EXH. RJR-27
DOCKET UE-22___/UG-22___
2022 PSE GENERAL RATE CASE
WITNESS: RONALD J. ROBERTS

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**Docket UE-22____** **Docket UG-22____**

TWENTY-SIXTH EXHIBIT (NONCONFIDENTIAL) TO THE PREFILED DIRECT TESTIMONY OF

RONALD J. ROBERTS

ON BEHALF OF PUGET SOUND ENERGY

JANUARY 31, 2022

ADMINISTRATIVE ORDER ON CONSENT REGARDING IMPACTS RELATED TO WASTEWATER FACILITIES COMPRISING THE CLOSED-LOOP SYSTEM AT COLSTRIP STEAM ELECTRIC STATION, COLSTRIP MONTANA

BETWEEN

PPL MONTANA, LLC AS OPERATOR OF THE
COLSTRIP STEAM ELECTRIC STATION

AND

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

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Administrative Order on Consent

This Administrative Order on Consent ("AOC") is entered into by PPL Montana, LLC ("PPLM") as operator of the Colstrip Steam Electric Station (Colstrip Units 1, 2, 3, and 4) and the Montana Department of Environmental Quality ("DEQ" or "Department"), acting pursuant to its statutory authority including the authority vested in it by the Montana Water Quality Act, Section 75-5-101, *et seq*, MCA, and specifically Section 75-5-612, MCA, and pursuant to the Department's general enforcement authority under the Montana Major Facility Siting Act, Section 75-20-101, *et seq.*, MCA.

I. Background

A. The Department is the agency with the duty and authority to administer and enforce the Montana Major Facility Siting Act and the Montana Water Quality Act.

B. PPLM is a Delaware limited liability company with offices at 303 N. Broadway, Ste. 400, Billings, Montana. PPLM is the operator of a 2276 MW steam electric generating station located in Colstrip, Montana. The Colstrip Steam Electric Station ("SES") is co-owned by PPLM, Puget Sound Energy, Inc., PacifiCorp, Portland General Electric Company, Avista Corporation and NorthWestern Corporation. As operator, PPLM has access to the plant property and the right to grant access to others to implement the work plans developed hereunder.

C. The Colstrip SES consists of four units, Units 1 and 2 that are 333 MW each and Units 3 and 4 that are 805 MW each. Construction on Units 1 and 2 began

in 1972 and they came on-line in the mid-1970s. Units 3 and 4 were constructed later; Unit 3 came on-line in 1983 and Unit 4 came on-line in 1985.

D. On July 22, 1976, the Montana Board of Natural Resources and Conservation ordered the issuance of a Certificate of Environmental Compatibility and Public Need ("Certificate") for the proposed Colstrip Units 3 and 4. In making the order, the Montana Board of Natural Resources and Conservation made 97 findings of fact including the following:

1. That the Board of Health and Environmental Sciences, (BHES) has, after a hearing held pursuant to notice, certified to the Board of Natural Resources and Conservation that the facilities as proposed will not violate state and federally established air and water quality standards and implementation plans, a duly certified copy of the Board of Health's Findings of Fact, Conclusion of Law and hereto, marked as Exhibit "A" for identification, and by this reference fully and completely incorporated herein and made a part hereof. (Finding of Fact, No. 8).

2. That the Board of Health and Environmental Sciences, the duly authorized agency empowered to determine whether or not the proposed facility will violate state and federally established standards and implementation plans insofar as air and water quality are concerned, has, after hearing duly noted and held, issued twenty-one (21) pages of Findings of Fact regarding air

and water resources and impacts which Findings of Fact and Conclusions of Law are fully and completely incorporated and adopted herein. (Finding of Fact, No. 60).

3. Seepage from the wastewater ponds will be minimal and will be collected by wells and returned to the ponds (Finding of Fact, No. 61).

4. Effluents emanating from Colstrip 1-4 are not anticipated to impair the quality of the ground and surface water of the area and will not violate applicable standards, however, careful monitoring of seepage and complete sealing of sludge ponds will ensure that water quality of the area is not degraded. (Finding of Fact, No. 64).

5. The units as proposed will use a closed loop water system which does not discharge effluents from the plants into ground water or surface water or large evaporation ponds and therefore will have no effect on the ground or surface water in the area (Finding of Fact, No. 65).

6. The facility as proposed will not violate any applicable water quality standards. (Finding of Fact, No. 66).

7. That neither withdrawal of the water from the Yellowstone River under the conditions prescribed by the BHES, nor the minimum seepage from the ponds will have any effect on the plants, animals, wildlife, fish or vegetation in the areas directly and

indirectly effected (sic) by such withdrawal. (Finding of Fact, No. 68).

8. Seepage from the surge ponds will be monitored by observation wells constructed at appropriate sites to ensure that any seepage will not exceed the estimated minimum amounts around the rim and through the foundation of the dam (Finding of Fact, Nos. 70 and 71).

9. That waste materials from scrubber units and boilers will be conveyed to sealed ash disposal ponds and eventually dried and the disposal ponds reclaimed. (Finding of Fact, No. 88).

10. That all effluents from seepage from the waste disposal ponds have been analyzed, and to insure no adverse effects on the area the waste disposal ponds will be sealed and monitoring wells installed. (Finding of Fact, No. 89).

11. That the ash and sludge disposal program projects temporary retention ponds located in a 40-acre area south of the plants and then the wastes are slurred (sic) to permanent disposal ponds. The first two permanent disposal areas developed (112 and 147 acres each) will be located 10,000 feet northwest of the plants in Section 20, 21, 28 and 29, T2N, R41E. A third pond is proposed in Sections 5, 6, 7 and 8, T1N, R42W. When these ponds are filled, they will be dried up, covered with soil and reclaimed. (Finding of Fact, No. 90).

12. That the disposal ponds will not impair the quality of the ground or surface water of the area or violate any applicable standards. (Finding of Fact, No. 91).

13. That all three permanent ponds will service the 37 year life of the plant. (Finding of Fact, No. 92).

E. Based on the foregoing Findings of Fact, the Board of Natural Resources and Conservation reached 18 Conclusions of Law, including the following:

1. The only authorized state air and water quality agency, the Board of Health and Environmental Sciences, has certified that the proposed facility, Colstrip Units #3 and #4 and associated facilities will not violate state and federally established standards and implementation plans. (Conclusion of Law, No. 10).

2. That the seepage from the existing surge pond and any enlarged or additional surge ponds be monitored, as specified by the State Board of Health and Environmental Sciences, and that every feasible engineering means be taken by the Applicants to minimize such seepage. (Conclusion of Law, No. 12(c)).

3. The sludge pond or ponds shall be completely sealed. If the conventional means such as compaction and bentonite application do not seal the pond(s), as indicated by monitoring wells the Applicants shall install and operate, then extreme measures even up to complete sealing by a plastic membrane

shall be taken (Conclusion of Law 12(d) "later modified by stipulation" as further explained below).

4. The reclamation of the sludge ponds, when they are filled and dried out, shall follow the basic reclamation requirements and standards applicable to the proper covering of highly saline backfill in coal areas (Conclusion of Law 12(e)).

5. That all monitoring programs heretofore instituted in regard to Colstrip Units 1 and 2, and in the Application proposed, be implemented and instituted so as to provide a continual flow of factual data insofar as air, surface and ground water are concerned. (Conclusion of Law, No. 12(h)).

6. That the Applicants enter into a written agreement with the Board of Health and Environmental Sciences for the payment of the monitoring facilities and operation thereof required by said Board in their certification heretofore issued, and for any further monitoring required in the conditions set forth herein by the State Board of Natural Resources and Conservation. (Conclusion of Law, No. 12(i)).

F. Conclusion of Law 12(d) states that the sludge ponds will be sealed. However, under Finding of Fact 61, seepage from wastewater ponds was anticipated and would be collected and returned to the ponds.

G. Conclusion of Law 12(d) was subsequently interpreted in litigation between the Board of Natural Resources and Conservation and the prior operator of

Colstrip Units 3&4. The Montana First Judicial District Court interpreted Conclusion of Law 12(d) as follows: "The clear meaning of condition 12(d), taken in the context of the Board's findings that some seepage was expected (see BNR findings numbers 61, 64, 68, 71 and 89 and BHES finding XXXIX), is that the pond as constructed for Relators may leak in small amounts but if the leakage is detected by the monitoring wells, the Relators will have to resort to more stringent measures, up to and including the installation of a plastic liner." (Findings of Fact and Conclusions of Law, p. 8, ¶ 3 (June 29, 1983), *State of Montana v. Board of Natural Resources and Conservation*, Cause No. 49348, District Court of the First Judicial District of the State of Montana, in and for the County of Lewis and Clark).

