

Greener Cleanups Contracting and Administration Toolkit



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U.S. Environmental Protection Agency
Office of Land and Emergency Management
Office of Superfund Remediation and Technology Innovation

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Cover photos:

- Wind turbine compressor for oil skimming during removal actions at Former St. Croix Alumina Plant, St. Croix, VI
- Land and surface water recovery along the Upper Arkansas River near Leadville, CO, ten years after amending soil with municipal biosolids
- Water storage tank used in gravity irrigation system for phytoremediation during EPA removal actions at fruit orchard near Crozet, VA
- Microturbines converting landfill gas to electricity for onsite remedial use at Operating Industries, Inc. Landfill in Monterey Park, CA
- Tiered, gradient-driven constructed wetlands and solar-powered ground water recirculation at Apache Powder NPL site near Benson, AZ
- Annual fishing derby to help assess environmental improvements after remediation at adjacent Re-Solve, Inc. NPL site near North Dartmouth, MA
- Ground-mounted solar energy system offsetting use of electricity for groundwater treatment system at Frontier Fertilizer NPL site in Davis, CA

The **Greener Cleanup Contracting and Administrative Toolkit** serves as a “living” compendium of greener cleanup contracting and administrative information available to date. The U.S. Environmental Protection Agency anticipates frequent updates to the toolkit as new information becomes available. All updates are posted at www.clu-in.org/greenremediation.

Overview

Optimal approaches for greener cleanup of hazardous waste sites involve upfront planning and continuous collaboration among project managers, service acquisition personnel and other stakeholders. Early integration of greener cleanup objectives and criteria into service contracts and administrative documents for response and remedial actions increases the likelihood that best management practices (BMPs) will be used throughout a project life. Additionally, an integrated, “whole-site” approach offers more opportunities for project managers to exchange site-specific information, potentially share infrastructures and innovative technologies, and refine green strategies as a cleanup project moves through the pipeline in preparation for future site use.

Procurement personnel such as contracting officers, project officers, task order project officers and contracting officer representatives of regulatory agencies can work with site-specific remedial project managers (RPMs) to incorporate greener cleanup BMPs throughout the placement and execution of a service contract. In turn, clear specification of greener cleanup expectations can help private sector organizations such as engineering firms institutionalize greener cleanup approaches as standard operating procedures. A greener cleanup approach often includes a structure for tracking related environmental performance of the remedial activities.

Contracting and administrative materials for greener cleanups often cite:

- The U.S. Environmental Protection Agency (EPA) *Principles for Greener Cleanups* (www.epa.gov/greenercleanups/epa-principles-greener-cleanups).
- EPA’s *Superfund Green Remediation Strategy* (www.epa.gov/greenercleanups/superfund-green-remediation-strategy).
- EPA regional policies on greener cleanups (www.clu-in.org/greenremediation/regions) or national cleanup program objectives.
- Greener cleanup guidelines established by state agencies (www.clu-in.org/greenremediation/states).
- EPA’s series of BMP fact sheets (www.clu-in.org/greenremediation/docs/GR_BMP_factsheet_overview.pdf).
- The ASTM *Standard Guide for Greener Cleanups*, (E2893-13) (www.astm.org/Standards/E2893.htm), a consensus-based industry standard. The standard provides a systematic process and technical protocols for integrating greener cleanup considerations into any phase of a cleanup project. It includes a list of BMPs that can be readily implemented and guidelines for quantifying the environmental footprint of cleanup activities.

Contracting and Associated Tracking Mechanisms
Requests for proposals
Award fee contracts
Performance based contracts
Task orders and work assignments
Work plans
Quality assurance plans
Site management plans
Contractor monthly progress reports

Administrative Mechanisms
Grants or loans
Cooperative agreements
Memoranda of agreement
Interagency agreements

Greener cleanup: The incorporation of practices, processes, and technologies into cleanup activities with the goal of reducing impacts to the environment through reduced demands on natural resources and decreased emissions to the environment.

