FAXED TO ADEC
ON 6/9/09

June 9, 2009

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JUN 12 2009
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RE: Comments on ADEC Proposal to Issue Preliminary BART Determination on GVEA Healy Power Plant 1

Dear Ms. Smith,

The purpose of this letter is to submit public comment on ADEC's proposed Best Available Retrofit Technology (BART) Determination for the GVEA Healy 1 Power Plant.

I have lived in Interior Alaska for almost 40 years and during that time have worked as an engineer and in senior management positions at the Fairbanks Municipal Utilities System and GVEA's three power stations located in Fairbanks, North Pole and Healy. My job duties included responsibility for operation and maintenance of the power plants to ensure their compliance with all environmental permit requirements. From 1987 through 1999 I acted as GVEA's project manager on the Healy Clean Coal Project (HCCP) and actively participated with AIDEA, DOE, ADEC, EPA, and the National Park Service (NPS) during the EIS, power plant design, permitting, construction and plant startup. I am a registered Engineer and currently semi-retired as an energy consultant. I have considerable knowledge in the history of the Healy 1 power plant and believe that I'm qualified to submit testimony on this important ADEC preliminary BART Determination. My comments are based on review of documents and studies listed at the end of this letter that pertain to Alaska's visibility/haze issues and this preliminary BART Determination.

According to the 5/12/09 Public Notice (1), ADEC is proposing significant reductions in the Healy 1 Power Plant's existing operating permit's Nitrogen Oxides (NOX), Sulfur Dioxide (SO2) and Particulate emission limits. I understand that the NPS is requiring that Selective Catalytic Reduction (SCR) equipment be installed to control NOx, along with increased sorbent injection to control SO2 emissions at the 25 MW Healy 1 Power Plant.

The Enviroplan Consulting Report (2) prepared for ADEC states that Healy Unit 1 and Auxiliary Boiler 1 fall under the Federal Regional Haze Rule (40 CFR Parts 51.300 through 51.309 and CFR Part 51, Appendix Y) and ADEC's regulations relating to BART (18AAC 50.260). Initial modeling conducted by Western Regional Air Partners (WRAP) predicted that the Healy 1 Power Plant emissions have a maximum visibility impact exceeding 0.5 deciviews inside the Denali National Park Class 1 area. Based on this modeling, Enviroplan concluded that GVEA Healy 1 BART controls currently comply with ADEC 18 AAC 50.260. Healy 1's existing dry

sorbent injection system to control SO2 and existing reverse gas baghouse for Particulate control are both considered BART. At the insistence of NPS, Enviroplan stated that an SCR unit should be added to the boiler's existing low NOx burner (LNB) and over-fire air (OFA) system in order to reduce NOx emissions control as BART along with substantial increases in sorbent injection to further reduce SO2 emissions.

According to 40 CFR 51, Appendix A, a BART engineering analysis requires six factors to be considered in evaluating emission sources: 1) the available retrofit options, 2) any pollution control equipment in use at the source, 3) the cost of compliance with control options, 4) the remaining useful life of the facility, 5) the energy and non-air quality environmental impacts of control options and 6) the visibility impacts analysis. GVEA hired CH2MHill and conducted the BART engineering analysis. GVEA notified ADEC of CH2MHill's conclusions that the existing Healy 1 Plant does not require additional retrofit controls because potentially feasible control options are a) not cost effective, b) do not result in significant visibility benefit and c) the visibility improvement from installing these controls are highly cost prohibitive. In GVEA's 3/18/09 Letter (3) to ADEC, they estimate the initial capital cost for adding these additional emission controls would be $10.8 million and the increased operation/maintenance costs for ammonia and additional sorbent would be $1.6 million/year. These changes would increase Healy 1's non-fuel power costs almost 40% or $3 million/year for each of the next 15 years. The financial impact to all of GVEA's customers would require a 3.3% rate increase to pay for this NPS mandate.

The GVEA Healy 1 Plant was built in 1967 and has operated almost continuously for over 50 years providing competitively priced, reliable and environmentally compliant power production for GVEA's customers. In the late 1970's GVEA upgraded the Healy 1 Plant by installing a reverse gas baghouse to reduce the boiler's particulate emissions in order to meet EPA's (and ADEC's) new (0.1 gr/dscf) particulate emission limit. In the mid-1980's ADEC requested and GVEA agreed to reduce the Healy 1 permit's existing 0.10 gr/dscf particulate emission limit 50% to 0.05 gr/dscf based on the baghouse's actual performance.