H. The requirements of Conclusion of Law 12(d) were further clarified as the result of litigation involving the Board of Natural Resources and Conservation, Northern Plains Resource Council, the prior operator of the Colstrip Units 3&4 and landowners adjacent to the Units 3&4 Effluent Holding Pond ("EHP"). The parties entered into a stipulation that generally describes the circumstances under which Conclusion of Law 12(d), as it pertains to the Cow Creek and South Cow Creek drainages, will be satisfied at the Units 3&4 EHP. To that end, Paragraph 9 of the stipulation provides as follows: "If MPC [Montana Power Company] complies with all terms and conditions of this Stipulation, such compliance constitutes full compliance with both the first and second sentences of Condition 12(d) of the Colstrip 3&4 Certificate for the Section 5 and 6 sludge pond."

I. The 12(d) stipulation generally requires PPLM to construct monitoring wells in specific areas near Units 3 & 4 EHP (ash disposal ponds) and other ponds in

the Cow Creek drainage and prepare an interception plan so as to contain any impacts on PPLM lands, install an interception system in designated locations if conditions warrant, pay for third-party monitoring activities of the Cow and Pony Creek drainages, provide replacement wells on land owned by Genie Land Company, distribute monitoring data to all parties to the stipulation and implement a monitoring program for certain persons' water supplies. PPLM has taken and is continuing to take the required actions, including action taken to address and recover seepage discovered in 2004 from the south and west sides of Units 3 & 4 EHP.

J. To minimize impacts to water resources, the units authorized by the Certificate were constructed utilizing what was intended to be a closed loop water system and the ash disposal ponds were to be sealed.

K. A brief history and description of each of the ponds comprising the closed-loop system at the plant are included in Attachment A. The Certificate refers to ponds by geographic location in relation to the Colstrip SES, but does not attempt to identify every pond that is subject to the Certificate's requirements. The ponds subject to the Certificate include those used exclusively by Units 3 & 4 and those used jointly by Units 1 & 2 and Units 3 & 4. Although not all of the ponds listed in Attachment A may be subject to the Certificate, all ponds listed in Attachment A will be subject to the provisions of this AOC.

L. The Colstrip plant also has a freshwater pond (called the Surge Pond or Castle Rock Lake) that provides fresh water drawn from the Yellowstone River for water supply to the plant and the town of Colstrip.

M. While many of the systems and actions discussed in Attachment A were effective, the migration of the seepage continued beyond these initial recovery systems in certain areas. In October 2003, PPLM retained an environmental consultant to, among other tasks, characterize the ground water affected by pond seepages and develop numerical models that can be used as a tool to evaluate hydraulic control alternatives to prevent continued migration of ground water affected by pond seepage at the Stage I and II EHP for Colstrip Units 1 and 2. PPLM's environmental consultants have completed a variety of studies and assessments as identified on Attachment B. Further work founded on these reports and other reports for the areas affected by seepage described in Article III will be conducted under Article VI and the Department will take action under Article XII on PPLM's submissions with respect to such further work because the Department and PPLM have concluded that a comprehensive, risk-based approach incorporating all tools and requirements applicable under Montana's generally applicable environmental laws, including adaptive management practices available thereunder, is needed to address ground water contamination from seepage.

II. Effective Date

This AOC shall become effective on the date it is executed by the parties.

III. Scope of the Administrative Order on Consent

A. This AOC applies to the following areas:

1. Areas at and downgradient of Units 1&2 Stage I and Stage II evaporation ponds northwest of the main plant site.

2. Areas at and downgradient of the main plant site.

3. Areas at and downgradient of Units 3&4 EHP southeast of the main plant site.

4. (a) Areas at and downgradient of past pipeline spills and

(b) Other miscellaneous areas that are mutually agreed upon by the parties to address in this AOC.

IV. Definitions

A. Remedial Design/Remedial Action Work Plan – plan for designing and implementing the selected remedy.

B. Control Actions - remedial actions directed exclusively toward reducing, containing or controlling the seepage or migration of regulated substances including but not limited to sulfate, boron, selenium, potassium, sodium, magnesium, total dissolved solids, and salinity measured by specific electrical conductance through the environment. Control actions shall include affirmative source mitigation measures.

C. Institutional Controls – restrictions on the use of real property agreed to by the landowner that mitigates the risk posed to public health, safety, and welfare and the environment. Institutional Controls include but are not limited to:

1. deed restrictions;

2. easements;

3. reservations;

4. covenants, either restrictive or affirmative; and

5. other mechanisms or physical restrictions for controlling present and future land use, including controlled ground water areas that are placed upon real property to mitigate the risk to public health, safety, and welfare and the environment.

D. Reasonably Anticipated Future Uses - likely future land or resource uses that take into consideration:

1. local land and resource use regulations, ordinances, restrictions, or covenants;

2. historical and anticipated uses of the facility;

3. patterns of development in the immediate area; and

4. relevant indications of anticipated land use from the owner of the facility, owners of property affected or potentially affected by the facility, and local planning officials.

E. Interim Response Action – a prompt action to respond to an immediate circumstance, such as, an acute threat to human health or a recent spill.

F. Constituents of Interest ("COI") – those parameters found in soil, ground water or surface water that (1) result from Site operations and the wastewater facilities and (2) exceed background or unaffected reference areas concentrations.

G. Cleanup Criteria –

1. for each constituent of interest in ground or surface water, except for the evaluation for ecological receptors, the applicable standard contained in the most current version of Circular DEQ-7 Montana Numeric Water Quality Standards ("DEQ-7"), the EPA maximum contaminant level, the risk-based screening level contained in the most current version of Montana Risk-Based Guidance for Petroleum Releases, whichever is more stringent; and, for constituents of interest for which there is not a DEQ-7 standard, a maximum contaminant level, or a risk-based screening level contained in the Montana Risk-Based Guidance for Petroleum Releases, the tap water screening level contained in the most current version of EPA Regional Screening Levels for Chemical Constituents at Superfund Sites, except that no criterion may be more stringent than the background or unaffected reference areas concentrations; and

2. for each constituent of interest in ground or surface water that may impact an ecological receptor, an acceptable ecological risk determined using the most current versions of standard EPA

ecological risk assessment guidance if the criteria set pursuant to 1. above are not adequate to protect ecological receptors, except that no criterion may be more stringent than the background or unaffected reference areas concentrations;

3. for each constituent of interest in soil, the more stringent of:

(a) a cumulative human health risk of 1×10^{-5} for carcinogens or a cumulative hazard index of 1 for non-carcinogenic constituents of interest, except that no criterion may be more stringent than the background or unaffected reference areas concentrations;

(b) an acceptable ecological risk, determined using the most current versions of standard EPA ecological risk assessment guidance if the criteria set pursuant to (a) above are not adequate to protect ecological receptors, except that no criterion may be more stringent than the background or unaffected reference areas concentrations; or

(c) the risk-based screening level contained in the most current version of Montana Risk-Based Guidance for Petroleum Releases, except that no criterion may be more stringent

than the background or unaffected reference areas concentrations.

H. Compliance Monitoring Points – locations established as points to determine the effectiveness of a remedial action on an ongoing basis.

I. Confirmatory Sampling – Sampling to confirm cleanup effectiveness.

J. Operation and Maintenance Plan – a plan describing required operation and maintenance tasks to keep Control Actions in place.

K. Limited Remediation Area - a portion of a Site for which active remediation would be difficult due to structural features or components such as underground piping, wiring, conduits, supporting structures, and other equipment which, if disturbed or removed, would substantially diminish the integrity of essential operating equipment and/or endanger the safety of workers or other individuals.

L. Health and Safety Plan – a plan to address risks that contaminants at the Site pose to workers engaged in remedial actions at the Site.

M. Seepage - all seeps, leaks, spills, and discharges from the wastewater facilities listed in Attachment A.

N. Site - area under investigation and, if needed, remediation, as specifically defined in each work plan submitted hereunder.

O. Permits - any regulatory authorization, amendment, permit, consent, certification or approval required to be issued by the Department for actions to be taken under this AOC.

V. Public Participation

A. Within 10 days of submission of a Site Report to the Department under Article VI A., the Department will set a public meeting date and notify PPLM. PPLM shall then, within 10 days, publish a notice of meeting in the local newspaper and the *Billings Gazette*. The notice must advise the public of the time and place of the community meeting and of a 30-day public comment period, which will extend at least 10 days following the meeting, the manner in which comments may be submitted, and the manner that copies of the Site Report may be reviewed. The Department shall post the Site Report on its website upon receipt of the report and shall conduct the community meeting. The Department will respond to substantive public comment as part of its action on the submission.

