

Board of Minerals and Environment

523 East Capitol Avenue
Pierre, South Dakota 57501-3182
(605)773-3151

Live audio of the meeting is available at <http://www.sd.net>

AGENDA

Board of Minerals and Environment
Telephone Conference Meeting
523 East Capitol Avenue
Pierre, South Dakota

October 19, 2023

10:00 a.m. Central Time

Call to order and roll call

Approval of minutes from August 17, 2023, meeting

Mining Issues Consent Calendar – Tom Cline

Bentonite Performance Minerals LLC's request for approval of its socioeconomic contractor for a large-scale bentonite mine permit application pursuant to SDCL 45-6B-33.1 – Eric Holm

Five-Year Update of Homestake Mining Company's post closure bond for Permit Nos. 332 and 456 – Eric Holm

Public comment period in accordance with SDCL 1-25-1

Laurie Schultz oral biography

Next meeting

Adjourn

The board packet is available on the South Dakota Boards and Commissions Portal at <https://boardsandcommissions.sd.gov/Meetings.aspx?BoardID=67>

Interested parties may participate via telephone or in the DANR Large Conference Room, 523 East Capitol Avenue, Pierre, SD. To participate via telephone please contact DANR at (605) 773-3886 no later than 4:00 p.m. Central Time on Wednesday, October 18, 2023.

Notice is given to individuals with disabilities that the meeting is being held in a physically accessible location. Individuals requiring assistive technology or other services in order to participate in the meeting or materials in an alternate format should contact Brian Walsh, Nondiscrimination Coordinator, by calling (605) 773-5559 or by email at Brian.Walsh@state.sd.us as soon as possible but no later than two business days prior to the meeting in order to ensure accommodations are available.

The audio recording for this meeting is available on the South Dakota Boards and Commissions Portal at <http://boardsandcommissions.sd.gov/Meetings.aspx?BoardID=67>

Minutes of the
Board of Minerals and Environment
Telephone Conference Call Meeting
523 East Capitol Avenue
Pierre, South Dakota

August 17, 2023
10:00 a.m. Central Time

CALL TO ORDER: The meeting was called to order by Chairman Rex Hagg. The roll was called, and a quorum was present.

The meeting was streaming live on SD.net, a service of South Dakota Public Broadcasting.

Chairman Hagg welcomed new board member Laurie Schultz.

BOARD MEMBERS PRESENT: Rex Hagg, Glenn Blumhardt, Gregg Greenfield, Gary Haag, Doyle Karpen, Bob Morris, and Laurie Schultz.

BOARD MEMBERS ABSENT: Jessica Peterson.

OTHERS PRESENT: Mike Lees, Roberta Hudson, Eric Holm, Tom Cline and Bret Graves, DANR Minerals, Mining, and Superfund Program; Matt Zietlow, Wharf Resources, Stephanie Kuntz, Marsh; Sam Keeran, Bureau of Land Management.

APPROVAL OF MINUTES FROM JULY 20, 2023, MEETING: Motion by Karpen, seconded by Greenfield, to approve the minutes from the July 20, 2023, Board of Minerals and Environment meeting. A roll call vote was taken, and the motion carried unanimously.

MINING ISSUES CONSENT CALENDAR: Prior to the meeting the board received a copy of the consent calendar, which is a table listing the department recommendations for transfers of liability and releases of liability, transfer of liability and release of surety, transfers and releases of liability. (See attachment)

Tom Cline, Minerals, Mining, & Superfund Program, presented the consent calendar.

In response to a question from Mr. Haag regarding the transfer of liability and release of surety from Fred Ludwig to Jared and Shantell Gross, Mr. Cline stated that Mr. Ludwig sold his property to the Gross's. He reclaimed all of the site except for a small portion that the Gross's would like to take over. Staff visited the site and determined that the small portion was less than an acre, which requires a \$500.00 surety.

Motion by Karpen, seconded by Haag, to accept the department recommendations for releases of liability and surety, transfer of liability and releases of surety, transfer of liability, and releases of liability. A roll call vote was taken, and the motion carried unanimously.

ACCEPTANCE OF INCREASE TO RECLAMATION AND POSTCLOSURE BONDS FOR WHARF RESOURCES (USA), INC., MINE PERMITS 356,434, 435, 464,,476, AND 490: Eric Holm noted that Matt Zietlow, Wharf Resources, and Stephanie Kuntz, Wharf's bond broker from Marsh, were on the conference call.

Mr. Holm reported that Wharf's current reclamation surety includes bonds issued by five companies for a total of \$58,246,100.

At the July 20, 2023, meeting the Board of Minerals and Environment approved a \$13,906,800 increase to Wharf's reclamation bond. Wharf submitted a bond from Ascot Surety and Casualty Company to cover that amount, bringing the total reclamation surety to \$72,152,900.

Wharf's current postclosure surety includes bonds issued by four companies for a total of \$38,396,200.

At the July 20, 2023, meeting the board approved a \$4,289,400 increase to Wharf's postclosure bond. Wharf submitted a bond issued by Ascot Surety and Casualty Company to cover that amount, bringing the total postclosure surety to \$42,685,600.

Mr. Holm stated that Ascot Surety and Casualty Company is a certified company listed on the US Department of Treasury Circular. The department reviewed the ratings for Ascot Surety and Casualty Company. The company only has ratings from AM Best: Financial strength A, long term A+ (excellent) and the outlook for the company is stable.

The department recommendation for the reclamation surety increase for Wharf Resources is that the board accept Bond No. SURU2210000179, Ascot Surety and Casualty Company, in the amount of \$13,906,800 increasing the reclamation bond amount to \$72,152,900.

The department recommendation for the postclosure increase for Wharf Resources is that the board accept Bond No. SURU2210000180, Ascot Surety and Casualty Company, in the amount of \$4,289,400 increasing the post closure bond amount to \$42,685,600.

In response to a question from Mr. Morris regarding diversity in the bonding rather than Wharf Resources holding one bond, Stephanie Kuntz stated that, as a surety broker, Marsh is responsible to ensure that Wharf Resources' entire bond portfolio across all of their mine sites is actively managed and continually reviewed to ensure that no one surety market is too heavily weighted. It is very much purposeful to try to have an even spread of that surety exposure across Marsh's surety partners.

Chairman Hagg requested board action.

Motion by Morris, seconded by Haag, to accept Bond No. SURU2210000179, Ascot Surety and Casualty Company, in the amount of \$13,906,800 increasing the reclamation bond amount to \$72,152,900 for Wharf Resources (USA), Inc.'s Permit Nos. 356, 434, 435, 464, 476, and 490. A roll call vote was taken, and the motion carried unanimously.

Motion by Blumhardt, seconded by Greenfield, to accept Bond No. SURU2210000180, Ascot Surety and Casualty Company, in the amount of \$4,289,400 increasing the post closure bond amount to \$42,685,600 for Wharf Resources (USA), Inc.'s Permit Nos. 356, 434, 435, 464, 476, and 490. A roll call vote was taken, and the motion carried unanimously.

Matt Zietlow extended Wharf Resources' appreciation to DANR staff and the Board of Minerals and Environment for the diligent, thorough, and extensive work they have done regarding the Boston Expansion permit and the bond approval.

PUBLIC COMMENT PERIOD IN ACCORDANCE WITH SDCL 1-25-1: There were no comments from the public.

NEXT MEETING: The next meeting is scheduled for October 19, 2023.

ADJOURN: Motion by Karpen, seconded by Greenfield, to adjourn the meeting. A roll call vote was taken, and the motion carried unanimously.

