IN THE MATTER OF A PERMIT APPLICATION (AP-5873) FROM MEDICINE BOW FUEL & POWER, LLC TO CONSTRUCT AN UNDERGROUND COAL MINE AND INDUSTRIAL GASIFICATION AND LIQUEFACTION PLANT TO BE KNOWN AS THE MEDICINE BOW IGL PLANT

DECISION

I. Introduction

The Air Quality Division received a permit application from Medicine Bow Fuel & Power, LLC on February 14, 2007, to construct an underground coal mine and industrial gasification and liquefaction (IGL) plant that will produce transportation fuels and other products. The underground coal mine (Saddleback Hills Mine) is expected to have a maximum production rate of 8,700 tons per day (TPD) of coal or approximately 3.2 million tons per year (MMTPY) of coal as feed to the IGL Plant. The plant will gasify coal to produce synthesis gas (syngas) to produce the following products: 18,500 barrels per day (bpd) of gasoline, 42 tons per day (tpd) of sulfur, 198 million standard cubic feet per day (MMscfd) of carbon dioxide (CO_2) and 712 tpd of coarse slag. The Medicine Bow IGL Plant would be located in Section 29, T21N, R79W, approximately eleven (11) miles southwest of Medicine Bow, in Carbon County, Wyoming.

The Division conducted an analysis of this application and on July 3, 2008, published in the Daily Times, in Rawlins, Wyoming, a public notice and notice of public hearing of the proposed intent to approve the application. A copy of the application and Division's analysis was placed in the office of Carbon County Clerk in accordance with regulations. The public notice period ran from July 3, 2008 to August 4, 2008 and a public hearing was held on August 4, 2008, at the Medicine Bow Senior Center, located at 520 Utah Street, in Medicine Bow, Wyoming.

The Division received twenty (20) comment letters on the proposed permit during the public comment period: 1) a July 22, 2008 letter from Virginia Clarke; 2) a July 24, 2008 letter from A. Josef Greig, PhD; 3) a July 24, 2008 letter from Kathy Moriarty, PhD; 4) a July 28, 2008 letter from the Wyoming Outdoor Council; 5) a July 31, 2008 letter from DKRW Advanced Fuels, LLC; 6) an August 1, 2008 letter from Earthjustice; 7) an August 4, 2008 letter from William and Denise Sherwood; 8) an August 4, 2008 letter from the Carbon County Economic Development Corporation; 9) an August 4, 2008 letter from the Biodiversity Conservation Alliance; 10) an August 4, 2008 letter from the Powder River Resource Council; 11) an August 4, 2008 letter from Rev. Rebekah Simon-Peter; 12) an August 4, 2008 letter from an unknown sender due to an incomplete fax; 13) an August 4, 2008 letter from EPA Region VIII; 14) slides from a presentation August 4, 2008 at the public hearing from DKRW; 15) an August 4, 2008 letter submitted at the public hearing by Kirby Hornbeck; 16) an August 4, 2008 letter submitted at the public hearing by Rita Clark; 17) an August 4, 2008 letter submitted at the public hearing by John Johnson; 18) an August 4, 2008 letter submitted at the public hearing by Connie Wilbert; 19) an August 3, 2008 letter submitted at the public hearing by Reese Johnson; and 20) an August 5, 2008 letter submitted by Casey & Nellie Palm.

Due to the number of public comments with similar concerns, the Division grouped individual comments and developed summary comments and responses. Comments from EPA, Environmental Groups, and DKRW (Medicine Bow Fuel & Power, LLC) are addressed individually. The comments and responses are presented on the following pages. The Division also received positive comments supporting this project. The Division appreciates these comments but they are not included in this document as no response is required.

II. Analysis of Public Comments:

II.1 **Control of Mercury Emissions** – Comments were received regarding the need to control mercury emissions from the facility.

Response – Mercury emissions from the facility are to be controlled with two (2) mercury guard beds (activated carbon) with an estimated removal efficiency of 99 percent, as determined by best available control technology (BACT). Additionally, Condition 10 of the permit limits mercury emissions from each turbine to $4.33*10^{-5}$ tons per year (0.087 lb/yr).

II.2 **Carbon Dioxide Sequestration (Greenhouse Gases)** – Comments were received regarding sequestration of carbon dioxide.

Response – CO_2 emissions are not currently "subject to regulation" for DEQ/AQD permitting purposes, including BACT. *See In re Basin Electric Power Cooperative Dry Fork Station Air Permit CT-4631*, EQC Docket No. 07-2801, Order (August 21,2008) (recognizing that Wyoming does not have any emission standards or control requirements for CO_2 and declining to find that CO_2 data collection encompasses regulation).

Medicine Bow Fuel & Power, LLC stated as part of their application for this facility that they intend to capture carbon dioxide (CO_2) from the process and sell CO_2 for enhanced oil recovery. In 2008, Wyoming adopted carbon sequestration laws addressing the legal framework for storing carbon dioxide underground. *See* Wyo. Stat. Ann. § 35-11-313. Except for the enhanced recovery of oil or other minerals approved by the oil and gas conservation commission, geologic sequestration of carbon dioxide will require a separate DEQ permit. Such action is outside the scope of this air quality permit.

II.3 **Financing** – Comments were received which recommend that the Division ensure that Medicine Bow Fuel & Power, LLC has adequate financing for the project before issuing the permit for the proposed facility.

Response – The Wyoming Air Quality Standards & Regulations (WAQSR) does not require companies to provide documentation that adequate finances are available to complete a proposed project.

II.4 **Ozone** – Comments were received regarding the impact this facility would have on ozone levels in the area and whether this facility would show compliance with the National Ambient Air Quality Standard (NAAQS) for ozone (0.075 ppm 8-hour) and whether ozone monitoring should be required.

Response – Because ozone is a pollutant that forms due to emissions from a large number of sources over larger (regional) areas, ozone modeling to demonstrate compliance with the NAAQS is not typically performed for single facilities. Ozone monitoring data was examined to determine the current ambient ozone levels. The Division operates a monitoring station approximately 100 kilometers west of the proposed project near the town of Wamsutter, Wyoming in an area of concentrated oil and gas development. Fourth-high 8-hour readings from that site for 2006-2008 are below the new EPA 8-hour standard of 0.075 part per million (ppm). Another monitor is located approximately 19 kilometers south-southeast of the proposed project near Centennial, Wyoming. The three-year averages of the fourth-high 8-hour readings from that site for 2005-2007 are also below the new EPA 8-hour standard of 0.075 ppm. Data from the two monitoring stations are summarized in the tables below. Both monitoring stations show a slight downward trend in the three-year averages of the 4th high readings. The Division does not feel that an ozone monitor at the proposed project site is needed, given the regional nature of ozone formation and the existence of the two existing ozone monitors in the region.

CASTNET Monitor CNT169 (Centennial, WY) Ozone Data

Year	4th Highest 8-Hour Ozone Concentration (ppm)	Three-Year Average (ppm)
2003	0.079	–
2004	0.072	–
2005	0.066	0.072
2006	0.070	0.069
2007	0.066	0.067

Note:
To attain the 8-hour standard, the 3-year average of the fourth-highest daily maximum 8-hour average concentrations must not exceed 0.075 ppm. Data obtained from http://www.epa.gov/castnet/data.html#ozone

Wamsutter, WY Ozone Data

Year	4th Highest 8-Hour Ozone Concentration (ppm)
2006	0.067
2007	0.064
2008	0.064

Notes:
To attain the 8-hour standard, the 3-year average of the fourth-highest daily maximum 8-hour average concentrations must not exceed 0.075 ppm.
Monitoring began in March of 2006. Data for 2008 through September 30, 2008.

II.5 **PM_{10} Increment** – The Division received several comments that emission controls should be stronger because of the predicted increment consumption for PM_{10}.

Response – Emission controls for the project will consist of best available control technology (BACT). The Division's modeling analysis showed that 85% of the allowable PSD increment for PM_{10} for the annual averaging period would be consumed near the proposed plant. The PSD increments are set at levels well below the NAAQS, and are designed to prevent newer sources from degrading the air quality in areas that attain the NAAQS. The area of relatively high increment consumption (> 50% of allowable level) is limited to an area on the western edge of the proposed facility boundary, which is contained within the boundary of the Carbon Basin Mine and not within the area considered "ambient" air available for public access. The extent of the modeled increment consumption is shown in Figure 1.

II.6 **WY Department of Health involvement** – A comment was received regarding the need to have the Wyoming Department of Health examine and comment on the permit.

Response – The Division required a Tier 1 inhalation risk assessment from the applicant to assess the potential health effects from project emissions (see response to Public Comment II.10 and responses to Environmental Groups Comments IV.17 and IV.18 of Exhibit 1 of the Earthjustice letter dated August 1, 2008). Division staff reviewed the risk assessment to confirm that it was conducted in accordance with EPA guidelines. The Division consulted with the Wyoming Department of Health regarding the need for additional analysis, and no further analyses were suggested. Additionally, the modeled impacts for the proposed project were below all health-based (WAAQS/NAAQS) standards for criteria pollutants.

II.7 **Class I Projections and Rock River WA** – Comments were received regarding the lack of analysis conducted for the Rock River wilderness.

Response – The Division requires a PSD applicant to evaluate impacts at Class I areas that may be affected by a proposed project. The Rock River area is not listed as a Class I area in Wyoming. For this project, the applicant evaluated the project's impact on visibility at eight Federal Class I areas in Wyoming and Colorado as well as a State Class I area in Wyoming (Savage Run WA), and all results were below the level of concern.

II.8 **Cumulative Modeling Sources** – Comments were received regarding the cumulative modeling analyses and whether all sources within 50 km were included.

Response – All sources within 50 km of the proposed project were considered for the cumulative modeling. Appendix A of the Division's analysis lists the outside sources that were included in the cumulative modeling, including one source that is located 47.8 km from the proposed project. Appendix A also indentifies the facility associated with each of the outside sources. The Division included each outside source listed in Appendix A in the NAAQS/WAAQS and PSD increment modeling runs.

II.9 **Fine particulate matter** – Comments were received regarding the lack of analysis for $PM_{2.5}$.

