



# CITY OF RAPID CITY

RAPID CITY, SOUTH DAKOTA 57701-5035

## Growth Management Department

300 Sixth Street

Keri Schiferl, Air Quality Specialist  
Growth Management Department  
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### MEMORANDUM

TO: Rapid City Area Air Quality Board

FROM: Keri Schiferl, Air Quality Specialist <sup>KS</sup>

DATE: October 28, 2010

RE: Annual Inspection Report – Pennington County Highway Department

The annual inspection report of the Pennington County Highway Department was continued from the September 13, 2010 meeting to allow the Pennington County Highway Department time to submit documentation that sanding materials that will be used in the future meet the requirements of Pennington County Ordinance Number 12.

A letter dated October 21, 2010 was submitted to the Air Quality Division certifying that the material provided by Pete Lien & Sons, Inc. meets the Ordinance requirements for de-icing sand. Pennington County Highway Department staff confirmed that this new material will be used for de-icing sand in the Air Quality Control Zone.

**Recommendation: Staff recommends the Air Quality Board acknowledge the Annual Inspection Report for the Pennington County Highway Department with the updated information indicating that material used for sanding in the future will meet the Ordinance Requirements.**



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### MEMORANDUM

TO: Rapid City Area Air Quality Board

FROM: Keri Schiferl, Air Quality Specialist<sup>KS</sup>

DATE: August 25, 2010

RE: Annual Inspection Report – Pennington County Highway Department

The purpose of the annual inspection of the Pennington County Highway Department is to identify fugitive dust generating activities and assess if control measures are in use and adequate to control fugitive emissions.

Attached for your review is a copy of the Annual Inspection Report.

**Recommendation:** Staff recommends the Air Quality Board continue the Annual Inspection Report for the Pennington County Highway Department Compliance Plan to the next Air Quality Board Meeting to allow Pennington County to submit documentation that the sanding material that will be used in the future meets the Ordinance requirements.



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# ANNUAL INSPECTION REPORT

July 2010

## Pennington County Highway Department Continuous Operations

### GENERAL INFORMATION:

Facility Name: Pennington County Highway Department  
Location: 3601 Cambell Street  
Date of Inspection: July 28, 2010  
Report By: Keri Schiferl

### GENERAL COMMENTS:

The purpose of the annual inspection of the Pennington County Highway Department facility is to identify the fugitive dust generating activities and assess whether the control measures identified in the Compliance Plan are in use and adequate to control fugitive dust emissions. The current Compliance Plan is in effect until November 9, 2012.

### STAFF REVIEW:

On July 28, 2010 staff met with Mark Schock, Assistant Superintendent, and inspected the Pennington County Highway Department facility located at 3601 Cambell Street. Staff discussed the street traction and deicing operations, street cleaning and sweeper operations, material storage piles, storage yard, unpaved roads and paved street maintenance with Mr. Schock.

#### *Deicing and Traction Control*

A mixture of salt and sand are used for street deicing and traction control operations. Double washed Type 2A material is used inside of the Air Quality Control Zone. The Type 2A material is supplied from Pete Lien and Sons. At the time of the inspection, Mr. Schock was uncertain if the material used met the requirements of Pennington County Ordinance No. 12. Mr. Schock was asked to provide proof that the materials used have a durability or hardness as defined in Mohs scale of greater than 6 for 70% of the material used. The specifications of the material given in the compliance plan meet the requirement of no more than 3% of the total particle material content by weight may be smaller than 200 sieve. Staff requested proof that the sanding material met the specification that the materials used have a durability or hardness as defined in Mohs scale of greater than 6 for 70% of the material used.

Mr. Schock contacted staff on August 18, 2010 regarding the type of material used in the air quality control zone. According to Mr. Schock the material that they have been using in the Air Quality Control Zone is double washed Type 2A limestone mixed with some sand and salt. According to Mr. Schock this material meets the requirement of no more than 3% of the total particle material content by weight may be smaller than 200 sieve. Limestone does not meet the requirement of a hardness greater than 6. The mixture of material used likely did not meet all of the requirements of the Ordinance. Mr. Schock is currently working on obtaining a material that will meet the Ordinance requirements. **Staff requests documentation that the materials that will be used in the future for sanding in the Air Quality Control Zone meet the specifications as required by Pennington County Ordinance Number 12.**

# ANNUAL INSPECTION REPORT

July 2010

## Pennington County Highway Department Continuous Operations

According to Mr. Schock during harsh conditions up to 1.5 tons/mile of deicing and traction material is used. The least amount of material is used to control cost and to control emissions. Salt is used in the parking lot at the Pennington County Highway facility at 3601 Cambell Street instead of sand.

