

US EPA ARCHIVE DOCUMENT

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
January 1 – March 31, 2009

Project Synopsis:

WDEQ is well underway in resuming watershed-based permitting, the Bitter Creek General Permit is nearly ready for advertisement in public notice, and preliminary information gathering has begun for Wild Horse Creek and Spotted Horse Creek.

Further progress has been made on items discussed in the First Quarter, 2008 watershed grant report:

1. Using the Feature Analyst software, a shapefile of potentially irrigated acreage has been extracted from available color infrared imagery for the entire Little Powder River, Powder River, and Tongue River drainages, and work has begun for similar data extraction for the Belle Fourche and Cheyenne River drainages.
2. Further work on Powder River assimilative capacity allocation continues, all but two or three of the companies expected to obtain allocations under the Powder River assimilative capacity process have done so.

Narrative Discussion:

At this time, the WDEQ has determined not to proceed with ArcHydro modeling for the Powder River basin for the following reasons:

Information needed as inputs into the model are either entirely lacking or too sporadic to expect accurate model results.

Model runs require the use of more memory and RAM-intensive computers than are available to the great majority of WYPDES staff, which would mean that modeling runs would cause processing bottlenecks for the few staff having computers capable of running such a computationally-intensive model.

Model runs by WYPDES staff as a whole would require very intense, time-consuming training prior to any staff being able to run the models.

At this time, the WDEQ is considering alternate methods that might predict the impact of continued CBM permitting within the Powder River basin, including, but not limited to: more intense background water quality modeling by the USGS to validate the assimilative capacity modeling and BLM spreadsheet modeling work that has already been completed, alternate, less data-and-training intensive models (other than ArcHydro) that could easily be run by WYPDES staff.

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 requires 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.
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 (05/30/08)	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. 2007 data has been incorporated into the model.
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.

Task/Goal	Description	Start Date	End Date	Status/Comments
Permitting approach/mechanism for Powder River point source discharges	Could include general permits, synchronized 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	06/30/10	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. <i>Assimilative capacity approach fully implemented, ongoing maintenance regarding lease tracking (lease sales and trades) ongoing throughout project.</i>
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). These permits will be revised according to the final EQC decision once WDEQ receives the final written order. Watershed permits are pending for the following drainages: Clear Creek, Fence Creek, (draft permit to be revised and re-advertised in public notice) Lower Tongue River, Crazy Woman Creek, and Dead Horse Creek watershed permits being prepared for public notice. The WDEQ has determined that the next watersheds slated for watershed permitting will be Bitter Creek, Spotted Horse Creek, and Wild Horse Creek. Bitter Creek general permit currently under construction.
Extraction of shapefiles delineating potentially irrigated lands within the Powder River basin using Feature Analyst software		8/2008	Ongoing	Data extraction complete for the Little Powder River drainage, work beginning on various sub-watersheds within the Powder River proper.

Financial Report

Expenditure Summary

Budget Category	Approved Budget	Spent this Quarter	Cumulative to Date
Travel	\$ 15,991.00		\$ 1,425.00
Equipment	\$6,269.60		\$6,269.60
Supplies	\$4,000.00		\$ 1,870.00
Contracts	\$171,739.40		\$ 7,822.00
Total		\$0	\$17,386.60

Expenditure Breakdown, 1st Quarter, 2009

No new expenses this quarter