A Report on MDU Resources Group, Inc.'s Production and Safe Management of Coal Combustion Residuals (CCRs)

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ABOUT THIS REPORT

At our company's 2010 annual meeting, one of our shareholders presented a proposal requesting a report on how we manage the disposal of coal ash produced by our coal-fueled electric generating plants. Although the proposal did not receive sufficient votes to pass, we recognize that there is a growing interest in the subject and have prepared this report.

As in all matters, principal responsibility for the company's environmental performance starts at the top. Our board of directors expects that our operations fulfill a commitment to responsible environmental stewardship. Harry Pierce, chairman of the board, has monitored progress of the report's preparation, and the full board has reviewed and approved the report. I share that commitment, and will continue to work with the rest of our senior management team to ensure that environmental responsibility remains one of our company's core values.

This report primarily focuses on our electric utility segment, Montana-Dakota Utilities Co. (MDU), which is responsible for the safe management of the ash (more formally called coal combustion residuals, or CCRs) that is produced at its coal-fired electric generating plants. In addition, our construction materials and contracting segment, Knife River Corporation, beneficially utilizes fly ash (which is a CCR) by incorporating it as a bonding agent in as much of its ready-mix concrete production as practicably possible.

Our intent is to provide timely, accurate information regarding the coal ash management activities of our operating subsidiaries and the broad range of company practices in the area of coal ash management to ensure the priorities of public safety, facility security and environmental protection. This report details the source, different types and non-hazardous nature of CCRs, describes the company's procedures for safe handling of CCRs and for regulatory compliance, summarizes the existing CCR beneficial use recycle market, and explores how new regulations would impact the company's operations regarding management of CCRs.

We believe that this information is particularly important because of continued public concern about the coal ash slurry spill that occurred in 2008 at the Tennessee Valley Authority's Kingston plant. Following that event we reviewed our own facilities and CCR management practices, and we are confident that such an event would not occur at our facilities. In addition, the Environmental Protection Agency (EPA) is proposing to regulate CCRs when placing them in landfills and surface impoundments. The EPA is taking comments on its proposed rule and is expected to finalize the regulation sometime in 2011. See further discussion on the EPA's proposed CCR rule under the section "The Future of CCR Management."

We hope that the report helps stakeholders understand our efforts, above and beyond current compliance, to limit any environmental impacts associated with CCRs and how those efforts may reduce legal, reputational and other risks to the company's finances and operations.

Sincerely,

Terry D. Hildestad
President and CEO
MDU Resources Group, Inc.

(Picture 1 – Lewis & Clark Station near Sidney, Mont.)

DISCLOSURE

While the subject of this report is CCRs, the company is subject to extensive environmental laws and regulations affecting many aspects of its present and future operations, including air quality, water quality, waste management and other environmental considerations. Existing environmental laws and regulations may be revised and new laws and regulations seeking to further protect the environment may be adopted or become applicable to the company. Revised or additional laws and regulations, which result in increased compliance costs or additional operating restrictions, particularly if those costs are not fully recoverable from customers, could have a material adverse effect on the company's results of operations and cash flow. For a further discussion of the company's Risk Factors, see the company's Form 10-K, Annual Report, available under the "Investors" tab, "SEC Filings" subtab on the company's website: http://investor.mdu.com/sec.cfm.

If you have comments or questions about this report, please direct them to coalash@mduresources.com.

SOURCE OF CCRs

MDU provides electric service to more than 122,000 customers in 177 communities and adjacent rural areas in North Dakota, South Dakota, Montana and Wyoming. Coal is a natural, abundant and reliable fuel source for serving these customers. The total capacity of MDU's owned electric generation is 564 megawatts; approximately 70 percent of this capacity is fueled by coal. Coal is burned to heat water to generate steam. The steam, at high pressure, is then used to turn turbines and generators to produce the electricity. CCRs are the non-combustible mineral residue that remains after the coal is burned to make the steam used for generating electricity. This electricity generation process is illustrated below.

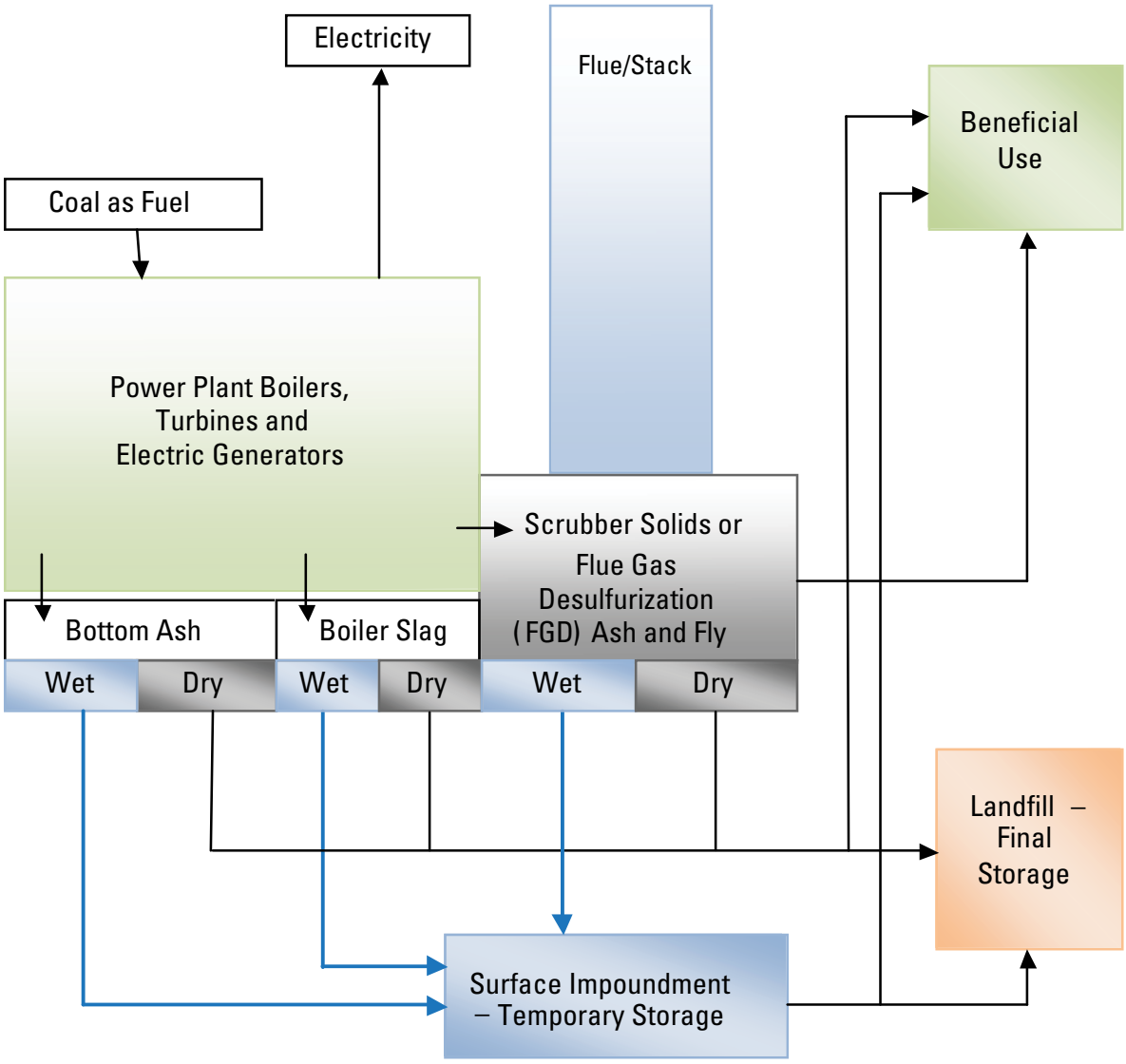


Diagram 1 - Sources of Coal Combustion Residues (CCRs)

Coal contains naturally occurring elements that one would find in rocks and soils, including trace metals – such as arsenic, selenium, cadmium, mercury, and lead – which remain in the residual ash once the coal is burned. The presence of trace metals in CCRs does not make CCRs hazardous or toxic. This is because the concentration of these metals in CCRs is generally low and these metals do not pose a human health or environmental threat when the ash is properly managed.

The ash, or CCRs, takes the form of: (1) bottom ash – a coarse granular material collected from dry or wet hoppers in the bottom of the power plant boilers; (2) boiler slag – coarse pellets formed by quenching molten ash at the bottom of boilers with water; (3) fly ash – finer particle ash that is collected as it exits the boiler in the flue gas stream; (4) economizer ash – ash that is collected in hoppers below the economizing heat exchanger in a boiler; and (5) scrubber solids, or flue gas desulfurization (FGD) ash – typically consisting of a combination of fly ash and gypsum collected from the flue gas stream using SO2 scrubbing equipment. The different types of ash that are generated are dependent on the facility's boiler technology, coal quality, and the pollution control technologies utilized.

COAL ASH IS NOT A HAZARDOUS WASTE

Electric Power Research Institute (EPRI) studies cited by the EPA in its March 15, 1999 Waste Characterization Report (of the Technical Document for the Report to Congress on Remaining Wastes from Fossil Fuel Combustion) http://www.epa.gov/osw/nonhaz/industrial/special/fossil/fsltech.htm have conclusively shown that coal ash is non-hazardous. This determination was made by comparing TCLP (known as the Toxicity Characteristic Leaching Procedure) test results from coal ash to the Resource Conservation and Recovery Act (RCRA) hazardous waste limits. The TCLP is an analytical method used to simulate liquid leaching from a solid (such as CCRs) over time when the solid is placed in a landfill. To conduct a TCLP test, a liquid sample is extracted from the CCR being tested. The extract from the CCR is then analyzed for the RCRA constituents of concern. For CCRs, these constituents are metals such as arsenic, cadmium, lead, and selenium.

