

**MEMO**

To:  
Kendall Kliewer

Copies:  
Bill Thompson

From:  
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Date:  
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ARCADIS Project No.:  
B0014505

Subject:  
Aberdeen MGP Site Remedial Program: 2015-2019 Projected Cash Flow

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This memorandum presents an update on the progress of remediation work at NorthWestern Energy's former manufactured gas plant site in Aberdeen, South Dakota, along with estimated environmental remediation expenditures over the next five years. The remedial program, approved by the SDDENR in a letter dated June 14, 2010, consists of enacting institutional controls restricting property development and groundwater use, recovery of coal tar free product from the subsurface, long-term perimeter groundwater monitoring, and ongoing operational maintenance on current and future groundwater/free product remediation systems.

During 2014, ARCADIS continued the extraction of coal tar free product from several on-site collection galleries and on-site and off-site recovery wells. Over 3,000 gallons of coal tar have been recovered over 2.5 years of operation since the collection systems have been in place, and using the acquired recovery data a performance analysis was conducted to determine long-term trends and overall optimization of additional recovery systems anticipated for off-site areas that are north, east, south, and west of the site. Off-site remediation was initially targeted to begin in 2014; however, the performance analysis and possible modifications to the approach used for off-site areas has delayed the design and construction to 2015.

The analysis of the existing coal tar collection systems suggests that coal tar in various areas and depths is not readily drainable. Accordingly, ARCADIS is currently conducting a coal tar drainability/mobility analysis to determine those areas where coal tar may not be reasonably recoverable, which would in effect lead to a more "surgical" approach to recovering isolated coal tar bodies rather than large-scale collection galleries as have currently been in use. The results of this analysis, expected to be complete in early 2015, may support a finding that a significant volume of

the coal tar free product is immobile and not drainable, and for those remaining areas this information will support a modified design approach. Depending on the conclusions, and subsequent discussions with the South Dakota Department of Environment and Resources (SD DENR), this may possibly affect future expenditures.

The cost components used to develop this estimate were initially prepared as part of a Remedial Alternative Evaluation intended to provide an engineering-level cost comparison between various alternatives that were being considered in 2010. For purposes of this cash flow analysis, and until other design concepts are developed and approved by SD DENR, we are conservatively assuming an analogous approach to the off-site properties except that the implementation will be spread out over four remedial construction efforts instead of two. This will have the effect of spreading out the expenditures over a slightly longer time period than previously contemplated. The schedule and projected expenditures for the next five years are outlined in the table below. This includes an established budgetary amount of \$1,000,000 for third party property owner compensation, assumed to be negotiated and outlaid over a four-year period. Particularly in the case of the off-site areas, the schedule and costs will be more susceptible to third party negotiations regarding access, timing, and any impacts to property owners and the local community. As such, actual costs will likely differ once regulatory meetings are convened, designs are developed and finalized, contractor bids are received and evaluated, and third party negotiations take place.

<b>ABERDEEN MGP REMEDIATION SCHEDULE</b>		
<b>Year</b>	<b>Projected Expenditures</b>	<b>Anticipated Project Activities and Related Assumptions</b>
2015	\$1.9M	Remedial design and construction in northern offsite area, 35% of institutional controls execution (assumes total of \$1MM for third-party property owner compensation), operation and maintenance costs for existing Booster Station remediation system continued O&M for onsite remediation systems, installation of up to four additional offsite monitoring wells and annual groundwater monitoring.
2016	\$2.0M	Remedial design and construction in southern offsite area, 35% of institutional controls execution, operation and maintenance costs for existing Booster Station remediation system and annual groundwater monitoring. Initial O&M on offsite remediation systems (northern area) and continued O&M for onsite remediation systems.

2017	\$1.6M	Remedial design and construction in western offsite area, 15% of institutional controls execution, O&M for existing Booster Station remediation system and onsite collection systems and annual groundwater monitoring. Additional O&M for northern and southern offsite remediation systems.
2018	\$1.7M	Remedial design and construction in eastern offsite area, 15% of institutional controls execution, O&M of Booster Station remediation system and onsite collection systems, and annual groundwater monitoring. Additional O&M for northern/southern/western offsite remediation systems. Remedial construction expected to be completed for all areas in 2018.
2019	\$800K	O&M of Booster Station remediation system, onsite collection systems, additional O&M for northern/southern/eastern/western offsite collection systems, and annual groundwater monitoring.

**5-Year Subtotal for 2015-2019: \$8.0M**

**Non-discounted liability value identified in December 2014 reserve update: \$12.8M**

Remedial construction is expected to be completed in 2018, and annual costs in 2019 will consist of O&M and monitoring of the in-place systems. Annual expenditures are expected to be approximately \$500k-\$600k in 2020 and remain stable or gradually decrease in forthcoming years.