Secretary, Board of Minerals
and Environment

Date

Witness

Date

Consent Calendar
South Dakota Board of Minerals & Environment

August 17, 2023

<u>License Holder</u>	<u>License No.</u>	<u>Site No.</u>	<u>Surety Amount</u>	<u>Surety Company or Bank</u>	<u>DANR Recommendation</u>
<u>Release of Liability & Surety:</u>					
David Braun Rosholt, SD	10-897		\$500 \$500	First Interstate Bank, Rosholt	Release liability and \$1000.
		897001	SW1/4 Section 34; T129N-R48W, Roberts County		
Harvey Fouberg Letcher, SD	12-937		\$1,000	CorTrust Bank, Mitchell	Release liability and \$1,000.
		937001	E1/2 NE1/4 Section 35; T104N-R61W, Davison County		
Heavy Constructions Inc. Rapid City, SD	93-504		\$10,000	Western Surety Company	Release liability and \$10,000.
		504001	S1/2 Section 34; T2N-R8E, Pennington County		

Consent Calendar

South Dakota Board of Minerals & Environment

August 17, 2023

<u>License Holder</u>	<u>License No.</u>	<u>Site No.</u>	<u>Surety Amount</u>	<u>Surety Company or Bank</u>	<u>DANR Recommendation</u>
<u>Transfer of Liability & Release of Surety:</u>					
Fred Ludwig Aberdeen, SD	00-710		\$1,000 \$1,000 \$500 \$500	Dacotah Bank, Aberdeen	Transfer liability and release \$3,000.
		710002	SE1/4 Section 33; T124N-R64W, Brown County		
Transfer to:					
Jared & Shantell Gross Aberdeen, SD	23-1127		\$500	First Interstate Bank, Aberdeen	
<u>Transfer of Liability:</u>					
Morris Inc. Pierre, SD	83-2		\$20,000	United Fire & Casualty Company	Transfer liability.
		2053	NW1/4 Section 16; T121N-R74W, Walworth County		
Transfer to:					
Mathew Arbach Hoven, SD	15-982		\$8,000 \$4,000	Plains Commerce Bank, Hoven	

Consent Calendar

South Dakota Board of Minerals & Environment

August 17, 2023

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<u>Transfer of Liability:</u>					
Simon Contractors of SD Inc. Rapid City, SD	14-977		\$20,000	Liberty Mutual Insurance Company	Transfer liability.
		977009	Portion of E1/2 Section 18 North of I-90 except N1/2 NE1/4 Section 18; T6N-R3E, Lawrence County		
Transfer to:					
Johner Gravel Inc. Spearfish, SD	09-884		\$1,000	First Interstate Bank, Spearfish	
			\$1,000		
			\$4,000		
			\$2,000		
			\$1,500		
			\$10,500		
Dixie Veurink Trucking Mitchell, SD	83-167		\$20,000	Nationwide Mutual Insurance Company	Transfer liability.
		167037	Section 29; T105N-R65W, Aurora County		
Transfer to:					
Richard Markhardt White Lake, SD	10-893		\$2,123	Farmers & Merchants State Bank, White Lake	
			\$4,500		

Consent Calendar
South Dakota Board of Minerals & Environment

August 17, 2023

<u>License Holder</u>	<u>License No.</u>	<u>Site No.</u>	<u>Surety Amount</u>	<u>Surety Company or Bank</u>	<u>DANR Recommendation</u>
<u>Release of Liability:</u>					
Clausen & Sons Construction LLC Watertown, SD	83-15		\$20,000	Merchants Bonding Company (Mutual)	Release liability.
		15003	NW1/4 Section 31; T117N-R57W, Clark County		
Charles Mix County Highway Department Lakes Andes, SD	83-22		EXEMPT	NA	Release liability.
		22005	NW1/4 Section 35; T98N-R69W, Charles Mix County		
Day County Highway Department Webster, SD	83-34		EXEMPT	NA	Release liability.
		34020	Section 11; T121N-R53W, Day County		
Edmunds County Highway Department Ipswich, SD	83-161		EXEMPT	NA	Release liability.
		161011	SW1/4 Section 30; T122N-R66W, Edmunds County		

Consent Calendar
South Dakota Board of Minerals & Environment

August 17, 2023

<u>License Holder</u>	<u>License No.</u>	<u>Site No.</u>	<u>Surety Amount</u>	<u>Surety Company or Bank</u>	<u>DANR Recommendation</u>
<u>Release of Liability:</u>					
Gregory County Highway Department Burke, SD	83-171		EXEMPT	NA	Release liability.
		171003	N1/2 Section 32; T95N-R70W, Gregory County		
		171004	SE1/4 Section 31; T97N-R72W, Gregory County		
		171005	NE1/4 Section 13; T97N-R73W, Gregory County		
		171006	N1/2 Section 9; T95N-R71W, Gregory County		
		171008	NW1/4 Section 3; T95N-R71W, Gregory County		
		171009	NW1/4 Section 7; T99N-R70W, Gregory County		
		171010	NE1/4 Section 1; T97N-R70W, Gregory County		
		171011	S1/2 Section 36; T98N-R70W, Gregory County		
		171014	NE1/4 Section 24; T97N-R73W, Gregory County		

Consent Calendar

South Dakota Board of Minerals & Environment

August 17, 2023

<u>License Holder</u>	<u>License No.</u>	<u>Site No.</u>	<u>Surety Amount</u>	<u>Surety Company or Bank</u>	<u>DANR Recommendation</u>
<u>Release of Liability:</u>					
Haakon County Highway Department Philip, SD	83-40		EXEMPT	NA	Release liability.
		40006	NE1/4 Section 20; T6N-R18E, Haakon County		
		40007	Section 2; T7N-R22E; Haakon County		
		40025	S1/2 Section 31; T2N-R25E, Haakon County		
		40028	S1/2 Section 36; T2N-R24E, Haakon County		
		40029	S1/2 Section 18; T7N-R21E, Haakon County		
		40031	W1/2 Section 14; T7N-R23E, Haakon County		
Perkins County Highway Department Bison, SD	83-91		Exempt	NA	Release liability.
		91013	E1/2 SE1/4 Section 31; T17N-R13E, Perkins County		
		91018	SW1/4 Section 20; T17N-R11E, Perkins County		
		91024	E1/2 SW1/4 Section 29; T17N-R12E, Perkins County		
		91025	SE1/4 Section 9; T16N-R16E, Perkins County		
		91028	SE1/4 Section 30; T16N-R11E, Perkins County		
		91029	NW1/4 Section 21 & SW1/4 Section 16; T13N-R10E, Perkins County		

Consent Calendar
South Dakota Board of Minerals & Environment

August 17, 2023

<u>License Holder</u>	<u>License No.</u>	<u>Site No.</u>	<u>Surety Amount</u>	<u>Surety Company or Bank</u>	<u>DANR Recommendation</u>
<u>Release of Liability:</u>					
Walworth County Highway Department Selby, SD	83-7		EXEMPT	NA	Release liability.
		7033	SW1/4 Section 13; T124N-R76W, Walworth County		
Ziebach County Highway Department Dupree, SD	83-246		EXEMPT	NA	Release liability.
		246015	SE1/4 Section 20; T13N-R22E, Dewey County		

South Dakota Board of Minerals & Environment

August 17, 2023

<u>Permit Holder</u>	<u>Permit No.</u>	<u>Surety Amount</u>	<u>Surety Company or Bank</u>	<u>DANR Recommendation</u>
<u>Acceptance of Reclamation Bond Increase for Wharf Resources (USA), Inc.:</u>				
Wharf Resources (USA), Inc. Lead, SD	356, 434, 435, 464, 476, & 490	\$13,906,800	Ascot Surety & Casualty Company	Accept Bond No. SURU2210000179, Ascot Surety & Casualty Company, in the amount of \$13,906,800 increasing the reclamation bond amount to \$72,152,900.
<u>Acceptance of Post Closure Bond Increase for Wharf Resources (USA), Inc.:</u>				
Wharf Resources (USA), Inc. Lead, SD	356, 434, 435, 464, 476, & 490	\$4,289,400	Ascot Surety & Casualty Company	Accept Bond No. SURU2210000180, Ascot Surety & Casualty Company, in the amount of \$4,289,400 increasing the post closure bond amount to \$42,685,600

Consent Calendar

South Dakota Board of Minerals & Environment

October 19, 2023

<u>License Holder</u>	<u>License No.</u>	<u>Site No.</u>	<u>Surety Amount</u>	<u>Surety Company or Bank</u>	<u>DANR Recommendation</u>
<u>Release of Liability & Surety:</u>					
Kilby Trucking Faith, SD	02-749		\$500	State Bank of Eagle Butte, Eagle Butte	Release liability and \$500.
		749001	S1/2 Section 12; T8N-R14E, Meade County		
Floyd Morrison Mitchell, SD	06-827		\$500	Palace City Federal Credit Union, Mitchell	Release liability and \$1,000.
		827001	\$500	Fulton State Bank, Mitchell	
			N1/2 Section 22 & N1/2 Section 23; T104N-R60W, Davison County		
John Oban Roscoe, SD	03-769		\$500	First National Bank, Pierre	Release liability and \$500.
		769001	NE1/4 Section 9; T122N-R73W, Edmunds County		
William J. Sutton Burke, SD	06-830		\$1,000	First Fidelity Bank, Burke	Release liability and \$1,000.
		830001	SE1/4 Section 12; T97N-R70W, Gregory County		