MDU facilities' different types of ash are similar in makeup to the different types of ash studied extensively by EPRI. MDU relies on the EPRI studies for selection of CCR best management practices and for this reason, MDU has not conducted TCLP tests. However, testing has been performed in the past on R.M Heskett Station ash using the Extraction Procedure (EP) Toxicity test, which is similar to a TCLP. The EP Toxicity test procedure pre-dates the TCLP and was once used in determining whether a waste was considered hazardous under RCRA guidelines. The two main differences between EP Toxicity test procedures and the TCLP are that the TCLP requires use of a more acidic leaching fluid for alkaline materials, such as coal ash, and the TCLP test requires an extraction time of only 18 hours in comparison with 24 hours for EP Toxicity testing. Prior to about 1990, EP Toxicity tests were conducted to determine if wastes were hazardous under RCRA. EPA no longer accepted EP Toxicity test results after 1990 in determining hazardous waste designations. However, by comparing the results of R.M. Heskett Station EP Toxicity tests with RCRA's numeric hazardous waste limits for each metal, we can still gain some insight as to whether MDU ash may potentially be considered hazardous under current RCRA regulations. Table 1 provides a summary of the EP Toxicity test data for R.M. Heskett Station ash and the comparison RCRA TCLP limits. The large numerical gap between the results indicates that the ash is not expected to be hazardous. MDU will consider additional testing as the industrywide review of ash management practices evolves.

Table 1 – R.M. Heskett Station Ash EP Toxicity Results and Comparison to RCRA TCLP Hazardous Waste Limits (1986 data)

Ash Type	TCLP Test Parameter	MDU EP Toxicity Test Result, mg/L	RCRA Limit for Non-Hazardous Characterization, mg/L	Regulatory Classification Expected
Unit 1 Fly Ash				
	Arsenic	0.045	5.0	Non-Hazardous
	Barium	<0.5	100	Non-Hazardous
	Cadmium	0.03	1.0	Non-Hazardous
	Chromium	<0.05	5.0	Non-Hazardous
	Lead	0.25	5.0	Non-Hazardous
	Mercury	<0.002	0.2	Non-Hazardous
	Selenium	0.004	1.0	Non-Hazardous
	Silver	<0.05	5.0	Non-Hazardous
Unit 2 Fly Ash				
	Arsenic	0.07	5.0	Non-Hazardous
	Barium	<0.5	100	Non-Hazardous
	Cadmium	0.02	1.0	Non-Hazardous
	Chromium	<0.05	5.0	Non-Hazardous
	Lead	0.4	5.0	Non-Hazardous
	Mercury	<0.002	0.2	Non-Hazardous
	Selenium	0.003	1.0	Non-Hazardous
	Silver	<0.05	5.0	Non-Hazardous
Unit 1 Bottom Ash				
	Arsenic	<0.002	5.0	Non-Hazardous
	Barium	<0.5	100	Non-Hazardous
	Cadmium	<0.01	1.0	Non-Hazardous
	Chromium	<0.05	5.0	Non-Hazardous
	Lead	<0.1	5.0	Non-Hazardous
	Mercury	<0.002	0.2	Non-Hazardous
	Selenium	<0.003	1.0	Non-Hazardous
	Silver	<0.05	5.0	Non-Hazardous
Unit 2 Bottom Ash				
	Arsenic	0.155	5.0	Non-Hazardous
	Barium	<0.5	100	Non-Hazardous
	Cadmium	0.02	1.0	Non-Hazardous
	Chromium	<0.05	5.0	Non-Hazardous
	Lead	0.35	5.0	Non-Hazardous
	Mercury	<0.002	0.2	Non-Hazardous
	Selenium	<0.003	1.0	Non-Hazardous
	Silver	<0.05	5.0	Non-Hazardous

CCR REGULATORY FRAMEWORK

Regulation of CCRs historically has been under the scope of individual states, each with their own distinct requirements. Coyote and R.M. Heskett stations located in North Dakota, Big Stone Station located in South Dakota, and Wygen III, through the Wyodak Mine in Wyoming, are required to obtain state permits for CCR impoundments and landfills. The permits for each facility require that impoundments and landfills for CCRs be appropriately designed, that groundwater quality be monitored, and that adequate financial assurance be provided for closure and post-closure care of these facilities.

Under Montana law, Montana Code Annotated 75-10-214(1)(b), electric generating facilities are exempt from solid waste licensing regulations when disposing of coal ash waste on the power plant site. This exclusion is applicable to both management and disposal of ash at Lewis & Clark Station and Lewis & Clark Station's Savage Ash Landfill. MDU has self-imposed a higher standard of care by managing Lewis & Clark's coal ash disposal using management practices similar to the requirements in North Dakota that the company believes minimizes risk to the company and the environment.

Table 2 provides a listing of the MDU CCR management facilities, the state rules in accordance with which the CCRs must be managed, and the corresponding state permit number for each facility.

Table 2 – Summary of State Agency Regulation of Coal Ash for MDU Facilities

Facility Name	Applicable State Solid Waste Management Rule	Facility Solid Waste Management Permit Number(s)
R.M. Heskett Station, Mandan, ND	Coal ash is regulated under Special Waste Landfill requirements per: State Solid Waste Management and Land Protection Law Chapter 23-29 and ND Administrative Code Article 33-20 http://www.ndhealth.gov/wm/SolidWasteProgram	SP-087
Coyote Station, Beulah, ND	Coal ash is regulated under Special Waste Landfill requirements per: State Solid Waste Management and Land Protection Law Chapter 23-29 and ND Administrative Code Article 33-20 http://www.ndhealth.gov/wm/SolidWasteProgram	SP-182 IT-131 SP-170
Big Stone Plant, Milbank, SD	Coal ash is regulated as solid waste under: South Dakota Codified Laws Chapter 34A-6 and Administrative Rules of South Dakota 74:27 http://denr.sd.gov/des/wm/sw/swmainpage.aspx	06-18A
Wygen III, Gillette, WY	For Wygen III, coal ash disposal is addressed under mining operations in WY per: Wyoming Department of Environmental Quality/Land Quality Division Rules, Chapter – 4 Environmental Protection Performance Standards for Coal Mining Operations http://deq.state.wy.us/lqd/recentapprovedrules.asp Wyoming Statute Title 35 Chapter 11 http://legisweb.state.wy.us/statutes/statutes.aspx?file=titles/Title35/Title35.htm (Wyoming Department of Environmental Quality Solid Waste Rule Chapter 3 addresses coal ash disposal for facilities other than mine fill.)	232-T6
Lewis & Clark Station, Sidney, MT (including Savage Ash Landfill)	Exempt from solid waste disposal requirements per Montana Law – Montana Code Annotated 75-10-214(1)(b)	NA

At the federal level, the EPA has been evaluating whether additional regulation of CCRs is merited, and has issued proposed rules for public review and comment. The EPA's proposed CCR Rule is described in more detail later in this report. The EPA has evaluated the management and disposal of CCRs since the 1980s. The EPA's most recent evaluation of CCRs was triggered by the 2008 coal ash discharge from the TVA Kingston facility. As part of the current process, the EPA reviewed the condition of coal ash surface impoundments using survey information from electric generating facilities and inspections of numerous ash disposal facilities across the country. MDU received no survey letters from the EPA and to date its facilities have not been inspected by the EPA.

Key Strengths to Prevent Event

MDU did not receive a survey letter from the EPA; furthermore, MDU believes that none of its facilities would have been assigned a High Hazard Potential rating based on review of CCR management at its own facilities compared with the TVA's Kingston facility. Specific MDU strengths that provide solid support for environmental, health and safety compliance include:

MDUR has strong culture of environmental and safety compliance

Integrity is the cornerstone for all of MDUR's dealings with customers, employees, stockholders, suppliers, competitors and the communities we serve. The MDU Resources Vision, Mission and Guiding Principles http://www.mdu.com/OurBusiness/Overview/Pages/GuidingPrinciples.aspx lay the foundation for conduct as employees and a corporation. Responsibility for instilling that culture throughout the corporation starts at the top, with the board of directors and chief executive officer. Leading With Integrity http://www.mdu.com/Governance/Pages/Overview.aspx is the ethics, code of conduct and legal compliance programs of MDU Resources Group, Inc.

Safety also is a leading priority, and MDUR's board of directors reviews performance at every meeting. MDUR provides continual safety training to meet the needs of individual business units and employees. The company has a Coordinated Loss Prevention Strategy (CLPS), which has helped MDUR improve its safety excellence efforts. CLPS focuses on continuous improvement through integrated, work-based solutions for communicating, directing and controlling safety improvement and mitigation. In addition to employee efforts, all contractors must complete safety training before working on site and they are required to meet company all safety standards. Environmental and safety audits are conducted to ensure compliance.

Board of directors' responsibility and commitment

Responsibility for the company's environmental performance starts with MDUR's board of directors, who expect that operations fulfill a commitment to responsible environmental stewardship. Harry Pierce, chairman of the board, has monitored progress of the report's preparation, and the full board has reviewed and approved the report. Terry Hildestad, MDUR president and CEO, shares that commitment, and works with the senior management team to strengthen environmental responsibility as one of our company's core values.