Standard Guide for Greener Cleanups, ASTM E2893-13

Superfund Contracts

EPA publically released DRAFT statements of work (SOWs) in late 2014 for all new contracts administered under EPA’s Superfund Program “Remedial Action Framework” (RAF), which applies to cleanups covered by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended.¹ The draft SOWs include general requirements for greener cleanup considerations and include references to EPA’s *Principles for Greener Cleanups* (www.epa.gov/greenercleanups/epa-principles-greener-cleanups), EPA’s *Superfund Green Remediation Strategy*

¹ EPA release of the DRAFT SOWs does not constitute solicitation of qualifications, proposals or other competitive materials responding to specific contracts.

(www.epa.gov/greenercleanups/superfund-green-remediation-strategy) and the ASTM *Standard Guide for Greener Cleanups* (www.astm.org/Standards/E2893.htm). The RAF consists of three suites of multiple-award contracts to provide:

- **Design and Engineering Services (DES):** professional services of a scientific, architecture and engineering nature for remedial investigations, feasibility studies, remedial designs and general technical assistance.
- **Remediation Environmental Services (RES):** remedial and removal action services, which may include significant construction components.
- **Environmental Services and Operations (ESO):** technical oversight of the environmental remediation work being financed and performed by another federal Agency, state, tribe or potentially responsible parties (PRPs), as well as EPA-lead remedy operations such as groundwater restoration and source treatment.

The draft RES SOW, for example, refers to the ASTM standard and the *Superfund Green Remediation Strategy* and specifies the following Task 1, General Requirements (in part):

1.4 Green Remediation and Climate Change Considerations: The contractor shall consider the environmental footprint of all activities. In particular, to the extent practicable and/or feasible, the contractor shall explore and implement green remediation strategies to reduce energy and water usage, promote carbon neutrality, promote industrial materials reuse and recycling, protect and preserve land resources. The contractors shall also integrate climate change vulnerability analyses and adaptation, as needed, to ensure the resiliency of remedies to climate change impacts.

1.5 Clean Diesel Requirements: The contractor shall use diesel nonroad construction equipment and generators that meet the United States Environmental Protection Agency's (EPA's) Tier 2 clean diesel standards.

Diesel Emission Control Technology: Contractors shall apply diesel emission control technology requirements listed below to all nonroad equipment and generators onsite powered by diesel engines, whether owned, leased or rented by the contractor.

Proper Maintenance: Contractors shall ensure all diesel nonroad equipment and generators are properly maintained according to manufacturer's recommendations.

Idle Reduction: During periods of inactivity, contractors shall meet minimum idle reduction requirements at the state or local level. In the absence of state or local idling regulations, contractors shall ensure idling is kept to a minimum.

1.6 Renewable Energy Considerations: The contractor is encouraged to evaluate reasonably feasible renewable energy sources when conducting work under this contract. Sources of renewable energy include solar, wind, and biomass and biogas. Examples of renewable energy technologies include photovoltaic panels, wind turbines, digesters, gasifiers, and micro turbines. EPA also considers purchasing green power from organizations that offer green power within the appropriate state a method for using renewable energy sources.

Full text of pertinent language in the SOW of each contract suite is provided in Attachment 1 of this toolkit.

Cleanups Under Other Statutory Programs

Brownfield Sites

State agencies administering programs for brownfield parcels are incorporating greener cleanup provisions in cleanup service contracts, revolving loans and cooperative agreements. Examples include:

- The **Connecticut Department of Energy and Environmental Protection**, which considers the employment and utilization of green remediation technologies in bid solicitations, requests for proposals, and negotiation of contracts for environmental remediation of brownfield properties. Section 4e-50 of the General Statutes of Connecticut, Title 4e, Chapter 62 (www.cga.ct.gov/2011/pub/chap062.htm#Sec4e-50.htm), states:

Contracts for environmental remediation of brownfields: Notwithstanding any other provisions of the general statutes, whenever a state agency or quasi-public agency, as defined in section 1-120, solicits bids, makes a request for proposals or negotiates a contract for the environmental remediation of a brownfield property, such bid, proposal or contract shall include a provision whereby the employment and utilization of green remediation technologies shall be accorded due consideration.

- The **Illinois Brownfields Program**: The Illinois Environmental Protection Agency collaborated with four recipients of U.S. EPA Brownfields Program revolving loans to pilot the use of the ASTM standard at four sites in Illinois. Through a

related U.S. EPA cooperative agreement, green remediation evaluations were performed by an engineering consulting firm on behalf of the borrowers and in accordance with the standard. Complete evaluations produced through the pilot applications are available at www.epa.illinois.gov/topics/cleanup-programs/greener-cleanups/.