Response – The Division analyzed $PM_{2.5}$ using EPA's PM_{10} Surrogate Policy and has established emission limits in the permit for particulate matter that are protective of air quality. In October 1997, EPA issued guidance allowing states to use PM_{10} as a surrogate for $PM_{2.5}$ in meeting PSD permitting requirements ("PM_{10} Surrogate Policy"). *See Interim Implementation of New Source Review Requirements for $PM_{2.5}$*, EPA, John S. Seitz, Memorandum, October 23, 1997. Subsequently, in April 2005, the EPA reaffirmed continued use of the PM_{10} Surrogate Policy. *See Implementation of New Source Review Requirements in $PM_{2.5}$ Nonattainment Areas*, EPA, Stephen D. Page, Memorandum, April 5, 2005. Again, in September 2007, the EPA reaffirmed that states could continue using the PM_{10} Surrogate Policy until such time as EPA had approved the state's revised SIP. 72 Federal Register 54112, 54114 (September 21, 2007). Finally, in May 2008, the EPA reiterated that states may continue using the PM_{10} Surrogate Policy until the state's SIP was revised. *See Implementation of the New Source Review ("NSR") Program for Particulate Matter less than 2.5 micrometers ($PM_{2.5}$)*, 73 Fed. Reg. 28321, 23341 (May 16, 2008). The Division has incorporated the 1997 $PM_{2.5}$ NAAQS into the WAQSR, but has not yet amended the rules or SIP to incorporate the 2006 standards established by EPA. See 2 WAQSR § 2. Since EPA's promulgation of the $PM_{2.5}$ NAAQS in 1997, the Division has followed and applied EPA's PM_{10} Surrogate Policy. On May 8, 2008, EPA approved Wyoming's Interstate Transport of Pollution SIP effective as of July 7, 2008. *See* 73 Fed. Reg. 26019. Wyoming's SIP states, "Wyoming will implement the current [PSD] rules in accordance with EPA's interim guidance using PM_{10} as a surrogate for $PM_{2.5}$ in the PSD program." *See* Wyoming State Implementation Plant, Interstate Transport, at pg. 3 (December 11, 2006).

PM_{10} includes all particulate matter less than 10 micrometers and smaller, which means PM_{10} also includes $PM_{2.5}$. The Division's review of DKRW's modeling analysis concluded that the total PM_{10} ambient impacts were less than the PM_{10} NAAQS/WAAQS and PSD increment standards. Furthermore, the permit established BACT emission limits for $PM_{2.5}$ precursors: nitrogen oxides (NO_x), sulfur dioxide (SO_2), and volatile organic compounds (VOCs).

II.10 **Toxic and hazardous chemicals** – Comments were received regarding the omissions of several compounds from the Tier 1 inhalation risk assessment.

Response – The applicant revised the Tier 1 inhalation risk assessment to include all known carcinogens that are expected to be emitted from the facility. Individual risk factors were summed to arrive at a total estimated cancer risk, as shown in the table below. Note that the total estimated cancer risk is dominated by the individual risk for benzene, which was already considered with the initial Tier 1 assessment. The extent of the estimated cumulative 1/million cancer risk is shown graphically in Figure 2. As shown in the figure, the nearest residence is outside of the 1/million isopleth. The EPA considers 1 per ten thousand persons, i.e., 100 per one million persons, to be the upper bound of "acceptable risk" [see EPA benzene NESHAP, Federal Register, 54: 38044, September, 1989]. For this project, the maximum predicted increased cancer risk from all HAP was predicted to occur within the Carbon Basin Mine boundary, and was calculated to be 88 per million persons.

Health risk screening is conducted in connection with PSD permit issuance for public information purposes. No ambient standards have been established for hazardous air pollutants (HAP), but current Division policy requires PSD applicants to conduct a Tier 1 inhalation risk assessment for HAP in accordance with EPA guidelines and to compare predicted risks to reference levels [see 6 WAQSR § 4(b)(iv); DEQ/AQD Guidance for Submitting Major Source/PSD Modeling Analyses § 5.G (January 2008); see also EPA's Air Toxics Risk Assessment Reference Library, Volume 2, Facility-Specific Assessment (April 2004)].

A top-down best available control technology (BACT) analysis was conducted for each of the pollutants determined to be subject to PSD for the project, and all predicted impacts of criteria pollutants were below allowable ambient standards.

Tier 1 Inhalation Risk Assessment Results (Cancer Risk)			
Parameter/HAP	Factors/Risk		
Cancer Risk	EC_L ($\mu g/m^3$)	IUR [$1/(\mu g/m^3)$]	Risk
Acetaldehyde	0.00689	0.0000022	1.52E-08
Benzene	11.3	0.0000078	8.81E-05
1,3-Butadiene	0.00022	0.00003	6.60E-09
Dichlorobenzene	0.00007	0.000011	7.70E-10
Formaldehyde	0.047	5.50E-09	2.59E-10
Napthalene	0.0002	0.000034	5.78E-09
PAH	0.0002	0.0011	2.53E-07
Propylene Oxide	0.00354	0.0000037	1.31E-08
Total			8.84E-05

Note: The total estimated risk of 8.84E-05 is equivalent to 88.4 per million
EC_L = exposure concentration based on a lifetime of continuous inhalation exposure to an individual HAP ($\mu g/m^3$)
IUR = inhalation risk estimate for that HAP [$1/(\mu g/m^3)$]
Risk = excess lifetime cancer risk estimate (unitless)

II.11 **Flaws in air quality and visibility analysis, no nearby visibility analysis, Class I areas in the Snowy Range** – A comment was received that there were "significant flaws" in the methods used to evaluate air quality and visibility impacts. No nearby (within 20 km) visibility analysis was done, and Class I areas in the Snowy Range were not evaluated.

Response – The visibility modeling, as described in detail in the Division's analysis, was performed in accordance with Federal Land Manager (FLM) guidance. No specific flaw was identified in the comment, and therefore the Division cannot specifically respond to the comment. The Division did not identify any scenic views that would require protection near the proposed project, and therefore did not require any near-field (within 50 km) visibility modeling with the VISCREEN model. No Class I areas have been designated in the Snowy Range. The applicant did evaluate the project's impact on visibility in eight Federal Class I areas as well as a State Class I area (Savage Run WA), and all results were below the level of concern.

II.12 **Short-term impacts** – A comment was received that stated short-term impacts were incorrectly modeled with annual average emissions.

Response – Sources for the proposed project were modeled with worst-case, short-term emission rates for all comparisons to short-term air quality standards. Cumulative sources were required to be included in the modeling for carbon monoxide (CO) and nitrogen dioxide (NO_2). Air quality standards for NO_2 are based on an annual averaging period, and therefore cumulative sources were modeled with annual-average emissions. Air quality standards for CO are based on 1-hour and 8-hour averaging periods, and cumulative sources were modeled with short-term allowable emissions.

II.13 **Lack of Adequate Public Notice** – A comment was received requesting to extend the public notice as 30 days is not an adequate enough time for public comment on the proposed facility.

Response – The 30-day public notice period required by Chapter 6, Section 2(m) of the Wyoming Air Quality Standards and Regulations (WAQSR) applies to all applications. The 30-day public notice period meets the requirements of Chapter 6, Section 2(m) and, therefore, the request to extend the public notice period was denied. The Division notes that the commenter was able to provide written comment during the public notice period and attended the public hearing on August 4, 2008.

II.14 **Case-by-Case Maximum Achievable Control Technology (MACT) Analysis** – A comment was received requesting that the facility undergo a case-by-case maximum achievable control technology (MACT) evaluation under Section 112 of the Clean Air Act.

Response – DKRW reevaluated the engineering information for the design of the facility, and based on this design information they have revised the fugitive emission calculations for the facility. Revised emission calculations now indicate that the facility is a minor source of HAPs as the facility is less than 10 tpy of any individual HAP or 25 tpy of any combination of HAPs, which is shown in the table below.

Medicine Bow IGL Plant HAP Emissions (tpy)

Pollutant	HAPs as Represented in Analysis	Revised HAPs based on component count
Benzene	8.5	8.5
Formaldehyde	0.7	0.7
Hexane	1.3	1.3
Methanol	10.3	9.2
Toluene	1.8	1.8
Other Haps	2.2	2.1
Total HAPs	**24.8**	**23.6**

Based on HAP emissions being less than major source levels, a case-by-case MACT analysis for the facility under Section 112 of the Clean Air Act (Chapter 6, Section 6 of the WAQSR) is not required. It should be noted that the Division considers fugitive emission estimates to be conservative as emissions are based on all connections and pumps leaking at the proposed leak detection and repair (LDAR) levels (500 ppm for valves/flanges and 2000 ppm for pumps).

With estimated HAP emissions being revised the Division will include as a condition of the permit a demonstration that fugitive HAP emissions are as represented in the application based on a final equipment count (equipment as defined in 40 CFR part 60, subpart VVa) of the as-built facility prior to startup of the facility, and will require the submittal of a report showing actual fugitive HAP emissions based on measured leak detection rates during operation of the facility. The Division will also include a condition in the permit requiring the monitoring of leaks under the LDAR program in accordance with 40 CFR part 60, subpart VVa to be conducted a minimum of every six (6) months to minimize fugitive emissions from equipment leaks, as the monitoring frequency under Subpart VVa can be greater than six (6) months.

II.15 **Allowed particulate matter** – An individual commented that the plant will contribute up to 85% of the allowed particulate matter for the area, and raised several related questions:

- What is current % of allowed particulate matter?
- Will this bring us into non-compliance?
- How large is our area defined as and does it take in the Medicine Bow National Forest?
- Will this restrict any other industry from coming to the area?

Response – The projected increment consumption was modeled with the proposed IGL plant sources and other nearby sources such as the neighboring coal mine, and therefore the current increment consumption (pre-IGL plant) was not considered. The results of the modeling indicate that the proposed facility will not prevent the attainment or maintenance of any air quality standard. The modeling domain did not extend to the Medicine Bow National Forest, which is located approximately 18 km to the southeast of the proposed project. The area of relatively high (> 50% of allowable level) increment consumption is predicted for an area at the west end of the boundary for the proposed project (see Figure 1).

The Division cannot predict what effect this facility will have on future growth in the area based on the modeled PM_{10} increment consumption. Increment consumption in any given area is driven by numerous factors, such as the amount of pollutant emitted by the facility, whether the source was constructed before or after the baseline date, and the type and number of surrounding sources; to name a few. If another facility were to be built near the Medicine Bow IGL Plant, an ambient impact analysis would need to be conducted to assess the amount of increment consumption for comparison with the PM_{10} increment.

II.16 **Volatile Organic Compounds (VOC)** – An individual commented that there are other VOCs produced in this process, and raised several related questions:

- What is the projected area that will be affected?
- What is the safe distance from the fallout for someone to live?

Response – In the impact analysis for the project, the applicant considered all VOC that are classified as hazardous air pollutants (HAP). The applicant submitted a revised Tier 1 inhalation risk assessment that included a graphic depiction of the extent of the increased cancer risk from the cumulative effects of all emitted HAP. See response to Public Comment II.10.

II.17 **Medicine Bow River** – An individual commented that the Medicine Bow River is relatively close and downwind of the proposed facility, and raised several related questions:

- What might be the projected dust load to the river?
- How will mercury be contained and what is the likelihood of it coming in contact with the river?
- Is this going to degrade the water quality to the point it will no longer be able to be classified as a cold water fishery?

