Department of Environmental Quality

To protect, conserve and enhance the quality of Wyoming's environment for the benefit of current and future generations.

Dave Freudenthal, Governor

John Corra, Director

October 23, 2007

Ms. Pauline Romano
USEPA Region 8
1595 Wynkoop Street
Denver, CO 80202-1129

RE: 3RD QUARTER PROGRESS REPORT: PI978078-01 – "WATERSHED-BASED WYPDES PERMITTING FOR THE POWDER RIVER BASIN, WYOMING"

Dear Ms. Romano:

Please find attached the July 2007- September 2007 quarterly progress report for the grant identified above. Please also find enclosed a data CD containing all information posted on the Wyoming Department of Environmental Quality's website regarding watershed-based permitting, as requested.

If you have any questions, please contact me at 307-777-6682, or via e-mail at kshrev@state.wy.us.

Sincerely,

Kathy Shreve
Environmental Program Principal (Grant Manager)
Wyoming Department of Environmental Quality
Water Quality Division
WYPDES Permitting Section

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▷ 6

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NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION

Wyoming Department of Environmental Quality (WDEQ), Water Quality Division, WYPDES Permitting Program
Watershed-Based Permitting for the Powder River Basin, Wyoming
State Innovation Grant Program – PI978078-01
Quarterly Report
July 2007 – September 2007

Project Synopsis:

During this period, no additional meetings were held with any of the stakeholders in any of the drainages in which watershed-based permitting has already been initiated (Lower Tongue River, Crazy Woman Creek, and Dead Horse Creek), or for which watershed-based permits have been advertised in public notice but not issued (Clear Creek and Fence Creek). One reason is that the three watershed-based permits/plans that were originally issued (Pumpkin Creek, Willow Creek, and Fourmile Creek) are currently under appeal. WDEQ administrators and other higher-level personnel have deemed it prudent to await the outcome of these appeals before issuing other watershed-based permits, in the hope that any changes that may be required as the result of the appeals may be addressed prior to issuance of any new watershed-based permit. Another reason is that the appeals challenge the authority of the WDEQ to issue watershed permits. Currently, these appeals are in the deposition phase.

An additional reason that no further action has been taken on pending watershed permits is that the WDEQ is currently considering restructuring the watershed-based permitting process, as the current process may be somewhat redundant, and there may be some efficiencies, now that the WDEQ has experienced several of these processes in various drainages, that could potentially be incorporated into the watershed-based permitting process.

However, some progress has been made in other areas of the proposal.

1. The Powder River Assimilative Capacity Allocation Process has been implemented. Several operators have completed the registration process, which involves submitting ArcGIS compatible shapefiles of their leaseholdings, and having their percentage of total Powder River Basin coal calculated. The first WYPDES permit that includes assimilative capacity requirements is currently being advertised in public notice. Within the next few weeks, the WDEQ expects to have a geodatabase completed that will allow tracking of credits issued and credits used that operators can access on-line. The first individual permits that contain assimilative capacity requirements are currently being advertised in public notice.

2. The WDEQ has begun the process of developing protocols to allow the use of existing data available in the WYPDES database and from USGS in an ArcHydro model.

3. The WDEQ has investigated the use of an additional tool, a software package called Feature Analyst, that would allow the use of color infared raster images in identifying downstream irrigation uses. Once identified, the irrigated areas could then be automatically digitized, polygons extracted, and shapefiles created that could be imported into GIS compatible software for mapping, identification, and quantification purposes. The advantage of utilizing Feature Analyst is that the

WDEQ would no longer be required to rely on anecdotal information, or information from other agencies that only identifies a subset of the information being sought by the WDEQ. In addition, by utilizing an automated method of digitalization, a great deal of subjectivity is removed from the identification process, the process is greatly sped up, and WDEQ personnel are freed to work on other projects that cannot be automated.

4. As channel surveys quantifying CBM discharge flows that could be handled in several drainages (Fence Creek and Lower Tongue River drainages) have been completed, the WDEQ requested the channel survey contractor to attempt to use the data collected to develop a model that could be utilized in lieu of the time, resource, and labor-intensive channel survey methodology that was used to obtain allowable flows in the Fence Creek and Lower Tongue River drainages. This modeling work was completed as of July 31, 2007. Preliminary results from the modeling work are promising, and the WDEQ is in the process of trying to obtain additional field data to corroborate the model.

Narrative Discussion:

Currently, the WDEQ is brainstorming on restructuring the watershed-based permitting process to reduce redundancy and streamline the process. However, due to the ongoing appeals on the watershed permits that were issued, the restructuring process is not expected to be complete for another 2 or 3 months.

Watershed permitting may also be further delayed due to some other ongoing appeals between Wyoming and Montana. Currently, the two states are working towards an agreement. Based upon the potential agreement, or if no agreement can be reached, widespread changes to watershed permitting and CBM permitting in general within the state of Wyoming may be necessary. However, it is too early in the appeal process to speculate on what those changes might be and how they might impact the WYPDES Program.

Work continues on the ArcHydro modeling front. However, it may still be necessary, based on the complexity of the modeling effort, which still remains to be seen, to hire either a contractor to develop the model, or a consultant to aid WDEQ personnel in model development.