Good CCR storage design and management minimizes risk

The design and operating features of MDU's coal ash management facilities contrast sharply with those of TVA's failed Kingston coal ash management facility. At Kingston, a combination of the high water content of the wet ash, the increasing height of ash (over 100 feet), the construction of sloping dikes over the wet ash (often referred to as upstream construction), and the existence of a weak bottom layer of ash and silt were among the long-evolving conditions that caused the TVA Kingston plant ash spill on Dec. 22, 2008. Since MDU does not permanently store wet ash, nor expand the company's wet ash pond capacity by constructing embankments on top of wet ash, and since MDU's pond depths and acreage are limited, the environmental risks and physical hazards associated with MDU's facilities are minimal.

Safe water management

MDU's wet ash impoundments do not discharge directly to surface waters. Process water that discharges to surface waters is managed under the National Pollutant Discharge Elimination System (NPDES) by the EPA and as delegated to the individual state programs where process waters are discharged. Additional pond water quality monitoring is conducted at sites where surface water runoff

comes in contact with CCR materials. Performance monitoring is done by analyzing samples for chemical constituents that are indicative of CCRs and comparing the concentrations of those parameters with the surface water standards. These data help ensure that the water is safe to discharge off site, or if not discharged, provide useful information on the source concentrations that might seep to groundwater and be detected in groundwater monitoring wells.

Proper permitting
All MDU permits are valid and current.

As a result of the EPA's evaluation, 49 coal ash management units at 30 facilities were assigned a High Hazard Potential rating. The EPA's evaluation of ash management facilities is ongoing. Under the EPA's facility classification system, a High Hazard Potential means:

> *Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.*

The EPA developed its rating system for ash impoundments using as a guide the Mine Safety and Health Administration's (MSHA) regulations for dam safety under the National Inventory of Dams. MSHA's hazard potential ratings for dams address the potential consequences of failure or misoperation of dams — not the likelihood of failure — and as such these ratings are sometimes misunderstood or mischaracterized. The rating is not an indication of the actual structural integrity or stability of the unit or even the possibility that a failure would occur in the future; it merely allows dam safety and other officials to determine where economic damage or loss of life may occur if there is a structural failure of the unit. Dam safety officials then know they must devote proportionally more effort to routine inspections of facilities having a high hazard potential rating than to facilities having lower hazard potential ratings.

SAFE AND SECURE MANAGEMENT OF CCRs

Montana-Dakota Utilities Co. manages CCRs through permitted management practices, as well as through the best management practices applied by facility operators when permits have not been required, so that public exposure to coal ash constituents is minimized.

In 2009, MDU-owned and operated coal-fired electric generating plants, R.M. Heskett Station and Lewis & Clark Station, produced 85,294 tons of CCRs, of which 78,223 tons were either placed for final disposal in an entirely dry state in landfills near the vicinity of the electric generating plant, or held temporarily in a wet state in surface impoundments near the electric generating plant, subsequently dewatered and will be relocated to a dry ash landfill. The remaining quantity was sold or given away for beneficial use. CCRs also were produced at co-owned coal-fired electric generating plants, Coyote Station (291,362 tons) and Big Stone Station (107,828 tons). One additional co-owned coal-fired electric generating plant, Wygen III, started producing CCRs just recently, when it began commercial operation in April 2010.

Each MDU facility has its own practices and schedules for CCR management and disposal. Where ash is handled in a dry state, it is conveyed to storage silos and then loaded into trucks for transport directly to a dry landfill, with trucks transporting ash multiple times daily. Where ash is handled wet initially, it is sluiced continuously by pipe to an impoundment and then dewatered; subsequent placement in a dry landfill can vary annually. Dewatering times depend on weather conditions throughout the year and can impact when the ash is transported to a dry landfill. Wet conditions also can temporarily delay the transport of ash. If a facility utilizes contractors for ash transport, such as Lewis & Clark Station, arranging schedules during optimal dry conditions can sometimes limit the window of opportunity in placing the ash in a dry landfill. Generally, each MDU CCR facility aims to place all ash generated in the current year into a dry landfill that same year or the following year.

MDU periodically conducts environmental audits to ensure established procedures for safe CCR handling and management have been followed. Employees and contractors are required to complete safety training, and are required to use respirators when cleaning and performing maintenance of dry ash handling equipment, or operating ash silo unloading equipment. There have been no reported health problems from workers or contractors that could be attributed to CCR.

Table 3 lists the MDU-owned and co-owned CCR facilities and shows their respective total 2009 CCR generation rates, dry and wet CCR management methods, and some basic information about impoundments and practices utilized for temporary ash management. None of these facilities has received a notice of noncompliance or violation in the last five years.

Table 3 - Annual MDU Facility Ash Generation and Ash Management Methods

Facility Name	Location	Annual CCR Generation	Temporary CCR Storage Method	Final CCR Disposal	Comments
R.M. Heskett Station	Mandan, ND	37,724 Tons Fly Ash	Ash Silo, Dry	Active Ash Landfill, landfilled dry	
		11,070 Tons Bottom Ash	Ash Silo, Dry	Active Ash Landfill, landfilled dry	
		520 Tons Bottom Ash	Ash Silo, Dry	Beneficial Use	Road base/sub-base
	Total	49,314 Tons			
Lewis & Clark Station	Sidney, MT	2,103 Tons Fly Ash	Sluiced Wet to Bottom Ash Pond and Dewatered	Savage Ash Landfill, landfilled dry	
		7,001 Tons Fly Ash	Sluiced Wet to Bottom Ash Pond and Dewatered	Sent to Savage Ash Landfill in 2010, landfilled dry	Quantity transported to dry landfill varies annually due to contractor availability, wet conditions and other factors. Wet conditions prevented transport of a higher quantity of ash in 2009.
		3,901 Tons Fly Ash	Ash Silo, Dry	Beneficial Use	Meets Class C ASTM-C 618-03 specifications; used as cement additive and for road base construction
		1,800 Tons Bottom Ash	Sluiced Wet to Bottom Ash Pond	Savage Ash Landfill, landfilled dry	
		2,775Tons Fly Ash	Sluiced Wet to Bottom Ash Pond and Dewatered	Sent to Savage Ash Landfill in 2010, landfilled dry	Quantity transported to dry landfill varies annually due to contractor availability, wet conditions and other factors. Wet conditions prevented transport of a higher quantity of ash in 2009.
		2,650 Tons Bottom Ash	Sluiced Wet to Bottom Ash Pond and Dewatered	Beneficial Use	Waste stabilization/ solidification Agricultural amendment/ soil stabilization
		13,480 Tons FGD Ash	Sluiced wet to Scrubber Ponds and Dewatered	Savage Ash Landfill, landfilled dry	
		2,270 Tons FGD Ash	Sluiced wet to Scrubber Ponds and Dewatered	Sent to Savage Ash Landfill in 2010, landfilled dry	Quantity transported to dry landfill varies annually due to contractor availability, wet conditions and other factors. Most FGD ash was able to be transported to dry landfill in 2009.
	Total	35,980 Tons			

Facility Name	Location	Annual CCR Generation	Temporary CCR Storage Method	Final CCR Disposal	Comments
Coyote Station (Co-Owned)[1]	Beulah, ND	202,216 Tons FGD Ash	Ash Silo, Dry	Blue Pit, landfilled dry	
		6,692 Tons Misc Ash from Silo Clean up Management and Misc. FGD Ash	Ash Silo, Dry	Blue Pit, landfilled dry	This ash is handled twice and is not reflected in totals.
		25,640 Tons Boiler Slag (and small amount of Economizer Ash)	Sluiced Wet and Dewatered in Sluice Outfall Area, Water Drains to Ash Pond	Blue Pit and Purple Pit, landfilled dry	
		5,560 Tons Boiler Slag and Economizer Ash	Dredged from Ash Pond and placed in Nelson Pond and Dewatered	Blue Pit, landfilled dry	This ash is handled twice and is not reflected in totals.
		63,506 Tons Boiler Slag	Sluiced Wet and Dewatered in Sluice Outfall Area, Water Drains to Ash Pond and Dewatered	Beneficial Use	Shingle grit and blasting sand; used by mine for road deicing and stabilization
	Total	291,362 Tons			
Big Stone Plant (Co-owned) [2]	Milbank, SD	31,696 Tons Fly Ash	Ash Silo, Dry	Ash Disposal Area, landfilled dry	
		6,172 Tons Fly Ash	Ash Silo, Dry	Beneficial Use	Soil stabilization
		29,828 Tons Boiler Slag	Sluiced Wet to Bottom Ash Pond and Dewatered	Ash Disposal Area, landfilled dry	
		34,706 Tons Boiler Slag	Sluiced Wet to Bottom Ash Pond and Dewatered	Beneficial Use	Shingle grit and blasting sand
		5,426 Tons Boiler Slag	Sluiced Wet to Bottom Ash Pond and Dewatered	Stored for future beneficial use adjacent to ash pond	
	Total	107,828 Tons			
Wygen III (Co-Owned) [3]	Gillette, WY	11,550 Tons Bottom Ash	Ash Silo	Wyodak Mine Peerless Pit, mine backfilled dry	
		35,728 Tons Fly Ash	Ash Silo	Wyodak Mine Peerless Pit, mine backfilled dry	
	Total	47,278 Tons			

Notes: (1) Ash quantities are totals. However, MDU's share of Coyote Station is 25 percent.
(2) Ash quantities are totals. However, MDU's share of Big Stone Plant is 22.7 percent.
(3) Operational in April 2010 – these are projected total annual generation quantities. However, MDU's share of Wygen III is 25 percent.