Response – The WAQSR does not require that an applicant assess the dust loading to a water body. The air quality analysis did include an assessment of the deposition rates of sulfur and nitrogen compounds to Class I areas, and predicted levels were below the level of concern. Additionally, the modeling analysis included an assessment of the ambient concentrations of particulate matter within 10 km of the proposed plant, and the results of the analysis were below the allowable Federal and State ambient air quality standards.

Mercury was included in the Tier 1 inhalation risk assessment and was addressed under BACT (see response to Public Comment II.10 and II.1). Total mercury (concentration in precipitation and flux in wet deposition) is monitored on a regional basis by the National Atmospheric Deposition Program: Mercury Deposition Network. The closest MDN site is at Buffalo Pass – Summit Lake in Colorado and is 135 kilometers south-southwest of the proposed facility.

Impacts to water quality and classification are regulated by the Water Quality Division and such actions are outside the scope of this air quality permit. See also response to Environmental Group Comment IV.2.

II.18 **Sage grouse and mule deer** – An individual commented that there are known sage grouse leks and critical winter range for mule deer in the immediate area, and raised several related questions:

- What forage degradation will occur as a result of the particulate matter and other VOC that might become airborne?
- In regards to the sage grouse, is this one more step in getting them listed as an endangered species?

Response – State regulations require applicants to evaluate impacts to soils and vegetation, but not animals. 6 WAQSR § 4(b)(i)(B). The applicant analyzed the effects on vegetation of the pollutants emitted in the largest quantities (NO_x and SO_2). See response to EPA Comment III.9.

Emissions from the proposed project are not anticipated to be in such quantities as would cause an exceedance of the primary or secondary NAAQS or WAAQS. *See* Permit Application Analysis pages 37-47. EPA sets primary NAAQS at a level designed to protect public health with an adequate margin of safety. *See* 40 CFR § 50.2. EPA sets secondary NAAQS at a level designed to protect public welfare from any known or anticipated adverse effects of a pollutant. *Id.*

As a result of the comment, the Division contacted the Wyoming Game and Fish Department and was directed to the Industrial Siting Permit. The Division reviewed the Findings of Fact, Conclusions of Law, Order and Decision of the Industrial Siting Council (ISC), noting that the ISC concluded that "the proposed facility will not pose a threat of serious injury to the environment" and requiring the applicant to provide fish and wildlife training during the construction of the project. *See In re Industrial Siting Permit Application of Medicine Bow Fuel and Power, LLC*, ISD Docket No. 07-01, Findings of Fact, Conclusions of Law, Order and Decision (March 30, 2008) at ¶ 27, Decision at ¶ 4.

The Division is not and has not been made aware of any air quality impacts to mule deer or sage grouse which may occur as a result of emissions from the proposed project that fall below the secondary NAAQS or WAAQS.

II.19 **Carbon dioxide capture** – An individual commented that DKRW has stated they will be making the capital investment to capture the carbon dioxide produced to be used in enhanced oil recovery and asked if the air quality permit could be issued contingent upon this.

Response – See response to Public Comment II.2.

III. Analysis of Comments from EPA:

III.1 **PSD Applicability for SO_2** – EPA commented that SO_2 emissions should have gone through a prevention of significant deterioration (PSD) analysis due to emissions of SO_2 during a cold startup year (256.9 tpy).

Response – The Division does not agree with EPA that SO_2 emissions from the facility should have gone through a PSD analysis. The Division considers emissions represented in Table Va (Cold Startup Year Emissions) as emissions associated with commissioning (startup) activities for the plant, which are temporary in nature and are not routine as represented in the application. It has been the Division's consistent practice to make applicability determinations based on consideration of a facility's routine operations. In this case the facility's routine operations include startup and shutdown emissions the sum of which are 40 tons per year. The Division, however, did request DKRW to evaluate the facility to ensure that all routine (planned) activities were accounted. Based on this request, DKRW provided information that due to planned maintenance activities on the gasification units SO_2 emissions from the facility during normal operations will increase from 32.9 tpy to 36.6 tpy of SO_2. Since SO_2 emissions during normal operation of the facility remain less than 40 tpy, a PSD analysis for SO_2 under Chapter 6, Section 4 of the WAQSR is not required. See also response to Environmental Groups Comment IV.6.

Source	SO_2 Emissions (tpy)
Facility Emissions	32.9
Preheater Emissions	0.0154
Planned Maintenance Emissions Gasifiers	3.64
Total	**36.6**

III.2 **BACT Procedure** – EPA commented that the Division's BACT analyses should be expanded, and should include a more detailed description of cost effectiveness and other factors that form the basis for the rejection and selection of control options.

Response – A top-down BACT analysis was conducted for each of the pollutants determined to be subject to PSD, and the Division considers the Chapter 6, Section 4 BACT determinations in the analysis to justify the control strategies selected for each emission unit.

III.3 **Pollutants and Emitting Units that Need BACT Analysis** – EPA commented that the Division must revise the application analysis to include: a NO_x BACT determination for FL-1, FL-2; a CO BACT determination for FL-1, FL-2, and CO_2 VS; a VOC BACT determination for FL-1, FL-2, and the FW-Pump; and PM/PM_{10} BACT determination for previous listed sources under NO_x, CO, and VOC including Gen-1 through 3.

Response – Sources FL-1, FL-2, and CO_2 VS were addressed under the startup and shutdown operations portion of the analysis for the facility, and the startup/shutdown emission minimization plan (SSM) was determined to represent BACT for these sources. BACT for PM/PM_{10} emissions were addressed under the SSM plan and under the PM/PM_{10} emissions portion of the analysis. Additionally, the Division considers compliance with Subpart IIII for the FW-Pump as representing BACT for PM and VOCs emissions for this unit, based on the expected utilization of this source.

III.4 **PSD BACT Limits** – EPA commented that limits need to be established for all units that will emit nitrogen oxides (NO_x), carbon monoxide (CO), volatile organic compounds (VOCs), and particulate matter/particulate matter less than ten microns (PM/PM_{10}).

Response – The Division did not establish emission limits for sources that do not have add on controls and combust natural gas and/or treated process gas from the facility as these sources were considered to have an insignificant emission rate and ambient air quality impact during routine operation of the facility. This is consistent with previously issued PSD and minor source permits by the Division. Sources without emission limits are shown in the following table, and sources FL-1 (HP Flare), FL-2 (LP Flare), and CO_2 VS (CO_2 Vent Stack) are addressed under the SSM plan.

ID	Emission Unit	Pollutant	Emission Rate (tpy)
AB	Auxiliary Boiler	VOC	1.6
		SO_2	0.2
		PM_{10}	2.2
B-1	Catalyst Regenerator	VOC	0.5
		SO_2	0.1
		PM_{10}	0.7
B-2	Reactivation Heater	VOC	0.3
		SO_2	0.1
		PM_{10}	0.4
B-3	HGT Reactor Charge Heater	VOC	0.1
		SO_2	0.1
		PM_{10}	0.1
GP-1 – GP-5	Gasifier Preheaters 1-5	VOC	0.1
		PM_{10}	0.1
Gen-1 – Gen-3	Black Start Generators 1-3	PM_{10}	insig
FW-Pump	Firewater Pump Engine	VOC	0.3
		PM_{10}	0.1

III.5 **BACT Compliance** – EPA commented that based on the units it considers to need BACT limits established; initial and continuous compliance demonstrations need to be established.

Response – The Division has set testing requirements for each emission unit where emission limits have been established.

III.6 **VOC BACT Limit** – EPA commented that the VOC emission limit for the turbines do not include averaging times.

Response – The averaging time for VOCs for the turbines is specified by the performance testing requirement in Condition 9. The ppm and lb/hr VOC emission limits are based on the average of three (3) 1-hour tests as specified in Condition 9.

III.7 **Combustion Units PM/PM_{10} BACT Analysis** – EPA commented that the Division should provide information indicating how effective current filtration options are, and compare this with the estimated grain loading from the combustion turbines.

Response – The Division conducted a top-down BACT analysis for PM/PM_{10} emissions, and considered good combustion practices as representing BACT for PM/PM_{10} for the combustion turbines as represented in the analysis.

III.8 **Coal Conveyor PM/PM_{10} BACT Analysis** – EPA commented that the Division should clarify whether "enclosed" means fully enclosed or partially enclosed (3/4 covered), and if fully enclosed conveyors represent BACT.

Response – Based on the Division's experience permitting coal conveyors, the Division considers 3/4 covered conveyors, which are designed and installed based on predominant wind direction, to be representative of BACT.

III.9 **Soils and Vegetation Analysis** – EPA commented that the applicant's soils and vegetation analysis did not fully justify the statement that soils in the area do not have significant commercial or recreational value, and did not take into account the project's impacts to soils.

Response – PSD applicants must assess impacts to soils and vegetation. *See* 6 WAQSR §4(b)(i)(B); DEQ/AQD Guidance for Submitting Major Source/PSD Modeling Analyses § 5.G (January 2008), see also EPA NSR Manual, Chapter D (Draft 1990). However, the depth of the analysis depends in part on the sensitivity of local soils and vegetation. *See* 6 WAQSR § 4(b)(i)(B)(analysis is not needed if vegetation has "no significant commercial or recreational value"). Typically, ambient concentrations lower than the secondary NAAQS or WAAQS will not result in harmful effects to soils or vegetation [see NSR Manual, including the secondary levels].

Attachment 3 of DKRW's October 17, 2007 letter in response to Division comments on the initial application submittal describes the land surrounding the proposed project site as having very low commercial productivity. Primary land use and vegetation cover within 10 km of the proposed project is fallow or shrubland. The US Department of Agriculture has compiled a detailed list of soil types in Carbon County. Land capability is classified between Class 3 (soils with severe limitations that reduce choice of plants) to Class 8 (soils with limitations that nearly preclude use for crop production). Only one percent of the surveyed land in the area produces alfalfa or hay without using irrigation.

III.10 **NAAQS/WAAQS Analysis** – EPA commented that the close approach of modeled impacts to air quality standards may warrant a more thorough analysis of modeling parameters and sources.

Response – The Division conducts a thorough review of all modeling inputs/outputs associated with PSD permit applications, and the application for the IGL Project was no exception.

III.11 **Background Source Selection** – EPA commented that the permit application and supporting information did not indicate how outside sources were selected or whether they were modeled for NAAQS/WAAQS and/or PSD increment. Also, the application indicates that only sources within 35 km were considered, and Table 6.3 in the application only provides outside sources by number and not by name.

Response – See response to Public Comment II.8.