Based upon uncertainties due to the ongoing appeals and the fledgling modeling effort, the WDEQ forsees an increasing possibility that it may be necessary to extend the grant period and restructure the grant. However, at this point in time, it is still too early to speculate on what the restructuring might entail, and how long an extension might be necessary.

Please note that, as requested, all information currently available on-line at the WDEQ's CBM watershed permitting page has been copied onto the enclosed CDs. Detailed information, such as comments received on any particular watershed general permit, meeting summaries for any particular stakeholder meeting, channel survey information, and so on, are included in this information.

Additional expenditures will be reported in the next quarterly report, as additional modeling monies have already been spent in the fourth quarter, 2007 period.

Project Tasks and Milestones

The following is a list of project goals, descriptions, milestones, and timelines.

Task/Goal	Description	Start Date	End Date	Status/Comments
Baseline Water Quality Assessment	Assess available water quality data and channel morphology	11/9/2004	Ongoing throughout project	Each watershed incorporated into watershed permitting requires separate analysis as to availability and type of water quality data available/needed.
Identify water quality parameters	Identify water quality parameters first to exhibit a detectable response to effluent discharges, allowing for efficient assessment of model inputs and needed effluent limits (discharge limitations)	11/9/2004	Ongoing throughout project	Each watershed incorporated into watershed permitting requirr separate analysis as to parameters of concern and allowable loads/concentrations.
Compile/interpret data gathered as a result of completion of above two tasks.		11/9/2004	Ongoing throughout project	Each watershed incorporated into watershed permitting requires separate water quality data analysis.
Develop ArcHydro data format protocols	Clarify inputs needed for ArcHydro model and data transfer protocols from other data sources (WYPDES database, USGS, NOAA)	10/1/2007	1/30/2008	Kathy Shreve has attended ArcHydro training to assess use as modeling tool. She is currently in the process of assessing data needs and data transfer protocols needed to develop an ArcHydro model. Additional outside assistance may be necessary to complete model development. However, different drainages may require use of different data (different consitituents, different available data types) which may require developing new data format protocols.
Develop transferrable ArcHydro model to quanitfy CBM impacts within the Powder River Basin.	Develop a modeling tool that will allow assessment of Powder River Basin end goals (flow, concentration, and load)	2/1/2008	6/30/2008	This portion of the proposal may proceed sooner than anticipated, depending on how soon data format protocols can be developed.
Quantify existing and reasonably foreseeable potential future industrial development in PRB of Wyoming	Acquire future CBM development forecasts, use forecasts to model development impacts	3/22/2007 (data obtained from BLM)	6/14/2007	CBM development forecasts obtained from BLM, Kathy Shreve developed spreadsheet model that combines water chemistry reported in the course of WYPDES permit self-reporting, GIS to assign estimated water quality data to CBM wells on a spatial basis, reported ambient water quality concentration and flow at USGS stations within the Powder River Basin, and basic mass balance equations to model flow and concentration in time series to obtain modeled CBM impacts within the Powder River Basin.

Task/Goal	Description	Start Date	End Date	Status/Comments
Identify potential assimilative capacity within the Powder River Basin		11/9/2004	10/9/2007	Assimilative capacity (available loading) for dissolved sodium and total dissolved solids calculations complete.
Conceptual outline for assimilative capacity allocation		11/9/2004	7/14/2006	Concept document for Powder River assimilative capacity process posted on WDEQ website.
Permitting approach/mechanism for Powder River point source discharges	Could include general permits, sychronized permitting, assimilative capacity.	11/9/2004	7/14/2006	Includes general watershed permitting/permit plans under which individual permits will be issued and assimilative capacity.
Implement Powder River assimilative capacity approach		10/1/2007	Ongoing	The WDEQ has contracted with the Wyoming Geological Survey to calculate total coal resources within the Powder River basin (cubic tons), and each CBM operator's portion (percent) of the coal resource utilizing GIS and leasehold shapefile submittals from CBM operators. The WDEQ has developed a geodatabase to track assimilative capacity credits, and plans to post the geodatabase using a GIS server to allow all operators access.
Watershed General permit implementation	Implement watershed-based general CBM permitting within the Powder River Basin	1/11/2005	Ongoing	To date, the WDEQ has issued watershed-based permits/plans for three watersheds (Pumpkin, Willow, and Fourmile Creeks). All of these permits/plans are under appeal. Watershed permits are pending for the following drainages: Clear Creek, Fence Creek, (draft permit advertised in public notice) Lower Tongue River, Crazy Woman Creek, and Dead Horse Creek (draft permit under development). The following drainages are also slated for watershed -based permitting implementation: Wild Horse Creek, Bitter Creek, LX Bar Creek, SA Creek, Flying E Creek, Indian Creek, Kinney Draw, Coal Gulch, Deadhorse Creek, and numerous small, unnamed ephemeral tributaries of the Powder River

Financial Report

At this point, the only expeditures have been for modeling efforts directed towards developing a model that would allow for rapid and efficient estimation of allowable CBM discharge flows.

Budget Category	Approved Budget	Spent this Quarter	Cumulative to Date
Travel	$ 8,000.00		$ 0.0
Contracts	$ 190,000.00	$ 7,822.00	$ 7,822.00
Total		$ 7,822.00	$ 7,822.00