Consent Calendar

South Dakota Board of Minerals & Environment

October 19, 2023

October 19, 2023					
<u>License Holder</u>	<u>License No.</u>	<u>Site No.</u>	<u>Surety Amount</u>	<u>Surety Company or Bank</u>	<u>DANR Recommendation</u>
<u>Release of Liability & Surety:</u>					
Matthew R. Vogel Aberdeen, SD	13-956		\$1,000	First State Bank, Aberdeen	Release liability and \$1,000
		956001	SW1/4 Section 18; T121N-R64W, Brown County		
<u>Transfer of Liability & Release of Surety:</u>					
Gregory Schimkat Naperville, IL	11-927		\$1,000	Farmers State Bank, Marion	Transfer liability and release \$1,000.
		927001	E1/2 Section 20; T100N-R53W, Turner County		
Transfer to:					
Rechnagel Construction, Inc. Hurley, SD	83-135		\$20,000	United Fire & Casualty Company	
<u>Transfer of Liability:</u>					
Lyman County Highway Department Kennebec, SD	83-215		EXEMPT	NA	Transfer liability.
		215008	SW1/4 Section 21; T106N-R71W, Lyman County		
Transfer to:					
Cherie & Cody Lafferty Reliance, SD	93-480		\$3,500	BankWest, Gregory	

Consent Calendar

South Dakota Board of Minerals & Environment

October 19, 2023

<u>License Holder</u>	<u>License No.</u>	<u>Site No.</u>	<u>Surety Amount</u>	<u>Surety Company or Bank</u>	<u>DANR Recommendation</u>
<u>Release of Liability:</u>					
Bawek Construction Grenville, SD	83-121		\$20,000	Bank of Hoven, Conde	Release liability.
		121003	W1/2 SW1/4, SE1/4 SW1/4 Section 10; T120N-R59W, Day County		
		121005	NW1/4 Section 12; T119N-R59W, Clark County		
Fisher Sand & Gravel Company Dickinson, ND	83-54		\$20,000	Liberty Mutual Insurance Company	Release liability.
		54030	W1/2 NW1/4 Section 19; T8N-R6E, Butte County		
Wayne Swenson Watertown, SD	01-715		\$2,000	DNB National Bank, Clear Lake	Release liability.
		715001	NE1/4 SE1/4 Section 9; T117N-R50W, Deuel County		
Miner County Highway Department Howard, SD	83-177		EXEMPT	NA	Release liability.
		177022	S1/2 Section 15; T105N-R57W, Miner County		

South Dakota Board of Minerals & Environment

October 19, 2023

Permit Holder

Permit No.

Surety Amount

Surety Company or Bank

DANR Recommendation

Five-Year Update of Post Closure Financial Assurance:

Homestake Mining Company
Central City, SD

332 & 456

\$61,271,809

Federal Insurance Company

Increase the Post Closure bond
amount to \$80,201,732.



BENTONITE

Performance Minerals LLC

Colony, Wyoming Plant

554 US Hwy 212,

Belle Fourche, SD 57717

Phone (307)896-2596/Fax (307)896-4588

September 18, 2023

Board of Minerals and Environment
SD Department of Environment and Natural Resources
523 E Capitol Avenue
Pierre, South Dakota 57501

RECEIVED
SEP 19 2023
MINERALS & MINING PROGRAM

RE: Approval of Socio-Economic Assessment Author

Dear Board of Minerals and Environment;

Please consider this letter a request for the South Dakota Board of Minerals and Environment to review and approve the qualifications of SWCA Environmental Consultants (SWCA) to complete a Socioeconomic Assessment of the effects of a proposed bentonite mine in Butte County, South Dakota. Bentonite Performance Minerals, LLC (BPM) will in the near future be submitting Requests for Determination of Special, Exceptional, Critical or Unique Lands and a Large Scale Mine Permit Application for one bentonite mining project located approximately 7.0 miles northwest of Belle Fourche, South Dakota. The mine will be known as the Larsen Mine and will be the fourth mining permit BPM has had in South Dakota within the last 10 years.

BPM requests that SWCA be approved to conduct the Socioeconomic Assessment for the proposed mine. SWCA has conducted socioeconomic assessments for a variety of energy, infrastructure and development projects for over two decades. SWCA's Statement of Qualifications is attached for the board's review. Thank you in advance for your consideration of this request.

Sincerely,

Jennifer Henson
Environmental Specialist
Bentonite Performance Minerals, LLC

SOCIOECONOMIC IMPACT ASSESSMENT

WHAT IS A SOCIOECONOMIC ASSESSMENT?

Whether they are conducted to support public outreach efforts or to satisfy regulatory requirements, socioeconomic impact assessments are designed to help stakeholders understand the effect a proposed project or policy is likely to have on people and the communities in which they live.

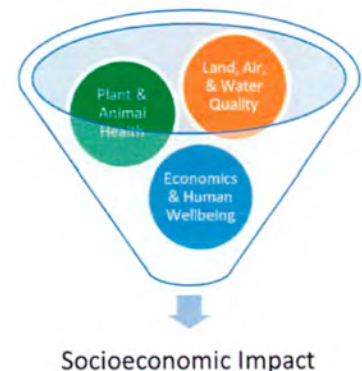
For over two decades, SWCA Environmental Consultants' economists and community facilitators have worked with financial experts, scientists, and affected communities to quantify and articulate the socioeconomic impacts of policy alternatives and proposed projects. While every assessment is customized to the project or policy at issue, three activities are common to most: community engagement, economic impact assessment, and environmental justice evaluation.

Community engagement activities are tailored to specific projects. Common activities include identification of affected communities; development of project descriptions suitable for public consumption; dissemination of information via social media, traditional media, mailings and/or postings; organization of virtual or in-person community meetings; tracking of public outreach efforts, comments, and responses; and establishment of information repositories. SWCA social scientists have led these efforts for energy, infrastructure, and development projects in more than 20 states.

Economic impact assessments quantify the effects a proposed project or policy will have on regional wages, incomes, jobs, and tax revenue. SWCA economists have used the IMPLAN and JEDI models to evaluate the direct, indirect, and induced economic effects of mining activities, recreational resource development initiatives, and energy infrastructure projects throughout the United States.

The Environmental Protection Agency defines environmental justice as the fair treatment and meaningful involvement of all people with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. SWCA is currently helping a range of clients understand and mitigate environmental justice issues under rapidly evolving federal and state regulations.

Socioeconomic impact assessments integrate the biological, physical, and social sciences to help society understand how projects and people interact.



SOCIOECONOMIC SERVICES:

- Community Engagement
- Community Characterization
- Economic Impact Assessment
- Infrastructure Adequacy Assessment
- Recreational Impact Assessment
- Social Benefit-Cost Analysis
- Decision Analysis
- Environmental Justice Assessments

CONTACT US



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SUCCESS ASSESSING SOCIOECONOMIC IMPACTS

Cooling Water Technologies: Working on behalf of Electric Power Research Institute, SWCA economists quantified the nationwide social and economic impacts of policy alternatives related to alternative industrial cooling water intake technologies. The assessment included monetized estimates of ecological and human health externalities associated with various technologies as well as estimates of more traditional use and non-use values. The work was submitted to the Environmental Protection Agency during its rule making process. SWCA economists have since conducted site-specific assessments on behalf of a dozen facilities.



Liquefied Natural Gas Terminals and Offshore Oil Platforms: Working on behalf of the Federal Energy Regulatory Commission, the United States Coast Guard, and project proponents, SWCA economists have conducted socioeconomic and environmental justice assessments for proposed liquefied natural gas terminals and oil platforms at coastal and offshore sites located throughout the United States. These assessments often integrate the results of economic impact analysis, air quality modeling, visual simulations, and chemical fate and transport modeling to evaluate the potential for and distribution of economic, health, and quality of life impacts.



Deep Sea Minerals Mining: Working at the request of the Secretariat of the Pacific, SWCA's Dr. Wakefield co-authored an assessment of the social costs and benefits of deep-sea mineral mining at hydrothermal vent, seamount, and abyssal plain sites throughout the Pacific Rim. The detailed assessment included on-site interviews with government and tribal stakeholders to identify and evaluate potential social and distributional impacts along with financial and environmental issues. The work is summarized in the Journal of Marine Policy in an article titled "Social Cost Benefit Analysis for Deep Sea Minerals Mining" (95:346–355).



Energy Infrastructure Projects: Working on behalf of the Federal Energy Regulatory Commission, the U.S. Department of State, and project applicants, SWCA economists have conducted socioeconomic and environmental justice assessments for proposed pipeline, transmission line, and renewable energy projects at locations throughout the United States. Associated issues often include regional economic impacts, the potential for adverse health effects, adverse impacts to recreational infrastructure, language barriers, and quality of life issues related to noise, air quality, and viewsheds.



Salton Sea Dust Suppression: SWCA economists assessed the social costs and benefits of dust suppression at the Salton Sea. The assessment used human health, tourism, and agricultural data to assess the social costs and benefits associated with projects designed to suppress dust and/or create habitat around the Salton Sea. Critical issues revolved around human health impacts to low-income populations and the distribution of project benefits among rural populations.