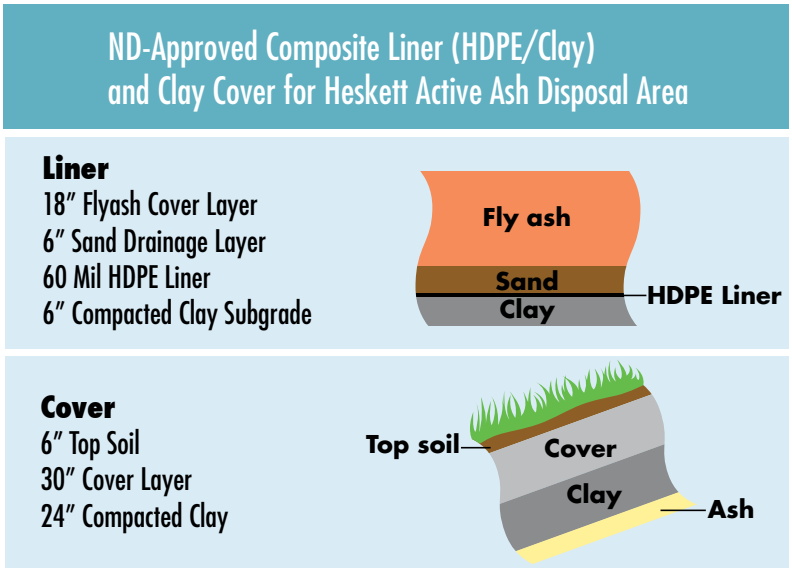
None of MDU's CCR is placed in uncontrolled "dumps" as ash disposal is sometimes portrayed in the media. The coal ash produced by MDU through its owned and co-owned electric generating plants that is not beneficially used is disposed of permanently in dry landfills. The landfills are constructed facilities that are excavated into either native clay soils, are built with an engineered compacted clay liner, or are built with a compacted clay and geomembrane composite liner system. The only exception to this is that the Wygen III facility's ash is placed dry as minefill on the mine floor of the Peerless Pit at the Wyodak Mine, adjacent to the Wygen III facility site.

Landfill liner systems, combined with leachate collection and final cover systems, are designed to impede the flow of precipitation into the CCRs, thereby minimizing the generation of landfill leachate. Leachate is

precipitation or ash transport water that has contacted the ash and has subsequently seeped through the ash and may contain trace minerals and metals from the ash. Liner systems impede the flow of leachate out of the landfill, thereby protecting groundwater resources. The landfills also are designed to maintain their structural integrity to provide physical containment of the ash. Tests are performed and/or observations are made during construction of these facilities to confirm that the facilities have been constructed in accordance with construction specifications and regulatory agency approvals. Examples of tests that are performed are testing of permeability of clay liner systems and testing of seam integrity for geomembrane liner systems. Reports documenting the construction specification test results are submitted to state regulatory agencies for MDU's permitted facilities.

One example of a composite liner system is the one approved by the North Dakota Department of Health at R.M. Heskett Station for Slots 6 through 10 of the Active Ash Landfill. Illustration 1 shows the components of this composite liner system as well as the cover system components to be applied when the slot is full and needs to be capped. MDU hires an engineering consultant to assist the company with design and specification of each slot or cell of the landfill. Construction contractors are employed to excavate and construct the slot and install the liner according to the engineer's specifications, with the engineer and company personnel overseeing construction. Pictures 2 through 4 show a few of the phases of the Slot 7 liner construction for the R.M. Heskett Station Active Ash Landfill.

Illustration 1



(Picture 2 – Construction crews excavating Slot 7 of the R.M. Heskett Station Active Ash Landfill, prior to liner installation. Ash in Slot 6 can be seen to the right.)

(Picture 3 – Construction crews installing the HDPE geomembrane liner on top of the engineered clay liner of Slot 7 at R.M. Heskett Station's Active Ash Landfill.)

(Picture 4 - Construction crew pulling down one of the last sections of HDPE geomembrane liner during the construction of Slot 7 at R.M. Heskett Station's Active Ash Landfill.)

Each MDU CCR management facility, whether it is a dry landfill or impoundment, has its own individual characteristics and specifications applied. Table 4 shows the specifications of the different ash impoundments and dry ash landfills that each of the MDU facilities utilizes.

Table 4 - MDU Facility Impoundments and Landfill Specifications

Facility Name	Pond/Landfill	Area	Pond Depth	Liner
R.M. Heskett Station	Active Ash Landfill	47 acres total permitted	NA	Slots 1-5 5 feet of compacted clay (maximum hydraulic conductivity 1.0 X 10^{-7} cm/sec) Slots 6-10 0.5 feet of clay (maximum hydraulic conductivity 1.0 X 10^{-7} cm/sec) and 60 mil HDPE (cells 6-10)
	Evaporation Pond	1/3 acre permitted	5 feet total depth	3 feet of compacted clay (maximum hydraulic conductivity 1.0 X 10^{-7} cm/sec)
Lewis & Clark Station	Bottom Ash Pond	Two cells, 15 acres total	15 feet total depth 7 feet maximum above grade	60 mil HDPE with 1.5 feet of protective ash cover
	Scrubber Ponds	Two 1.33 acre cells and two 0.46 acre cells	8 feet total depth 3 feet maximum above grade	3 feet compacted of clay (maximum hydraulic conductivity 1.0 X 10^{-7} cm/sec), dewatering pad lined with 20 mil HDPE
	Savage Ash Landfill	104 total acres available	NA	Constructed on natural in-place clays
Coyote Station	Ash Pond	4.0 acres permitted	13 feet total depth 0 feet maximum above grade	3 feet of clay liner covered with 3 feet of protective soil
	Sluice Outfall Area	1.0 acre permitted	5 feet total depth 0 feet maximum above grade	No liner
	Nelsen Pond	5.0 acres permitted	13 feet total depth 12 feet maximum above grade	2 feet of compacted clay with 1 foot of protective boiler slag
	Blue Pit	224 total acres permitted	NA	4 feet compacted clay liner constructed in 6" lifts. (maximum hydraulic conductivity 1.0 X 10^{-7} cm/sec)
	Purple Pit	155.7 total acres permitted	NA	No liner
Big Stone Station	Bottom Ash Pond	2.1 acres permitted	26 feet total depth 5 feet maximum above grade	Constructed on natural in-place clays
	Ash Disposal Area	134 total acres permitted	NA	Constructed on natural in-place clays
Wygen III	Wyodak Mine Peerless Pit	NA –acreage not specified in permit	NA	Minefloor has natural in-place clays

MDU's largest wet ash impoundments include the 15-acre Bottom Ash Pond at Lewis & Clark Station as shown in Picture 5 and the four-acre Ash Pond and five-acre Nelson Pond at Coyote Station. These ponds are shallow; 13 to 15 feet deep with maximum above-grade heights ranging from zero to 12 feet. The Bottom Ash Pond at Big Stone Plant covers about two acres in area and has a depth of 26 feet. At two acres in size, this pond is small and its embankments are not significantly high at only five feet above-grade. Water elevations in the ponds are maintained below the crest elevation of the ponds to prevent overtopping.

(Picture 5 – Lewis & Clark Station's Bottom Ash Pond (two cells in background) and smaller Wastewater Treatment Pond in foreground.)

The MDU ponds that receive ash are only utilized for temporary or interim ash storage of approximately one year; the ash is subsequently dewatered through natural evaporation, removed and either beneficially used or placed at one of MDU's permitted landfill facilities. These operational ponds are either geomembrane- or clay-lined or are constructed on natural in-place clays, to limit water in the ponds from seeping into the surroundings. As experience demonstrates, the ponds are designed for safe year-round use, including the region's sometimes harsh winters. Storage levels are maintained below embankments, so that inclement weather cannot cause an overflow. There have been no instances of over topping.

The design and operating features of MDU's coal ash management facilities contrast sharply with those of TVA's failed Kingston coal ash management facility. At Kingston, a combination of the high water content of the wet ash, the increasing height of ash (over 100 feet), the construction of sloping dikes over the wet ash (often referred to as upstream construction), and the existence of a weak bottom layer of ash and silt were among the long-evolving conditions that caused the TVA Kingston plant ash spill on Dec. 22, 2008. Since MDU does not permanently store wet ash, nor expand the company's wet ash pond capacity by constructing embankments on top of wet ash, and since MDU's pond depths and acreage are limited, the environmental risks and physical hazards associated with MDU's facilities are minimal.

A key to safe and secure CCR management is ensuring the ongoing integrity of containment facilities. At the outset, MDU's disposal facilities are located in remote or fenced areas to discourage visits by unauthorized personnel, and facilities are visited and inspected on a routine basis and sometimes multiple times within a single day by facility operations personnel. MDU and the companies that operate its jointly owned facilities maintain ongoing embankment and facility inspection programs, consisting of weekly, daily or even more frequent inspections of operating CCR management facilities by site personnel; schedules vary by facility. These inspections include assessing the condition of ash haul roads, erosion, water accumulation in sumps and ponds,

dust issues, and recording of precipitation amounts. If impoundments are not utilized at a facility, sumps generally are inspected monthly. However, since CCRs are hauled to these sites on a more frequent basis, observations occur more frequently than monthly. Facility personnel inspect the ash disposal sites by daily site visits as shown in Pictures 6 and 7 and also utilize video surveillance inspection as appropriate, such as for monitoring unauthorized access. One exception is the Savage Ash Landfill site, shown in Picture 8, utilized by Lewis & Clark Station for dry disposal of ash. This landfill is observed multiple times daily by contractors hauling and placing the ash. This landfill is inspected weekly by MDU personnel and more frequently by MDU personnel if rain events occur. The Wyodak Mine site is a secured and fenced facility. Any deficiency or discrepancy found during facility inspections is reported to management and corrective action plans are implemented.