B. Within 10 days of submission of the Cleanup Criteria and Risk Assessment Report for each site to the Department under Article VI B., the Department will set a public meeting date and notify PPLM. PPLM shall then, within 10 days, publish a notice of meeting in the local newspaper and the *Billings Gazette*. The notice must advise the public of the time and place of the community meeting and of a 30-day public comment period, which will extend at least 10 days following the meeting, the manner in which comments may be submitted, and the manner that copies of the Report may be reviewed. The Department shall post the Report on its

website upon receipt of the report and shall conduct the community meeting. The Department will respond to substantive public comment as part of its actions on the submission.

C. Within 10 days of submission of the Remedy Evaluation Report for each site to the Department under Article VI C., the Department will set a public meeting date and notify PPLM. PPLM shall then, within 10 days, publish a notice of meeting in the local newspaper and the *Billings Gazette*. The notice must advise the public of the time and place of the community meeting and of a 30-day public comment period, which will extend at least 10 days following the meeting, the manner in which comments may be submitted, and the manner that copies of the Report may be reviewed. The Department shall post the Report on its website upon receipt of the report and shall conduct the community meeting. The Department will respond to substantive public comment as part of its action on the submission.

D. A single community meeting may be held to obtain comment on both the Cleanup Criteria and Risk Assessment Report and the Remedy Evaluation Report for an individual site if PPLM elects to submit these reports at the same time.

E. Within 10 days of submission of the Final Remediation Action Report for each site to the Department under Article VI E., the Department will set a public meeting date and notify PPLM. PPLM shall then, within 10 days, publish a notice of meeting in the local newspaper and the *Billings Gazette*. The notice must advise the public of the time and place of the community meeting and of a 30-day public comment period, which will extend at least 10 days following the meeting, the manner

in which comments may be submitted, and the manner that copies of the Report may be reviewed. The Department shall post the Report on its website upon receipt of the report and shall conduct the community meeting. The Department will respond to substantive public comment as part of its action on the submission.

F. Within 10 days of submission of a Facility Closure Plan to the Department under Article IX B., the Department will set a public meeting date and notify PPLM. PPLM shall then, within 10 days, publish a notice of meeting in the local newspaper and the *Billings Gazette*. The notice must advise the public of the time and place of the community meeting and of a 30-day public comment period, which will extend at least 10 days following the meeting, the manner in which comments may be submitted, and the manner that copies of the Plan may be reviewed. The Department shall post the Plan on its website upon receipt of the report and shall conduct the community meeting. The Department will respond to substantive public comment as part of its action on the submission.

VI. Investigation and Remediation

A. Site Report.

1. For each area covered by this AOC as stated under Article III, PPLM shall develop and submit to the Department a Site Report based on available data, on a schedule developed under Article X. If the parties are unable to agree on a schedule within a time deemed reasonable by the Department, the Department may unilaterally create and require a schedule, subject to PPLM's

right to invoke the Dispute Resolution provisions of Article XIII. The Site Report shall contain, at a minimum, the following:

(a) Identification of releases, if any, for each area and the source of the releases;

(b) A description of the investigations performed to date, including a list of the reports resulting from the investigations and a summary of the findings and results from the investigations;

(c) Water models and results of modeling.

(d) A description of completed and ongoing remedial actions (including the sampling parameters and frequency of any ongoing monitoring) and an effectiveness assessment of the remedial actions;

(e) For each area that contains a pond, a description of the construction of the ponds and of pond contents through time;

(f) For each pond, an estimate of seepage to ground water beneath the pond;

(g) Identification of data gaps, if any; and

(h) Recommendations for additional site characterization, if any.

2. The Department shall take action on the Site Report pursuant to Article XII.

3. After completion of the Site Report, if additional site characterization and/or ground water modeling of an area covered by this AOC as stated under Article III is deemed necessary by either PPLM with the Department's concurrence or the Department, PPLM shall submit a Site Characterization Work Plan for that area as provided in Article XI within a reasonable time frame required by the Department after consultation with PPLM, under Article X. The Site Characterization Work Plan shall set forth the scope of work and schedule for additional site investigation of an area covered by this AOC as stated under Article III. The Department shall take action on the Site Characterization Work Plan pursuant to Article XII.

4. PPLM shall implement the Site Characterization Work Plan as approved by the Department and shall, per the schedule in the Site Characterization Work Plan, submit a Supplemental Site Report to the Department. The Department shall take action on the Supplemental Site Report pursuant to Article XII.

B. Cleanup Criteria and Risk Assessment Report

1. PPLM shall submit a Cleanup Criteria and Risk Assessment Report for each of the four areas covered by this AOC as stated under Article III within a reasonable timeframe required by the Department after consultation with PPLM under Article X. The Cleanup Criteria and Risk Assessment Report may be submitted at the same time as the Remedy Evaluation Report required under Article VI C.

2. The Cleanup Criteria and Risk Assessment Report shall identify, at a minimum the following: a) the Cleanup Criteria for the COIs; b) identification of transport mechanisms for the COIs; c) identification of potential receptors; d) identification of exposure pathways; and e) if there are COIs, recommendation of any additional site characterization needed to determine what, if any, human health or environmental risks are posed by releases from the Site.

3. The Cleanup and Risk Assessment Report shall also include an assessment of the risk posed by COIs that exceed soil or water screening levels. The Cleanup and Risk Assessment Report shall also evaluate environmental and human health risks based on Cleanup Criteria defined in Article IV G.

4. The Department shall take action on the Cleanup Criteria and Risk Assessment Report per Article XII.

5. If the approved Cleanup Criteria and Risk Assessment Report concludes that remedial measures are necessary, i.e., the report identifies one or more COIs that exceed Cleanup Criteria as defined in Article IV G, PPLM shall submit a Remedy Evaluation Report as provided in Article VI C.

6. If the approved Cleanup Criteria and Risk Assessment Report concludes that the remedial measures are not necessary, i.e., the report does not identify COIs that exceed Cleanup Criteria as defined in Article IV G, the Department shall provide PPLM with a Closure Letter that states that, based upon the approved Report, there is no need for no further action. If future data indicate additional or unanticipated contamination, the Department may require additional action pursuant to Article VI G.

C. Remedy Evaluation Report

1. If the approved Cleanup Criteria and Risk Assessment Report shows that remedial measures are necessary at an area covered by this AOC, PPLM shall submit a Remedy Evaluation Report evaluating remedial alternatives for that area. The Remedy Evaluation Report shall be submitted within a reasonable

timeframe required by the Department after consultation with PPLM under Article X. The Remedy Evaluation Report may be submitted at the same time as the Cleanup Criteria and Risk Assessment Report required under Article VI B.

2. The Remedy Evaluation Report must contain the following:

(a) A description of the areas where remedial action is necessary;

(b) Identification and summary of feasible remedial alternatives. Feasible remedial alternatives include active remedial actions, and/or, where allowed by applicable law, control or elimination of pathways by use of Institutional Controls and with consideration of Reasonably Anticipated Future Uses of the PPLM property and/or of adjacent property where the landowner voluntarily agrees to implement institutional controls;

(c) Pros and cons of each remedial alternative and a summary of how each alternative satisfies the Cleanup Criteria defined in Article IV G;

(d) Identification of a preferred remedy, including rationale for such identification;

(e) Identification of sampling or treatability studies;

(f) A demonstration that exposures to risk to public health, safety, or welfare and the environment from the facility, not otherwise addressed pursuant to subparagraph (c) above, if any, will be substantially mitigated by the plan; and

(g) A Schedule for submission of a Remedial Design/ Remedial Action Work Plan.

3. The Department shall take action on the Remedy Evaluation Report per Article XII and shall select a remedy or a modified remedy as part of that Department action.

D. Implementation of Selected Remedy

1. Within a reasonable timeframe required by the Department after consultation with PPLM under Article X, PPLM shall submit a Remedial Design/Remedial Action Work Plan for implementing the selected remedy that shall include the following, as necessary:

(a) Narrative description and detailed design of the selected remedy;

(b) Description of any required compliance monitoring and confirmatory soil sampling;

(c) Description of emergency preparedness procedures;

(d) Health and Safety plan;

(e) Engineering certification of the remediation design;

(f) A timetable for implementing the remedy;

(g) A statement that applicable health and safety regulations will be met during implementation of the remediation proposal;

(h) A description of how short-term disturbances during implementation of the remediation proposal will be minimized and reclaimed;

(i) Identification of any Permits applicable under 75-20-401, MCA, necessary to conduct the proposed remedies;

(j) A commitment to provide an Annual Progress Report if implementation of the remedy exceeds one (1) year and periodic status reports as requested by the Department;

(k) Any anticipated Operation and Maintenance requirements;

(l) A commitment to obtain approval from the Department for any deviation from the approved work plan; and

(m) Such other information as is appropriate based on conditions unique to the Site.