In 1987 AIDEA and GVEA started working with DOE to build HCCP. DOE completed an extensive EIS as part of the design and permitting effort for HCCP. The NPS, ADEC and EPA actively participated with DOE in defining the scope of the EIS. Visibility monitoring stations were installed in and near the Denali Park boundary to document any evidence of actual visual impact from the existing Healy 1 Plant. During the one-year study a Healy 1 "steam" plume was only sited a couple hours near but outside the northeast boundary of Denali Park during arctic winter conditions. The annual wind data showed that wind direction is to the East or North most of the time at the Healy power plant site. Winds seldom blow South or West toward Denali Park. These EIS visibility studies did not document any evidence that Healy 1 generated any haze or reduced visibility inside Denali Park. However, the NPS was still concerned that additional emissions from HCCP might cause future haze or impact visibility within Denali Park. In 1994 GVEA and AIDEA reached a formal agreement with ADEC, EPA and the NPS in order to obtain the HCCP construction and operating permits. GVEA and AIDEA agreed to install additional emission controls to reduce the existing Healy 1 Plant's permitted NOx and SO2 emissions enough to offset all of HCCP's future emissions. The modified Healy Plant operating permit now includes both Healy 1 and HCCP. The Healy 1 Plant's annual allowable NOx

emissions were reduced over 50% and the annual SO2 emissions were reduced 25%. GVEA and AIDEA then invested over $12 million in a major retrofit of Healy 1 Plant to a) upgrade the boiler with Low NOx Burners (LNB) and Over-Fire Air (OFA) for NOx control and b) install a dry sorbent injection system for SO2 control. The Healy 1 retrofit was completed in 1998 and has consistently complied with the lower NOx and SO2 emission limits for the past decade. I am not aware of any formal complaint against GVEA's Healy 1 plant concerning plume visibility or causing haze within Denali Park.

The 1999 PRIMENet Report (5) published by EPA and NPS summarized the monitoring results of environmental stressors in fourteen Class 1 parks. The report stated that sulfates are usually the greatest contributor to visibility impairment, and sulfate particles are typically formed in the atmosphere from SO2. The Denali Park collection samples had some of the lowest levels of sulfates. The next largest chemical contributor to visibility impairment is organic carbon, which are primarily generated in Alaska from forest fires. Nitrates (NOx) present a smaller contribution to visibility impairment. The lowest concentrations of nitrate were recorded in Olympic and Denali National Parks. The report also stated that the cleanest air (ozone) in the United States is found at the border areas of Denali, Everglades and Olympic National Parks.

In 2002 ADEC published a "Draft Regional Haze in Alaska Report" (4) that states there are strong seasonal trends to the visibility degradation within the state of Alaska. Arctic Haze appears to have a substantial impact on visibility in Denali Park, which occurs annually during the seven months of November through May. Asian dust, transported from dust storms in the Gobi and Taklimakan deserts in Mongolia and northern China, seem to be the source causing this haze. It also appears that global scale transport of Asian dust has been a long-running natural phenomenon. The fire season in the area usually starts in April and continues through most of August. ADEC analyzed data on pollutants found in Denali Park, and their analysis showed nothing other than simple seasonal trends. When the temperature is warm there were high instances of fire components found. The worst days for visibility impairment were most frequently found to be in the summer, when fires appear to be the most significant source. The best days tend to occur in the autumn and winter. The Report summarized Denali Park air conditions as follows: "Clearly, the Denali National Park and Preserve data indicates that visibility in the area is close to the natural condition goal". The Report recommended more widespread monitoring, particularly to characterize fire emissions and international transport.

