

Coal Combustion Residuals Management

Operators of coal-fired electric power plants may need to significantly change how they manage coal combustion residuals (CCRs) due to comprehensive rules by the U.S. Environmental Protection Agency to regulate CCR disposal practices. Having completed hundreds of CCR projects since 1958, GAI has the experience and resources needed to help electric power producers interpret new rules and navigate emerging compliance issues.

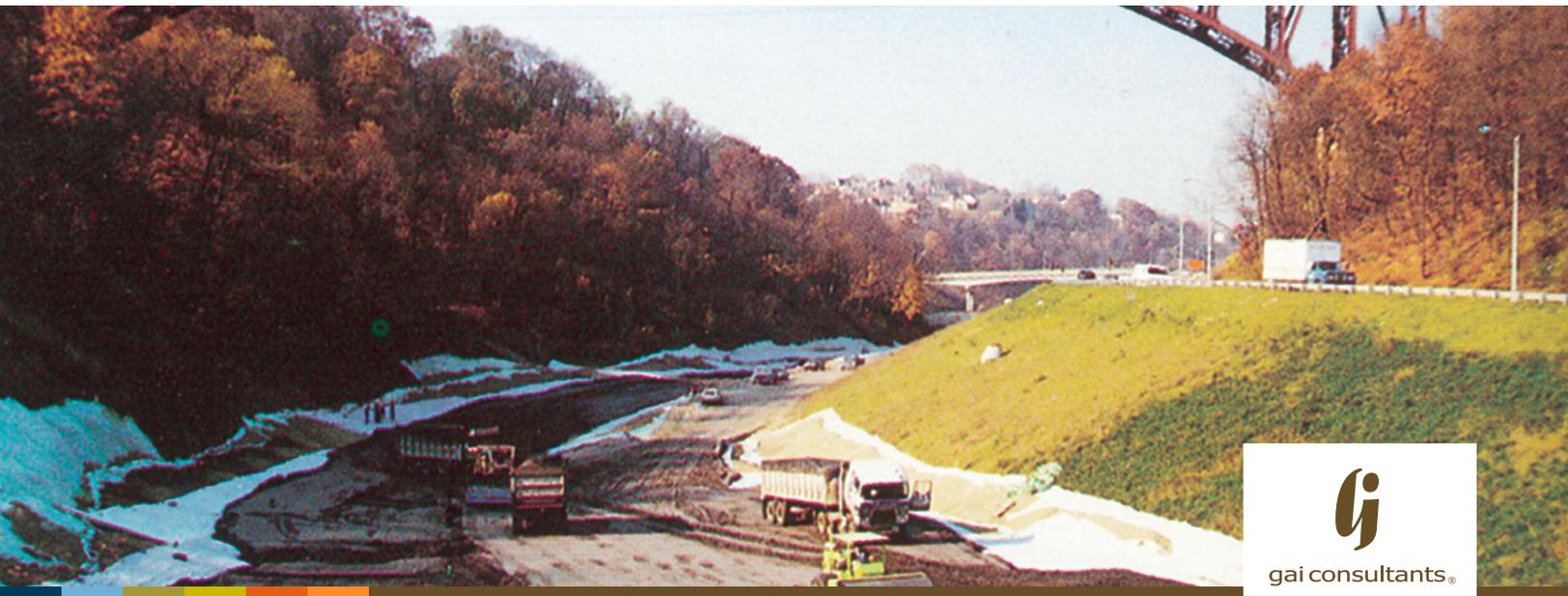
Negotiated variances and beneficial use of CCRs means millions of dollars in savings for energy clients.

GAI designs structurally stable and environmentally secure landfills, impoundments, and pond-to-landfill conversions for major electric power companies. We take pride in developing innovative and cost-effective solutions for CCR disposal, and have saved clients millions of dollars by negotiating variances to regulations with state regulatory agencies. We are also leaders in promoting beneficial use of CCRs in construction applications as structural fill, flowable backfill, road base and subgrade stabilization, underground mine stabilization, and soil amendment.

GAI is a valuable policy resource for interpreting the regulations on disposal practices and plant-specific or system-wide compliance costs. Our planning studies evaluate long-term disposal options for impoundment closures, including conversions to dry ash handling systems. Our experienced engineers, hydrogeologists, archaeologists, and natural resource specialists work with state-of-practice tools and methods, including Geographic Information Systems (GIS) to identify, rank, and select new disposal facility sites that meet applicable federal and state selection criteria.

The EPA rules have prompted closure of hundreds of CCR disposal impoundments in the U.S. Having completed hundreds of projects involving design, instrumentation, rehabilitation, and closure of many types of dams and impoundments, GAI has proven solutions for closures, including in-place CCR stabilization and conversions of ponds to landfills.

Our current staff has designed and permitted dozens of CCR landfills under the most stringent environmental regulations, and regularly conducts geotechnical and hydrogeological site investigations, and surface and groundwater monitoring programs. Our geotechnical engineers



Service Profile

specialize in detailed steady-state liquefaction evaluations, and static and seismic stability analyses of ash and coal refuse impoundments.

Our CCR team takes pride in recommending innovative designs that reduce disposal costs. We specialize in difficult to permit sites such as strip mines, sinkhole prone areas above karst formations and deep mine workings. Whenever possible, we incorporate CCRs into the construction of landfill support facilities to extend the life of the landfill and reduce the cost of conventional construction materials.

GAI's full-service approach to managing the construction and operation of disposal facilities includes bid documents, construction administration, and construction QA/QC monitoring, with field teams trained to keep pace with the rigorous documentation requirements required during liner system installation

GAI has promoted beneficial uses of CCRs for many years. We prepare design guides, specifications, and construction manuals for the FHWA, EPRI, ASTM, and state highway departments. Our market research studies have provided strategies for increasing CCR utilization to nearly 95% of annual CCR production, and we have conducted over 100 demonstration projects involving roads, parking lots, airports, and mine land reclamation sites.

From planning and design to permitting and construction, GAI is a one-stop solution for managing CCRs.

Coal Combustion Residuals Management Services

- CCR Management Planning
 - Innovative compliance solutions
 - Technical responses to regulations
 - Estimates of the cost of compliance
- Impoundments
 - Hazard potential classification
 - Groundwater assessments and corrective action plans
 - Stability Investigations
 - Instrumentation, inspection, certification
 - Design, construction, maintenance plans
 - Closure plans
- Landfill Development
 - Site selection studies and permitting
 - Environmental assessments
 - Environmental management systems
 - Facilities engineering
 - Groundwater monitoring programs
 - Water and wastewater treatment systems
 - Construction management
- Beneficial Use of CCRs
 - Market research studies
 - Demonstration projects
 - Agency approvals
 - Market development

GAI Services Summary

- Airport Planning and Design
- Bridge and Structure Inspection and Design
- Coal Combustion Residuals Management
- Construction Inspection and Management
- Cultural Resources Management
- Economic Analyses and Strategies
- Electric Transmission Design and Siting
- Environmental Engineering
- Environmental Studies, Species Studies, Permitting
- Gas Pipeline Surveying and Mapping
- Geographic Information Systems (GIS)
- Geotechnical Engineering and Geology
- Impoundment and Landfill Permitting and Design
- Land Development Engineering
- Landscape Architecture and Design
- Master Planning and Urban Design
- Mechanical, Electrical, Structural Engineering
- Natural Gas FERC Certification and Permitting
- Nuclear Energy Engineering Support
- Right of Way and Appraisal Support
- Land Surveying and Mapping
- Transportation Planning and Design
- Utility Management Consulting
- Water, Stormwater, Wastewater Management

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