Kissimmee River Water Reservation: Working at the request of the South Florida Water Management District, SWCA economists quantified social and economic benefits and costs of the proposed Kissimmee River Water Reservation in Central Florida. The analysis utilized an ecosystem service accounting framework to quantify anticipated benefits such as outdoor recreation and fish and wildlife habitat enhancement as well as costs to individuals, small businesses, and government entities.



JEFF WAKEFIELD, PH.D., DIRECTOR OF ECONOMICS

Dr. Jeffrey Wakefield has over 20 years of experience assessing anthropogenic impacts to natural resources. This has been done in the context of NEPA permitting, policy analysis, and natural resource damage assessment. He has done this work on behalf of private industry, law firms, trade groups, and government entities including the U.S. National Marine Fisheries Service (NMFS), U.S. Coast Guard (USCG), the Federal Energy Regulatory Commission (FERC), the U.S. Department of State (USDOS), the U.S. Maritime Administration (MARAD) and the Secretariat of the Pacific Community (SPC). In addition, Dr. Wakefield has developed methods that integrate hydrodynamic modeling, toxicology, and population dynamics to assess impacts to avian and aquatic resources. He is formally trained in Economics, Marine Biology, and Biochemistry and has published in economic, biological, marine policy, and oil spill-related journals.

SELECTED PROJECT EXPERIENCE

YEARS OF EXPERIENCE

22

EXPERTISE

Natural Resource Economics

NEPA and Permitting Compliance

Public Outreach and Coordination

Population Dynamic Modeling

Social Benefit Cost Analysis

Marine Biology

EDUCATION

Ph.D., Economics, University of Delaware; 2001

M.A., Economics, University of Delaware, 1998

M.S., Marine Biology & Biochemistry, College of Marine Studies, Delaware; 1996

B.S., Biology, Rochester Institute of Technology, New York; 1993

TRAINING

OSHA - Hazardous Waste Operations and Emergency Response (HAZWOPER) 40- Hour Training; 2001 to Present

NEPA Permitting for Offshore Platforms and LNG terminals; Multiple Clients; Sites throughout the United States. Working on behalf of MARAD, FERC, the USCG, and project applicants, Dr. Wakefield has been the lead social scientist for NEPA permitting processes associated with multiple offshore platforms and terminals. In addition to contributing assessment of visual impacts, alternatives, and marine traffic, he authored sections on socioeconomics and environmental justice. *Role: Lead Economist*

NEPA and State Permitting for Utility Level Solar and Wind Projects; Multiple Clients; Sites throughout the United States. Working on behalf of BLM and project applicants, Dr. Wakefield has been the lead social scientist for NEPA and state-level permitting processes associated with multiple utility level solar and wind projects. In addition to contributing assessment of visual impacts he authored sections on socioeconomics and environmental justice and produced estimates of direct and net social costs associated with greenhouse gas emissions. *Role: Lead Economist*

NEPA and FERC Relicensing Support for Reservoirs Multiple Clients; Sites throughout the United States. Working on behalf of the U.S. Army Corps and project proponents, Dr. Wakefield has been the lead social scientist for NEPA, and FERC relicensing processes associated with multiple reservoir development and/or relicensing projects. His rolls have included socioeconomics, recreation, and environmental justice. *Role: Subject Matter Expert*

NEPA Permitting for Mine Operations; Confidential Clients; Utah and Wyoming Dr. Wakefield is currently support 2 mining operations by filling the role of subject matter expert for socioeconomics and environmental justice as they seek significant operational expansions. *Role: Subject Matter Expert*

NEPA Permitting for Linear Projects; Multiple Clients; Sites throughout the United States. Working on behalf of the Federal Energy Regulatory Commission, the United States Department of State, and project applicants, Dr. Wakefield has been the lead social scientist for NEPA permitting processes associated with multiple linear (powerline and pipeline) projects. In addition to contributing to assessments of visual impacts, alternatives, and project purpose, he authored sections on socioeconomics and environmental justice. These assessments often integrated the results of regional economic analyses, air quality modeling, and visual simulations to evaluate the potential for, and distribution of, economic, health, and quality of life impacts. *Role: Lead Economist.*

Economic Evaluation of Regulatory Options for Managing Ground Fisheries; New England Regional Office of NMFS; Northeast United States. Dr. Wakefield coordinated with New England Regional Office of NMFS, the Northeast Fisheries Science Center, and commercial fishermen to evaluate the social and economic impacts of alternative groundfish regulatory regimes. The team completed a total of 17 assessments in ten months facilitating implementation of new regulations prior to the targeted fishing year. *Role: Lead Economist*

Social Costs and benefits of Salton Sea Dust Suppression; California. Dr. Wakefield led a team of economists assessing the social costs and benefits of the Salton Sea 10 Year Dust Management Plan. The assessment used existing project costing along with published human health, tourism, and agricultural data to assess the social costs and benefits associated with projects designed to suppress dust and/ or create habitat around the Salton Sea. Critical issues revolved around human health impacts to minority and low-income and rural populations. The assessment was integrated into the CEQA permitting and inter-agency decision making process. *Role: Lead Economist*

NEPA Compliance Support; Tennessee Valley Authority (TVA); Tennessee. Dr. Wakefield was the Social Science lead managing the environmental justice and socioeconomic assessments of multiple projects sponsored by, or affecting, TVA assets. These projects ranged from evaluation of potential electricity rate changes to development of recreational and industrial infrastructure policy. In each case, the socioeconomics team gathered community demographic data, evaluated project impacts, and characterized the potential for adverse impacts to minority or low-income populations. *Role: Lead Economist.*

Cost Benefit Analysis of Deep-Sea Mineral Mining; Secretariat of the Pacific; Papua New Guinea, Cook Islands, and the Republic of Marshall Islands. Dr. Wakefield co-authored an assessment of the social costs and benefits of deep-sea mineral mining at hydrothermal vent, seamount, and abyssal plain sites. The detailed assessment included on-site interviews with stakeholders to identify and evaluate potential social and distributional impacts among indigenous persons along with quantification of environmental impacts. The work is being used by the Secretariat to inform policy decisions related to the regulation of this emerging industry and is summarized in the Journal of Marine Policy in an article titled "Social Cost Benefit Analysis for Deep Sea Minerals Mining (95:346-355). *Role: Lead Economist.*

Kissimmee River Regulatory Cost Estimate; South Florida Water Management District; Florida. Dr. Wakefield was the senior economic reviewer for a project that analyzed the costs and benefits likely to arise if a Water Reservation regulation were implemented on the Kissimmee River. This assessment focused on the impacts to businesses and recreation. *Role: Senior Economics Reviewer*

Clean Water Act Section 316(b) Fisheries Assessments; Multiple Clients; Sites throughout the United States. Dr. Wakefield quantified the biological and economic effects of entrainment and impingement at over 30 industrial facilities located throughout the United States. For these projects Dr. Wakefield oversaw the development and implementation of fisheries models used to estimate changes in standing stocks, commercial harvest, and recreational harvest likely to be brought about by alternative technologies. These predictions, coupled with costing information provided by project engineers, were used to calculate and compare the social costs and social benefits of alternative entrainment and impingement technologies. *Role: Technical Lead for Economics and Fisheries Modeling*

Independent Review of Australian Petroleum Production & Exploration Association (APPEA) Cost, Expenses and Liabilities Estimation Method for Petroleum Activities in Offshore Waters; The APPEA; Australia. Dr. Wakefield conducted an independent review of financial assurance calculation methodologies put forth by The APPEA in association with Australia's offshore oil and gas development. The assessment integrated chemical transport, fate, and effects modeling, bottom-up oil-spill response costing, and econometrics to estimate the range of response and restoration costs associated with multiple offshore oil production platforms. The assessment was relied upon by Australia's Offshore Petroleum Safety and Environmental Management Authority (NOPSEMA) to develop compliance guidelines for Australia's Offshore Petroleum and Greenhouse Gas Storage Act of 2006. *Role: Lead Scientist*

Offshore Wind Constraints Analysis; Confidential Clients; U.S. Pacific Coast and Northeast U.S. (February 2022 – Ongoing). Dr. Wakefield conducted several commercial fishing constraints and impact assessments on behalf of offshore wind developers. The research was used to inform the developers as they develop offshore wind and transmission investment strategies. *Role: Lead Economist & Commercial Fisheries Analyst.*

HEATH BYRD, M.S., ECONOMIST

Mr. Heath Byrd is a natural resource and environmental economist specializing in: (1) the assessment of socioeconomic and environmental justice impacts, (2) the quantification of regional economic impacts; and (3) the collection and analysis of outdoor recreation visitation data. He has applied these areas of expertise to NEPA and state level permitting processes, regulatory impact and compliance analyses and natural resource damage assessment.