(Picture 6 – Lewis & Clark Station employee conducting an inspection of the Bottom Ash Pond.)

(Picture 7 – Lewis & Clark Station employee conducting an inspection of the Bottom Ash Pond embankment.)

(Picture 8 – Savage Ash Landfill, where dewatered fly ash and bottom ash that are not beneficially used and FGD ash from Lewis & Clark Station are placed for permanent disposal.)

State regulatory agency personnel conduct annual or biennial inspections at permitted facilities. In the case of Lewis & Clark Station, even though the CCR facilities are exempt from permitting, state regulatory personnel conduct inspections of the CCR impoundments every two years under the conditions of the National Pollutant Discharge Elimination System (NPDES) wastewater and storm water discharge permits for the facility. Furthermore, MDU utilizes the services of professional engineers and scientists who specialize in permitting, design, operations, performance monitoring and closure of CCR management facilities, including surface impoundments and landfills. These subcontracted professionals make periodic site visits to observe MDU's CCR management facilities and provide guidance on potential changes and improvements.

Closed CCR disposal facilities are covered or capped with several feet of clay and rooting zone soil to preclude rainwater infiltration. This cover also affords MDU the opportunity to establish an open meadow or grassland landscape, as shown in Picture 9, thereby minimizing mixing of the coal ash with surrounding natural resources while providing a visually acceptable landscape that supports a variety of wildlife habitat.

(Picture 9 – R.M. Heskett Station Active Ash Landfill Cap on Slots 1 through 5.)

While the December 2008 TVA Kingston ash management facility failure was catastrophic and all reasonable efforts must be taken to prevent a similar occurrence in the future, the Tennessee Department of Health, under a cooperative agreement with the Agency for Toxic Substances and Disease Registry ("ATSDR"), has since released a final report finding only minimal environmental and health risks from the coal ash spill. Among other things, the report found that (1) using drinking water wells within four miles of the site will not harm people's health from exposure to coal ash or metals in the coal ash because no evidence has been found of groundwater contamination by coal ash, (2) ambient levels of coal ash were below levels of concern, (3) no harm to human health was likely from touching or accidentally ingesting the ash, including by children who might touch the ash while playing, (4) no harm to human health is expected from accidentally eating a small amount of coal ash, and (5) any exposure to radiation from the small amount of naturally occurring radionuclides present in coal ash would be too small to give people a radiation dose that would be substantially greater than the normal, everyday background radiation dose to which all people are exposed. An ATSDR and Tennessee Department of Health fact sheet summarizing the report is available via the Tennessee Department of Health web site at http://health.state.tn.us/coalashspill.

Financial assurance is another method of ensuring safe and secure management of MDU's CCR facilities for the long term. Financial assurance became a normal requirement in disposal operations due to fly-by-night operators entering the disposal business many years ago. These operators were required to shut down operations, but did not have the financial ability to fund the proper closure of their sites.

As part of the MDU CCR facility permit conditions for R.M. Heskett and Coyote stations, the company must show proof of its ability to fund final closure and post-closure care and monitoring of CCR management facilities. R.M. Heskett and Coyote stations have received estimates of the closure and post-closure costs from third-party engineers and have used these estimates in a financial test of corporate guarantee on an annual basis to satisfy permit requirements for financial assurance. A third-party auditor is used to provide certification of the financial test on an annual basis and each certification is submitted to the North Dakota Department of Health. Under this agency's rule, the financial test must show that an owner or operator has: (1) a ratio of current assets to current liabilities greater than one and five-tenths, or a current rating for the owner's or operator's most recent bond issuance of AAA, AA, A, or BBB as issued by Standard and Poor's or Aaa, Aa, A, or Baa as issued by Moody's; and (2) net working capital and tangible net worth each at least four times the sum of the current cost estimates for closure or post-closure, whichever is applicable; and (3) tangible net worth of at least $2 million; and (4)

assets located in the United States amounting to at least four times the current cost estimates for closure or post-closure care, whichever is applicable.

Lewis & Clark Station's CCR facilities, exempt from permitting, are not required to demonstrate financial assurance. Additionally, Big Stone Plant is not required under its permit conditions to provide financial assurance for its CCR facilities. The Wyodak Mine, where Wygen III sends its CCR for minefill, has requirements in its mining permit to post a reclamation liability bond for the reclamation of mining lands, including closure of the Peerless Pit where Wygen III's ash is placed for permanent dry disposal. The costs included for the Peerless Pit are based on the amount of material needed to cover the ash to the required depth and achieve 5 to 1 side slopes. The cost for reclaiming the Peerless Pit alone has not been estimated separately from the entire mine's reclamation bond.

WATER MONITORING FOR CCR MANAGEMENT AREAS

Protection of water resources always has been a top priority for MDU at each of its facilities. Permitted facilities typically have water quality monitoring requirements that must be met as a requirement of the facility permit. Permit numbers for each facility are shown on Table 2 where applicable.

Because rules vary from state to state and sampling requirements for each facility are inherently site-specific, each facility has its own unique water monitoring requirements. This section describes the general elements of water monitoring and provides a site-by-site description of water quality monitoring activities.

The purpose of water quality monitoring is to determine whether a CCR facility is having an impact on the water resources at a facility and if it is, to determine what measures are needed to help prevent or minimize the impact to the environment. Water samples are collected from groundwater and/or surface water for testing of chemical parameters that are indicative of CCR constituents and compared to various standards to determine if there are water quality impacts resulting from the ash management activities. A generalized list of water quality parameters included in routine monitoring of MDU's facilities is shown in Table 5. The standards used for comparison to the site water data vary depending on whether the sample is from surface water or groundwater and on the particular requirements of each state in which the facility is located. The standards used are based on protective assumptions about the amount of each constituent that is safe to humans if they are exposed to the water. These standards represent a regulatory benchmark for comparison to the sample data.

Table 5 – Groundwater Monitoring Parameters at MDU CCR Management Facilities

• Field pH	• Boron
• Field Temperature	• Cadmium
• Field Conductivity(@ deg 25C)	• Chromium
• Total Alkalinity	• Copper
• Chloride	• Lead
• Hardness as $CaCO_3$	• Manganese
• Nitrate – Nitrite as N	• Selenium
• Potassium – total	• Silver
• Sodium – total	• Strontium
• Sulfate	• Vanadium
• Arsenic	• Zinc
• Barium	

The chemical constituents reflected by the sampling parameters shown above are present in CCRs, but are also very common naturally occurring elements found in natural soil, plants, and even in the foods we eat every day. As one might expect, each of the chemical constituents used to monitor CCR facilities are also present at natural background concentrations in groundwater and surface water. A key challenge for monitoring is to determine which constituents and concentrations are present naturally and which constituents and concentrations may be due to leaching of CCRs. This means that even if a water parameter is above a regulatory threshold at a facility, it may not indicate that a release from an ash landfill or impoundment has occurred.

Surface water sampling may be required by permit or conducted voluntarily by MDU. Ponds that contain CCRs are sampled at each facility. Process water that discharges to surface waters are managed under the National Pollutant Discharge Elimination System (NPDES) by the EPA and as delegated to the individual state programs where process waters are discharged. Additional pond water quality monitoring is conducted at sites where surface water runoff comes in contact with CCR materials. Performance monitoring is done by analyzing samples for chemical constituents that are indicative of CCRs and comparing the concentrations of those parameters with the surface water standards. These data help ensure that the water is safe to discharge off site, or if not discharged, provide useful information on the source concentrations that might seep to groundwater and be detected in groundwater monitoring wells.

Sampling for surface water for NPDES purposes is conducted at the point of discharge to document what is reaching the waters beyond the facility. EPA guidance and state rule-required standard methods and procedures are employed to ensure consistency and reliability of the results. Because surface waters are generally well mixed by the time they are sampled and easy to access, the sampling requirements are typically straightforward and relatively easy to implement for most sites. Groundwater is more complicated because it is not directly accessible at the surface without the use of a monitoring well or similar device to collect the water. In addition, the groundwater does not mix as much as surface water because it has to move within the ground. Therefore, groundwater can have a very different chemistry from one place to another around a facility as the result of natural variation in the geology, interaction of plants, microbes, changes in percolation from rainfall, and changes in river levels. Man-made influences, such as mining, also can change the chemistry of groundwater around the CCR facility.

Groundwater and surface water sampling are conducted semiannually in the spring and fall, or sometimes more frequently during the year. Water samples are withdrawn from the monitoring wells as defined by each facility permit for those sites with permit-required monitoring. Each water sample is tested in the field as needed and an additional sample is then preserved and delivered to a water quality laboratory for analysis. Data quality is analyzed and results are compared with site-specific groundwater quality history and groundwater quality standards. MDU's CCR management facilities have a large quantity of historic water quality data. The data is reported to the state regulatory agency responsible for permitting the facility and for monitoring permit compliance. Water quality data collected for each of the permitted facilities is a matter of public record and can be obtained by contacting the respective state agency for each MDU CCR management facility as provided in Table 2.

