the time of day and sample collection locations in the final Plan.

Erosion Control Plan

The following comments based on our limited knowledge of the erosion areas discussed and that additional comments may be made after a work plan for 2004 is written and possibly a site visit.

- Vertical banks should be re-contoured to provide slopes that are conducive to re-vegetation.

- Bare soil areas should be either hydro seeded or faced with a coir fabric in areas where flows are concentrated.

- Re-vegetation should be accomplished using native species at a planting density that precludes future erosion.

- Rock and or woody debris local to the sites should be placed in the drainage ways to dissipate water run-off energy.

- To avoid additional damage to the surrounding area, reclamation work should be accomplished using manual labor or a "spider-hoe."

If you should need additional information please contact Christian J Levine at 406-444-0371 or email clevine@state.mt.us.

Sincerely,

Bob

Bob Bukantis
Water Quality Planning Bureau, Chief

AMERICAN WHITEWATER
www.americanwhitewater.org

John T. Gangemi
Conservation Director
482 Electric Avenue
Bigfork, MT 59911
Phone/Fax: (406) 837-3155/3156
jgangemi@digisys.net

December 16, 2003

Dave Leonhardt
Program Manager
PacifiCorp
825 N.E. Multnomah, Suite 1500
Portland, OR 97232
(503)813-5000

RE: Comments on the Flow Monitoring Plan
Bigfork Hydroelectric Project, FERC No. 2652

Dear Dave:

Thank you for circulating the Draft Flow Monitoring Plan for the Bigfork Hydroelectric Project, FERC No. 2652. American Whitewater has reviewed the document and offers the following comments. The comments parallel the numerical paragraph format in the draft.

Section 1, page 1: Introduction: Be sure to refer to American Whitewater as an Affiliation not an Association.

Section 3.1, page 3: Gage Locations and Modifications: The list of gages does not include the USGS Gage on the Swan River upstream of the project reservoir (USGS Gage No. 12370000). Because summer whitewater releases are contingent on adequate inflow (800 cfs or greater) there needs to be a correlation established between the PacifiCorp reservoir gage and the USGS gage. This correlation will help the public boating community monitor inflows the day of a potential release to determine if inflows are sufficient for a release. In essence, the USGS gage will serve as an index and communication tool for the public.

Section 3.1.1, page 3: Fish Ladder Staff Gage: PacifiCorp proposes to "refurbish" this gage. This gage has been used by kayakers as a reference for years. Kayakers rely on this gage to determine whitewater difficulty prior to "putting-on" for a run. The difficulty of the Swan's Wild Mile changes dramatically with flow. Any refurbishment to this gage must keep in tact the exact reference points on the gage. Any alterations to the current gage heights relative to water levels becomes a safety issue for boaters. American Whitewater urges PacifiCorp to use extreme caution when refurbishing this gage.

Section 3.1.3, Page 3: Bigfork Dam Staff Gage: PacifiCorp asserts that the reservoir gage is "well suited to estimate whitewater flows in the bypassed reach." American Whitewater requests PacifiCorp demonstrate how this gage is well suited for estimating whitewater flows in the bypass reach. The boating public has never used this gage as a reference point. The boating public typically references the USGS gage (Gage No. 12370000 on the Swan River) to evaluate inflows in combination with reading the fish ladder gage to account for project diversions. PacifiCorp should demonstrate how the reservoir gage correlates with the USGS gage.

Furthermore, since summer whitewater releases are contingent on reservoir inflows being equal to or greater than 800 cfs it is critical that PacifiCorp communicate with the boating public if a given whitewater release will occur on a specific day. This is best done by relying on a publicly accessible hydrologic gage. American Whitewater recommends that PacifiCorp include the USGS gage in their flow monitoring plan as a means of communicating with the public boating community. Developing a correlation between the USGS Gage No. 12370000 and the reservoir gage will be critical for informing the public about potential releases.

Section 3.3, page 4, Schedule: The correlation between the reservoir gage and the USGS gage needs to be completed prior to July 1 for this year's whitewater release schedule. PacifiCorp should be able to complete work on the reservoir gage prior to the run-off season. We also believe that the fish ladder gage can be refurbished prior to the run-off season since this gage is largely out of the water in a safe wading area during minimum instream flow periods in March.

Section 4.2, page 5, Bypassed Reach Flow Monitoring During Whitewater Flows: American Whitewater requests that this paragraph specify that the dataloggers will be deployed within the wetted perimeter prior to a whitewater release. Ideally, the dataloggers will be deployed in the wetted perimeter for minimum instream flows (MIFs) and left in place for July and August. This placement would enable us to track the stage relationship with MIFs particularly as MIFS become the more prevalent flow during August.

Please contact me if you have any further questions regarding these comments.

Sincerely,

John T. Gangemi
Conservation Director

January 7, 2004

Mr. David Leonhardt
Program Manager
PacifiCorp
825 N.E. Multnomah, Suite 1500
Portland, Or. 97232

Subject: Transmittal of U.S. Fish and Wildlife Service's (Service) comments regarding PacifiCorp's draft Flow Monitoring Plan, draft Water Quality Monitoring Plan and the draft Erosion Control Plan for Big Fork Hydroelectric Project (FERC No. 2652) located in Big Fork, MT.