2. The Department shall take action on the Remedial Design/Remedial Action Work Plan per Article XII.

3. PPLM shall implement the Remedial Action per the approved Remedial Design/Remedial Action Work Plan.

E. Final Remedial Action Report

1. Upon completion of the remedial measures per the approved Remedial Design/Remedial Action Work Plan, PPLM shall submit a Final Remedial Action Report that shall include the following, as necessary:

(a) Description, documentation and certification of completed remedial actions, including Institutional Controls, if any;

(b) Documentation of and justification for any deviation from the Remedial Design/Remedial Action Work Plan;

(c) A description and results of any Confirmatory Sampling;

(d) Photographs of the site during remediation;

(e) Location and description of any Limited Remediation Areas;

(f) Protocols for ensuring that Control Actions or Limited Remediation Areas are not impacted by any future construction or other Site disturbance;

(g) Protocols for periodic inspection of Control Actions and/or Limited Remediation Areas in any areas subject to natural disturbance (e.g. flooding); and

(h) Operation and Maintenance Plans, if necessary, including a map showing the Compliance Monitoring Points, sampling schedules and reporting procedures and calculations for financial assurance per Article VIII.

2. The Department shall take action on the Final Remedial Action Report pursuant to Article XII conditioned on acceptable financial assurance being provided pursuant to Article VIII.

VII. Interim Response Action

Where PPLM determines that prompt action is required at a Site, PPLM may undertake such action at any time, including prior to submitting a Site Report or a Site Characterization work plan. PPLM shall orally notify the Department if it intends to

implement an Interim Response Action, explaining the need for and nature of the Interim Response Action and a preliminary schedule of immediate actions to be taken. PPLM may proceed to take the action without first obtaining Department approval so long as PPLM submits an e-mail to the designated Department representative within 24 hours of initiating an Interim Response Action. Within 60 days after completing an Interim Response Action, PPLM shall submit a written report to the Department of the actions taken, and how the Interim Response Action shall relate to ongoing actions or actions to be taken under Article VI. The Department shall take action on the report pursuant to Article XII hereof. The Department may also require PPL to take additional Interim Response Action, Investigation and Remediation under Article VI, and/or follow-up monitoring.

VIII. Financial Assurance

To ensure the operation and maintenance of remedial and closure actions carried out under this order, PPLM shall provide financial assurance in the amount required by the Department and by any one method or combination of methods approved by the Department, and such approval shall not be unreasonably withheld, including but not limited to insurance, third-party guarantee, performance or other surety bond, or letter of credit. Such financial assurance shall be subject to annual review by the Department, with a comprehensive review at least every five years. The amount of the assurance may be increased or decreased based on the projected costs for the operation and maintenance of remedial and closure actions. Any disagreement between the parties with respect to the amount of the financial

assurance will be subject to the dispute resolution per Article XIII. The Department shall make available, through its website or similar means, the basis and/or calculations used to determine the amount of the financial assurance.

The parties agree that provision of the financial assurance will be addressed in phases, with the first phase addressing obligations for current and continuing remedial actions including monitoring, a second phase to incrementally address obligations resulting from actions taken pursuant to the process described in Article VI, and a third phase to address the Facility Closure Plan and amendments thereto addressed in Article IX. The parties agree that the first phase of financial assurance will be addressed by the parties upon execution of this AOC.

IX. Facility Closure

A. PPLM shall develop a Facility Closure Plan for each Site that provides for control, minimization or elimination, to the extent necessary to protect human health and the environment, of post-closure escape of COIs to the environment.

B. PPLM shall submit a proposed Facility Closure Plan for each Site under a schedule defined per Article X. Proposed Facility Closure Plans for each Site shall be submitted not later than 5 years from the date of execution of this AOC.

C. The Facility Closure Plan shall include proposed actions to inform and obtain input from the community consistent with Article V. The Department shall take action on the Facility Closure Plan pursuant to Article XII except that the 75 day

timeframes are extended to 90 days and the 30 day timeframes are extended to 60 days.

D. The Closure Plan shall include an estimate of closure and post-closure costs. PPLM shall provide financial assurance for these costs per Article VIII above.

E. PPLM shall update the approved Facility Closure Plan for each Site either every five years or when a major change or modification is made to the facility. The schedule for such updates shall be included in the Five-Year Plans and Annual Plans submitted under Article X. If the Department determines that there is significant public interest in the change or modification, it may seek public comment pursuant to the procedures contained in Article V F.

X. Annual Planning Meetings

The parties will meet at least annually to discuss the status of work under Article VI hereunder and planned future activities. Sixty days prior to each meeting PPLM shall develop and submit an updated Five-Year Plan and Annual Plan. The Five-Year Plan shall contain projected long-term schedules for actions under Article VI above. The Annual Plan shall contain the status of activities underway and detailed schedules for scope of work for projects to begin in that year, including schedules for completion of Site Reports. The Department shall take action under Article XII on the schedules submitted hereunder.

XI. Submissions

A. All work plans, reports, notices, inquiries, correspondence and other documents relating to this AOC and the implementation of its terms which are to be directed to either PPLM or the Department shall be sent in writing to the individuals designated in Article XVI . All work plans and reports shall be certified by a licensed professional engineer or qualified PPLM employee, consultant or representative.

B. All work plans, reports, notices, inquiries, correspondence and other documents relating to this AOC shall be transmitted in their entirety by first class mail, overnight delivery, facsimile, hand delivery or electronic correspondence [e-mail] where practicable. Any work plan, notice, report or other document required to be submitted to the Department or PPLM under this AOC shall be deemed to have been submitted on the date that it is received.

C. Any time period specified in this AOC within which a specific requirement is to be met shall begin to run on the date that PPLM or the Department, as appropriate, receives a work plan, report, notice, inquiry, correspondence or other document requiring the next action regardless of the date of submission of any such document.

XII. Department Action on Submissions

A. Unless otherwise expressly provided to the contrary in this Agreement, whenever PPLM is required under this AOC to submit a work plan, report or other document (the "Submission") to the Department for action, such submissions shall be processed in accordance with this Article. The Department shall make a good faith effort to respond in writing to any Work Plan submitted by PPLM hereunder within 30

days and any Report submitted by PPLM hereunder within 75 days, and identify the Department's substantive concerns, if any, or provide the Department's approval, conditional approval, or disapproval. The Department may, at its discretion provide conditional approval rather than disapproval, in order to avoid unnecessary delays.

B. If the Department disapproves of PPLM's Submission, the Department shall include a detailed statement of reasons supporting the disapproval. PPLM shall thereafter, within 60 days submit to the Department a response addressing the concerns identified by the Department. Within 30 days after the receipt of PPLM's response, the Department shall either (1) finally approve the submission as originally made or as revised, together with reasonable conditions, if any, dealing with concerns identified by the Department as part of the prior disapproval and PPLM's response thereto, or (2) disapprove the Submission, giving a detailed statement of its reasons in writing. However, the Department may, if it determines that additional public participation is required, treat its decision regarding PPLM's response as a new Submission for purposes of public participation under Paragraph A of this Article and under Article V.

C. If the Department fails to take action as stated above after receiving a Submission from PPLM pursuant to this AOC, the dispute resolution provisions of Article XIII shall be automatically triggered.

D. Not later than 30 days after receiving the Department's conditional approval or disapproval, PPLM may invoke dispute resolution in accordance with Article XIII.

E. Unless PPLM invokes dispute resolution process, PPLM shall:

1. comply with the work plan finally approved by the Department, including any conditions of approval; or

2. if the Department has disapproved the submission, submit a new work plan, report, or other document that remedies or corrects the deficiencies indicated in the disapproval. The submission shall then be reviewed pursuant to Paragraphs B through E of this Article.

XIII. Dispute Resolution

In the event of any dispute arising under this AOC, PPLM and the Department agree to attempt to resolve the dispute as follows:

A. PPLM may at any time formally invoke the dispute resolution process by sending written notice to the Department.

B. For a period of 30 days after the receipt of the written notice provided under subparagraph (A) of this paragraph, PPLM's Environmental Management Representative and the Department will confer in an attempt to resolve the dispute informally.

C. In the event the Parties are unable to resolve the dispute within the 30-day period above, a PPLM representative senior to the Environmental Management Representative and the Department's Permitting and Compliance Division

Administrator, shall confer for a period of up to 15 days in an attempt to resolve the dispute. In the event that the parties are unable to resolve the dispute within this period, the Department's Director shall issue a final decision.

D. The Parties may, by mutual agreement, extend any deadlines specified in this Article.

E. The Parties may, by mutual agreement, arrange for the participation of a neutral mediator in an attempt to resolve a dispute under the provisions of this Article.

F. During the pendency of any dispute, PPLM shall not be obligated to perform the action(s) in dispute except for interim response actions pursuant to Article VII.