Groundwater monitoring is conducted by MDU or its operating partners, and in Wygen III's case the Wyodak Mine, to detect the presence of CCR constituents in areas downgradient (relative to groundwater flow direction) of each facility. Specific requirements vary by state for each facility. Standard EPA and industry standard methods such as American Society for Testing and Materials (ASTM) are used in combination with state and federal rules and guidance to evaluate background and ambient water quality conditions. This means that statistical methods and hydrogeologic principals must be carefully applied to each site to determine if there is evidence of seepage from a particular facility.

Groundwater occurs in the pore spaces of the geologic material under each CCR management facility. Monitoring wells at MDU's facilities consist of 1- or 2-inch diameter solid PVC riser pipe with a slotted or screened pipe section that allows groundwater to flow freely into the well. An example of a groundwater

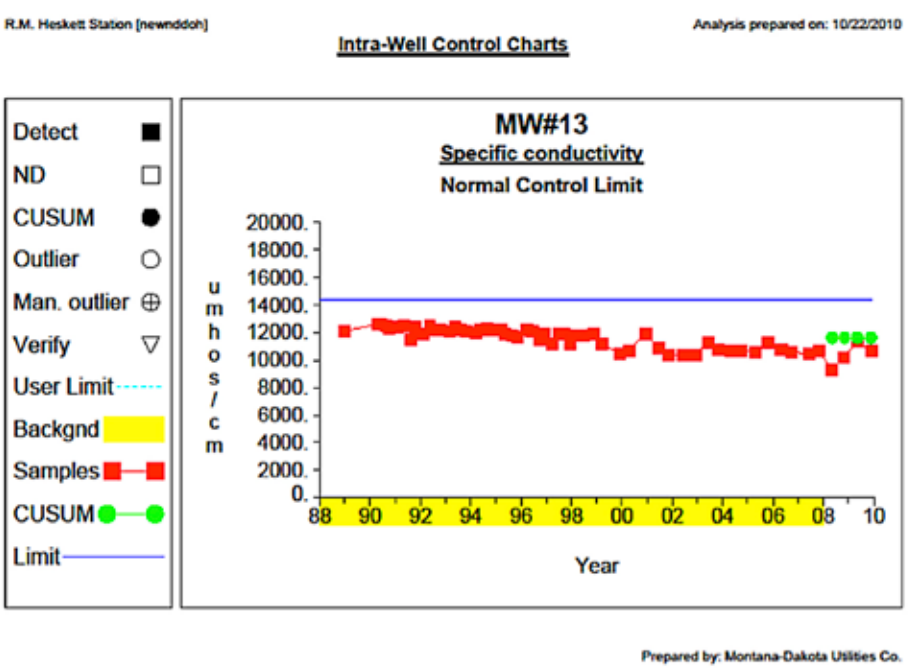
(Picture 10 – Groundwater monitoring wells in foreground at Coyote Station.)

monitoring well can be seen in Picture 10. The screened section is installed to intersect the uppermost saturated groundwater zone below the facility. Samples collected from the wells are then analyzed for a suite of parameters that are indicative of CCR constituents.

The wells must not only be spaced laterally around the facility to provide representative sample coverage and to determine the direction of groundwater flow; they also must be open or screened vertically to intersect the interval most likely to detect a release from the CCR facility. When completed, each facility has a monitoring network consisting of at least three wells around the facility. The wells are located upgradient and downgradient (similar in principle to being upstream or downstream in a river) of the facility. The upgradient wells are not affected by a hypothetical release from a facility because the release of CCR leachate would move downstream with groundwater flow, but would not be able to move "upstream" against the flow. This makes upgradient wells particularly useful for measuring ambient background conditions of water that is moving under the landfill or impoundment.

Because CCR constituents are often naturally occurring, it is important to note that natural background conditions are not uniform and can vary from place to place, even at a relatively small facility. For this reason, historical trends at each individual well are also evaluated over time for some sites to ensure that the natural variation in background concentrations is considered in distinguishing background conditions from a potential release of CCR leachate. An example of one of the tools used to analyze groundwater data is DUMPStat™, a statistical analysis software specifically designed for reviewing groundwater data. Illustration 2 shows an example of one of the statistical charts, an Intrawell Control Chart, developed using DUMPStat.

(Illustration 2 – Intrawell Control Chart of specific conductance for upgradient groundwater monitoring well #13 for R.M Heskett Station's Active Ash Landfill, example of a control chart used in groundwater analysis.)



Site-Specific Summaries of Water Quality Data

The water quality results from each sampling event at each facility are evaluated over time to look for trends and are also compared to water quality standards such as the Maximum Contaminant Levels (MCLs) established by the EPA for drinking water, as well as state-specific standards for groundwater. Even though none of MDU's owned or co-owned CCR management facilities are located near public supply wells for drinking water, comparison to the MCLs provides a benchmark for groundwater quality at each site. Monitoring results have consistently shown that none of the facilities pose a threat to drinking water supplies. A description of each site's monitoring program and any impacts observed at a facility are summarized in Table 6, with additional description and detail provided in MDU facility-specific discussions following the table.

Table 6 – Summary of Groundwater Quality Monitoring for MDU Facilities

Site/Facility Name	Groundwater Monitoring Conducted?	Required by Permit or Rule?	Permitted Facility(s)?	CCR Constituents above Maximum Contaminant Levels (MCL) in downgradient wells (above background)	Comment
Big Stone	Yes	Yes	Yes	No	
Coyote	Yes	Yes	Yes	No	
R.M. Heskett	Yes	Yes	Yes	No	
Lewis & Clark – Scrubber Ponds	Yes	No	NA-Exempt	Yes – Arsenic 15.7 ug/L (above MCL of 10 ug/L *) and Selenium 224 ug/L (above MCL of 50 ug/L*)	Continued improvement is a result of lining ponds in 1993 and 1994 and lining dewatering pad in 1998. No down gradient drinking water receptors are present.
Lewis & Clark – Savage Ash Landfill	Yes	No	NA-Exempt	No	
Lewis & Clark – Bottom Ash Pond	No	No	NA-Exempt	NA	Future monitoring in consideration
Wygen III – Wyodak Minefill	Yes	Yes	Yes	No	Monitoring data required per mine permit under WY DEQ/Land Quality Division

** Note: Results shown are from wells located outside of the pond perimeter in past 5 years.*

R.M. Heskett Station

CCRs are managed in a dry state at R.M. Heskett Station's Active Ash Landfill. The facility is permitted by the North Dakota Department of Health and meets the requirements of North Dakota Solid Waste Rules as a Special Waste. The Active Ash Landfill has both composite-lined (an HDPE geomembrane over a compacted clay layer) and compacted clay-lined areas. Groundwater at the facility is monitored by a network of wells that have shown that there are no exceedances of groundwater standards in downgradient wells except for historically elevated detections of cadmium, selenium and nitrates. However, because these parameters also are found at similar concentrations in upgradient wells, they are not related to the ash management areas and are the result of off-site sources or natural conditions.

Wygen III

CCR from the Wygen III site is managed at the Wyodak Mine, which is permitted by the Wyoming Department of Environmental Quality/Wyoming Land Quality Division (WLQD). The ash is used as backfill for the reclamation of a former mine pit, called the Peerless Pit.

Monitoring and inspections are conducted by the mine operator under the mining permit. The wells are monitored annually and the results are submitted annually to the WLQD as required in the mine permit. New wells were installed in 2010 around the perimeter of the Peerless Pit to improve the monitoring specific to the CCR areas. Since these wells were just installed in 2010, quality-assured groundwater results are not yet available.

The mine site is protective of groundwater because it is underlain by a dense siltstone and is controlled by unique flow conditions that prohibit off-site migration of groundwater. The unique flow conditions at the mine site are the result of inward flow gradients. This means that unlike other facilities where groundwater flows away from the CCR facility, the groundwater at the Peerless Pit flows into the pit and/or flows to an adjacent mine pit called the South Pit. The bottom elevation for the Peerless Pit is lower than the surrounding groundwater elevations, but is above the final elevation of the nearby South Pit. For this reason, groundwater flow is controlled by the South Pit, which acts as a sump, drawing water in from the vicinity of the mine pits.

Groundwater that flows into the South Pit evaporates and does not discharge to surface water and there are no groundwater receptors, such as drinking water sources. As the Peerless Pit is reclaimed with CCR in the future, the groundwater flow direction will continue to move toward the South Pit and any potential release would be detected by the new monitoring well network. Therefore, it is unlikely that the groundwater or surface water resources will be impacted by CCR management at the Peerless Pit because of the unique local hydrologic conditions that exist, and the new groundwater wells will be monitored to confirm groundwater is protected.

Lewis & Clark Station

The Lewis & Clark Station manages CCR in Scrubber Ponds and a Bottom Ash Pond located on the plant property. Dry ash is permanently disposed of at the Savage Ash Landfill, on MDU-owned property that previously had been mined for lignite and contains mine overburden. The property is adjacent to the current Westmoreland Savage Coal Mine located about 22 miles southwest of Lewis & Clark Station. Monitoring is not required by the Montana Department of Environmental Quality, but the Scrubber Ponds have been monitored on a voluntary basis by MDU for the last 25 years. The Savage Ash Landfill has been monitored for more than 16 years.