The Service received PacifiCorp's draft Flow Monitoring Plan, draft Water Quality Monitoring Plan and draft Erosion Control Plan (collectively, the Plans), on December 1, 2003. These plans were submitted to the Service for review and approval in accordance with the Service's Biological Opinion (BiOp) dated May 28, 2003, regarding the effects to bull trout from the operation and maintenance of PacifiCorp's Big Fork Hydroelectric Dam (FERC No. 2652) located in Big Fork, MT. The plans, which require Service approval, are intended to satisfy the BiOp's Terms and Conditions 1A, 1B, and 2A respectively. To facilitate the approval process, the Service is providing the following comments on the draft plans:

Flow Monitoring Plan

Article 402 of the license for the Big Fork Hydroelectric Dam establishes minimum instream flow within the bypass reach of 70 cfs. Article 403, intending to meet the BiOp's Term and Condition 1A requires PacifiCorp to file a flow monitoring plan and for the plan to "contain measures to monitor the reservoir elevations and flows…"

1. Please indicate in the plan that PacifiCorp will provide, to the Service, a printed copy of the rating gage tables for all gages when PacifiCorp has them developed and verified.

Water Quality Monitoring Plan

Article 404 of the license requires PacifiCorp to file a water quality monitoring plan which should "contain measures to monitor dissolved oxygen (DO) and temperature in the bypassed reach during July, August, and September for three consecutive years." After review of the draft water quality monitoring plan, the Service has the following comments:

1. We do not believe that comparing water temperatures within the canal to those of the bypass reach, as proposed, will provide the necessary information regarding any natural warming which may occur within the bypass reach. The volume and the geomorphic characteristics (including shading effects and canal cross section) of the canal seem to vary significantly from those parameters within the bypass

reach. To adequately enumerate any naturally occurring warming within the bypass reach, anthropogenic effects should be excluded; one potential option is to measure the temperatures during the installation of the fish screens if the installation matches the time of potentially stressful warming trends within the bypass reach (July-September). Based upon a conference call with PacifiCorp on January 9, 2004, the Service understands that PacifiCorp will incorporate provisions to provide the full flows of the Swan River to the bypass reach for the period of August 9th to August 28th, 2004. Additionally, PacifiCorp will measure the water temperatures at the dam and at a station immediately upstream of the powerhouse. PacifiCorp should submit to the Service for approval the changes to the Water Quality Plan as discussed during the January 9th conference call.

2. The Service would like to see at least one temperature measurement station located upstream of the impoundment to record water temperatures entering the area influenced by project. This would provide the most reasonable method to measure the "naturally occurring water temperature" as described in the Montana Department of Environmental Quality's (DEQ) standards. The water entering into the impoundment in the vicinity of the Ferndale Bridge is the location where the influence of the project shouldn't be affecting the water quality (i.e. temperature, DO) and therefore project effects are absent. By comparing the "naturally occurring water temperature" to the temperature at the downstream portion of the bypass reach, temperature changes resulting from the operation of the project can be estimated. For example, if the water entering the impoundment is 63°F and the water temperature at the lower end of the bypass reach above the powerhouse tailrace is 65°F, the increase in temperature could be compared to any naturally occurring warming trends, as established in comment #1, to determine the potential effects the project has on water temperature.

3. PacifiCorp should indicate in the plan that they will initiate consultation with the State, the FERC and the Service should temperature monitoring indicate water temperature fluctuations exceed DEQ standards. This consultation should occur during the winter months following the summer when temperatures exceeded the standards.

4. The Service suggests establishing a DO monitoring location upstream of the impoundment to allow comparison between the DO levels coming into the system with those levels at the other monitoring locations.

5. The Service recommends developing criteria to allow for increases in the frequency of DO sampling should a DO threshold be observed during the weekly sampling. Individual criteria for all three DEQ standards (30-day Mean, 7-day Mean Minimum and 1-Day Minimum) should be established with associated responses identified. For example, if the weekly DO measurement is less than 5.0 mg/L, sampling would be conducted for a period of 7 consecutive days to verify that the DEQ standard of the 7-day Mean Minimum is not being exceeded. PacifiCorp should indicate in the plan that they will initiate consultation during

the winter months with the State, the FERC, and the Service should DO levels fail to meet DEQ standards.

6. PacifiCorp should indicate in the plan that they will provide the Service the raw water quality data electronically. It can be sent to paul_hanna@fws.gov.

Erosion Control Plan

The Service does not have any comments regarding the Erosion Control Plan.

The Service looks forward to working with PacifiCorp in the development of these plans and the incorporation of our comments. Upon receipt of the final plans the Service will submit a letter detailing our approval or changes necessary for our approval in accordance with the BiOp's Terms and Conditions. The point of contact for these comments and the project in general is Paul Hanna (406) 758-6871.

Sincerely,

R. Mark Wilson

Copy To: Kalispell ES, Kalispell, MT
Federal Energy Regulatory Commission (attn: Steve Hocking)
MT Dept of Fish, Wildlife and Parks, Kalispell, MT. (Attn: S. Rumsey)