III.12 **Short-term SO_2** – EPA commented that it was unclear why the differences in predicted short-term and annual SO_2 concentrations was so small (in Tables 6.10 and 6.11) given the large difference between the short-term and annual emission rates. Additionally, they suggest that the short-term emission rates listed in Table 6.2 should be checked to ensure that they match the AERMOD *.LST files.

Response – The differences between the predicted short-term impacts and long-term impacts for the NAAQS/WAAQS modeling are actually large, as reflected in Table 6.10 of the permit application and Table XIX of the Division's analysis. On the other hand, the difference in the predicted short-term and long-term impacts for PSD increments, as shown in Table 6.11 (application) and Table XX (analysis) are much smaller, due to the absence of the flare sources from the increment modeling. All sources and short-term emissions listed in Table 6.2 of the application were included in the latest version of the modeling, as verified by the Division.

III.13 **Inclusion of SO_2 Emissions from Flares in Increment Modeling** – EPA commented that the HP and LP flares should have been included in the PSD increment modeling.

Response – Emissions from the flares that were included in the NAAQS modeling represented worst-case emissions associated with start-up or malfunction (non-routine operation). The Division does not include infrequent, non-routine operation in assessments of PSD increment consumption.

III.14 **Haul Road Fugitive Dust** – EPA commented that the fugitive PM_{10} emissions from the project haul roads should have been included in the short-term (24-hour) modeling.

Response – Current Division policy does not endorse short-term (24-hour) modeling for predicting impacts from fugitive particulate sources because of the uncertainties in the performance of the recommended EPA models. The State and EPA Region VIII entered into a Memorandum of Agreement in 1994 which allows the Division to conduct monitoring in lieu of short-term modeling for coal mine particulate concentrations in the Powder River Basin, and this practice has been applied to modeling of PM_{10} fugitive sources in other parts of the state.

III.15 **Mine Receptors** – EPA commented that model receptors should be included around mining areas if they are ambient air.

Response – The Division established a 500-m receptor buffer around the area sources that represented mining activity outside of the MBFP plant boundary to avoid excessive overpredictions near those sources (source IDs MineA_SP and MineA_S2). Predicted impacts from area sources within AERMOD can be excessive, as described in the latest *AERMOD Implementation Guide* from the EPA (January 2008). The Implementation Guide states that concentration predictions for area sources may be overestimated under very light wind conditions because of the lack of "plume meander" in the area source algorithm (page 14 of implementation guide). Additionally, the two area sources in question are located within the facility boundaries of Arch Coal's Carbon Basin Mine, and as such are not located in ambient air. Figure 3 shows the relative location of the coal mine areas sources and modeled receptors.

IV. **Analysis of Comments from Earthjustice, Sierra Club, Wyoming Outdoor Council, Powder River Basin Resource Council, and Biodiversity Conservation Alliance (Environmental Groups):**

IV.1 **Carbon monoxide** – The Powder River Basin Resource Council commented that the predicted CO impacts barely meet the WAAQS/NAAQS and asked how many hours of venting per year were assumed for the modeling of the CO_2 vent.

Response – The WAAQS/NAAQS for CO are based on 1-hour and 8-hour averaging periods. The assessment of the CO_2 vent's impact was based on worst-case hourly emissions from the vent. Essentially, the modeling conservatively assumed that the vent would operate continuously.

IV.2 **Mercury Emissions** – The Powder River Basin Resource Council and the Wyoming Outdoor Council commented that the Division needs to ensure that a proper MACT analysis is conducted for mercury, and that there is an enforceable emission limit for mercury in the permit. The Biodiversity Conservation Alliance along with PRBRC and WOC expressed concern with the impact of mercury on fish in Pathfinder and Seminoe Reservoirs and associated tributaries.

Response – As the facility is not a major source of HAPs (see response to Public Comment II.14) a case-by-case MACT analysis is not required for the facility. Condition 10 of the permit limits mercury emissions from each turbine (see response to Public Comment II.1). See response to Public Comment II.17. The Wyoming Department of Health and Game & Fish Department have conducted surveys on major reservoirs around the state for mercury. Fish from the majority of waters exhibited low levels of mercury, and a few have warranted additional testing. Fish consumption advisories have been issued by the Wyoming Department of Health based on results of scientific studies indicating that methylmercury is more toxic than previously thought. Based on the study results, the guidelines that are used for Wyoming fish advisories have been lowered to protect the most sensitive populations. Methylmercury is not a pollutant known to be emitted from coal combustion or gasification.

IV.3 **Financing** - The Powder River Basin Resource Council commented that DKRW needs to demonstrate to the Division that they financing lined up, and have buyers for the sulfur and carbon dioxide. Additionally, the Powder River Basin Resource Council is concerned that the limits in the permit may not represent BACT while DKRW obtains financial backing for the plant.

Response – See response to Public Comment II.3. Under Chapter 6, Section 2(h) of the WAQSR approval to construct or modify a facility shall become invalid if construction is not commenced within 24 months of receipt of approval (permit date) or if construction is discontinued for a period of 24 months or more. The Administrator may extend this period based on satisfactory justification of the requested extension. Additionally, if an extension is requested, the Administrator may require a demonstration that emission limits continue to represent BACT.

IV.4 **PM_{10} Increment** – The Powder River Basin Resource Council, Wyoming Outdoor Council and Biodiversity Conservation Alliance commented that if the facility were allowed to consume 85 percent of the PM_{10} Class II annual increment it would "cause significant deterioration of existing ambient air quality in the region", and should require a major reduction in particulate emissions. Additional comments were made as to what impact the increment consumption would have on future development in the area.

Response – See response to Public Comments II.5 and II.15.

IV.5 **Leak Detection And Repair (LDAR)** – The Powder River Basin Resource Council commented that LDAR levels which are set at 500 ppm for valves and 2000 ppm for pumps should be evaluated for lower threshold levels.

Response – The LDAR levels which were determined to represent BACT for VOCs from fugitive equipment leaks from the facility are consistent with levels established in new source performance standards (NSPS) and national emission standards for hazardous air pollutants (NESHAP). Additionally, the facility is considered to be a minor source of HAP emissions (see response to Public Comment II.14).

IV.6 **SO_2 Emissions from HP and LP Flares** – The Powder River Basin Resource Council commented that a BACT analysis should be conducted for SO_2 from the HP and LP flares. It was also commented that the permit should protect against operation of the flares for more than 50 hours per year, and conditions should include a reporting requirement for all venting episodes as well as a cumulative time that each vent may be open during a given year.

Response – Emissions from the flares during startup and shutdown of the facility are addressed under the SSM plan for the facility, which was determined to represent BACT for this type of operation. Venting to the flares during non-routine events, such as malfunctions, is addressed under Chapter 1 of the WAQSR and is subject to Division approval. The Division will require monitoring of SO_2 emissions from the flare as part of the permit. DKRW has indicated that this can be accomplished by installing flow monitoring equipment and by either direct sampling of the flow to the flares or sampling of the coal. Also see response to Environmental Group Comment IV.35.

IV.7 **24-hour impact of fugitive sources of PM_{10}** – The Powder River Basin Resource Council commented that the discussion of modeled 24-hour PM_{10} impacts is misleading. The analysis provides the Division's policy for not modeling fugitive sources for 24-hour impacts, but does not provide an alternative method to account for these sources.

Response – See response to EPA Comment III.14.

IV.8 **Maximum modeled concentrations and significant impact areas** – Earthjustice et al. commented that the PSD application did not include the maximum predicted concentrations or significant impact areas (SIA) from the proposed project. This information would be used to determine whether cumulative modeling and on-site monitoring will be required.

Response – Preliminary modeling (i.e. determining the SIA from the proposed project only) is typically performed to determine which pollutants do not have to be carried forward to a full-impact analysis (FIA), which includes outside sources and often requires extensive computing time. For this project, the applicant anticipated that project emissions would result in predicted impacts that were above the significant impact levels for all modeled pollutants, and given the scarcity of outside sources, they proceeded directly to full-impact modeling. Additionally, SIA modeling to determine the need for pre-construction monitoring was not necessary because the Division deemed the background concentrations proposed by the applicant to be adequately representative.

IV.9 **Outside sources for cumulative modeling** – Earthjustice et al. commented that cumulative modeling only includes sources within 35 km of the MBFP project. Normally, cumulative sources within 50 km would be considered.

Response – See response to Public Comment II.8.

IV.10 **Annual-averaged emissions from cumulative sources** – Earthjustice et al. commented that short-term impacts from cumulative sources were underestimated because annual-average emissions were used in the modeling.

Response – See response to Public Comment II.12.

IV.11 **Fugitive emissions and 24-hour PM_{10} modeling** – Earthjustice et al. commented that AERMOD has an improved algorithm for handling area sources, and that fugitive PM_{10} area sources should be included in the 24-hour AERMOD modeling.

Response – See response to EPA Comment III.14. The AERMOD model does not contain an improved algorithm for handling area sources. In fact, the latest *AERMOD Implementation Guide* from the EPA (January 2008) states that concentration predictions for area sources may be overestimated under very light wind conditions because of the lack of "plume meander" in the area source algorithm (page 14 of Implementation Guide).

IV.12 **Proposed PSD increment and NAAQS compliance for $PM_{2.5}$** – Earthjustice et al. commented that predicted PSD increment consumption for PM_{10} should be compared to the proposed increments for $PM_{2.5}$ and predicted NAAQS impacts for PM_{10} should be compared to the proposed NAAQS for $PM_{2.5}$.

Response – See response to Public Comment II.9.

IV.13 **PSD increment analysis and flare emissions** – Earthjustice et al. commented that the flare sources should have been included in the PSD increment modeling.

Response – See response to EPA Comment III.13.

IV.14 **CO background concentrations** – Earthjustice et al. commented that the modeled CO impacts would have exceeded the NAAQS with higher background concentrations. They also pointed out that some older data from the site used by the applicant for background concentrations are higher than those used in the modeling analysis.

Response – DKRW searched the AirData website (http://www.epa.gov/air/data/geosel.html) to find monitored CO data from within the state of Wyoming. Data from a single site (Yellowstone NP) was available, and the applicant chose data from the latest year (2005) that was available at the start of preparation of the permit application. Contrary to the footnote in Table XI of the Division's analysis that stated the chosen values were 2nd high values for the year, the chosen values of 1.7 ppm for 1-hour and 0.8 ppm for 8-hour represent the overall highest values measured during 2005. The highest values for the more current available years (2006 and 2007) are the same or lower than the values from 2005. Beginning in December of 2006, ambient CO data has been collected at a station located to the north of Evanston, Wyoming at Murphy Ridge. Since the start of monitoring, and through the 3rd quarter of 2008, the highest 1-hour (0.87 ppm) and 8-hour (0.69 ppm) values measured at the station are lower than those used by the applicant. The Division is satisfied that the values chosen by the applicant represent conservative estimates of the background CO concentrations in the area of the proposed project.