SELECT PROJECT EXPERIENCE

YEARS OF EXPERIENCE

22

EXPERTISE

National Environmental Policy Act (NEPA)

Natural Resource Damage Assessment (NRDA)

Outdoor Recreation Modeling

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

California Environmental Quality Act (CEQA)

Clean Water Act 316(b) Permitting and Bio-Economic Assessment

Fish and Wildlife Population Modeling

EDUCATION

M.S., Agricultural and Resource Economics: Natural Resource and Environmental Economics; Colorado State University; Colorado; 2004

B.S., Environmental Economics and Management; University of Georgia; Georgia; 1998

TRAINING

OSHA HAZWOPR 40-hour Training Certification; 2001

MEMBERSHIPS

Member; Association of Environmental and Resource Economists (AERE)

Policy Analysis

Floating Houses Policy Review EIS; Tennessee Valley Authority; Southeast U.S.

Mr. Byrd led the socioeconomics and outdoor recreation sections of an EIS evaluating potential changes to TVA regulations affecting floating houses and houseboats on TVA reservoirs. The socioeconomics analysis employed a stakeholder analysis approach that summarized categorized the potential benefits and costs to key stakeholder groups. A survey of local marina operators was used to help quantify potential economic impacts on the marina industry. The outdoor recreation analysis considered how policy changes would affect visitation and economic value of outdoor recreation at TVA reservoirs. *Role: Technical Lead for socioeconomics and outdoor recreation*

2019 Changes to Green Power Providers Program; Tennessee Valley Authority;

Southeast U.S. Mr. Byrd has led and the 2019 Changes to Green Power Providers Program EA. Mr. Byrd led the socioeconomics and environmental justice assessments associated with potential changes to a TVA program that could affect distributed energy sources such as rooftop solar. Key topics included equity and fairness of electricity costs, the effects of subsidies for private rooftop solar, the effects on low-income and minority groups, energy conservation, and TVA's renewable to non-renewable energy mix.. *Role: Project Manager, Technical Lead for socioeconomics and environmental justice*

Kissimmee River Water Reservation Benefit-Cost Analysis and Statement of Regulatory Impacts; South Florida Water Management District; Florida.

Mr. Byrd led an analysis of the potential economic benefits and costs of the proposed Kissimmee River Water Reservation in Central Florida. The purpose of the water reservation was to preserve sufficient instream flows to maintain fish and wildlife populations. The reservation supports the Kissimmee River restoration project, which is restoring the river from a channelized waterway to a more natural habitat. The analysis utilized an ecosystem service accounting framework to quantify anticipated benefits such as outdoor recreation and fish and wildlife habitat enhancement.. *Role: Technical Lead*

Electric Vehicle Standards Policy Analysis; Confidential Client; National. Mr. Byrd supported an economic analysis of potential changes to Federal and California standards for electric vehicles. The analysis considered national benefits and costs, as well as potential regional economic impacts associated with changes in locations of vehicle manufacturing and related supply chains. *Role: Analyst*

2018 Wholesale Rate Change EA; Tennessee Valley Authority; Southeast U.S.

Mr. Byrd has led the 2018 Wholesale Rate Change EA. Mr. Byrd led a socioeconomics and environmental justice analysis of potential changes to TVA's wholesale electricity rates. Key topics included equity and fairness of electricity rate structures across customer classes, effects on low-income and minority groups, and energy use and conservation. *Role: Project Manager, Technical Lead for socioeconomics and environmental justice.*

Outdoor Recreation Studies and Economics

Tittabawassee River Study Area; Dow Chemical Company; Michigan. Mr. Byrd served as lead analyst for human use and providing technical and strategic support for a NRDA associated with potential releases of dioxins and furans into the Tittabawassee River and downstream waterbodies. He developed a Monte Carlo analysis of potential ecological and human use injuries and the potential benefits from habitat and human use restoration projects. He worked with government agency representatives to design and implement extensive human use studies, including focus groups with outdoor recreators and tribal members, a large mail-based recreational fishing survey, and in-person counts and interviews of visitors at parks. *Role: Lead Human Use Analyst.*

Deepwater Horizon Accident; BP Exploration & Production Inc. (BP); Gulf of Mexico. Mr. Byrd responded to the Deepwater Horizon accident and oil spill in the Gulf of Mexico. Mr. Byrd led the design and data collection of a large effort to collect data on outdoor recreation across the entire Gulf of Mexico, which included visitor counts based on aerial photography, on-site counts, in-person interviews, and collection of visitor data from state and national parks. He contributed to statistical analysis of these data to estimate the potential effects of the incident on outdoor recreation visitation and economic value. He also assisted in the evaluation of potential restoration projects designed to offset the loss in outdoor recreation value. *Role: Human Use Study Design, Analyst.*

Nathan E. Stewart Grounding; Kirby Corporation; British Columbia. Mr. Byrd evaluated economic claims for disruptions to tribal uses and harvests of natural resources due to oil released from a grounded vessel, including subsistence harvests. He also advised the client on potential methods to develop scaling habitat and other restoration-based compensation rather than using controversial ecosystem service valuation methods. *Role: Lead Human Use Analyst.*

Evaluation of Environmental Liabilities for Portfolio of Contaminated Sites; Confidential Client; National. Mr. Byrd supported the evaluation of potential environmental liabilities for 75 sites across the U.S. as part of the ASARCO bankruptcy proceedings. He participated in the estimation of liabilities associated with natural resources injuries including outdoor recreation services, ground water, surface water, and sediment habitats. He created and maintained a database of liability estimates. The work was presented to the U.S. Department of Justice during the proceedings. *Role: Analyst and Database Manager.*

Refugio Beach Oil Spill; Downey Brand LLP; California. Mr. Byrd served as lead human use analyst and technical working group representative for a NRDA involving an oil spill near Santa Barbara, CA. He developed improved methods for assessing the statistical power of regression models that use time-series visitation data to infer potential recreational losses. He also applied Clean Water Act §316(b) biological modeling techniques to quantify aquatic egg and larval injury and estimate the aquatic benefits of potential restoration projects. Mr. Byrd performed statistical analyses of benthic abundance data to assist shoreline injury quantification. *Role: Lead Human Use Analyst.*

Social Costs and benefits of Salton Sea Dust Suppression; California. Mr. Byrd conducted a recreational assessment in support of a project to estimate the social costs and benefits of the Salton Sea 10 Year Dust Management Plan. The assessment used existing project costing along with published human health, tourism, and agricultural data to assess the social costs and benefits associated with projects designed to suppress dust and/ or create habitat around the Salton Sea. Critical issues revolved around quality of life impacts among minority, low-income and rural populations. The assessment was integrated into the CEQA permitting and inter-agency decision making process. *Role: Lead Human Use Analyst*

Regional Economic Impact Modeling

Eagle Mountain Hydroelectric Facility Regional Economic Impact Analysis; California Alliance for Renewable Energy Solutions; California. Mr. Byrd led a regional economic impact analysis using IMPLAN for a proposed hydroelectric facility in southern California. The IMPLAN model was used to estimate potential changes in jobs, value added, and economic output for various political subdivisions in the project area. The information informed discussions among project sponsors, local representatives, and various stakeholder groups. *Role: Project Manager and Technical Lead.*

Oil and Gas Infrastructure EIS; Confidential Client; Gulf of Mexico. Mr. Byrd used the IMPLAN model to estimate the potential effects of off- and onshore oil and gas infrastructure in the Gulf of Mexico. The work supported the socioeconomics section of the EIS. *Role: Analyst.*

OLIVER PAHL, M.A., ECONOMIST

Mr. Pahl is an Economist and Environmental Planner with 14 years of environmental consulting experience. He has worked on numerous National Environmental Policy Act (NEPA) documents and has served in roles including Project Manager, Deputy Project Manager, Task Lead, Lead Economist, Section Author, and Subject Matter Expert (SME), with specialized expertise in socioeconomic and environmental justice impact assessments, public health and safety, and utilities. He has experience working on a range of Regional Economic Impact Assessments using the economic modelling software IMPLAN including the use of Multi-Regional Input-Output Analysis and Analysis-by-Parts.