G. Upon conclusion of the dispute resolution process, PPLM shall:

1. comply with the work plan finally approved by the Department, including any conditions of approval; or

2. if the Department has disapproved the submission, submit a new work plan, report, or other document that remedies or corrects the deficiencies indicated in the disapproval. The submission shall then be reviewed pursuant to paragraph B through E of Article XII.

XIV. Department's Right to take Action

Nothing in this AOC will prevent the Department from taking emergency action or requiring PPLM to take such action where the Department determines any condition, on, at, or from a Site poses an imminent threat to human health or the environment. Nothing in this AOC precludes the Department's actions to enforce compliance with statutes and regulations. Nothing in this AOC will prevent PPLM from defending against any such actions taken by the Department.

XV. Effect on Existing Obligations

Compliance with this AOC shall constitute the means, as between the parties, for attaining and assuring compliance with PPLM's obligation under its Certificate and water quality laws and rules within the scope of this AOC. Nothing set forth in this AOC is intended, or shall be construed, to authorize any violation of any statute or rule issued or administered by the Department.

XVI. Designated Contacts and Correspondence

A. The Department designates Tom Ring as its contact person under this AOC. PPLM designates Gordon Criswell as its contact person under this AOC.

B. All correspondence with the Department concerning this AOC will be addressed to:

Tom Ring
Montana Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

And copies to:

Warren McCullough
Montana Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Lisa Boettcher
Montana Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

C. All correspondence with the PPLM concerning this AOC will be addressed to:

Gordon Criswell
PPL Montana
303 North Broadway, Suite 400
Billings, MT 59101

And copies to:

Steve Christian
PPL Montana Colstrip Steam Electric Station
Warehouse and Willow Roads
P.O. Box 38
Colstrip, MT 59323-0038

Michael Holzwarth
PPL Montana Colstrip Steam Electric Station
Warehouse and Willow Roads
P.O. Box 38
Colstrip, MT 59323-0038

XVII. Force Majeure

A. In the event that PPLM is prevented from complying in a timely manner with any time limit or other requirement imposed in this AOC solely because of a strike, fire, flood, act of God, or other circumstances entirely beyond PPLM's control,

and which PPLM by the exercise of all reasonable diligence, is unable to prevent or mitigate, then PPLM may request from the Department an extension of time.

B. PPLM will be entitled to the benefits of this paragraph only if PPLM notifies the Department within 5 days by telephone and within 15 days in writing of the date it becomes aware of the event impeding performance. The written submission will include all related documentation, as well as a notarized affidavit from a responsible corporate official specifying the reasons for the delay, the expected duration of the delay, and the efforts which have been made and are being made by PPLM to minimize the length of the delay. The failure of PPLM to comply with the requirements of this paragraph specifically and in a timely fashion will render this paragraph null and of no effect as to the particular incident involved.

C. The Department will decide whether to grant all or part of the extension requested on the basis of all documentation submitted by PPLM and other information available to the Department. Only a letter that has been signed by the Department and its counsel will constitute an extension under this paragraph.

D. In any subsequent litigation, PPLM shall have the burden of proving that the Department's refusal to grant the requested extension was unreasonable based upon the information available to the Department.

XVIII. No Admission

No action taken by PPLM to contain or remove a release pursuant to this AOC may be construed as an admission of liability for the release.

XIX. Entire Order

This AOC shall constitute the entire agreement of the parties. No prior or contemporaneous communications or prior drafts shall be relevant or admissible for purposes of determining the meaning or extent of any provisions herein in any litigation or any other proceeding.

XX. Modifications

Except as provided in Paragraph XVII (Force Majeure), no changes, additions, modifications or amendments of this AOC shall be effective unless they are set out in writing and signed by the parties hereto.

XXI. Changes in Law

If new state laws or rules are enacted with standards different from those in existence today, the new standards shall apply prospectively to any remediation that has not been completed (i.e., the Final Remedial Action Plan Report has not been approved). Where remediation has been completed in compliance with the AOC, PPLM shall not be required to take additional remediation actions unless the Department demonstrates that new information has been obtained about a COI which revises exposure assumptions beyond the environmental and human health risk levels previously determined to be acceptable by the Department in the approved Human Health and Environmental Risk Assessment Report.

XXII. Enforcement

The parties agree that a violation of this AOC, including a failure to comply with any plans or schedules approved by the Department under the AOC, constitutes violation of an Order under Section 75-5-617, MCA, or Section 75-20-408, MCA.

XXIII. Binding Effect

This agreement shall bind these parties' successors.

IN WITNESS WHEREOF, the parties hereto have caused this AOC to be executed by the duly authorized representatives. The undersigned representatives of PPLM certify under penalty of law, that they are authorized to execute this AOC on behalf of PPLM; that PPLM consents to the entry of this AOC and that PPLM hereby knowingly waives its right to appeal this AOC under Section 75-5-612, MCA, or any other provision of law.

FOR PPL MONTANA, LLC:

OFFICE OF GENERAL COUNSEL
BY: [illegible]
DATE: 7/26/12

Peter J. Somovich

7/27/2012
Date

FOR THE MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY:

[signature]

8/3/2012
Date

Attachment A

Table 2-1
Units 1-4 Waste Water Facility Descriptions
[Evaluation of 2010 Hydrologic Monitoring Data from Colstrip Units 1 through 4 Process Pond System Colstrip Steam Electric Station. April 2011 Report.]

Attachment A

Table 2-1
Units 1-4 Waste Water Facility Descriptions
[Evaluation of 2010 Hydrologic Monitoring Data from Colstrip Units 1 through 4 Process Pond System Colstrip Steam Electric Station. April 2011 Report.]

Attachment A

PPL Montana, Colstrip Units 1-4 Waste Water Facility Descriptions

Revision 2, 4/17/2012

Waste Water Facility	Total Capacity (acre-feet)	Surface Area (acres)	Years in-service	Lining	Pond Function /Comments
Units 1 & 2 Flyash Pond	490	27	1975 - present	see below	Originally received scrubber slurry on an short-term basis until the solids could be dredged to the Stage I or Stage II Evaporation Ponds for final disposal. Clear water from this pond flowed into the Clearwell where it was sent back to the scrubbers for re-use. In 1997, an extension to the existing Sediment Retention Pond (SRP) area groundwater collection was installed in this area. In 2002 and 2003, additional expansion was added to the groundwater collection in this area.
Clearwell	49	3	1975 - present	Clay originally, double-lined RFP with leachate collection system installed in 2006	This section of the pond was removed from scrubber service in May of 2005. In 2006, this area was double-lined with 45 mil RFP and a leachate collection system installed between the liners and under both liners. This area is currently being used as the 1&2 Bottom Ash Pond Clearwell.
A side (west)	245	14	1975 - present	Clay	This section of the pond was removed from scrubber service in May of 2005. It is currently being used as a clean water storage pond (stormwater runoff, etc).
B side (east)	196	10	1975 - present	Clay originally, double-lined RFP with leachate collection system installed in 2004.	This section of the pond was double-lined with 45 mil RFP and a leachate collection system between the liners and under both liners and placed in-service in 2004. Normally this section of the pond receives scrubber return water from the STEP but can receive scrubber slurry during emergency conditions (i.e. scrubber slurry pipeline out of service). Periodically, solids will be dredged to Stage II Evaporation Pond for final disposal.
1&2 Scrubber Pipeline	na	na	1975 - present	Lined Steel Pipe, changed to HDPE in 2001	Transports scrubber slurry 3 miles from the scrubbers to the Stage I & II Evaporation ponds and returns clearwater back to the scrubbers. Line was originally lined-steel, changed out to HDPE in 2001. Failure of pipeline reported in 2000 (4), and 2002.
Units 1&2 Wash Tray Pond	50	8	1975 - 1980	Clay	Originally served as a scrubber pond for the wash tray loop. This pond was abandoned in 1980 when a separate loop for the scrubber wash tray was determined to be unnecessary. This area was converted to the 1&2 Bottom Ash Pond in 1988.
Units 1 & 2 Bottom Ash Pond w/ Clearwell	24	4	1975 - present	Clay, new clearwell double-lined RFP with leachate collection installed in 2006	Collection area for bottom ash and drain collection pit effluent. Clearwater flows into the clearwell section of this pond and is returned to the plant bottom ash system for re-use. In 1988, the bottom ash ponds were relocated to the area just north of the 1&2 Flyash Pond B side. In 2006, the 1&2 Flyash Pond Clearwell was double-lined with 45 mil RFP (with leachate collection between the liners and below both liners) and converted to the new 1&2 Bottom Ash Pond Clearwell.
Units 1 & 2 Brine Waste Disposal Ponds	60	4	1976 - 2005	Hypalon	Disposal location for brine from Wastewater Concentrator (RCC). The Wastewater Concentrator is no longer in-service (removed in 2000), so these ponds no longer collect brine.
D1 - D3 ponds	30	2	D1 & D2 1976 - 1994, D3 1980 - 1994	Hypalon	In 1980-1981, a failure of the D3 Pond was identified and repaired. In 1985, the Brine Pond Collection system was installed to collect impacted groundwater. These ponds were closed in 1994. The solids were removed and stored in F cell of the 3&4 EHP. The liner was also removed. The depressions from these ponds were left to provide a clean water collection area for precipitation which would allow for clean water recharge into the area.
D4 pond	30	2	1984 - 2005	Hypalon, with a underdrain system	This pond has an Underdrain Collection system and is used as a excess water storage area. In November 2005, a problem was identified with the liner and the pond was drained and removed from service. In 2006, the pond was closed with solids stored within a lined section and capped with a 45 mil RFP. In 2007, a soil cover was placed over the liner cap and seeding completed.
Units 1 & 2 Cooling Tower Blowdown Pond (Pond C)	400	20.5	1978 - present	Clay	Originally received cooling tower blowdown and raw water which was used as make-up to the Wastewater Concentrator. In 1987, the pond was split into two sections (North and South). The South Pond was relined with clay and erosion control was added in the form of a geotextile material and scoria.
North pond	195	10	1978 - present	Clay	In 2004, this pond began receiving groundwater collection water (Brine Pond and 10S/10M collection systems) to be used for a highway construction project. In 2005, raw water and storm water runoff was sent to this pond for additional raw water storage because of the anticipated drought conditions. This pond is used to store stormwater runoff for water management purposes.
South pond	205	10.5	1978 - present	Clay with geotextile and scoria on banks added for erosion control in 1987	Since 2000, this pond has been receiving raw water and storm water runoff to provide road watering for dust control. In 1999, a groundwater collection system was installed on the south end of this pond.