The ADEC Regional Haze Report (4) did not identify that the Healy Power Plant was causing haze or impacting visibility within Denali Park. The Healy 1 Power Plant burns Usibelli coal that has the lowest sulfur content in the US. Since 1998 the Healy 1 plant has significantly reduced its NOx emissions from 0.8 lb/mmBTU to 0.35 lb/mmBTU after being retrofitted with LNB and OFA. Healy 1's annual coal consumption has roughly the equivalent carbon content of 1,000 acres of forest. Forest fires in Alaska consume an average of 1 million acres each year (99.9% of the carbon source compared to Healy 1). The 25 MW Healy 1 Plant is insignificant to other natural and world sources of emissions that cause haze in Denali Park. It is highly unlikely that any reductions in NOx or SO2 from installing an SCR or increased sorbent injection at the Healy #1 Plant would have any noticeable impact on visibility inside Denali Park. In my opinion the state and federal governments should focus their efforts on improving their management of

forest fire suppression within Alaska to improve visibility and reduce haze within Denali Park, especially during the high visitor summer months.

I do not support ADEC's BART proposal that would require installing an SCR onto the Healy 1 Plant. It would require a major retrofit of the boiler involving a lengthy and costly plant outage. GVEA estimates the cost of removing the additional NOx at a cost of $4,748 per ton, which is outrageously expensive. The GVEA Letter to ADEC (3) states that the retrofitted Healy 1 plant has demonstrated NOx emission levels below 0.39 lb/mmBTU, which is the BART control limit established by EPA for similar sized power plants listed in the database included in the GVEA letter. I believe Healy 1's existing LNB and OFA system meets NOx controls for BART.

An SCR would inject ammonia into the boiler's exhaust stream, and there would likely be excess ammonia injected in order to meet the very low emission limits requested by NPS. Ammonia slip can change the color of a stack plume, which could increase the plume's visibility and haze. Ammonia is also a hazardous chemical that would have to be delivered from an out-of-state supplier and shipped either by truck or rail to the Healy Plant through the Railbelt transportation corridor and Denali Park. In my opinion the added cost of installing an SCR and its ammonia consumption is not warranted, would not be cost effective and could potentially increase the risk of a hazardous spill within Denali Park. I do not support ADEC's proposal to require installing an SCR onto the Healy 1 Plant.

I also do not support ADEC's proposal to increase sorbent injection rates on the Healy 1 Plant. GVEA estimates the cost of removing the additional SO2 at a cost of $9,339 per ton, which is even more outrageously expensive. To begin with, the Healy 1 Plant's coal supply is very low in sulfur. It makes no sense to waste a valuable sorbent resource that would have to be delivered from an out-of-state supplier and transported thousands of miles by truck or rail to the Healy Plant. I haven't found any scientific evidence that justifies the added expense of increased sorbent injection. Has the NPS provided ADEC with evidence of haze reduction or visibility improvement to justify their insistence on increased sorbent injection?

In the 1980s GVEA extended power lines and provided Denali Park with electric service, and the NPS diesel-fired power plant (inside the Park) was shut down. GVEA has an excellent record of operating and maintaining the Healy Power Plant in full compliance with its ADEC permits. The Healy community provides local emergency and fire service, schools, goods and critical services for Denali Park employees, visitors and local residents. Financial support for the community infrastructure depends on employment opportunities in tourism involved with Denali Park, plus operation of the GVEA Power Plant and Usibelli Coal Mine. Denali Park enjoys almost free access to critical community services. The proposed NPS emission limits would substantially increase the financial burden of keeping GVEA's Healy 1 Plant operating and providing electric power to Interior Alaska customers, including Denali Park.

Having reviewed the referenced documents and correspondence concerning this preliminary BART Determination, I must agree with GVEA that the emission controls on the existing retrofitted Healy 1 Plant should be considered as BART. I cannot support the NPS insistence that an SCR unit be installed on Healy 1 plant or that additional sorbent injection be required for BART.

There is one final concern I have with the NPS and Denali Park. For decades the NPS has had serious fugitive dust problems (NAAQS air quality violations ?) caused by the vehicle traffic inside the Park on their poorly constructed unpaved roads. Attached is a page from the NPS Publication "Denali Road Capacity Study" (6) that shows a photo of the dusty access road that visitors contend with, while traveling through Denali Park during the busy summer tourist season. What is the status of NPS solving this self-generated road dust problem that likely represents both a public health hazard and visibility problem inside Denali Park?

In closing I strongly recommend that ADEC resist the NPS excessive emission limits and accept the existing retrofitted Healy 1 Plant's emission controls as BART. If the NPS wants stricter Healy 1 emission controls, then the NPS should pay for them, not the rest of GVEA's customers.