The Scrubber Ponds initially were constructed without a liner, using the native clays present. In the early 1990s, MDU staff noted distressed vegetation near the ponds and initiated groundwater review that indicated a release to groundwater likely had occurred. The ponds were subsequently reconstructed with a three-foot clay liner in 1993 and 1994 to correct the problem. Also, the dewatering pad, adjacent to the Scrubber Ponds, was lined with high-density polyethylene (HDPE) in 1998.

Current monitoring at the Scrubber Ponds, shown in Picture 11, is intended to provide both detection monitoring for future releases as well as assess water quality improvements resulting from the corrective action performed by MDU. No groundwater parameters currently are detected above water quality standards with the exception of arsenic and selenium. Arsenic has been detected at a maximum of 15.7 ug/L in the past five years, which is above the MCL of 10 ug/L. Selenium has been detected at a maximum of 224 ug/L in the past five years, which is above the MCL of 50 ug/L. However, groundwater quality in most of the wells has improved with respect to several other parameters, and there are no drinking water receptors downgradient of the ponds. These concentrations are expected to decrease further as the constituents are flushed through the aquifer by natural groundwater flow. MDU will continue to monitor these levels.

From past investigation, it is believed that some of these higher well results are due to damage to the wells from heavy equipment and resulting contact with CCR since the wells were located very close to the edges of the impoundments. Results from damaged wells are not representative of groundwater quality and may not be representative of groundwater conditions at the Scrubber Ponds. MDU's consultant has recommended additional studies should be done to provide better definition of the geology at the site and to collect additional data on groundwater quality and flow directions. This work is planned for 2011

Monitoring at the Savage Ash Landfill is intended to detect a release to groundwater from the landfill. There are no parameters with verified exceedences of MCLs in downgradient wells at the facility. However, MDU's consultant has suggested that performance monitoring be improved by placement of additional wells and completion of additional site surveying to confirm groundwater flow directions at this site. This work is being considered for 2011.

(Picture 11 – Lewis & Clark Station Scrubber Ponds showing the process of cleaning out the right pond in order to transition ash sluicing from the left pond to the right pond. Ash stockpiled on the HDPE-lined dewatering pad in the background.)

Coyote Station

Coyote Station contains three active ash management facilities. All are permitted in compliance with North Dakota Solid Waste Rules and are regulated by the North Dakota Department of Health. The facilities include the Blue Pit dry FGD landfill, the Purple Pit inert waste landfill and the Ash Pond. Sampling data from monitoring wells at each facility indicates that groundwater concentrations are below the MCLs.

The Blue Pit is constructed with a four-foot compacted clay liner and the Ash Pond has a liner constructed of three feet of compacted clay. There are two associated process water impoundments called the Sluice Outfall Area and Nelson Pond. The Sluice Outfall Area is used as a settling pond for boiler slag and economizer ash and is not lined. Nelson Pond is lined with two feet of clay and equipped with an underdrain for dewatering solids dredged from the Ash Pond. All of the process water ponds are monitored semiannually for groundwater quality. The Purple Pit is located east of the plant property and accepts only inert waste, including boiler slag, and demolition debris. There are no monitoring or liner requirements for inert waste landfills in North Dakota.

All of Coyote Station's ash disposal facilities are permitted and meet North Dakota solid waste rule requirements. Sampling data from monitoring wells at each facility indicate that groundwater concentrations are below the MCLs.

Big Stone Plant

The Big Stone Plant disposes of the ash that it produces in an onsite Ash Disposal Area (ADA). The ADA is permitted by the South Dakota Department of Environment and Natural Resources (SDDENR) and is in compliance with South Dakota Solid Waste Rules. The ADA is underlain by a thick layer of naturally low-permeability clay that allows for very little lateral or vertical liquid migration. Concentrations of all parameters are below water quality standards except for nitrates which are related to surrounding agricultural land use. No evidence of a release from the ADA has been observed in downgradient wells.

The EPA evaluation addressing the merit of additional CCR regulation has drawn outside comment alleging groundwater contamination from several power plants, including Big Stone Plant's CCR facilities. Recently, environmental groups have made statements suggesting that ash management is responsible for water quality problems at the Big Stone Plant. The evidence cited is based on a past release from a brine pond used as part of the water treatment process at the plant. The brine pond is not related to CCR management at the facility. The South Dakota Department of Environment and Natural Resources (DENR) has publicly shared Big Stone Plant's

groundwater data that refutes the above allegations and has publicly declared, "The groundwater monitoring data shows there has not been any contamination of the groundwater from the fly ash landfill." The South Dakota DENR comments on Big Stone Plant's CCR disposal units can be found online at http://denr.sd.gov/coalash.aspx#Correspondence.

USEFUL PRODUCTS MADE WITH RECYCLED CCRs

The environmental, economic and performance benefits of CCR re-use have been recognized in the past by the EPA in its creation of the Coal Combustion Products Partnership (C2P2) to encourage beneficial use, and in its proposed special waste designation of CCRs under its proposed CCR management rules, wherein CCRs could continue to be beneficially used. As part of the C2P2 program, the EPA determined that appropriate beneficial uses of CCRs pose no significant risk and that no additional national regulations for beneficially used CCRs are needed. It is important to note that the EPA has suspended its involvement in the C2P2 program while it takes comment on its proposed rule for regulating CCRs. However, the EPA still provides C2P2 program beneficial use information at www.regulations.gov under the proposed CCR rule docket and the EPA provides instructions on accessing that information on the C2P2 website: http://www.epa.gov/osw/partnerships/c2p2/.

CCR re-use saves natural resources and reduces greenhouse gas emissions. Information on coal ash recycling and beneficial uses can be found on the American Coal Ash Association website: http://www.coalashfacts.org/. Table 7 provides a listing of typical CCR beneficial uses.

Table 7 – Beneficial Uses of Coal Ash

• Concrete/Concrete Products/Grout	• Blended Cement/Raw Feed for Clinker
• Flowable Fill	• Structural Fill/Embankments
• Road Base/Sub-Base	• Soil Modification/Stabilization
• Mineral Filler in Asphalt	• Snow and Ice Control
• Blasting Grit and Roofing Granules	• Mining Applications
• Gypsum Panel Products	• Waste Stabilization/Solidification
• Agriculture	• Aggregate

The concrete industry is the largest user of fly ash. Fly ash is used as a standard component in ready-mix concrete, a mix of gravel, sand, water and cement. Cement acts to bind the various materials together to form a hardened product. Incorporating fly ash as a substitute for a portion of the cement, up to 50 percent of the mix, has been known to bind the materials together better than using cement alone. Therefore, fly ash can replace a considerable amount of the cement in the concrete mix, depending on the specifications and desired characteristics, and fly ash is significantly less expensive than cement. Concrete made with fly ash can extend the life of construction projects, minimizing the cost and environmental impacts of rebuilding. In fact, concrete containing coal ash was used in the construction of the EPA's headquarters in Washington D.C. In 2009, Knife River produced approximately 3 million cubic yards of ready-mix concrete, which normally would require approximately 882,000 tons of cement. This equates to approximately 8 percent replacement of the cement volumes with fly ash.

Bottom ash can be used to replace lightweight expanded natural aggregates such as clay and shale used in block manufacturing. CCRs can be used for flowable fill, stabilization of soils, roadway sub-base, as a sanding agent for snow and ice control, in agricultural applications, and for shingle grit and sandblasting. Some agricultural uses of CCRs include adjusting soil pH and supplementing constituents that are absent in soils to improve plant growth. Some additional explanation of CCR uses in agricultural applications are provided in this excerpt from the Manual for Applying Fluidized Bed Combustion Residue to Agricultural Lands, Stout, 1988, R.F. Korcak, Ch.6 http://www.ars.usda.gov/is/np/agbyproducts/agbychap6.pdf

Opportunities for beneficial use of coal ash are dependent on a number of factors such as the quality of the ash relative to the quality required for specific beneficial use applications (such as cement replacement), the overall cost of the ash relative to costs of alternative materials, the magnitude of local demand for the ash relative to ash supply and availability, and whether shipping CCRs to distant beneficial use markets is economical. Based upon MDU's owned share of generating facilities, approximately 21 percent of the ash produced by the company is recycled for off-site beneficial use. In all cases, the applications represent instances where the CCR material provides equal or greater technical performance, value, and safety compared with other natural and byproduct materials that would otherwise be used.

Much evaluation has been done over the years to determine suitable beneficial uses for R.M. Heskett Station ash. R.M. Heskett Station fly ash is not suitable for cement replacement applications due to a 10 percent to 14 percent Loss on Ignition (LOI), or amount of unburned carbon present. Higher carbon levels present in ash increase the amount of additives needed to produce high-quality concrete, making the concrete less durable. Fly ash must usually have an LOI of less than 3 percent for suitability in ready-mix concrete. However, R.M. Heskett Station fly ash is suitable for flowable fill, which is a self-compacting low-strength material used for backfill and stabilization. Unfortunately, there are very limited applications in the vicinity of R.M. Heskett Station for flowable fill, and the shipping and handling costs to distribute the product to other distant regions make it uneconomical to market for this use currently.

A small amount of bottom ash is used in agricultural applications as a soil stabilizer in feedlots and as an amendment to provide minerals that are lacking in existing soil. Both bottom ash and fly ash have been determined appropriate for feedlot applications to stabilize pens and heavy-use areas. One example of how CCRs benefit feedlots is that by placing a mixture of fly ash, bottom ash and native soils in animal pens and heavy-use areas, the soils remain stabilized and dry, even in wet conditions. This contributes to a healthier environment for the animals and increased animal production. A literature source that describes appropriate use of fly and bottom ash in feedlot applications can be found from the University of Arkansas, Division of Agriculture: http://gpvec.unl.edu/mud/EnviroMudControl-FlyAsh-FSA-1043.pdf.

