

Administrative Guidance for Green, Sustainable, and Resilient Remediation

Contaminated Site Remediation & Redevelopment
New Jersey Department of Environmental Protection



Green and sustainable remediation (GSR) is the site-specific employment of products, processes, technologies, and procedures that mitigate contaminant risk to receptors while making decisions that are cognizant of balancing community goals, economic impacts, and environmental effects (ITRC, 2011). GSR has emerged as a beneficial approach that optimizes all phases of site remediation. Its use and best practices are encouraged by the United States Environmental Protection Agency (USEPA) throughout the remediation process (USEPA, 2016). While the goal of remediation remains to protect human health and the environment, consideration of environmental, social, and economic impacts of remediation, as well as potential benefits to the site and surrounding areas, can add great value to the project and local community while still meeting regulatory objectives and timeframes.

Contaminated Site Remediation & Redevelopment (CSR) formally encourages the use of GSR during the remediation of contaminated sites and acknowledges its alignment with the Department's initiatives on addressing climate change, increasing resilience, and prioritizing environmental justice. See the Brownfield and Contaminated Site Remediation Act (Brownfield Act) at N.J.S.A. 58:10B-12.1 and the Technical Requirements for Site Remediation at N.J.A.C. 7:26E-1.9. See also the Administrative Requirements for the Remediation of Contaminated Sites (ARRCS) at N.J.A.C. 7:26C-14.3(b)iv. The use of GSR neither exempts nor precludes a person's obligation to remediate to all applicable standards, guidance, regulations, and statutes, as set forth in ARRCS at N.J.A.C. 7:26C-1.2.

GSR holds value in helping to reduce impacts of climate change by factoring in considerations for carbon emissions, sustainability, resilience, and community-level impacts. In accordance with the [NJ Energy Master Plan](#) and the [NJ Protecting Against Climate Threats \(NJ PACT\) initiative](#), by reducing fossil fuel emissions, the person responsible for conducting the remediation should consider the use of available frameworks and policies for green and sustainable remediation to minimize the effects of remediation to public health and safety and of the environment by reducing greenhouse gas emissions.

The goals of incorporating GSR are to address threats posed by climate change, to reduce greenhouse gas emissions, to minimize impacts to environmental justice and overburdened communities, and to move through the cleanup process more swiftly and efficiently without weakening current or future remedial plans. The person responsible for conducting the remediation should also consider the current and future impacts from sea level rise, increased flooding and wind damage due to more frequent severe storm events, as well as increased wildfires due to less overall rainfall and increasing temperatures. These threats have the real possibility of negatively impacting contaminated sites and causing contaminant migration.

If the site is located in an overburdened community, the person responsible for conducting the remediation should develop an understanding of the current environmental stressors, consider partnering with local stakeholders, and help address environmental justice concerns. Resilience is a key aspect of GSR and should be considered in consultation with available GSR frameworks and

policies. Overall, GSR considers all environmental effects of remedy implementation and incorporates options to minimize the environmental footprints of a cleanup.

Green Sustainable Remediation Language

The GSR language below was developed to be inserted into Contaminated Site Remediation & Redevelopment (CSRR) contracts. It is informed by the USEPA's Greener Cleanups Contracting & Administration Toolkit (USEPA, 2015) and further developed through collaboration between the CSRR's Fiscal Support & Contract Administration Section and the Office of Brownfield & Community Revitalization.

Green Remediation: CSRR encourages strategies which consider environmental impacts of cleanup activities at every stage of the remedial process to maximize the net environmental benefit of a cleanup. Examples are reducing energy and water usage, promoting carbon neutrality, promoting industrial materials reuse and recycling, and protecting and preserving land resources.

Renewable Energy: During construction-related activities performed through contracts with CSRR, the LSRP/contractor should utilize all reasonably feasible renewable energy sources. Sources of renewable energy include solar, wind, biomass, and biogas. In evaluating renewable energy sources and technologies, the LSRP/contractor should perform a cost analysis, comparing the energy costs from renewable sources versus traditional sources for remedy construction. The LSRP/contractor is also encouraged to evaluate the costs of purchasing green power. Purchasing green power would be considered a method for using renewable energy resources.

Resilience Measures: CSRR encourages LSRP/contractors to integrate climate change vulnerability assessments and adaptation measures into the remediation process to ensure the resilience of remedies to climate change impacts.