Attachment A

Revision 2, 4/17/2012

PPL Montana, Colstrip Units 1-4 Waste Water Facility Descriptions

Waste Water Facility	Total Capacity (acre-feet)	Surface Area (acres)	Years in-service	Lining	Pond Function /Comments
Units 1 & 2 Stage I Evaporation Pond (E Pond)	2350	114	1975 - 1997	Partial clay	Received scrubber slurry from Units 1&2 for final disposal. This pond was full in 1997 and the reclamation program for this pond was completed in 2002. There has been limited grazing on this reclamation since 2003. In 1995, a groundwater collection system was installed west of this pond. In 1999 and 2001, this west groundwater collection system was expanded. In 2000, a groundwater collection system was installed south of this pond. In 2006, wells were installed in the pond boundary to evaluate dewatering of the scrubber material.
Units 1 & 2 Stage II Evaporation Pond	4370	176	1992 - present	High Density Polyethylene (HDPE)	Receives scrubber slurry from Units 1&2 for final disposal. Started receiving slurry in 1994. Clearwater is collected in the Clearwell and returned to the scrubbers for re-use. In 1999, a groundwater collection system was installed east of this pond. This area's groundwater collection system has been expanded in recent years.
Cells A-E	3933	166	1992 - present	High Density Polyethylene (HDPE), B cell double-lined RFP with leachate collection in 2006	Cells A, E, and the clearwell were lined during initial construction. Cell B was double-lined with 45 mil RFP and a leachate collection system installed between the liners and under both liners. Cell B will become the new clearwell in 2011 after the paste plant is in operation. Cells C and D will be lined when needed. In 1999, D cell weirbox outlet developed a leak that was repaired. In 2000, the C cell weirbox outlet developed a leak that was repaired. in 2006, a small hole in the liner on the north side of E cell was found just under the water level. The water that leaked was recovered on the north side of the E/C dike. The hole was repaired.
Cell B	257	12.9	2008 - present	Double-lined RFP with leachate collection system	Receives clear water from the Paste Plant and returns it to the scrubbers for re-use.
Clearwell	437	10	1992 - present	High Density Polyethylene (HDPE)	Receives clear water from the settling portion of the Evaporation pond and returns it to the scrubbers for re-use. In October 2007, water was observed under the south side of this lined pond. A capture system was installed and repairs to the liner were completed in June 2008.
Cell D	621	22	2011-present	Double-lined RFP with leachate collection system	Recieves clear water or paste from the STEP system as needed.
Units 3 & 4 Auxiliary Scrubber Drain Pond (Duck Pond)	0.51	0.23	1983 - present	Hypalon	Miscellaneous scrubber building drains.
Units 3 & 4 North Plant Area Drain Pond	4.5	1	1984 - present	Hypalon originally, now High Density Polyethylene (HDPE)	Receives raw water pretreatment filter backwash, cooling tower overflow, and miscellaneous north plant drainage. Water from this pond is sent to the bottom ash system or the circulating water system.
Units 3 & 4 Wash Tray Pond	85	8	1983 - 1995	Clay In 1988 the bank on the southern half of the pond was covered with geotextile and baked shale to reduce bank erosion.	Originally served as a scrubber pond for the wash tray loop. This pond was abandoned in 1995 when a separate loop for the scrubber wash tray was determined to be unnecessary. The wash tray loop is now fed from the EHP pond return water and the bleed goes to the scrubber recycle tank. The pond remains, but no longer utilized.
Units 3 & 4 Scrubber Drain Collection Pond. (DC Pond)	72	6	1983 - 1999	Clay	Received miscellaneous scrubber plant drains and washdown. This pond received scrubber slurry at times. In 1989, this pond was relined with 3" of clay and the east and south banks were shored up to address dredging and bank erosion issues. An access ramp was also added. In 1999, this pond was taken out of service and the scrubber drains/washdown were sent to the 3&4 EHP. In 2009, this pond was used to store the cleanup of materials from the 1&2 bottom ash secondary settling pond. The solids remain in this pond, but the water was pumped back to the 1&2 B Flyash pond. The pond remains, but not currently utilized.
Units 3 & 4 Bottom Ash Pond w/ Clearwell	38.4	7.6	1983 - present	Clay	Collection area for bottom ash and main plant sumps. Clearwater flows into the clearwell section of this pond and is returned to the plant bottom ash system for re-use. In 1991, the initial settlement cells of this pond were relined with clay and reshaped. In 1999, a groundwater collection system was installed in this area. In 2002 and 2003, this groundwater collection system was expanded.

Attachment A					Revision 2, 4/17/2012
PPL Montana, Colstrip Units 1-4 Waste Water Facility Descriptions					
Waste Water Facility	Total Capacity (acre-feet)	Surface Area (acres)	Years in-service	Lining	Pond Function /Comments
Units 3 & 4 Effluent Holding Pond w/Clearwell (EHP, 5-6 Pond)	17000	367	1983 - present	A slurry wall to bedrock on the perimeter of the pond with clay over shale and sandstone outcrops within the pond perimeter	Receives Units 3 & 4 scrubber slurry. Clearwater flows into the clearwell and is returned to the scrubbers for re-use. In 1989, a groundwater interception trench was installed down gradient of the main dam. In 2000, 2001, 2002 and 2004, the groundwater collection system downgradient of the main dam was expanded. In 1999, a gasket failure on the interception trench system failed, resulting in a leak that was repaired. Also in 1999, a seep was observed downgradient of the Saddle Dam and a Saddle Dam groundwater collection system was installed in 2000. This Saddle Dam groundwater collection system was expanded in 2001. In late 2003, the scrubber slurry was routed to a paste plant for thickening. The paste was then sent to the pond at about 65% solids and the clearwater was sent to the clearwell. The paste strategy was put in place to help reduce the potential for seepage from the pond. In 2002, a groundwater collection system was installed west of this pond. In 2003, 2005, and 2008 the west side groundwater collection system was expanded. In 2009, groundwater collection was expanded on the east side near well 560A.
Units 3 & 4 Effluent Holding Pond w/Clearwell (EHP, 5-6 Pond) continued	410	31.4	2008 - present	Clearwell was relocated to B cell in 2009, using 10'+ of dried paste as the bottom liner and 45 mil RFP as the upper liner with leachate collection between.	In 2004, a groundwater collection system was installed in South Fork Cow Creek (south of this pond). In 2005, the South Fork Cow Creek groundwater collection system was expanded and a groundwater collection system was installed south of the 3&4 EHP. Also in 2005, a 45 mil RFP liner (with underdrain system) was added to F cell of this pond for impacted groundwater collection storage and water management. In 2009, the clearwell was relocated to B cell (which contains dry paste) and lined with 45 mil RFP and underdrain collection system.
Units 3 & 4 Effluent Holding Pond cell F (EHP, 5-6 Pond) continued	520	53.6	2005 - present	F cell was lined in 2005 using 10'+ of dried paste as the bottom liner and 45 mil RFP as the upper liner with leachate collection between. It is a water storeage cell	In 2004, a groundwater collection system was installed in South Fork Cow Creek (south of this pond). In 2005, the South Fork Cow Creek groundwater collection system was expanded and a groundwater collection system was installed south of the 3&4 EHP. Also in 2005, a 45 mil RFP liner (with underdrain system) was added to F cell of this pond for impacted groundwater collection storage and water management. In 2009, the clearwell was relocated to B cell (which contains dry paste) and lined with 45 mil RFP and underdrain collection system.
Units 3&4 Scrubber - EHP Pipeline	na	na	1983 - present	na	Transports scrubber slurry 3 miles from the scrubbers to the EHP and returns clearwater back to the scrubbers. Line was originally fiberglass, changed out to HDPE from 1988 - 1998. Failure of pipeline reported in 1987, 1988 (3), 1989, 1990 (2), 1992, 1993 (7), 1994 (2), 1995, 1997, and 2000. In 2000, a groundwater collection system was installed downgradient from Drain Pit #3 along the pipeline. In 2001, a groundwater collection system was installed downgradient from Drain Pit #5 along the pipeline.
Units 1 - 4 Sediment Retention Pond (Thompson Lake)	16	3.6	1975 - present	Originally Hypalon lined, then relined with High Density Polyethylene (HDPE) in 1989.	Receives plant storm water drainage and occasional scrubber overflow or cooling tower basin overflow. This water is pumped to the 1&2 Flyash Pond A or B side, depending on quality. In 1989, this pond was relined with HDPE to address gas bubbles that were causing the original hypalon liner to rise and risk its integrity. In 1995, a groundwater collection system was installed in this area.
Units 1 - 4 North Plant Sediment Retention Pond	4	0.6	1975 - present	Clay	Receives surface drainage from north plant and warehouse areas.
Units 1 - 4 Surge Pond (Castle Rock Lake)	Summer elevation 3280, Winter elevation 3284		1975 - present	None, concrete cutoff wall on dam.	Fresh water supply from the Yellowstone River for plant and town.
Unit 4 Cooling Tower Canal	na	na	1985 - present	concrete	Route circulating water from Unit 4 cooling tower to the circulating water pumphouse. In 1989, frost damage occurred to the concrete, resulting in replacement of the original canal to a pre-fabbed underground concrete structure.