Under the Small Business Liability Relief and Brownfields Revitalization Act, EPA’s national brownfields program and regional offices are incorporating greener cleanup provisions in the evaluation and award process for site assessment, remediation or revolving loan grants. Relevant language in associated guidance for proposal preparation addresses greener cleanups in terms of the core elements of greener cleanups as well as broader sustainability goals.

- **Fiscal Year 2016 Grant Guidelines** for responding to RFPs include criteria on linking cleanup approaches with sustainable outcomes and analyzing alternatives. The guidance, checklists and other tools are available at www.epa.gov/brownfields/new-request-proposals-fy-2016-brownfields-assessment-revolving-loan-fund-and-cleanup/; relevant excerpts include:

Brownfields site preparation strategies that prevent contaminant exposure through green building design, materials recycling, enable urban agricultural reuse, promote walkability to/around the site and contribute to community walkability, and on-site stormwater management through green infrastructure, among other approaches, can contribute to sustainable development outcomes.

Applicants should incorporate sustainable and equitable cleanup and reuse approaches into their proposed Brownfields Cleanup project.

The alternatives may consider the degree to which they reduce greenhouse gas discharges, reduce energy use or employ alternative energy sources, reduce volume of wastewater generated/disposed, reduce volume of materials taken to landfills, and recycle and re-use materials generated during the cleanup process to the maximum extent practicable.

Site Cleanup Under TSCA

Assessment and cleanup of sites contaminated by polychlorinated biphenyls (PCBs) is regulated under the Toxic Substances Control Act (TSCA) (40 Code of Federal Regulations (CFR) Part 761). (For comprehensive information about PCB regulations under TSCA, see www.epa.gov/epawaste/hazard/tsd/pcbs/pubs/laws.htm.) In EPA Regions 1, 5 and 10, cleanup plan approvals issued for PCB-contaminated sites now require PRPs to consider processes and BMPs outlined in the ASTM standard. Upon project completion, PRPs are required to report on which BMPs were voluntarily implemented; the information is typically reported in a table format (illustrated below).

Sample Reporting Format: Summary of Implemented BMPs			
BMP Category	BMP	BMP Implementation Description	Comments
Vehicles and Equipment	Institute an idle reduction plan	<ul style="list-style-type: none"> Limited idle time of diesel-powered vehicles to no more than 5 minutes during warm-up 	
Materials	Steam-clean or use phosphate-free detergents or biodegradable cleaning products instead of organic solvents or acids to decontaminate sampling equipment	<ul style="list-style-type: none"> Used biodegradable cleaning products to decontaminate sampling equipment 	<ul style="list-style-type: none"> Steam-cleaning of construction equipment was not implemented due to water shortage
Surface/Storm Water	Install and maintain silt fences and basins to capture sediment runoff along sloped areas	<ul style="list-style-type: none"> Installed a stormwater retention basin with 6-foot-deep storage capacity Designed the basin for continued onsite use following remedial activities 	

Information relevant to Region 10 sites, for example, is available on the *Managing PCBs in the Pacific Northwest and Alaska* webpage (<http://yosemite.epa.gov/R10/OWCM.NSF/pcb/pcbs+home>). For illustration purposes, Attachment 2 of this toolkit contains the green remediation requirements specified in the North Ridge Estates Superfund site remedial action contract SOW, specific to: (1) clean diesel and air emissions requirements and (2) reporting on progress meeting greener cleanup best management practices. A summary of how compliance was integrated in the contract and associated reporting materials, as well as remedy design and remedial action operating procedures, is provided in *Greener Cleanup Bulletin: Application of the ASTM Standard Guide for Greener Cleanups at the North Ridge Estates Superfund Site* (September 2015, www.clu-in.org/greenremediation/docs/GC_Bulletin_2015-09_NRE.pdf). Currently, EPA is evaluating BMP trends at PCB sites across the U.S. to potentially streamline the BMP selection and implementation process used for PCB site cleanups (including associated service contracts) on a national basis.