### *Street Cleaning and Sweeper Operations*

The Pennington County Highway Department utilizes 3 sweepers. All of the sweepers are equipped with water delivery systems. The County roads are typically swept in early spring, before the annual striping of the roads and as needed. Mr. Schock indicated that the roads in the areas with curb and gutter are normally swept two to three times a year.

A complaint of a County sweeper generating fugitive dust on Country Road was received earlier this year. Mr. Schock stressed that now they make sure the sweepers know where the boundaries of the Air Quality Control Zone are and that a water truck is used ahead of the sweeper if it is used in the Air Quality Control Zone. He stated that using the water truck ahead of the sweeper with the insufficient water system is working. With the corrective action taken staff believes that the sweeper incident has been corrected and is no longer a compliance issue.

### *Material Storage Area*

The material storage area is surfaced with gravel. MC-70 is applied to areas of the storage yard as a dust suppressant when it is available. Mr. Schock stated that typically they do not have fugitive dust problems. Stockpiles of rip rap, fill dirt, topsoil, recycled asphalt, gravel, base rock, salt/sand, sand and type 2A chips were onsite at the time of inspection. Typically around 4,000 tons of materials are stored onsite but due to the spring flooding, Mr. Schock estimated that approximately 6,897 tons of material is currently stored onsite. The following estimated quantities of materials were onsite at the time of inspection.

Class B rip rap	420 ton
Recycled asphalt	3,383 ton
Salt/sand mixture	600 ton
¾" gravel	200 ton
4" Base rock	440 ton
Class A rip rap	500 ton
Class C rip rap	100 ton
Topsoil	200 ton
Fill dirt	300 ton
Clean sand	500 ton
3/8" Type 2A chips	254 ton

Fugitive dust controls for the stockpiled material with a potential to generate fugitive emissions consists of covering and watering the stockpiles. The sand/salt mixture stockpile is covered with plastic to protect the pile but also serves as fugitive dust control. Topsoil had been recently hauled to the site and Mr. Schock indicated that the pile would be sprayed with water so that a crust will form to prevent fugitive dust from the stockpile. Mr. Schock indicated that typically fugitive dust from the stockpiles is not a problem but water would be used to control fugitive dust as needed.

# ANNUAL INSPECTION REPORT

July 2010

## Pennington County Highway Department Continuous Operations

The material hauling trucks are equipped with tarps and the tarps are used when hauling material that has a potential to generate fugitive emissions.

### *Unpaved Roads*

Mr. Schock stated that most of the unpaved roads in the Air Quality Control Zone have been covered with recycled asphalt and then chip sealed, this significantly reduces the amount of dust generated by traffic on the road. Mr. Schock indicated that they typically do not receive complaints from dust on unpaved roads in the Air Quality Control Zone but if a complaint was received they would use a water truck to water the road. The County Commission adopted a policy that if the homeowners pay for the magnesium chloride the County will apply the material to the gravel road.

### *Paved Street Maintenance*

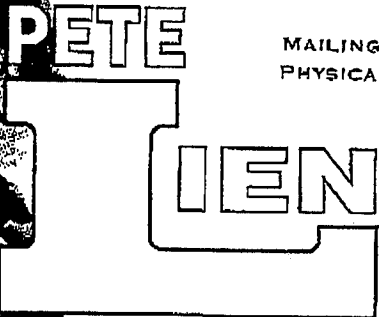
Paved street maintenance is done by the County and contractors are also utilized to perform some of the maintenance. The County has an annual contract for paved street maintenance.

### SUMMARY:

It is staff's opinion that the Pennington County Highway Department is in conformity with the existing Compliance Plan Permit with the exception of the deicing and traction material used inside of the Air Quality Control Zone. The material that was previously used likely did not meet the Ordinance requirements.