Attachment B

Updated Summary of Reports

PPL Montana, Colstrip Units 1-4

Summary of Reports Completed on Assessment, Modeling, and Abatement Actions Completed Since 2004

Area	Report	Date
All Areas	Annual Water Monitoring Reports	each year
All Areas	Water Resources Monitoring Plan Rev. 4	May-08
All Areas	Water Resources Monitoring Plan Rev. 5	Sep-11
Plant Site	Work Plan for Ground Water Model Development	Apr-05
Plant Site	Plant Site Area Groundwater Model	Dec-05
Plant Site	East Fork Armells Creek Synoptic Run Report	Oct-05
Plant Site	Units 1&2 D4 Brine Pond Work Plan	Nov-05
Plant Site	Report on Initial Ground Water Model Report	Jan-06
Plant Site	800 Series Wells Work Plan	Mar-06
Plant Site	Units 1&2 D4 Brine Pond Closure	Aug-06
Plant Site	68A Capture System Work Plan	Oct-06
Plant Site	North /Northwest Plantsite Groundwater Evaluation Work Plan	Oct-06
Plant Site	Units 1&2 A Flyash Pond Storage Strategy	Oct-06
Plant Site	31M Capture System Expansion Work Plan	Mar-07
Plant Site	31M Capture System Expansion Work Plan Addendum	May-07
Plant Site	Trailer Court Area Monitoring & Capture Work Plan	Aug-07
Plant Site	Units 3&4 Neutralization Sump Work Plan	Nov-07
Plant Site	East Fork Armells Creek Synoptic Run Report	Oct-07
Plant Site	Plant Site - 2004, 2005, 2006 Update Report	Oct-07
Plant Site	Trailer Court Area Monitoring & Capture Work Plan Update	Mar-08
Plant Site	2008 Armells Creek Synoptic Run Work Plan	Mar-08
Plant Site	41SP Area Work Plan	Apr-08
Plant Site	41SP Area Work Plan Supplement	May-08
Plant Site	2008 Armells Creek Synoptic Run Report	Jul-08
Plant Site	OT-7, OT-12, & CA-19 Work Plan	Jul-08
Plant Site	42S Area Work Plan	Sep-08
Plant Site	3&4 Bottom Ash Pond Oil Cleanup	Nov-08
Plant Site	Units 3&4 Neutralization Sump Report	Mar-09
Plant Site	41SP Area Geophysics Work Plan	Mar-09
Plant Site	2009 Armells Creek Synoptic Run Work Plan	Mar-09
Plant Site	41SP Report	Jun-09
Plant Site	2009 Armells Creek Synoptic Run Report	Jul-09
Plant Site	3&4 Bottom Ash Pond Hydrocarbon Sampling	Jul-09
Plant Site	41SP Capture Work Plan	Sep-09
Plant Site	Trailer Park Report	Jan-10
Plant Site	Colstrip Units 3 & 4 Bottom Ash Clearwell Sampling	Jan-10
Plant Site	Work Plan for 2010 synoptic run East Fork Armells Creek	Feb-12
Plant Site	2010 East Fork Armells Creek Synoptic Run and Groundwater Sampling Report	Jul-10
Plant Site	Selenium analysis 2007 info	Jul-10

PPL Montana, Colstrip Units 1-4

Summary of Reports Completed on Assessment, Modeling, and Abatement Actions Completed Since 2004

Area	Report	Date
Plant Site	Colstrip SES Area Potentiometric Maps	Nov-10
Plant Site	2011 Work Plan for the Synoptic Run EFAC	Feb-11
Plant Site	Wash Tray Pond Work Plan	Jun-11
Plant Site	Colstrip SES Units 3 & 4 Wash Tray Evaluation	Jun-11
Plant Site	WECO haul road widening	Jul-11
Plant Site	PPL Colstrip SES Units 1-4 2011 East Fork Armells Creek Synoptic Run	Sep-11
Plant Site	2011 Colstrip SES Units 3 and 4 Technical Memo on Well 112R	Dec-11
Plant Site	WECO haul road widening	Jan-12
Plant Site	Colstrip SES 2012 Synoptic Run EFAC Work Plan	Mar-12
lant Site and Units 1&2 Stage I&II Evap Ponds	Data Analysis and Statistical Evaluation of Unimpacted Groundwater Quality	May-07
lant Site and Units 1&2 Stage I&II Evap Ponds	Plantsite and Stage I/II Evaporation Pond Conceptual Model Update Report	Dec-07
Evaporation Ponds	Preliminary Site Conceptual Model Report	Jul-04
Units 1&2 Stage I & II Evaporation Ponds	Report on Initial Ground Water Model	Mar-05
Units 1&2 Stage I & II Evaporation Ponds	Groundwater Collection Wells Work Plan	Apr-05
Units 1&2 Stage I & II Evaporation Ponds	Stage I Evap Pond Water in Solids Investigation Work Plan	Apr-05
Units 1&2 Stage I & II Evaporation Ponds	Water Balance Study on Reclamation Cap Work Plan	May-05
Units 1&2 Stage I & II Evaporation Ponds	Stage I Evaporation Pond Dewatering Test Work Plan	Aug-05
Units 1&2 Stage I & II Evaporation Ponds	Additional Monitoring near old B&R Work Plan	Feb-06
Units 1&2 Stage I & II Evaporation Ponds	Moose Lodge Well Work Plan	Feb-06
Units 1&2 Stage I & II Evaporation Ponds	STEP E Cell/C Cell seepage control	Feb-06
Units 1&2 Stage I & II Evaporation Ponds	STEP Liner Inspection Work Plan	Mar-06
Units 1&2 Stage I & II Evaporation Ponds	Colstrip 1&2 Scrubber Slurry Paste Process Report	Mar-06
Units 1&2 Stage I & II Evaporation Ponds	STEP Liner Leak Detection Report	Apr-06

PPL Montana, Colstrip Units 1-4

Summary of Reports Completed on Assessment, Modeling, and Abatement Actions Completed Since 2004