YEARS OF EXPERIENCE

14

EXPERTISE

Economics

NEPA

Socioeconomics

Environmental Justice

Regional Economic Impact Assessment

IMPLAN

Land Use Planning

Non-Market Valuation

EDUCATION

MA, Applied Economics, University of North Carolina at Greensboro

BS, Environmental Economics Policy & Management, minor in Natural Resource & Environmental Law & Policy, Oregon State University

REGISTRATIONS / CERTIFICATIONS

Adult First Aid/CPR/AED Certified;
American Red Cross; 2022

MEMBERSHIPS

American Economic Association

SELECTED PROJECT EXPERIENCE

Pacific and Atlantic Sodo Project Environmental Impact Statement (EIS); United States (U.S.) Bureau of Land Management (BLM); Wyoming. Mr. Pahl is currently conducting an economic analysis of a proposed Trona mining operation in Wyoming. The analysis includes a review of potential socioeconomic impacts and regional economic impacts related to the construction and operation of various alternatives and uses an IMPLAN model to determine economic impacts in the study area. *Role: Economist*

Navy Old Town Campus Revitalization Environmental Impact Statement (EIS); United States (U.S.) Navy; San Diego, California. Mr. Pahl served as a task lead and SME for the socioeconomic, environmental justice, and public services sections of an EIS drafted by the U.S. Navy. The major proposed actions in the EIS are to address substandard, inefficient, and obsolete facilities that are incapable of meeting and sustaining the Navy's mission requirements and to pursue redevelopment that maximizes local transit efficiency consistent with an agreement between the Navy and the San Diego Association of Governments (SANDAG). An additional planning process to comply with both NEPA and the California Environmental Quality Act (CEQA) related to development of a transit center would be required prior to approval and construction and to aid in this process, a CEQA appendix will analyze the potential environmental impacts of alternatives, which include a transit center. Mr. Pahl was the senior reviewer for social science sections and IMPLAN modeling. *Role: Subject Matter Expert.*

Marine Corps Air Ground Combat Center Economic Impact Assessment (EIA); U.S. Marine Corps; San Bernardino, California. Mr. Pahl worked to develop an estimate of economic and community benefits associated with the operation of the Marine Corps Air Ground Combat Center in San Bernardino County, California. The project involved estimating the impact of the installation on the surrounding area using the regional economic analysis software IMPLAN. *Role: Economist.*

Various EIA Projects; U.S. Navy; California, Washington. Mr. Pahl worked to develop an estimate of economic and community benefits associated with the operation of four Navy installations in the State of Washington and four Navy installations in the State of California. The project involved estimating the impact of the installations on the surrounding area using the regional economic analysis software. *Role: Economist.*

Eagle Mountain Pumped Storage Project; California Alliance for Renewable Energy Solutions; California. Mr. Pahl worked to develop an estimate of economic and community benefits in the Coachella Valley associated with the proposed Eagle Mountain Pumped Storage Project. He used the regional economic analysis software IMPLAN to estimate local impacts of construction and operation of the project. *Role: Economist.*

Bremerton Waterfront EIS; U.S. Navy; Bremerton, Washington. Mr. Pahl served as the socioeconomics and environmental justice SME and section author for an EIS evaluating potential improvements to the Puget Sound Naval Shipyard and Naval Base Kitsap – Bremerton. The project involves proposed upgrades to pier and dry-dock facilities at the installation and includes in-water and upland construction. Construction of the proposed alternatives is estimated to include over one billion dollars in spending and last 13 to 15 years. Mr. Pahl modeled regional economic impacts of construction spending over the project timeframe. Mr. Pahl also evaluated impacts of construction on low-income and minority populations. *Role: Economist/Section Author.*

Washington Navy Yard EIS; U.S. Navy; Washington D.C. Mr. Pahl served as the socioeconomics and environmental justice SME and section author for an EIS evaluating the potential acquisition of parcels near the Washington Navy Yard in Washington D.C., for the U.S. Navy. The Washington Navy Yard is the U.S. Navy's oldest shore establishment and is located in the heart of Washington D.C. The former industrial area surrounding the Navy Yard is now a growing residential zone and the alternatives reviewed several development scenarios that would result from Navy actions. Mr. Pahl also evaluated impacts to low-income and minority residents. *Role: Section Author. Evaluated socioeconomic impacts of different development scenarios.*

Pearl Harbor Naval Shipyard Dry Dock EIS; U.S. Navy; Honolulu, Hawaii. Mr. Pahl served as the socioeconomics and environmental justice SME and section author for an EIS evaluating potential improvements to the Pearl Harbor Naval Shipyard. The project involves proposed upgrades to pier and dry-dock facilities at the installation and includes in-water and upland construction. Construction of the proposed alternatives is estimated to include over one billion dollars in spending. Mr. Pahl modeled regional economic impacts of construction spending over the project timeframe. Mr. Pahl also evaluated impacts of construction on low-income and minority populations. *Role: Economist/Section Author.*

TVA Montgomery County; Tennessee Valley Authority; Tennessee. SWCA is currently supporting the preparation of an environmental assessment (EA) as part of the Economic Development InvestPrep program. During the NEPA reviews, SWCA is conducting surveys including wetland delineations, hydrologic determinations, botanical, terrestrial, aquatic, and cultural Phase I and II surveys. *Role: Project Manager.*

Floating Houses Project; TVA; Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee, and Virginia. Mr. Pahl worked on an EIS as a section author and technical specialist reviewing socioeconomic and recreation impacts associated with several proposed alternative management plans for the oversight of floating houses and non-navigable houseboats on all TVA reservoirs. *Role: Economist/Section Author.*

Boone Dam Project; TVA; Tennessee. Mr. Pahl worked on an EIS as a section author and technical specialist reviewing socioeconomic and recreation impacts associated with the drawdown of Boone Lake and repair of Boone Dam. The project involved estimating potential impacts to property values and recreation resulting from lower reservoir levels. *Role: Economist/Section Author.*

U.S. Air Force F-35A Operational Beddown Air National Guard EIS; U.S. Air Force and National Guard Bureau; Wisconsin, Idaho, Florida, Michigan, Alabama. Mr. Pahl served as the socioeconomics and environmental justice SME and section author for an EIS evaluating potential beddown of F-35A aircraft at two of five alternative Air National Guard locations. The EIS was awarded Outstanding Environmental Planning Project at the 2020 American Planning Association, Federal Planning Division Awards. Mr. Pahl completed analysis of socioeconomic impacts including impacts to property values from increased aircraft noise surrounding runways. Completed analysis of impacts to low-income and minority populations in areas surrounding runways. *Role: Section Author.*

Cultural Resource Support and Supplemental Environmental Assessment for Watervliet Arsenal (WVA); U.S. Army; Watervliet, New York. Mr. Pahl served as the Project Manager for several cultural resource tasks and a supplemental EA on a high visibility project involving the divestiture of Army Family Housing Units at the historic WVA in New York. The arsenal is the oldest, continuously active arsenal in the U.S., having begun operations during the War of 1812 and is a National Historic Registered Landmark. The project involved additional architectural and archaeological surveys and reports at WVA. On the client side, the project involved coordination between U.S. Army Corps of Engineers, Headquarters Army Materiel Command, Tank-automotive and Armaments Command, and the WVA installation. The actions also required extensive consultation with the New York State Historic Preservation Officer, the National Park Service, and the Advisory Council on Historic Preservation. Mr. Pahl held biweekly client project calls coordinating ongoing action items. In addition to providing monthly progress reports to clients and managing the internal budget and effort allocation. *Role: Project Manager.*

Evaluation of New Information for the Bureau of Prisons' Letcher County EIS; Federal Bureau of Prisons, U.S. Department of Justice; Letcher County, Kentucky. Mr. Pahl worked to provide updated information on the cost effectiveness of the proposed prison construction and provided additional information on the regional economic impacts of prison construction on local communities in support of an EIS. Mr. Pahl modeled regional economic impacts of prison construction on rural Appalachian counties. *Role: Economist.*

South Dakota Department of Agriculture and Natural Resources

Homestake Mining Company Updated Postclosure Financial Assurance

October 19, 2023

Postclosure

- Board approved 100-year postclosure period in May 2006
- Required five-year reviews of the postclosure financial assurance completed in 2012 and 2017
- DNR reviewed and recalculated Homestake's postclosure financial assurance during this last five-year review
- Covers water management and treatment, monitoring, and maintenance of postclosure areas

Inflation and Discount Rates

- Decided to take a hard look at inflation and discount rates used in present worth analysis
- In November 2022, Homestake asked Barrick's financial advisor Verus to analyze inflation and discount rates
- In February 2023, Verus submitted analysis recommending 2.3 percent inflation rate and 5 percent discount rate

Inflation and Discount Rates

- DANR asked SD State Investment Council to review Verus analysis
- State Investment Council reviewed analysis and developed the following comments

Inflation and Discount Rates

- Inflation Rate
 - Disagreed with Verus' 2.3 percent rate based on Consumer Price Index (CPI)
 - Reclamation and water treatment inflation has historically exceeded CPI by 1 percent
 - Recommended 3.3 percent inflation rate