**Staff requested documentation that the materials that will be used in the future for sanding in the Air Quality Control Zone meet the specifications as required by Pennington County Ordinance Number 12. To comply with Pennington County Ordinance Number 12 materials that meet Ordinance requirements must be used.**

MAILING ADDRESS: P.O. Box 440 RAPID CITY, SD 57709-0440 PH. 605-342-7224  
PHYSICAL ADDRESS: 3401 UNIVERSAL DR. RAPID CITY, SD 57702 FX. 605-342-6979



\*PETE LIEN & SONS \*BIRDSALL SAND & GRAVEL \*COLORADO LIEN CO.  
\*DAKOTA BLOCK CO. \*TRANS COLORADO CONCRETE

PETER C. LIEN  
1988 - 1998 FOUNDER

BRUCE H. LIEN  
FOUNDER

CHARLES H. LIEN  
FOUNDER  
CHAIRMAN

PETER C. LIEN  
PRESIDENT

*& Sons, Inc.*

October 21, 2010

Pennington County  
3601 Cambell St  
Rapid City SD 57701

**RE: Certificate of Compliance**

This is to certify that the following products supplied by Pete Lien & Sons Inc conforms to the Rapid City Municipal Code 8.34 through 8.44 for City of Rapid City De-Icing Sand.

De-Ice Sand – sold as Concrete Sand, Mason Sand, & De-Ice Sand

Source – Creston Sand Plant

**Test Results**

- Durability as defined in MOH – 79 % of material is greater than 6
- Amount of material smaller than # 200 sieve – 1.0 %
- Material shall be 25 % or less Calcite – see attached test
  - Creston sand is tested at 2.3 +/- 0.5 %

If you have any questions or concerns, please feel free to contact me at the Rapid City office. Thank you.

Sincerely,

PETE LIEN & SONS INC

Kyle Frisinger  
Sand & Gravel Manager

Cc: File





**SOUTH DAKOTA SCHOOL OF MINES AND TECHNOLOGY  
ENGINEERING AND MINING EXPERIMENT STATION**

**X-RAY DIFFRACTION ANALYSIS REPORT**

Kyle Frisinger  
Pete Lien & Sons Inc.  
3401 Universal Drive  
Rapid City, SD 57702

Date Received: 3/15/2010  
Date Completed: 3/25/2010  
Work Order No. 7502  
Report Date: 3/25/2010

<u>EMES I.D.</u>	<u>Client I.D.</u>	<u>Results in percent by weight</u>
090.0402	Creston Concrete Sand	58.8% ± 6.3 Quartz SiO <sub>2</sub> 24.9% ± 2.9 Microcline (Feldspar) KAlSi <sub>3</sub> O <sub>8</sub> 14.0% ± 1.7 Albite (Feldspar) NaAlSi <sub>3</sub> O <sub>8</sub> 2.3% ± 0.5 Calcite CaCO <sub>3</sub>
090.0403	Iron Ore	28.0% ± 3.7 Muscovite (Mica) KAl <sub>3</sub> Si <sub>3</sub> O <sub>10</sub> (OH) <sub>2</sub> 12.0% ± 1.7 Quartz SiO <sub>2</sub> 1.9% ± 0.7 Chlorite (Mg Fe) <sub>3</sub> (Si <sub>2</sub> Al) <sub>4</sub> O <sub>10</sub> (OH) <sub>8</sub> 1.9% ± 0.6 Dolomite CaMg(CO <sub>3</sub> ) <sub>2</sub> 1.8% ± 0.7 Albite (Feldspar) NaAlSi <sub>3</sub> O <sub>8</sub> 1.5% ± 0.5 Magnetite Fe <sub>3</sub> O <sub>4</sub> 1.4% ± 0.5 Calcite CaCO <sub>3</sub> 1.0% ± 0.5 Hematite Fe <sub>2</sub> O <sub>3</sub> 0.5% ± 0.5 Jahnsite CaMnMg <sub>2</sub> Fe <sub>2</sub> (PO <sub>4</sub> ) <sub>4</sub> (OH) <sub>2</sub> ·8H <sub>2</sub> O 50% Amorphous iron oxide hydroxide Fe <sub>2</sub> O <sub>3</sub> ·(OH) <sub>2</sub>
090.0404	Decorative Rock	72.9% ± 6.1 Quartz SiO <sub>2</sub> 10.6% ± 1.3 Calcite CaCO <sub>3</sub> 6.0% ± 0.8 Rhodochrosite MnCO <sub>3</sub> 5.5% ± 0.7 Microcline (Feldspar) KAlSi <sub>3</sub> O <sub>8</sub> 5.0% ± 0.9 Muscovite (Mica) KAl <sub>3</sub> Si <sub>3</sub> O <sub>10</sub> (OH) <sub>2</sub>

*Russ Lingenfelter*  
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Russ Lingenfelter, Analyst