State Contingency Plans and Remedial Actions

State agencies are incorporating greener cleanup considerations in response and remedial actions concerning release of oil and hazardous materials. Examples include:

- The **Massachusetts Department of Environmental Protection (MassDEP) Greener Cleanups Guidance (WSC #14-150)** (www.mass.gov/eea/docs/dep/cleanup/laws/14-150.pdf), which recommends approaches that maximize the net environmental benefit when conducting response at disposal sites regulated under the Massachusetts Contingency Plan (MCP (310 CMR 40.0191 and 310 CMR 40.0858). MassDEP strongly recommends use of the ASTM *Standard Guide for Greener Cleanups* (E2893-13) to help integrate greener cleanup considerations into any MCP response action. Other resources recommended by the DEP to help environmental professionals consider and use greener cleanup approaches during MCP response actions include EPA's *Principles for Greener Cleanups* and information posted on EPA's *Green Remediation Focus* website (www.cluin.org/greenremediation/).
- The **Wisconsin Administrative Code, Chapter NR 722, Standards for Selecting Remediation Actions** (http://docs.legis.wisconsin.gov/code/admin_code/nr/700/722), which states:

Once the remedial action has been selected, the responsible party shall evaluate all of the following criteria, as appropriate for the selected remedial action: (a) Total energy use and the potential to use renewable energy; (b) The generation of air pollutants, including particulate matter and greenhouse gas emissions; (c) Water use and the impacts to water resources; (d) The future land use and enhancement of ecosystems, including minimizing unnecessary soil and habitat disturbance and destruction; (e) Reducing, reusing, and recycling materials and wastes, including investigative or sampling wastes; (f) Optimizing sustainable management practices during long-term care and stewardship.

Federal Facilities

Greener cleanup considerations are reflected in contract requirements for remedial activities at facilities owned or operated by the U.S. Department of Defense and U.S. Department of Energy. The considerations are typically referenced through a green and sustainable remediation (GSR) framework that considers social and economic as well as environmental aspects of sustainability.

- **U.S. Army Corps of Engineers (USACE): Evaluation of Consideration and Incorporation of Green and Sustainable Remediation Practices in Army Environmental Remediation.** An August 2012 final study report provides SOW template language regarding GSR as the process of considering all environmental effects of remedy implementation and operation and incorporation of options to maximize the overall environmental benefit of environmental response actions. The GSR language can be incorporated in both prescriptive and performance-based contracting approaches. (See www.fedcenter.gov/Documents/index.cfm?id=22322&page_prg_id=27392.)
- **U.S. Air Force: Air Force Instruction 32-7001, Environmental Management**, which establishes the framework for an environmental management system (EMS) at Air Force headquarters, major commands (MAJCOMs) and installations (www.denix.osd.mil/swr/upload/afi32-7001.pdf). This November 2011 instruction describes changes to Air Force contracting policies, regulations and procedures that facilitate reducing environmental impacts. The instruction's Chapter 6, Pollution Prevention (P2) Integration, states:

Each facility shall use their EMS to identify opportunities to optimize selected business, operational, or industrial processes or activities in terms of pollutant reduction, lower energy use, reduction in the use of natural resources, water conservation and improvements to health and safety. Installations should identify P2 and related green procurement and sustainability requirements within the installation EMS as well as incorporate into installation and MAJCOM AMPs [assessment and management programs] and related programming and planning requirements/documents.

- **U.S. Department of Energy Office of Environmental Management (EM): EM Memorandum, Green and Sustainable Remediation Contract Language.** A September 2013 EM contracting language template for cost-reimbursable performance-based contracts and task orders includes an SOW provision acknowledging the EM goal of considering GSR practices in all phases of the project work scope.

Also, EPA is formalizing greener cleanup provisions in agreements with other federal agencies responsible for site cleanup. Examples of relevant agreements and language include:

- **EPA Region 1 - U.S. Army Corps of Engineers (USACE) interagency agreements (IAGs)**, which state:

General Requirements

Furnish all necessary and appropriate personnel, including contractors, materials, and services needed for, or incidental to, performing and completing the RA. The RA and associated deliverables under this IA shall be consistent with the RODs, the Remedial Design/Remedial Action (RD/RA) Handbook (U.S. EPA Office of Solid Waste and Emergency Response (OSWER) 9355.0-04B, EPA 540/R-95/059, June 1995), and all other guidance used by EPA in conducting an RA.