Extreme Heat Resilience: CSRR encourages the redevelopment of brownfields located in urban areas into green space to combat the urban heat island effect. CSRR encourages the use of urban cooling strategies such as green open spaces, green infrastructure, and tree canopy development on urban brownfield redevelopment projects. This allows for carbon drawdown from woodland growth in urban green spaces, improvement of public access to parks within cities with overburdened communities, and improvement of public health through reduced heat reduction and reduced flooding.

Brownfield Redevelopment: CSRR encourages the incorporation of redevelopment into the overall process of site remediation at vacant and underutilized contaminated sites. Incorporation of site redevelopment into the overall remediation reduces the energy expenditure, carbon emissions, water use, etc. of the overall remedy. Additionally, brownfield redevelopment brings significant local, regional, and global climate benefits over traditional 'greenfield' development as brownfield redevelopment lowers per capita carbon footprint, reduces stormwater runoff and flooding, improves air quality, and can also add environmental benefits in overburdened communities through creation of open space, on-site mitigation of stormwater runoff, increased tree canopy and other local benefits to redevelopment of contaminated sites. CSRR is providing technical assistance for the NJ Economic Development Authority's (EDA's) Brownfield Redevelopment Incentive Program, a \$300 million tax credit program established by the New Jersey Economic Recovery Act of 2020 (ERA), which requires a project specific Green Remediation Plan be submitted following an application approval.

Clean Diesel: The LSRP/contractor is encouraged to use the cleanest construction equipment available. The LSRP/contractor is encouraged to incorporate at minimum diesel construction equipment retrofitted with emission control technologies, ensure proper maintenance, and minimize

idling for all non-road equipment and generators powered by diesel engines. All diesel construction equipment and generators that do not have an aftermarket emission control device installed should meet USEPA's Tier 4 clean diesel standards. There are many hybrid electric or fully electric non-road equipment options available and these should also be considered. NJDEP's Bureau of Mobile Sources provides funding for such equipment. For more information visit [NJDEP| Stop the Soot | Non-Road Diesel Replacements](#).

CSRR reserves the right to exempt these recommendations for certain equipment powered by diesel engines at the project level based on project-specific circumstances. Any exemptions will be communicated to the LSRP/contractor in the request for proposals at the task order level.

Idle Reduction: All on-road vehicles and non-road construction equipment operating at, or visiting, the construction site shall comply with the three-minute idling limit, pursuant to N.J.A.C. 7:27-14 and N.J.A.C. 7:27-15. The LSRP/Contractor should consider purchasing "No Idling" signs to post at the site to remind operators to comply with the idling limits. Signs are available for purchase from the Bureau of Mobile Sources at (609) 292-7953 or [NJDEP| Stop the Soot | Idling - Order No Idling Signs](#).

References

ITRC (Interstate Technology & Regulatory Council). 2011. *Green and Sustainable Remediation: A Practical Framework*. GSR-2. Washington, D.C.: Interstate Technology & Regulatory Council, Green and Sustainable Remediation Team. www.itrcweb.org.

NJEDA. 2023. Green Remediation Requirements NJEDA Brownfields Redevelopment Incentive Program (BRIP): Guidance Document for BRIP Program Participants 2023. <https://www.njeda.gov/wp-content/uploads/2023/02/Green-Redevelopment-for-BRIP-02-03-2023.pdf>

USEPA. 2016. *Consideration of Greener Cleanup Activities in the Superfund Cleanup Process*. Washington, D.C.: Woolford, J., Bertrand, C., Mackey, C., Albores, R. <https://semspub.epa.gov/work/HQ/100000160.pdf>.

USEPA. 2015. *Greener Cleanups Contracting and Administration Toolkit*. Washington, D.C.: Office of Land and Emergency Management, Office of Superfund Remediation and Technology Innovation. https://clu-in.org/greenremediation/docs/Greener_Cleanups_Contracting_and_Administrative_Toolkit.pdf

USEPA. 2023. Brownfield Program Environmental and Economic Benefits. Washington, D.C.: USEPA website last updated February 22, 2023. <https://www.epa.gov/brownfields/brownfields-program-environmental-and-economic-benefits>

University of Wisconsin Whitewater (in preparation). The Economic Impact of the New Jersey Department of Environmental Protection's HDSRF Grant Program.