IV.15 **Ozone air quality** – Earthjustice et al. commented that ozone modeling should be performed to assess the impacts of project emissions on ozone air quality.

Response – See response to Public Comment II.4.

IV.16 **Plume blight** – Earthjustice et al. commented that the VISCREEN model should have been used to estimate the degree to which the project's plumes would be visible.

Response – See response to Public Comment II.11.

IV.17 **Health risks of toxic chemicals** – Earthjustice et al. commented that several toxic chemicals (acetaldehyde, acrolein, mercury, naphthalene, PAH, propylene oxide) that have been identified as carcinogens were not included in the inhalation risk assessment, and that a multi-pathway risk assessment should be conducted for the facility.

Response – The applicant revised the Tier 1 inhalation risk assessment to include all known carcinogens that are expected to be emitted from the facility (see response to Public Comment II.10). Regarding the need for a multi-pathway risk assessment, the applicant used information in the EPA document *Air Toxics Risk Assessment Reference Library, Volume 2, Facility-Specific Assessment*, to evaluate the need for such an assessment. As described in the EPA document, a multi-pathway assessment may be required if air toxics are emitted that "persist" and which may "bioaccumulate" (namely, "PB-HAP"). For the proposed facility, the only PB-HAPs that will be emitted are mercury and polycyclic aromatic hydrocarbons (PAH). These compounds will be

emitted from the three proposed turbines. Total emissions of these two compounds are estimated to be less than 0.1% of the total HAP emissions from the facility. Mercury emissions from the facility are to be controlled with two (2) mercury guard beds (activated carbon) with an estimated removal efficiency of 99 percent, as determined by best available control technology (BACT). In addition, the PAH emissions from the turbines were conservatively estimated as uncontrolled for input into the Tier 1 inhalation risk assessment. Oxidation catalysts on the turbines will remove 85-90% of the organic HAPs.

IV.18 **Acute noncancer risks** – Earthjustice et al. commented that the sum of the individual hazard quotients (HQ) for acute noncancer health effects summed to more than one (1), and therefore are significant.

Response – A top-down best available control technology (BACT) analysis was conducted for each of the pollutants determined to be subject to PSD for the project. No ambient standards have been established for hazardous air pollutants (HAPs), but current Division policy requires PSD applicants to conduct a Tier 1 inhalation risk assessment for HAPs in accordance with EPA guidelines. This assessment is not required by the WAQSR, but the assessment is included in the permit application package for public information purposes. The EPA document *Air Toxics Risk Assessment Reference Library, Volume 2, Facility-Specific Assessment* (pg 43) provides a suggested method to sum individual acute risk factors, but also cautions that this approach is not as well-defined as the method for estimating long-term effects. As stated in the EPA reference: "although this appears similar to the process for combining chronic HQs, the summing of acute HQs is complicated by several issues that do not pertain to chronic HQs. First, acute dose-response values have been developed for purposes that vary more widely than chronic values. Some sources of acute values define exposures at which adverse effects actually occur, while other sources develop only no-effect acute values. Second, some acute values are expressed as concentration-time matrices, while others are expressed as single concentrations for a set exposure duration. Third, some acute values may specifically consider multiple exposures, whereas others consider exposure as a one-time event. Fourth, some sources of acute values are intended to regulate workplace exposures, assuming a population of healthy workers (i.e., without children, seniors, or other sensitive individuals). Such occupational values may also consider cost and feasibility, factors that EPA considers the province of the risk manager rather than the risk assessor."

As an example of the complications in an analysis of cumulative acute effects, the applicant determined individual risk factors using the dose-response values from the California reference exposure levels (REL) and the imminently dangerous to life and health (IDLH/10). The sum of the individual acute risk factors using the REL approach was well above the "threshold" value of one, while the IDLH/10 approach was much less than one. The large difference is brought about by the REL dose-response value for acrolein, which is several orders of magnitude lower than the IDLH/10 dose-response value (0.19 $\mu g/m^3$ vs. 460 $\mu g/m^3$). The acute hazard is estimated by dividing the modeled exposure concentration by the acute dose-response value:

Estimated acrolein risk using REL: 7.30 $\mu g/m^3 \div 0.19\ \mu g/m^3 = 38.4$
Estimated acrolein risk using IDLH/10: 7.30 $\mu g/m^3 \div 460\ \mu g/m^3 = 0.016$

The applicant produced a toxicological assessment for acrolein that compares the expected acrolein concentrations from the plant to the lowest concentrations at which effects of acrolein are actually perceived. The highest modeled 1-hour impacts of acrolein were approximately 0.003 ppm. This is significantly lower (by factor of about 20) than the level expected to cause minor eye irritation (and no other adverse effects), as cited by numerous studies. The toxicological assessment report (URS, Attachment 2 to November 5, 2008 letter) also notes that the conservative REL value for acrolein is based on a study that was published in 1960 and is not cited in any of the 10+ other studies reviewed by the applicant.

IV.19 **Project SO_2 emissions and soils/vegetation** – Earthjustice et al. commented that the modeled concentrations of SO_2 exceed threshold values for damage to sensitive soils and vegetation.

Response – The applicant provided an analysis of the recreational/commercial value of soils and vegetation in the project area (see response to EPA Comment III.9). As stated in the Division's analysis document, more than 99% of the modeled WAAQS/NAAQS impacts for short-term SO_2 are attributable to the project flares in cold start or malfunction modes, which will be infrequent and temporary.

IV.20 **Ozone impacts on sensitive soils and vegetation** – Earthjustice et al. commented that ozone impacts (or VOC impacts as a surrogate) have not been assessed for sensitive crops and plants.

Response – See response to EPA Comment III.9.

IV.21 **Greenhouse gas emissions** - Earthjustice et al. commented that CO_2 emissions from the proposed plant should be quantified and that BACT measures to capture and sequester them should be discussed.

Response – See response to Public Comment II.2.

IV.22 **Scale of meteorological data used for CALPUFF modeling** – Earthjustice et al. commented that the 36-km MM5 data and 4-km CALMET windfield are too coarse to model the complex terrain in the modeling domain.

Response – The Division is satisfied that the 36-km MM5 data that were resolved by the CALMET model down to 4-km spacing provided an adequate 3-dimensional meteorological field with which to drive the CALPUFF model. The experience of the Division's modelers with progressive resolution of CALMET fields to 2-km or 1-km spacing is that such efforts tends to drive the predicted impacts downward. A recent presentation at the 2008 EPA Regional/State/Local Modeler's Workshop titled *Scale Effects of Topography on Modeled Impacts* (Bowman, 2008) concluded that windfields with progressively higher resolution for several analyses in complex terrain in the Pacific Northwest tended to produce progressively lower modeled impacts. Given that the modeled visibility results for the proposed project were (at most) 65% of the 5% FLAG significance threshold, predicted criteria pollutant impacts were (at most) 19% of Class I area modeling significance levels, and predicted deposition levels were (at most) 18% of the National Park Service's Deposition Analysis Thresholds (DAT), the Division does not believe that further resolution of the MM5 data or CALMET windfield would produce results more conservative than those already presented.

IV.23 **Accuracy and validity of meteorological data** – Earthjustice et al. commented that the windfields generated by the CALMET preprocessor were not evaluated before their use in the CALPUFF modeling.

Response – The applicant conducted an analysis of the CALMET windfield which included comparisons of the predicted wind flows to actual observations. As described in Attachment 3 of *Response to Comments for Air Quality Permit Application (AP-5873)* (URS, 2007), the applicant used the PRTMET program to produce graphical representations of CALMET windflows. Several days were examined to confirm that the model was properly simulating the influence of terrain on the windflows. The 24-hour period that yielded the highest predicted visibility impact was also examined for proper windflows. This worst-case day corresponded to the unusually strong winter storm that occurred in March of 2003, and the applicant was able to use a research paper authored by UCAR/NOAA to confirm that the CALMET flows agreed with observed conditions on that day. The applicant also extracted wind roses from several points in the CALMET domain to compare to observed wind roses from Aspen and Craig, Colorado and Laramie, Wyoming. The wind roses extracted from CALMET showed very good agreement with the observed winds. The Division is satisfied that the meteorological inputs used to drive CALPUFF were adequately evaluated for quality.

IV.24 **Savage Run receptors** – Earthjustice et al. commented that the receptor spacing used for Savage Run Wilderness Area was too coarse (2 km) and that peak concentrations may have been missed because the National Park Service (NPS) normally uses spacing of 1 km.

Response – The 30 receptors used to represent the Savage Run Wilderness Area were placed along five rows with spacing in the X direction of approximately 1.3 km and spacing in the Y direction of approximately 1.8 km. An examination of the spacing used in the NPS receptor database to represent Rocky Mountain National Park reveals that the NPS spacing is nearly identical. The Division feels that the receptor spacing for Savage Run was adequate.

IV.25 **Top of modeling CALPUFF domain** – Earthjustice et al. commented that the top of the CALPUFF domain may have been set too low (3,500 meters), and that the CALPUFF modeling should be repeated with a domain top of 4,500 meters (m) to prevent loss of mass and the underprediction of visibility impacts.

Response – The Division created a CALMET windfield with a higher domain top of 4,500 m for test purposes. Differences between the predicted visibility and SO_2 impacts at the nearest Class I area (Mt Zirkel) and one of the more distant Class I areas (Bridger Wilderness) using the CALPUFF original domain top of 3,500 m and the domain top of 4,500 were negligible. Specifically, the largest difference brought about by the domain change was 0.5% in the predicted annual SO_2 concentration at Bridger WA. The predicted maximum visibility impacts were identical at both areas. The Division is confident that the CALPUFF domain capped at 3,500 m provides an adequate vertical dimension to model the impacts from the project.

IV.26 **Class I increment and visibility impacts (flares and intermittent sources)** – Earthjustice et al. commented that impacts have been understated due to the omission of intermittent sources such as the flares, gasifier preheaters, black start generators, CO_2 vent, and firewater pumps.

Response – See response to EPA Comment III.13. As stated in the Division's analysis: "Several sources proposed for the facility were not included in the CALPUFF modeling. The HP and LP flares were not included because they would only be significant sources of visibility-reducing or criteria pollutants during cold starts or malfunctions. The same applies to the Gasifier Preheaters, Black-Start Generators, CO_2 Vent Stack, and Firewater Pump."

IV.27 **Class I increment analysis for $PM_{2.5}$** – Earthjustice et al. commented that a $PM_{2.5}$ Class I increment analysis has not been performed.

Response – See response to Public Comment II.9.