Green Remediation

Green Remediation is the practice of considering environmental impacts of clean-up activities at every stage of the remedial process in order to maximize the net environmental benefit of a cleanup. The USACE should include, as appropriate, elements of "Green Remediation" as described in the following website: www.clu-in.org/greenremediation/ in subsequent solicitations for contractor support.

Renewable Energy: During construction-related activities performed by the USACE or its contractor, or during oversight activities, the USACE and/or its 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 contractor should perform a cost analysis, comparing the energy costs from renewable sources versus traditional sources for remedy construction. The USACE and/or its contractor shall also evaluate the costs of purchasing green power from organizations that offer green power within the appropriate state.

Clean Diesel: The USACE and/or its contractor shall use diesel construction equipment and generators, when feasible, that meet the United States Environmental Protection Agency's (EPA's) Tier 2 clean diesel standards. The USACE and/or its contractor shall incorporate diesel emission control technologies, ensure proper maintenance of and minimize idling for all such non-road equipment and generators powered by diesel engines.

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

Diesel Emission Control Technology: The USACE and/or its contractor shall apply diesel emission control technology requirements listed below to all non-road equipment and generators onsite powered by diesel engines, whether owned, leased or rented by the contractor.

All diesel non-road construction equipment and generators on site for more than 10 total days must have either (1) engines meeting USEPA Tier 2 or higher non-road emission standards or (2) emission control technology verified by USEPA or CARB for use with non-road engines to reduce Particulate Matter emissions by a minimum of 85%.

Proper Maintenance: The USACE and/or its contractor shall ensure all diesel non-road equipment and generators are properly maintained according to manufacturer's recommendations.

Idle Reduction: During periods of inactivity, the USACE and/or its contractor shall meet minimum idle reduction requirements at the state or local level. In the absence of state or local idling regulations, the USACE and/or its contractor shall ensure idling is kept to a minimum.

- **EPA Region 2 - U.S. Army Corps of Engineers IAGs**, which include the following provisions in SOWs and terms and conditions:

The USACE shall use technologies and practices that are sustainable in accordance with EPA Region 2 Clean and Green policy (March 2009) or most current version (www.epa.gov/greenercleanups/regional-and-state-implementation-greener-cleanups). At the direction of the EPA RPM or EPA Project Officer, the USACE shall incorporate requirements for the appropriate practices into the terms of its contracts consistent with the EPA Region 2 Clean and Green policy. The USACE shall report monthly on the use of these technologies and practices, including the associated quantities of materials reduced, reused, or recycled as a direct result of these practices, for all remedial activities conducted under this IA within its monthly progress report submission.

- **EPA Region 9 - U.S. Department of Navy (DON) Proclamation of Intent: Green and Sustainable Remediation Strategies**, which formalizes agreement to work to minimize the environmental footprint of DON cleanup actions while continuing to comply with CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan to protect human health and the environment (www.epa.gov/region9/superfund/greener-cleanup/navy.html). Through this agreement, EPA and DON aim to meet the following stated objectives:

1. Evaluate the effectiveness of the GSR practices and recommend additional or new approaches for consideration in future EPA and Department of Defense guidance,
2. Incorporate green practices, such as water reuse, soil consolidation, alternative energy sources, and optimization of pump and treat remedies in RD/RA work,
3. Identify representative DON CERCLA sites (i.e., discrete operable unit or remedy decisions) where the respective EPA and DON footprint analysis will be conducted for comparison,

4. Evaluate the applicability of these analyses and other GSR practices to other DON CERCLA sites in the region,
5. Continue to strengthen partnerships with States and other Federal agencies, and publicize these efforts on respective web sites.