Thank you for the opportunity to submit comments on this important issue.

Sincerely,

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Above Referenced Documents and Reports

1) "Proposal to Issue a Preliminary Best Available Retrofit Technology Determination, GVEA Healy Power Plant Unit 1", ADEC Public Notice, 5/12/09
2) "Final Findings Report – GVEA Best Available Retrofit Technology (BART) Evaluation", Enviroplan Consulting, 4/27/09
3) "Healy Power Plant Unit 1 – BART Additional Information Request", GVEA Letter to ADEC, 3/18/09
4) "Draft Regional Haze in Alaska – Summary of Scientific Knowledge and its Implications for Alaska's State Implementation Plan" ADEC, 10/22/02
5) "Park Research and Intensive Monitoring of Ecosystems Network (PRIMENet) – First Annual Report 1999", US Dept. of Interior National Park Service & US EPA, April 1999
6) "Denali Road Capacity Study", National Park Service Publication, 2007
7) Healy 1-HCCP Air Quality Operating Permits

Cc: Kate Lamal, Vice President of Power Generation – GVEA
Larry Hartig, Commissioner - ADEC
Elin Miller, Regional Administrator - EPA Region 10
Ken Salazar, Secretary of the Interior
Governor Sarah Palin
Senator Lisa Murkowski
Senator Nick Begich
Congressman Don Young
State Senator Joe Paskvan
State Senator Joe Thomas
State Representative John Coghill
State Representative David Guttenberg
State Representative Scott Kawasaki
State Representative Mike Kelly
State Representative Jay Ramras
State Senator Gene Therrault
Joe Usibelli, President - Usibelli Coal Mine
Jim Dodson, President - Fairbanks Economic Development Corporation

## *Summer 2007- Road dust monitoring*

*Fig. 1. Fugitive dust can be a real problem on some areas of the Denali Park Road.*

The Denali National Park road study is composed of 3 distinct parts. The first part of the study, the road capacity study, entails determining the capacity for vehicle traffic on the Denali Park road by examining the movements of wildlife in relation to traffic patterns; modeling possible constraints to traffic flow given driver behavior, number of vehicles, and physical characteristics of the park road; and conducting interviews to discover important components of a quality visitor experience. The results of this first study will help managers decide whether the current limit of 10,512 vehicles annually on the park road puts the road at-, under-, or over-capacity. If it's found that the park road could accommodate greater traffic without negatively affecting targeted wildlife species, traffic flow, or visitor experience, then the park will create an Environmental Impact Statement (EIS) outlining possible alternatives for increased road use. Because the initial road capacity study may not predict all possible negative effects of a traffic increase, a Before-After-Control-Impact (BACI) study would be implemented to evaluate a suite of potential effects. Traffic would be experimentally increased in alternate time periods to allow for data to be collected under control and impact scenarios. Significant changes in variables selected to be examined during the BACI study would be reason for rejecting an increase in traffic.

*Fig. 2. What are those green buckets for? Dust collection bin along the Denali Park Road.*

Dust can be severe on the 90-mile gravel road during summer dry periods, and possible negative impacts such as decreased visibility, loss of surface material, detrimental health affects, and alteration of plants and soils adjacent to the road are of concern to park managers (Fig. 1). Past studies of dust in the park road corridor found that a 1 meter wide section of road could generate 0.5 lbs of dust mass accumulation in areas adjacent to the road each day. Presumably quantities of dust generated on any one day varies with a number of environmental and anthropogenic factors, including precipitation, wind, dust palliative (calcium chloride, CaCl) application, and numbers and types of vehicles traveling the road. If a BACI study is initiated and traffic levels on the park road are experimentally increased, potential changes in fugitive dust will be monitored. Accumulated dust adjacent to the park road will be measured using sampling protocols developed in previous Denali Park dust monitoring studies (Karle 1997, 1999). The primary objective of the study would be to determine whether an increase in vehicle traffic on the park road causes a significant increase in dust accumulation adjacent to the road. To tease apart confounding factors, we will determine how dust accumulation varies with precipitation, wind, vehicle numbers and dust palliative application. Monitoring dust adjacent to the