IV.28 **Standards for Petroleum Refineries** – Earthjustice et al. commented that new source performance standards (NSPS) and national emission standards for hazardous air pollutants (NESHAP) for petroleum refineries should apply to the Medicine Bow IGL Plant based on an 1980 EPA determination that solvent refining of coal (SRC II process) is applicable to Subpart J.

Response – The Division requested Medicine Bow Fuel & Power evaluate the applicability of the refinery NSPS and NESHAP standards for the facility based on Earthjustice's comment. Medicine Bow Fuel & Power submitted documentation which contrasted the SRC II process and the proposed coal-to-liquid plant. While the feed to the SRC II process and the proposed facility are similar, the mechanisms for producing gasoline in the two processes are different. The SRC II process dissolves coal into a crude oil-like liquid, which is then fractionated to recover products. These products, such as naphtha, can be further treated in units such as reformers. The process proposed by Medicine Bow Fuel & Power converts syngas to methanol. The methanol is then converted to a gasoline range product through dehydration, polymerization, and cyclization. The gasoline product is then treated to remove durene. When comparing the two processes to the NSPS definition of a petroleum refinery the SRC II process fits the definition. The proposed coal-to-liquid process does not meet the definition of a petroleum refinery as the facility does not produce gasoline through distillation of petroleum or through redistillation, cracking, or reforming of unfinished petroleum derivatives. Therefore, the facility is not subject to the NSPS or NESHAPs for petroleum refineries.

IV.29 **$PM_{2.5}$** – Earthjustice et al. commented that BACT analyses for $PM_{2.5}$ needs to be conducted and a demonstration that $PM_{2.5}$ emissions from the facility will comply with the National Ambient Air Quality Standards (NAAQS).

Response – See response to Public Comment II.9.

IV.30 **PM_{10} (Condensable and Filterable)** – Earthjustice et al. commented that a top-down BACT analysis should be conducted for total PM_{10} comprising the sum of filterable plus condensable particulate matter.

Response – After additional review of the particulate emissions from the turbines it was determined that the potential to emit for these units and top-down BACT analysis was based on filterable plus condensable PM_{10} emissions. Therefore, the Division will clarify in Condition 10 that the particulate limit is based on filterable plus condensable PM_{10}, and will clarify that particulate testing in Condition 9 for the turbines includes EPA Reference Method 5 and 202.

IV.31 **Case-by-Case MACT analysis for HAPs (CO)** – Earthjustice et al. commented that a case-by-case maximum available control technology (MACT) analysis needs to be conducted for HAPs (CO is used as surrogate) as the NESHAP for Industrial, commercial, and institutional boilers and process heaters was vacated (40 CFR part 63, subpart DDDDD).

Response – See response to Public Comment II.14.

IV.32 **Acid Rain Provisions** – Earthjustice et al. commented that the Medicine Bow IGL Plant should be subject to the Acid Rain Provisions of 40 CFR part 72 as the facility will export power.

Response – The application, as submitted, did not show that the facility would export power. However, it is noted that the application for the Industrial Siting Permit indicated that power would be exported from the facility. DKRW provided clarification to the Division that the facility will not export power. Therefore, the facility is not subject to the Acid Rain Provision of 40 CFR part 72.

IV.33 **Clean Air Mercury Rule** – Earthjustice et al. commented that with 40 CFR part 60, subpart HHHH being vacated and the facility exporting power as an electric steam generating unit a case-by-case MACT analysis needs to be conducted for mercury.

Response – The application, as submitted, did not show that the facility would export power. However, it is noted that the application for the Industrial Siting Permit indicated that power would be exported from the facility. Medicine Bow Fuel & Power provided clarification to the Division that the facility will not export power. Additionally, the facility is not a major source of HAPs (See response to Public Comment II.14). Therefore, a MACT analysis is not required for mercury.

IV.34 **Title V** – Earthjustice et al. commented that the permit should contain a condition requiring the submission of complete Title V application within 12 months of startup of the facility and notification of actual startup.

Response – Condition 3 of the permit requires Medicine Bow Fuel & Power, LLC to obtain an operating permit in accordance with Chapter 6, Section 3 of the WAQSR. Chapter 6, Section 3(c)(i) details the requirements for submitting an application for an operating permit for a major source. Additionally, Condition 5 of the permit requires Medicine Bow Fuel & Power, LLC to provide the anticipated date of initial startup along with the actual date of initial startup.

IV.35 **Startup/Shutdown Emissions GE Gasifier and SynGas Cleanup** – Earthjustice et al. commented that since the GE Gasifier and SynGas Cleanup process vent to the HP/LP flares during startup/shutdown/malfunction (SSM) BACT emissions limits should be applied to the flares instead of a general SSM plan. Earthjustice also commented that the flares should be identified as VOC control devices during startup and should be monitored during startup such as ensuring the presence of a pilot flame and the flow rate for vent gases to the flares. Additionally, it was suggested that the permit should contain work practices (minimum loads for startup, maximum duration of startup, and maximum number of startups per year) and should also require recordkeeping of the occurrence of startups and shutdowns and the duration of these events.

Response – The Division did not establish emission limits for the flares as emission limits would not be practically enforceable as these units cannot be tested using traditional EPA reference methods to determine compliance with emission limits. However, the Division considered the SSM plan to represent BACT for the flares during startup/shutdown operations. DKRW has also indicated that the SSM for the facility will continuously be evaluated for improvements to minimize emissions. It should be noted that any revisions to the SSM plan by DKRW are subject to approval by the Division.

The Division agrees that the flares need to be monitored to ensure compliance, and has included conditions in the permit requiring monitoring and recordkeeping for the presence of a pilot flame, along with provisions requiring the flares to smokeless as defined in Chapter 5, Section 2(m) of the WAQSR. See also response to Environmental Group Comment IV.6.

IV.36 **Sour Water Stripper** – Earthjustice et al. commented that BACT emissions limits should be applied to the Sour Water Stripper during startup operations.

Response – During normal operation and flow rates above 20% of design during startup operations, the sour gas from the sour water stripper is directed toward the SRU. At flow rates below 20% the sour gas is routed to the flares for control. The sour water stripper is included in the SSM plan for the facility, which the Division considers to represent BACT for SSM operations.

IV.37 **Startup/Shutdown Emissions Sulfur Recovery Unit and Solexol Acid Gas Removal** – Earthjustice et al. commented that BACT emissions limits need to be applied to the sulfur recovery unit (SRU) and flare during startup.

Response – There are no emissions points associated with the SRU at the Medicine Bow IGL Plant; therefore, there are no emission limits to establish for the SRU. During normal operations of the SRU tail gas is routed back to the Solexol unit for recovery. However, during startup of the facility gases from the Solexol unit are routed to the flare until there is sufficient capacity for the SRU to commence operation as described in the SSM plan. The Division considers the SSM plan to represent BACT for the SRU and flares during startup/shutdown operations.

IV.38 **CO_2 (Greenhouse Gas) Emissions** – Earthjustice et al. commented that Medicine Bow Fuel & Power, LLC should quantify CO_2 emissions and should review technically feasible control options for minimizing CO_2 emissions during startup of the facility or any other time that CO_2 export is not feasible.

Response – See response to Public Comment II.2.

IV.39 **Startup emissions from the two flares and the Sour Water Stripper** – Earthjustice et al. commented that the ambient impact analysis should include startup emissions from the two flares and the Sour Water Stripper.

Response – The ambient air quality impact analysis did include worst-case (startup/malfunction) emissions from the proposed flares. The worst-case emissions from the flares include any contribution from the Sour Water Stripper during less than 20% design flow during stripper startup (DKRW, September 30, 2008 response letter). During normal operation and above 20% design flow during startup, sour gas from the stripper will be directed to the SRU and consumed in the SRU furnace.

IV.40 **Inclusion of elemental mercury and mercury compounds in the risk assessment** – Earthjustice et al. commented that elemental mercury and mercury compounds (mercury chloride and methylmercury) should be included in the risk assessment.

Response – The applicant revised their Tier 1 inhalation risk assessment (DKRW, November 5, 2008 letter) to include several compounds that were omitted from the initial analysis. Elemental mercury was included in the revised analysis, and the estimated chronic non-cancer and acute effects were quantified. The estimated chronic non-cancer risk is 4.7E-06 and the estimated acute non-cancer risk is 2.22E-05. Cancer risk was not quantified because mercury is not listed as a carcinogen.

According to the applicant's letter dated December 30, 2008, the project will not emit the other mercury compounds. Methylmercury is not a pollutant known to be emitted from coal combustion or gasification. Any mercury chloride that might be produced would be removed in the syngas scrubbers or in the water wash prior to the mercury guard beds.

IV.41 **Ambient impact analysis does not include ozone preconstruction monitoring** – Earthjustice et al. commented that preconstruction ozone monitoring should have been required, the applicant should demonstrate compliance with the NAAQS for ozone, and WDEQ ozone monitoring was inadequate at the Boulder station in 2007.

Response – Monitored data near the proposed site shows compliance with the ozone NAAQS (see response to Public Comment II.4). The Boulder monitor is located approximately 270 km west-northwest of the proposed project. Data used to represent the conditions for the project were taken from much closer stations (Wamsutter, WY and Centennial, WY).

IV.42 **Benzene Risk** – Earthjustice et al. commented that the predicted cancer risk for benzene was almost two orders of magnitude higher than the unit risk provided by the EPA.

Response – See response to Public Comment II.10. The receptors that yield the highest predicted benzene risk are located within the boundary of the Carbon Basin Mine (see Figure 2).

IV.43 **Sulfur Fuel Content (Turbines/Black Start Generators)** – Earthjustice et al. commented that the permit should contain a condition to ensure that the SO_2 emission rates from the turbines and Black Start Generators are limited to meet BACT.

Response – The Division established SO_2 emission limits for the turbines in the permit. Additionally, NSPS standard 40 CFR part 60, subpart KKKK sets SO_2 limits and establishes monitoring requirements for the turbines. The Division did not establish SO_2 emissions from the generators as these units are fired on natural gas and have limited operating hours. See response to EPA Comment III.4.

IV.44 **PM_{10} from Ash Storage or Handling** – Earthjustice et al. commented that the Air Quality Division did not address ash storage and/or handling as an emission source, and did not apply BACT for PM_{10} to this source.

Response – The gasification process produces a byproduct commonly referred to as slag, which Earthjustice has referred to as ash. The application indicates that the slag is not expected to become airborne and will be periodically treated with water. The Division will include as a condition of the permit that the slag storage and handling be treated with water, and will be subject to a no visible emission limit as determined by Method 22 of 40 CFR part 60, Appendix A.

IV.45 **Coal Cleaning and Drying Process** – Earthjustice et al. commented that a top-down analysis for mercury and particulate matter should have considered the use of coal cleaning and drying processes.