Industry Specific Inflation Data Alternatives

Inflation Alternatives	5 yr Avg	10 yr Avg	20 Yr Avg	30 Yr Avg
CPI¹	3.63%	2.48%	2.48%	2.49%
Engineering News Record Construction Cost Index²	3.93%	3.42%	3.51%	3.26%
US Bureau of Reclamation O&M Cost Index³	3.90%	3.42%	3.57%	3.08%
Construction Materials Index⁴	9.45%	5.48%	4.71%	3.56%
Construction Machinery and Equipment Index⁵	4.49%	2.98%	3.14%	2.58%
Private Industry Construction Workers Index⁶	3.46%	2.78%	2.55%	
Construction Sand and Gravel Mining Index⁷	5.71%	4.92%	4.78%	4.26%
Power Cranes, Draglines, Excavators Index⁸	3.94%	2.60%	2.52%	
Average of Other Cost Index Measures	4.98%	3.65%	3.54%	3.35%
Difference between Avg - CPI	1.35%	1.18%	1.06%	0.86%
Difference between Burea of Reclamation O & M Cost Index - CPI	0.27%	0.94%	1.09%	0.59%
Difference between ENR Construction Cost Index - CPI	0.30%	0.94%	1.03%	0.77%

Source: ¹US Bureau of Labor Statistics, ²(<https://www.enr.com/economics>), ³(<https://www.usbr.gov/assetmanagement/cost.html>),
⁴(<https://fred.stlouisfed.org/series/WPUSI012011>), ⁵(<https://fred.stlouisfed.org/series/WPU112#0>),
⁶(<https://fred.stlouisfed.org/series/ECICONWAG>), ⁷(<https://fred.stlouisfed.org/series/PCU212321212321>),
⁸(<https://fred.stlouisfed.org/series/PCU33312033312011>)

Inflation and Discount Rates

- Discount Rate
 - 5 percent rate not feasible without taking credit risk for which there is no backstop
 - Forfeited financial assurance placed into Cash Flow Fund in State Treasury
 - 30-year US Treasury Bond rate at end of February 2023 was 4 percent with lower credit risk
 - Recommended a 4 percent discount rate

Inflation and Discount Rates

- March 28, 2023 Teams Meeting
 - DANR
 - SD State Investment Council
 - Homestake
 - Verus
- Discussed Investment Council review of Verus Analysis
- Use Investment Council's 4 percent discount rate and 3.3 percent inflation rate

Inflation and Discount Rates

- On April 13, 2023, DANR sent Homestake revised calculation with 4 percent discount rate and 3.3 percent inflation rate
- Homestake requested another look at the inflation and discount rates
- DANR required response by July 31, 2023

Inflation and Discount Rates

- On July 25, 2023, Homestake requested
 - Use 4.2 percent discount rate and 3 percent inflation rate in calculation
 - Review inflation and discount rates every three years
- South Dakota Investment Council reviewed and agreed to Homestake's request

Postclosure Financial Assurance

- Requesting approval of update to Homestake's postclosure financial assurance
- Used 4.2 percent discount and 3 percent inflation rates
- Period reduced to 83 years, ends in 2105
 - Credit given for activities completed to year 17
- Used Homestake's actual water treatment and maintenance costs

Postclosure Financial Assurance

Updated Financial Assurance	\$80,201,732
Current Financial Assurance	<u>\$61,271,809</u>
Additional Financial Assurance	\$18,929,923

Postclosure Financial Assurance

Reasons for Increase

- Reduction of Discount Rate from 5 percent to 4.2 percent
- Inflation
 - Labor, heavy equipment, & seed costs
 - Water treatment, water sampling and analysis costs

Postclosure Financial Assurance Assumptions

- Based on perpetual water treatment calculations developed by other state and federal agencies
- Present worth analysis of annual costs adjusted for inflation
- Postclosure bond is sum of present worths
- Water treatment ends in adjusted year 83

Postclosure Financial Assurance

Annual Operation and Maintenance Costs

East Waste Rock Depository (EWD) Slope & Road Maintenance	\$17,973
Open Cut & EWD Stability Monitoring	\$ 6,000
Site Caretaker/Water Sampler	\$71,590
Weed Control	\$ 8,704
Vehicle (Every 10 Years)	\$32,000
Vehicle Fuel/Maintenance	\$ 7,357

Postclosure Financial Assurance Operation and Maintenance

Year 2091 (Adjusted year 69)

- \$1 million contingency to cover water treatment in Open Cut
- Based on the current model, the Open Cut would eventually fill with water if the underground lab is shut down. The model indicates that water quality will be good and will not require treatment. However, \$1M to cover water treatment in Open Cut was included in Year 2091 as a contingency

Postclosure Financial Assurance Operation and Maintenance Annual Indirect Costs

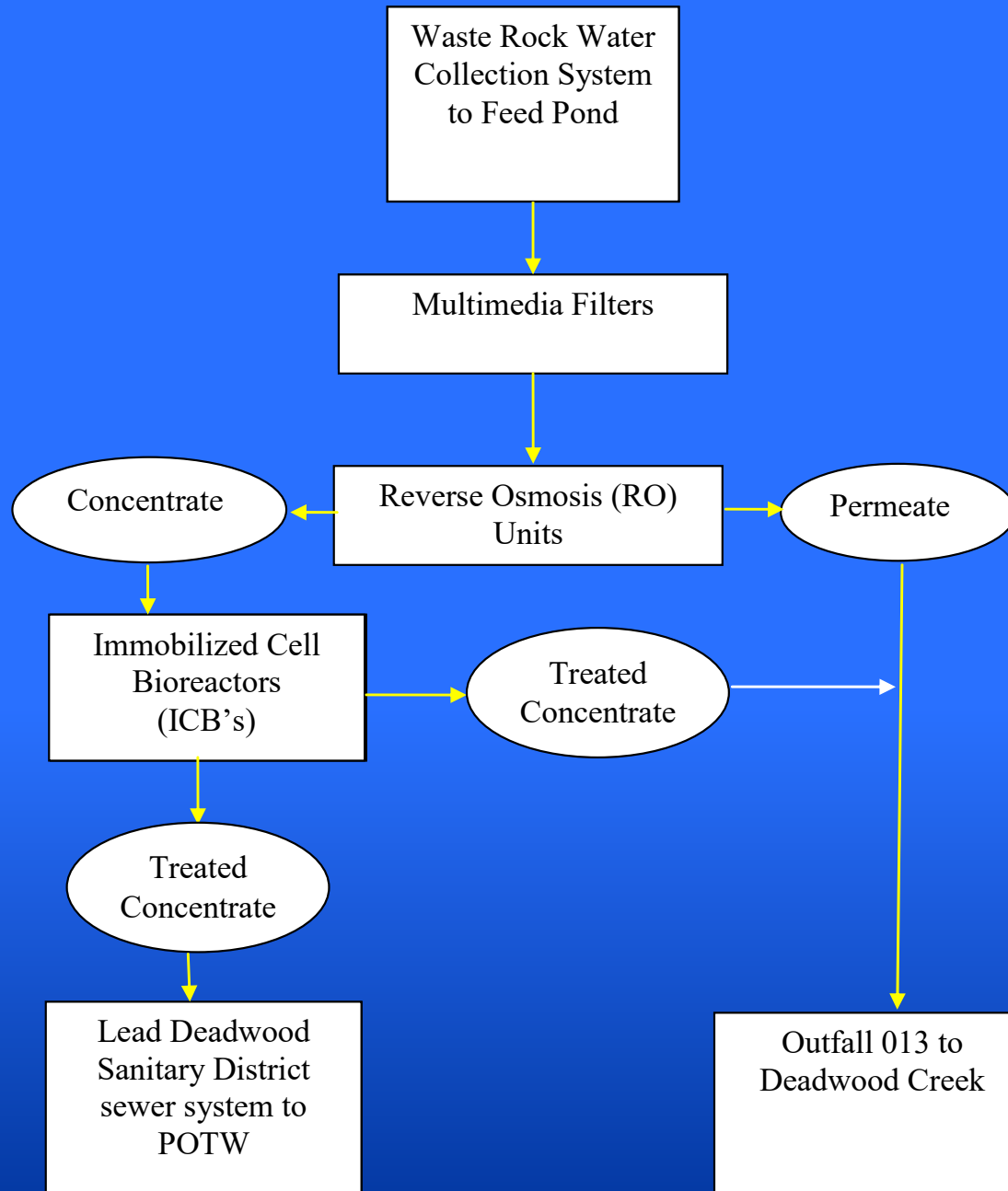
Mobilization*	5%
Contractor Overhead	8%
State Excise Tax	2%
Contractor Profit	10%
Contingency	5%
Administration	5%
Engineering/Consulting	1%
Scope and Bid*	5%

*Applied every 10 years beginning in year 18 (adjusted year 1)