Area	Report	Date
Units 1&2 Stage I & II Evaporation Ponds	906D Capture Work Plan	Oct-06
Units 1&2 Stage I & II Evaporation Ponds	Stage I Pond Dewatering Work Plan	Oct-06
Units 1&2 Stage I & II Evaporation Ponds	368D Area Capture Work Plan	Oct-06
Units 1&2 Stage I & II Evaporation Ponds	958D Capture Work Plan	Oct-06
Units 1&2 Stage I & II Evaporation Ponds	STEP A Cell Liner Repair	Dec-06
Units 1&2 Stage I & II Evaporation Ponds	Additional Monitoring in 366S Area Work Plan	May-07
Units 1&2 Stage I & II Evaporation Ponds	Colstrip 1&2 Scrubber Slurry Paste Process Report	May-07
Units 1&2 Stage I & II Evaporation Ponds	Human Health Risk Assessment Work Plan	May-07
Units 1&2 Stage I & II Evaporation Ponds	Ecological Risk Assessment Work Plan	May-07
Units 1&2 Stage I & II Evaporation Ponds	STEP Main Dam Sump Area Work Plan	Sep-07
Units 1&2 Stage I & II Evaporation Ponds	STEP Clearwell Work Plan	Oct-07
Units 1&2 Stage I & II Evaporation Ponds	Stage I&II Evaporation Ponds - 2004, 2005, 2006 Update Report	Oct-07
Units 1&2 Stage I & II Evaporation Ponds	STEP (906D Area) Work Plan	Oct-07
Units 1&2 Stage I & II Evaporation Ponds	377A Area Work Plan	Dec-07
Units 1&2 Stage I & II Evaporation Ponds	STEP Clearwell Liner Repair Work Plan	Mar-08
Units 1&2 Stage I & II Evaporation Ponds	Stage I&II Evaporation Ponds Expanded Groundwater Model Work Plan	Jul-08
Units 1&2 Stage I & II Evaporation Ponds	377A Area Expanded Work Plan	Jul-08
Units 1&2 Stage I & II Evaporation Ponds	Stage I Evaporation Pond Cap Report	Jul-08
Units 1&2 Stage I & II Evaporation Ponds	STEP B Cell Upper Liner Repair	Jan-09

PPL Montana, Colstrip Units 1-4

Summary of Reports Completed on Assessment, Modeling, and Abatement Actions Completed Since 2004

Area	Report	Date
Units 1&2 Stage I & II Evaporation Ponds	STEP Area Groundwater Collection Well Spill Report	Jan-09
Units 1&2 Stage I & II Evaporation Ponds	366S Area Report	Feb-09
Units 1&2 Stage I & II Evaporation Ponds	906D Area Report	Mar-09
Units 1&2 Stage I & II Evaporation Ponds	Geophysics Work Plan in 377A Area	Mar-09
Units 1&2 Stage I & II Evaporation Ponds	377A Area Report	May-09
Units 1&2 Stage I & II Evaporation Ponds	SOEP Cap Work Plans	May-09
Units 1&2 Stage I & II Evaporation Ponds	Vegetation Study 2009 Report	Jan-10
Units 1&2 Stage I & II Evaporation Ponds	Colstrip SES STEP 2003D final technical Memorandum 2010	Jul-10
Units 1&2 Stage I & II Evaporation Ponds	Work plan for Colstrip SES STEP 2003D well area	Jul-10
Units 1&2 Stage I & II Evaporation Ponds	2010 Work Plan for the Colstrip SES STEP cell "C" monitoring wells	Sep-10
Units 1&2 Stage I & II Evaporation Ponds	Colstrip SES STEP technical memo from the pump testing of well 958D	Oct-10
Units 1&2 Stage I & II Evaporation Ponds	Colstrip SES Units 1 & 2 technical Memo on 2003D conversion and 2008D installation	Nov-10
Units 1&2 Stage I & II Evaporation Ponds	Colstrip SES Units 1 & 2 technical Memo on 2003D conversion and 2008D installation	Dec-10
Units 1&2 Stage I & II Evaporation Ponds	Colstrip Units 12 STEP Technical Memorandum for well 2012D installation	Dec-10
Units 1&2 Stage I & II Evaporation Ponds	Colstrip Units 12 STEP future cell C monitoring well technical memorandum	Dec-10
Units 1&2 Stage I & II Evaporation Ponds	Vegetation Study 2010 Report	Feb-11
Units 1&2 Stage I & II Evaporation Ponds	Stage One Pond 2010 Soil Cap Study	Feb-11
Units 1&2 Stage I & II Evaporation Ponds	Colstrip SES Units 1 and 2 work plan for the 985A area	May-11
Units 1&2 Stage I & II Evaporation Ponds	Colstrip SES Units 1&2 STEP D Cell Work Plan	Jun-11
Units 1&2 Stage I & II Evaporation Ponds	2011 Colstrip SES Units 1 & 2 985A Technical Memorandum	Oct-11

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Summary of Reports Completed on Assessment, Modeling, and Abatement Actions Completed Since 2004

Area	Report	Date
Units 1&2 Stage I & II Evaporation Ponds	2011 Colstrip SES Units 1 & 2 STEP 985A Work Plan	Nov-11
Units 1&2 Stage I & II Evaporation Ponds	Stage One Evaporation Pond 2011 Soil Cap Study	Mar-12
Units 1&2 Stage I & II Evaporation Ponds	Vegetation Study 2011 Report	Mar-12
Units 3&4 EHP	Hydrologic/Water Quality Study of Cow and Pony Creek	each year
Units 3&4 EHP	Groundwater Collection Storage Pond Work Plan	May-05
Units 3&4 EHP	Additional Monitoring in South Fork Cow Creek Work Plan	Jun-05
Units 3&4 EHP	Soil & Vegetation Study Work Plan	Jul-05
Units 3&4 EHP	Preliminary Site Conceptual Model Report	Dec-05
Units 3&4 EHP	Additional Wells (DP-5 & 586M Areas) Work Plan	Apr-06
Units 3&4 EHP	SP-15 North Capture System Expansion Work Plan	May-06
Units 3&4 EHP	South Fork Cow Creek Capture System Expansion Work Plan	Jul-06
Units 3&4 EHP	Monthly 3&4 EHP Seep Update Reports	2/2005 - 12/2006
Units 3&4 EHP	Numerical Model Work Plan	Apr-07
Units 3&4 EHP	North SP-15 Area Work Plan	Sep-07
Units 3&4 EHP	Saddle Dam Area Work Plan	Oct-07
Units 3&4 EHP	Units 3&4 EHP Data Report 2004 - 2006	Oct-07
Units 3&4 EHP	Revised Saddle Dam Work Plan	Oct-07
Units 3&4 EHP	Revised North SP-15 Area Work Plan	Oct-07
Units 3&4 EHP	560A Area Work Plan	Dec-07
Units 3&4 EHP	EHP Main Dam Abutment Work Plan	Mar-08
Units 3&4 EHP	EHP Paste Infiltration Test Report	Apr-08
Units 3&4 EHP	560A Area Expanded Investigation Work Plan	May-08
Units 3&4 EHP	624D Area Work Plan	Jul-08
Units 3&4 EHP	North SP-15 Report	Aug-08
Units 3&4 EHP	624D Area Groundwater Work Plan	Aug-08
Units 3&4 EHP	SP-15 North/South Work Plan	Sep-08
Units 3&4 EHP	581D Work Plan	Sep-08
Units 3&4 EHP	WA-136 Area Work Plan	Sep-08
Units 3&4 EHP	560A Area Status Report	Nov-08
Units 3&4 EHP	624D Area Status Report	Nov-08
Units 3&4 EHP	3&4 EHP Paste Seal Test Report	Nov-08
Units 3&4 EHP	602S Area Work Plan	Feb-09
Units 3&4 EHP	EHP Area Work Plans	Mar-09
Units 3&4 EHP	North and South SP15 Report	Mar-09
Units 3&4 EHP	Plant Identification Study	May-09
Units 3&4 EHP	560A/1051A Status Report	Jun-09

PPL Montana, Colstrip Units 1-4

Summary of Reports Completed on Assessment, Modeling, and Abatement Actions Completed Since 2004

Area	Report	Date
Units 3&4 EHP	Boron in Vegetation and Cattle Grazing	Jun-09
Units 3&4 EHP	Well Installation, Testing, and Sampling - PW 734, PW 735, and PW 736	Jul-09
Units 3&4 EHP	Well 581D Abandonment/Replacement	Sep-09
Units 3&4 EHP	EHP Area Geophysics and Joint Trent Analysis Work Plan	Sep-09
Units 3&4 EHP	625A/626A Work Plan	Sep-09
Units 3&4 EHP	560A/1051A Additional Work - Work Plan	Sep-09
Units 3&4 EHP	602S Area 2009 Report	Nov-09
Units 3&4 EHP	1073A Work Plan	Nov-09
Units 3&4 EHP	1051A Area 2009 Report	Dec-09
Units 3&4 EHP	Vegetation Study 2009 Report	Jan-10
Units 3&4 EHP	1073A Area Capture Options	Jan-10
Units 3&4 EHP	560A/1051 Area Status Memo	Jan-10
Units 3&4 EHP	Colstrip Units 3 & 4 EHP 560A/1051 Area Status Memo	Jan-10