Lewis & Clark Station fly ash meets Class C ASTM-C 618 -03 specifications and is sold to Headwaters, Inc., an ash marketing firm, for use in cement replacement applications and for road base construction. It also has been used successfully to set up or bind oil field pit materials. Headwaters, Inc. evaluated Lewis & Clark Station fly ash recently to determine the impact of mercury emissions control reagents and products on its end use and determined that the ash is suitable for cement replacement and road base construction. Lewis & Clark Station bottom ash is used in small amounts for soil stabilization, agricultural soil amendments or feedlot soil stabilization and in road sub-base construction. The scrubber ash, or FGD ash, does not have suitable properties for beneficial use, except that some FGD ash is reused in the scrubber for sulfur dioxide emission reduction.

Big Stone Plant's fly ash does not demonstrate good reactive qualities for use in cement applications; however, it has been beneficially used for soil stabilization. Big Stone's boiler slag is beneficially used for shingle grit and sandblasting. Additional beneficial uses are being reviewed for Big Stone's ash. Coyote Station's scrubber, or FGD, ash also is unsuitable for cement applications. However, some Coyote fly ash is reused internally in the FGD scrubber to reduce sulfur dioxide emissions. Boiler slag from Coyote is beneficially used for shingle grit, blasting media, and some slag also is used by the nearby mine for road deicing and stabilization and is used for cover to control dust when placing fly ash in the Blue Pit.

To minimize risk for the company, MDU has implemented a contract for use at Lewis & Clark Station and R.M. Heskett Station that provides for indemnification and release from liability for the company when ash is distributed for beneficial uses. MDU further provides guidance to promote the environmentally safe beneficial use of the company's ash.

THE FUTURE OF CCR MANAGEMENT

Each MDU CCR facility is regulated by its respective state regulatory agency and associated state regulations as shown in Table 2, with the exception of Lewis & Clark Station, which is currently exempt from regulation in Montana. MDU believes that it is appropriate for CCR disposal and use to be regulated, but not as a hazardous waste. On June 21, 2010, the EPA proposed a new rule in a Federal Register Notice to regulate CCRs. The EPA's proposed rule brings greater regulatory consistency and addresses perceived regulatory shortcomings in the aftermath of the 2008 TVA ash pond failure. The rule contains two main approaches for regulating CCR management under the Resource Conservation and Recovery Act (RCRA) Subtitle C and D: (1) as "special wastes" under the federal Hazardous Waste Program of Subtitle C; and (2) as non-hazardous wastes (solid waste rules) under Subtitle D. The main regulatory differences between the two approaches are provided below:

Subtitle C (CCRs a "special waste" under Hazardous Waste Program)

- No new surface impoundments, requiring significant costs for new facilities to manage ash dry, especially if wet scrubbing pollution control system required.
- Existing surface impoundments phased out within five to seven years, requiring significant expenditures to convert to dry management methods.
- Increased construction, groundwater monitoring, closure and financial assurance requirements for CCR landfills.
- Structural stability criteria.
- Increased groundwater monitoring, closure and financial assurance requirements for existing landfills and lateral expansions of existing landfills.
- Increased liner requirements, groundwater monitoring, closure and financial assurance requirements for new landfills.
- CCR interim storage and handling, treatment and transportation would be subject to hazardous waste program requirements.
- Direct state and federal enforcement.
- CAA dust compliance for landfills.
- Federal permits required for CCR management facilities.

Subtitle D (CCRs a "solid waste" under federal Solid Waste Rules)

- Nationwide CCR management criteria established by EPA; oversight by states.
- Existing unlined surface impoundments to be lined or closed within five years, resulting in increased costs for existing facilities.
- New surface impoundments allowed and must have liners, leachate collection, groundwater monitoring, Mine Safety and Health Administration (MSHA) inspection procedures, and closure plans.
- Existing lined surface impoundments must have groundwater monitoring, Mine Safety and Health Administration (MSHA) inspection procedures and closure plans.
- New landfills must have liners, leachate collection, groundwater monitoring, Mine Safety and Health Administration (MSHA) inspection procedures and closure plans.
- No direct EPA regulation/enforcement.
- Permitting (by state) and closure requirements.
- Structural stability criteria.
- Fugitive dust compliance for landfills.
- Existing landfills require monitoring, fugitive dust compliance and closure.

MDU believes it is too early for the company to develop detailed engineering and cost estimates of the impacts of the EPA CCR rule since the rule is still in its "proposed" phase and could change significantly when it is finalized. It is not the company's normal practice to conduct detailed engineering and cost analyses at this point in the EPA rulemaking process. However, through MDU's membership in trade associations, such as Electric Edison Institute (EEI) and the Utility Solid Waste Activities Group (USWAG), the company is reviewing high-level

cost analyses that will provide insight on the cost impacts of both Subtitle C and D approaches on utility companies.

MDU CCR facilities already manage and landfill CCRs according to the majority of the Subtitle D requirements proposed in EPA's rule and the company believes that CCR management costs will not increase significantly under that regulatory approach. Designating coal ash a hazardous waste under Subtitle C would significantly change and increase the costs of managing coal ash at the five plants that supply electricity to customers of MDU, mainly due to the requirement that impoundments would be phased out five to seven years from final publication of a rule. MDU will develop detailed costs for compliance with the rule when the requirements are finalized and will disclose these costs as appropriate under Securities and Exchange Commission guidelines if costs are determined to be material.

MDU Resources is very concerned with the negative public perception created for the beneficial use of CCR if it is labeled a hazardous waste. The company believes that it will be confusing to the public if the EPA designates beneficial use of CCR in an encapsulated state as non-hazardous, and on the other hand treats CCR generated, handled and disposed in a properly located and lined landfill or impoundment as hazardous. The hazardous stigma will remain with the CCR and the company expects that the market for beneficial use will diminish. With hazardous waste labeling of CCRs, many utility companies are expected to be more risk averse and may severely limit the sale of CCRs due to a buyer's potential mismanagement of the ash, and a resulting hazardous waste cleanup action required under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).

The EPA's CCR rule will have a direct impact on Knife River since the company beneficially uses fly ash as cement replacement in its operations. If the use of fly ash as a cement substitute had not been possible, Knife River would have had to purchase 70,568 additional tons of cement in 2009. The related challenges would have included:

- Increased costs for Knife River to manufacture concrete, which ultimately would have been passed on to customers.
- Increased raw material inputs, including water, and energy consumption at cement manufacturers' kiln operations.
- Increased conventional air pollutant emissions from cement kiln operations.
- Increased GHG emissions of 70,568 tons (each ton of cement produced equates to approximately 1 ton of kiln stack CO_2 emissions).
- Increased waste management costs for utility companies and other generators of CCRs.
- Decreased landfill capacity space for CCRs.

Whichever regulatory approach is ultimately adopted by the EPA, the regulations will have an industrywide impact on the way in which CCRs are managed and on the costs of CCR management. With either approach, the proposed rules will impact design and operating procedures for CCR management facilities, and the required timing of development of new CCR management facilities and closure of existing facilities. It also may impact the continued viability of beneficial use of CCRs, including Knife River's use of fly ash as a cement replacement in ready-mix concrete. This would increase the market price of ready-mix concrete, and would eliminate associated environmental benefits (reduced air emissions and energy and water use) since concrete production is an energy-intensive process. A final rule is expected from the EPA sometime in 2011 and MDU Resources will continue to review the rule's impacts to its company operations.

EXPLORING NEW HORIZONS

At MDU Resources Group, we believe we have a responsibility to use natural resources efficiently and minimize the environmental impact of our activities. We promote environmental stewardship by complying with or exceeding environmental regulations and striving to reduce harmful wastes and emissions. Our participation or partnerships to develop new and improved beneficial use of CCRs include:

The American Coal Ash Association – ACAA is a trade organization devoted to recycling the materials created when we burn coal to generate electricity.

The Electric Power Research Institute – EPRI collaborative RD&D programs focus on the many specific technology challenges of helping members provide society with reliable, affordable, and environmentally responsible electricity.

The Utility Solid Waste Activities Group –USWAG provides the most comprehensive, knowledgeable and experienced legal and technical resources on utility solid waste management issues available.

In addition, MDUR companies are taking many other steps to minimize harmful impacts on the environment. These include focusing on research, using more environmentally friendly technologies to improve operations, and working with customers to teach how they can reduce their consumption of natural gas and electricity.

MDUR also is directly involved in the growth of the renewable energy industry. One business is a national leader in solar panel installation services. Others provide service, installation and materials for renewable energy and environmentally friendly projects.

MDU significantly expanded its wind generating capacity in 2010; wind energy now accounts for about 10 percent of the utility's electric generating capacity. It has installed energy efficient waste-heat generation, is in the process of completing a landfill methane gas extraction facility, and will continue to evaluate additional projects that can provide cost-effective service to customers.

More detailed information on these issues can be found in the company's most recent sustainability report. http://www.mdu.com/CorporateResponsibility/Pages/Sustainability.aspx

(Picture 12 – In 2009, Knife River used more than 70,000 tons of fly ash as a replacement for Portland cement during the company's production of nearly 3 million cubic yards of ready-mix concrete.)

(Picture 13 – R.M. Heskett Station near Mandan, N.D.)