Example

Year 2033 Direct Cost	\$143,624
Mobilization (5%)	\$ 7,181
Contractor Overhead (8%)	\$ 11,490
State Excise Tax (2%)	\$ 2,872
Contractor Profit (10%)	\$ 14,362
Contingency (5%)	\$ 7,181
Administration (5%)	\$ 7,181
Engineering/Consulting (1%)	\$ 1,436
Scope and Bid (5%)	<u>\$ 7,181</u>
Total	\$202,508

Blacktail Water Treatment Plant – Pictorial Description of Discharge



Postclosure Financial Assurance

Water Treatment Costs

BioPlant Reagents	\$ 11,604
RO Reagents	\$ 151,957
Electricity	\$ 148,953
Natural Gas	\$ 20,744
Lead Deadwood Sanitary District	\$ 98,483
Lead City Water	\$ 4,922
Plant & Conveyance System O&M	\$ 20,768
Water Treatment Plant Assay	\$ 6,720

Postclosure Financial Assurance Water Treatment Costs

Annual Labor

Three Plant Operators	\$ 193,565
Plant Manager	\$ 93,850
Outside Contractors	\$ 40,000

Total Annual Plant & Labor Costs	\$ 791,566
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Postclosure Financial Assurance Water Treatment Costs

Other Costs

Every 25 Years

Reline Ponds	\$ 914,760
Overhaul Water Treatment Plant	\$ 895,466

Year 2105 (adjusted year 83)

Remove Water Collection System	\$ 200,000
Plug Four Monitoring Wells & Nine Piezometers	\$ 20,929

Postclosure Financial Assurance

Water Treatment Costs

- Since LAC's water treatment plant is controlled remotely at Homestake's Blacktail Treatment Plant, plant manager and operator costs are covered under Homestake's postclosure financial assurance

Postclosure Financial Assurance Water Treatment Indirect Costs

Mobilization*	5%
Contractor Overhead	8%
State Excise Tax	2%
Contractor Profit	10%
Contingency	10%
Administration	5%
Engineering/Consulting*	3%
Scope and Bid*	5%

*Applied every 10 years beginning in year 18 (adjusted year 1)

Postclosure Financial Assurance

Annual Monitoring Costs

Water Sample Analysis	\$ 40,863
Aquatic/Biologic Monitoring (Postclosure Years 22, 27, 32, & 37)	\$ 40,000
Water Sampling Equipment	Varies from \$4,399 to \$11,579

Postclosure Financial Assurance

Monitoring Indirect Costs

Mobilization*	5%
Contractor Overhead	8%
State Excise Tax	2%
Contractor Profit	10%
Contingency	5%
Administration	5%
Scope and Bid*	5%

*Applied every 10 years beginning in year 18 (adjusted year 1)
Not applied to analysis costs

Postclosure Financial Assurance Office Costs

Computer (Every 10 Years)	\$ 1,500
Office Supplies	\$ 1,800
Insurance	\$10,000
Utilities	\$11,325

Postclosure Financial Assurance Office Indirect Costs

Contingency	10%
Administration	1%

Postclosure Financial Assurance

Present Worth Analysis

- Need to determine a lump sum amount that deposited today will cover the postclosure costs for 83 years
- A present worth analysis will determine a present value (today's dollars) for a future value (inflated value)

Postclosure Financial Assurance Inflation Adjustment

- Each total annual cost (direct + indirect) is first adjusted for inflation
- Future value (FV) of each annual cost calculated using 3.0% inflation factor
- $FV = (1+i)^t \times \text{Annual Cost}$ where:
 - $i = 0.03$ (3.0% /100)
 - $t = \text{year}$

Postclosure Financial Assurance Present Worth Analysis

- The present worth brings the future value (inflated value) back to today's dollars
- The present worth of each inflated value is calculated using a discount rate of 4.2%
- $PV = 1/(1+i)^t \times \text{Inflated Value}$ where:
 - $i = 0.042$ (4.2% / 100)
 - $t = \text{year}$

Postclosure Financial Assurance Present Worth Analysis

- Year 1 of adjusted postclosure period is year 18 of the project period
- Escalation and present worth factors begin at year 18, or adjusted first year of postclosure period after Year 1 through 17 credit applied

Postclosure Financial Assurance Present Worth Analysis Example

- Annual Cost (Year 4) \$1,313,684
- Escalation Factor $(1+0.03)^4$ 1.1255
- Escalated Amount \$1,478,562
- Present Worth Factor $1/(1+0.042)^4$ 0.8483
- Present Worth Amount \$1,254,205

Postclosure Financial Assurance Present Worth Analysis

$$\Sigma PV (\text{Year 1 to Year 83}) = \$76,969,033$$

Face Value in Year 2023

$$\$76,969,033 \times (1+0.042)^1 = \$80,201,732$$

Adjustment of Face Value in Future Years

Face Amount in Given Year

\$80,201,732	2023 Dollars
\$82,004,927	2024 Dollars
\$84,000,056	2025 Dollars
\$86,035,509	2026 Dollars
\$88,108,340	2027 Dollars

Postclosure Financial Assurance Instrument

- After the board approves the amount of the updated postclosure financial assurance, Homestake will submit a surety bond rider with the new amount
- The surety bond rider will be presented to the board for approval at its next meeting

Postclosure Financial Assurance

DENR Recommendation:

Approve increase in Homestake's revised postclosure financial assurance for 2023 from \$61,271,809 to \$80,201,732



**DEPARTMENT of AGRICULTURE
and NATURAL RESOURCES**

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October 4, 2023

MEMO TO: Members of the Board of Minerals and Environment

FROM: *4w* Jim Wendte, Administrator, Waste Management Program

SUBJECT: Solid Waste Permit Actions

Listed below are the solid waste permit actions since my last memo dated March 2, 2023.

Individual Permits Public Noticed and Issued

1. City of Tea – yard waste compost (five-year renewal)
2. City of Yankton – restricted use site and solid waste transfer station (five-year renewal)
3. City of Philip – restricted use site (five-year renewal)
4. Town of Bison – restricted use site and solid waste transfer station (five-year renewal)
5. Stericycle (Sioux Falls) – medical waste transfer station (five-year renewal)
6. Homestake Mining Company (Lead) – construction debris post-closure (five-year renewal)
7. Stericycle (Rapid City) – medical waste transfer station (five-year renewal)
8. City of Pierre – restricted use site and closed municipal solid waste landfill (five-year renewal)
9. Cities of Deadwood, Lead, and Central City – restricted use site (five-year renewal)
10. City of Valley Springs – yard waste compost (two-year initial)
11. Town of Tabor – restricted use site (five-year renewal)
12. Black Hills Rubble Management (Box Elder) – restricted use site (five-year renewal)
13. Saber Shred (Groton) – waste tire storage and processing (five-year renewal)
14. Southern Missouri Recycling & Waste Management District (Lake Andes) – municipal solid waste landfill (five-year renewal)
15. Custer – Fall River Waste Management District (Edgemont) – municipal solid waste landfill (five-year renewal)
16. City of Aurora – construction and demolition debris disposal site (two-year initial)
17. City of Sturgis – restricted use site (five-year renewal)
18. City of Burke – construction and demolition debris disposal site (five-year renewal)

Individual Permit Amendments Public Noticed and Issued

1. Morris, Inc. (Pierre) – construction and demolition debris disposal site – amendment to increase the allowable tonnage and to accept dredged lake sediment
2. City of Rapid City – municipal solid waste landfill – amendment to allow a change to the sequence of cell construction
3. City of Huron – restricted use site and solid waste transfer station – amendment to allow an expansion and increase to the permitted acreage

4. City of Canistota – restricted use site – amendment to increase the allowable tonnage and to allow an expansion and increase to the permitted acreage

General Permit Authorizations Issued

1. Town of Ethan – restricted use site (five-year renewal)
2. Ronald Hins (Huron) – construction and demolition debris disposal site (five-year renewal)
3. Dakota Protein Solutions (Freeman) – storage and land application of rendering plant process wastewater (two-year initial)
4. City of Frankfort – restricted use site (five-year renewal)
5. Town of Hazel – restricted use site (five-year renewal)
6. Town of Delmont – restricted use site (five-year renewal)
7. City of Tripp – restricted use site (five-year renewal)
8. City of Mount Vernon – restricted use site (five-year renewal)
9. Town of Draper – construction and demolition debris disposal site (five-year renewal)
10. Town of Bristol – restricted use site (five-year renewal)
11. City of Emery – restricted use site (five-year renewal)
12. Town of Hitchcock – restricted use site (five-year renewal)
13. Town of Isabel – restricted use site (five-year renewal)

General Permit Authorization Transferred

1. Tripp County solid waste transfer station – authorization transferred to the city of Winner