Response – The Division does not agree that the use of coal cleaning and drying processes should have been considered in the top-down BACT analyses for the facility. The utilization of these technologies would require changes to the process proposed by the applicant and would redefine the source, which is not considered in BACT determinations.

IV.46 **Opacity Limits** – Earthjustice et al. commented that the Division should have established lower opacity limits less than 20%, as lower opacity limits have been established by BACT requirements by other agencies.

Response – WAQSR Chapter 3, Section 2 limits opacity to 20% and this limit is included in the permit. The definition of BACT contains the phrase "including a visible emission standard." It is the Division's position that this phrase allows but does not require an opacity limit other than the 20% limit. Opacity cannot be directly correlated to particulate emissions. Therefore, it is not feasible to perform a BACT analysis on visible emissions, and any limit other than 20% would be arbitrary. However, sources which have been identified as having no particulate emissions (i.e. passive enclosure control systems) are subject to a no visible emission limit as determined by Method 22 of 40 CFR part 60, Appendix A. If visible emissions are detected DKRW is required to take and document any corrective action.

V. **Analysis of Comments from DKRW:**

V.1 **Saddleback Hills Mine** – DKRW commented that the application analysis states that 2.1 MMTPY of coal is to be mined during the 3-year development period. The amount of coal mined should reflect a total of 2.5 MMTPY.

Response – The Division acknowledges that 2.5 MMTPY of coal will be mined during the 3-year development period of the Saddleback Hills Mine, and noted that projected emissions in the application were based on 2.5 MMTPY.

V.2 **Development Period Emissions** – DKRW commented that PM_{10} emissions shown for the development period of the Saddleback Hills Mine are higher as the table shown in the analysis did not include emissions from conveying and loading operations.

Response – The Division acknowledges that these emissions should have been included in Table I of the analysis. Emissions in Table I were shown to provide information about the activities which would occur prior to normal operation of the facility. Table I has been revised in the permit to include emissions from conveying and loading operations.

V.3 **Coal Storage** – DKRW comments that emissions from the coal conveyance system were not included in the total for coal storage in Table III.

Response – The Division acknowledges that these emissions should have been included in Table III of the analysis. Table III from the analysis has been revised in the permit (Table II) to include emissions from coal conveyance.

V.4 **Cold Start Turbine Emissions** – DKRW commented that the NO_x and CO emissions in Table Va (Cold Startup Year Emissions) should be higher based on the type of fuels utilized during startup in a cold start year.

Response – The Division does not agree with the assessment that NO_x and CO emissions should be higher based on the different types of fuels utilized during a cold start year. Emissions limits for NO_x and CO from the turbines were established on a 30-day rolling average through the BACT analysis regardless of the fuel type combusted, and included periods of startup and shutdown. Therefore, the Division considers the emissions for the turbines in Table Va as being representative of a cold start year.

V.5 **Hourly Cold Start Year Emissions** – DKRW commented that the maximum hourly emission rates in Table Vb for the turbines, gasifier preheaters, HP flare and LP Flare do not match rates presented in the application.

Response – The maximum hourly emission rates for PM_{10}, CO, SO_2 and NO_x in Table Vb reflect the maximum hourly emission rates utilized in the ambient impact analyses for the facility which corresponds with Table XIII in the analysis.

V.6 **HAP Major Source Applicability** – DKRW commented that the facility is only a major source of HAPs as a single pollutant is greater than 10 tpy and not any combination of HAPs greater than 25 TPY.

Response – DKRW originally commented that the facility is only a major source of HAPs as a single pollutant was projected to be greater than 10 tpy (Methanol). However, DKRW has subsequently revised HAP emissions and is no longer a major source of HAPs (See response to Public Comment II.14).

V.7 **Annual emission rates for turbines** – DKRW requested that the annual emission rates for the turbines be revised to account for cold startup year emissions.

Response – The Division established annual emission rates for the turbines in Condition 10 based on the 30-day rolling average emission limit determined through BACT, which included periods of startup and shutdown. Therefore, the annual emission limits for the turbines remain unchanged.

V.8 **Short term NO_x and CO limits for turbines** – DKRW requested that the pound per hour (lb/hr) limits for NO_x and CO be revised to account for changes in the ambient temperature as turbine emissions vary by ambient temperature.

Response – The pound per hour limits for NO_x and CO are based on 4 ppm_v NO_x and 6 ppm_v CO with the installation of SCR to control NO_x and an oxidation catalyst to control CO. These output limits were established independent of ambient temperature through the BACT analyses for these pollutants, and was not addressed as an issue of technical feasibility in the application. The Division considers the control equipment proposed as BACT for NO_x and CO as capable of meeting the proposed emission limits for the turbines independent of ambient temperature. Therefore, the pound per hour limits for the turbines remain unchanged.

V.9 **Black Start Generators** – DKRW requested that the operating hours of each Black Start Generator be increased to 360 hours per year instead of the originally requested 250 hours per year. DKRW noted that 360 hour per year of operation was utilized in the ambient impact analysis for these units.

Response – The Division requested clarification on the need to increase operating hours of the Black Start Generators. DKRW responded that the increase to 360 hours of operation was necessary for operations during the cold-start year (commissioning activities), and is not required for normal operation. Therefore, the Division will revise Condition 16 to allow 360 hours of operation for the initial year of operation (commissioning activities), and 250 hours of operation per year thereafter.

V.10 **Synthetic Organic Chemical Manufacturing Industry (SOCMI) NSPS Applicability** – DKRW commented that they believe that the facility is not subject to the requirements of 40 CFR part 60, subpart VVa and 40 CFR part 63 subparts H and EEEE as the facility doesn't meet the definition of a product under the subparts.

Response – The Division does not agree with DKRW that the facility is not subject to 40 CFR part 60, subpart VVa. Methanol is listed as one of the chemicals in Subpart VVa §60.489a which is covered under this subpart. Additionally, the EPA considers either of the following downstream uses as indicative of the production of a listed chemical as a product: (1) production for sale as that listed chemical, or (2) use in another process where that listed chemical is needed. The production and use of methanol in the MTG process at the facility meets the definition of a product as described under item two. Therefore, the Division has kept the requirement for DKRW to comply with the applicable requirements of 40 CFR part 60, subpart VVa.

Based on the revisions to the estimated HAPs at the facility (now a minor source of HAPs), the facility is no longer subject to the requirements of 40 CFR part 63 subparts H and EEEE and the respective conditions have been removed.

V.11 **Typographical Error** – DKRW commented that proposed Condition 32 incorrectly references Condition 29(a) instead of Condition 33(a).

Response – The Division has corrected this condition to reference the appropriate condition in the permit.

VI. Decision:

On the basis of comments received during the public comment period and at the public hearing, an analysis of those comments, and representations made by Medicine Bow Fuel & Power, LLC in the application, the Department of Environmental Quality has determined that the permit application filed by Medicine Bow Fuel & Power, LLC complies with all applicable Wyoming Air Quality Standards and Regulations and that a permit will be issued to Medicine Bow Fuel & Power, LLC allowing construction of Medicine Bow IGL Plant as described in the application. All of the conditions proposed in the Division's analysis will be included in the permit with the following changes and additions:

1. The Division has included as a condition of the permit (Condition 19) a demonstration that the facility is a minor source of HAPs based on a final component count of the as-built facility prior to startup of the facility (See response to Public Comment II.14).

   That Medicine Bow Fuel & Power shall submit a demonstration that fugitive HAPs emissions are as represented in the application (minor source of HAPs) based on a final equipment count (equipment as defined in 40 CFR part 60, subpart VVa) of the as-built facility prior to startup of the facility.

2. The Division has included as a condition of the permit (Condition 20) an annual submittal of HAP emissions based on the measured leak detection rates at the facility (See response to Public Comment II.14).

   Medicine Bow Fuel & Power, LLC shall submit, on an annual basis, a report on actual fugitive HAP emissions for the facility. Actual fugitive HAP emissions shall be calculated using the methodology in the permit application, and the average measured leak detection rates for the past calendar year. The frequency of reporting fugitive HAP emissions may be revised without amending the permit, but revisions to the frequency must be approved by the Division prior to implementation. This report shall include the following:

   a. *Total fugitive HAPs emissions for the facility in tons per year*
   b. *Speciated fugitive HAP emissions for the facility in tons per year*
   c. *Average leak detection rate by equipment in ppm (equipment as defined in 40 CFR part 60, subpart VVa)*
   d. *Documentation of fugitive HAP emission calculations*

3. The Division has included as a condition of the permit (Condition 21) a requirement for the monitoring of leaks under the LDAR program to be conducted a minimum of every six (6) months (See response to Public Comment II.14).

   Medicine Bow Fuel & Power, LLC shall utilize a LDAR program in accordance with 40 CFR part 60, subpart VVa. Monitoring under the LDAR program shall be conducted a minimum of every six (6) months. Records of monitoring and repair measures shall be kept for a period of at least 5 years and shall be made available to the Division upon request.

4. The Division has revised Condition 9 to include EPA Reference Method 202 in addition to Reference Method 5, and has revised Condition 10 to clarify the particulate emission limit for the turbines includes both filterable and condensable PM_{10} (See Environmental Group Comment IV.30).

5. The Division has included as a condition of the permit (Condition 22) a requirement to monitor SO_2 emissions from the HP and LP flares (See response to Environmental Group Comment IV.6).

   Medicine Bow Fuel & Power, LLC shall monitor SO_2 emissions from the HP and LP flares. Monitoring of SO_2 emissions shall consist of installing flow monitoring equipment to the flares, and by either direct sampling of the flow to the flares or sampling of the coal. Records shall be kept for a period of at least 5 years and shall be made available to the Division upon request.

6. The Division has included as a condition of the permit (Condition 23) a requirement for the HP and LP to be smokeless per Chapter 5, Section 2(m) of the WAQSR (See response to Environmental Group Comment IV.35).

   That the HP and LP flares shall be designed, constructed, operated and maintained to be smokeless, per Chapter 5, Section 2(m) of the WAQSR, with no visible emissions except for periods not to exceed a total of five (5) minutes during any two (2) consecutive hours as determined by Method 22 of 40 CFR part 60, Appendix A.

7. The Division has included as a condition of the permit (Condition 24) a requirement for the HP and LP flares to be maintained and operated during all periods of active operation of the facility (See response to Environmental Group Comment IV.35).

   Medicine Bow Fuel & Power, LLC shall maintain and operate the HP and LP flares during all period of active operation such that the controls remain effective as viable emission control devices.

8. The Division has included as a condition of the permit (Condition 25) a requirement for the monitoring of the presence of a pilot flame on the HP and LP flares along with a requirement to maintain records noting when the pilot flare is not present during active operation of the facility (See response to Environmental Group Comment IV.35).

   That the presence of a pilot flame shall be monitored using a thermocouple and continuous recording device or any other equivalent device to detect the presence of a flame on the HP and LP flares. Medicine Bow Fuel & Power, LLC shall maintain records noting the date and duration of time during active operation when the pilot flame is not present in the HP and LP flares. Records shall be kept for a period of at least 5 years and shall be made available to the Division upon request.

9. The Division has included as conditions of the permit (Conditions 26, 27, 28, and 29) a requirement for the slag storage and handling to be treated with water and/or chemical dust suppressants, and a no visible emissions limit as determined by Method 22 of Appendix A, 40 CFR part 60 (See response to Environmental Group Comment IV.44).

   The slag storage and handling operation shall be treated with water and/or chemical dust suppressants on a schedule such that treatment remains a viable control measure.

   The slag storage and handling operation shall be operated and maintained so the operation exhibits no visible emissions as determined by Method 22 of Appendix A, 40 CFR part 60.

   Medicine Bow Fuel & Power, LLC shall conduct, at minimum, daily visual observations of the slag storage and handling operation to determine the presence of visible emissions. Records shall be kept documenting whether visual emissions are noted and the corrective action taken. These records shall be maintained for a period of five (5) years and shall be made available to the Division upon request.

   That performance tests shall be conducted on the slag storage and handling operation to determine compliance with Condition 27. Method 22 of Appendix A, 40 CFR part 60, shall be used to determine fugitive particulate emissions. Performance tests shall be at least 30 minutes in duration, with observations taken from each side of the operation. Notification of the test date shall be provided to the Division fifteen (15) days prior to testing. Results shall be submitted to this Division within 45 days of completion.

10. The Division has revised Condition 18 to allow 360 hours of operation for each Black Start Generator during the initial year of operation, and 250 hours of operation for each Black Start Generator for the subsequent years of operation of the facility (See response to DKRW Comment V.9).

    That each Black Start Generator shall be limited to 360 hours of operation during the initial year of operation of the Medicine Bow IGL Plant, and shall be limited to 250 hours of operation per year after the initial year of operation. The Fire Water Pump shall be limited to 500 hours of operation per year. Medicine Bow Fuel & Power shall install, operate and maintain a non-resettable hour meter to determine the hours of operation of each Black Start Generator and Fire Water Pump. Records of the hours of operation shall be kept and maintained and made available to the Division upon request.

11. The Division has removed proposed permit conditions 28 through 31 as the facility is no longer a major source of HAPs (See response to Public Comment II.14).

12. The Division has revised Condition 39 (proposed permit condition 32) to correct the referenced permit condition (See response to DKRW Comment V.11).

13. The Division has revised Condition 42 (proposed permit condition 35) to be consistent with previously issued permits where EPA has proposed revisions to NSPS standards.

Dated this 4th day of March, 2009

David A. Finley
Administrator
Wyoming Air Quality Division

John V. Corra
Director
Wyoming Department of Environmental Quality

Figure 1: Modeled Annual PM-10 Increment (% consumed)

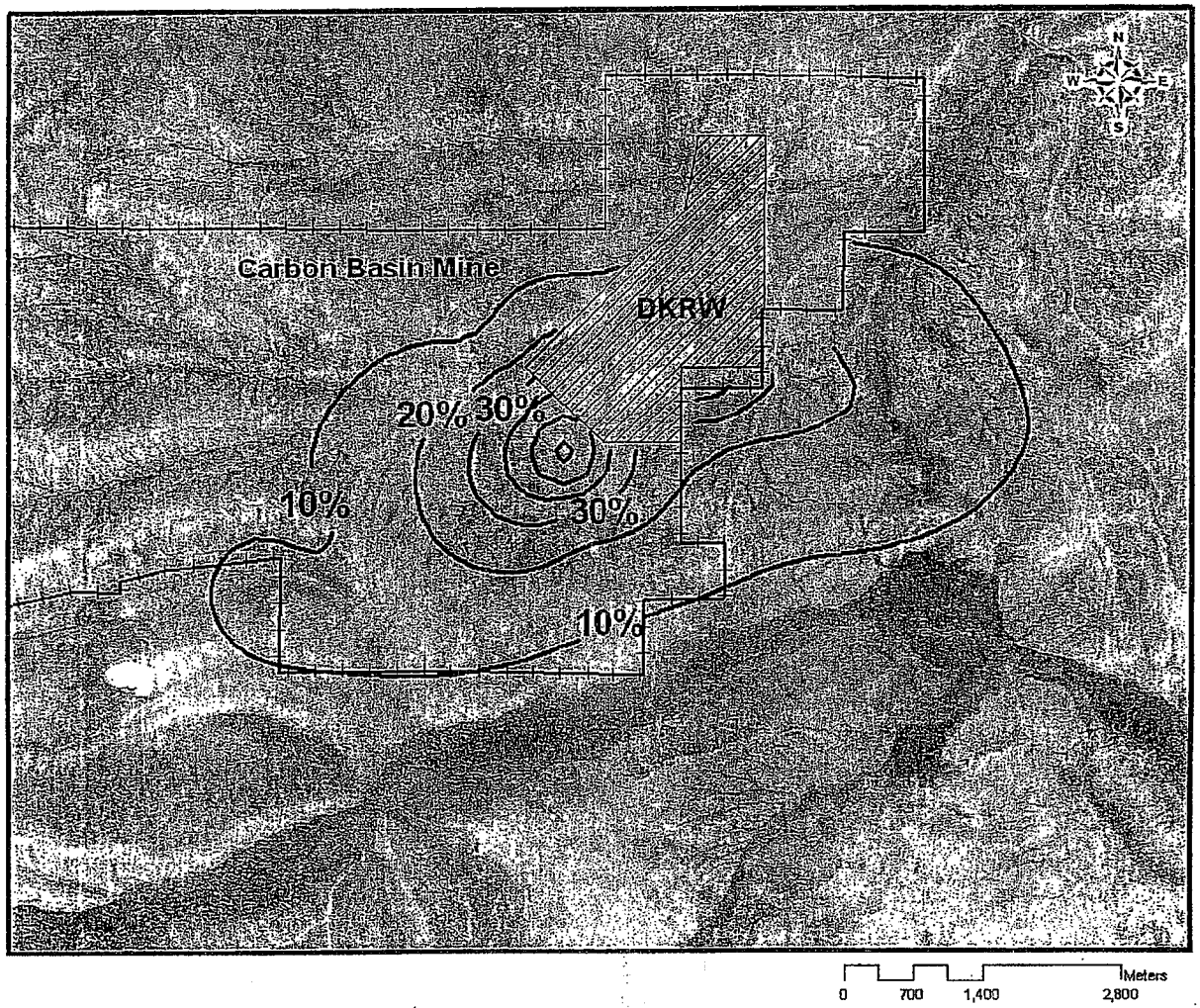

Figure 2: Estimated Extent of Total Increased Cancer Risk

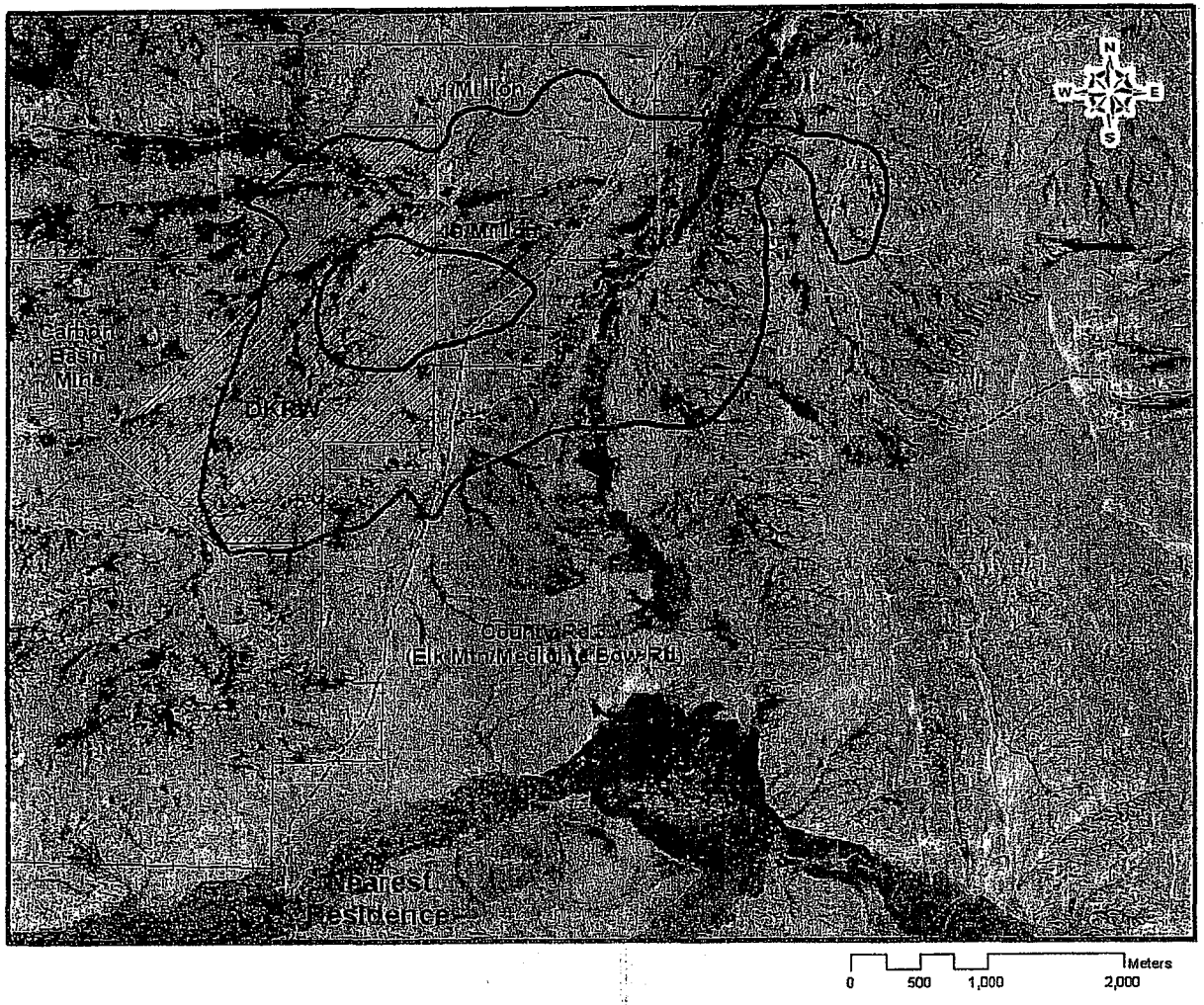

Figure 3: Mine Area Sources and Model Receptors