Related Contract Provisions

Contracts to procure cleanup services or products also may include terms and conditions adapted from general construction or operation guidelines that apply to multiple business sectors. Examples of relevant federal specifications or initiatives include:

- **Executive Order 13693, Planning for Federal Sustainability in the Next Decade**, promotes sustainable acquisition and procurement of products and services by federal agencies (www.gpo.gov/fdsys/pkg/FR-2015-03-25/pdf/2015-07016.pdf). Federal procurement actions must include specific environmental performance and sustainability factors to the maximum extent practicable for meeting statutory mandates requiring purchase preference for recycled content, energy and water efficiency, and biopreferred/biobased products; purchasing sustainable products/services identified by EPA programs including Significant New Alternatives Policy (SNAP), WaterSense, Safer Choice and SmartWay; and purchasing environmentally preferable products/services that meet or exceed EPA recommendations or meet environmental performance criteria in voluntary consensus standards. EPA has issued interim recommendations for certain purchasing categories, including construction, custodial, electronics, grounds/landscaping, office, and operations/fleet/shipping/shop (www.epa.gov/greenerproducts/epas-recommendations-specifications-standards-and-ecolabels).
- **U.S. General Services Administration (GSA) and U.S. Department of Energy (DOE) Verification Guide for Purchasers of Sustainable Products**: This April 2015 guide outlines how to ensure compliance with sustainability requirements in a contract. It provides best practices that can be used during pre-award or post-award procurement actions and lists resources for verifying sustainable products. The complete guide is available at www.fedcenter.gov/Announcements/index.cfm?id=27655&pge_prg_id=39297&pge_id=1001.
- **U.S. DOE Green Building Certification System; October, 14, 2014, Final Rule**. This rule establishes new criteria for green building rating systems potentially used by federal agencies for a new building or major renovation. Federal agencies choosing to use a green building rating system such as the U.S. Green Building Council's Leadership in Energy and Environmental Design or the Green Building Initiative's Green Globes certification systems must meet these criteria. Complete information is available at www.regulations.gov/#!documentDetail;D=DOE-EERE-OT-2010-0007-0084.
- **U.S. EPA Green Power Partnership**. This partnership program provides up-to-date information on green power pricing programs available in a given state as well as renewable energy certificate (REC) product options. Complete information is available at www.epa.gov/greenpower.

Updates and Contact Information

Frequent updates to this greener cleanups contracting and administrative summary are anticipated as new information becomes available from EPA program and regional offices, other federal agencies, states and other stakeholders. All updates will be announced on the *Green Remediation Focus* website sponsored by EPA's Office of Superfund Remediation and Technology Innovation (OSRTI), www.cluin.org/greenremediation.

To obtain more information or share new developments, contact:

Carlos Pachon, Team Lead, Greener Cleanups
Office of Superfund Remediation and Technology Innovation
Office of Land and Emergency Management (former Office of Solid Waste and Emergency Response [OSWER])
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Attachment 1: Greener Cleanup Provisions in the Superfund Program's Remedial Action Framework

Design and Engineering Services (DES) Contract Statement of Work Subject to Task Order Specific Requirements

August 2014 DRAFT – Subject to Change; SOL-HQ-00022

Task 1: General Requirements

1.4 Greener Cleanups⁵ and Sustainability Considerations

The contractor shall consider the environmental footprint of all activities. In particular, to the extent practicable and/or feasible, the contractor shall explore and implement green remediation strategies to maximize sustainability, reduce energy and water usage, promote carbon neutrality, promote industrial materials reuse and recycling, protect and preserve land resources through green applications. The contractor shall present green remediation options and approaches during systematic project planning meetings, provide a cost analysis for these options in any work plan budgets, maintain records of green related activities, and report this information to EPA as needed or requested.

⁵ Refer to ASTM International's *Standard Guide for Greener Cleanups* (E2893-13), November 2013, *EPA's Principles for Greener Cleanups* (www.epa.gov/greenercleanups/epa-principles-greener-cleanups), *Superfund's Green Remediation Strategy* (www.epa.gov/greenercleanups/superfund-green-remediation-strategy), and Attachment B for applicable regional policy and guidance related to reducing the environmental footprint of all phases of cleanup activities under this contract.

Task 10: Other Work Areas/General Technical Assistance

10.3 Optimization Reviews³⁸

The contractor shall provide optimization support for site activities. Support will involve the evaluation of treatment systems, cleanup approaches, characterization and monitoring strategies and data for the purpose of optimizing site cleanup. This support area involves expert review (optimization) of hazardous waste site cleanup projects by multidisciplinary teams of engineers and scientists that are independent and conflict of interest free of project activities. Optimization reviews are intended to provide comprehensive evaluations of site cleanup activities to identify opportunities for improvement in five primary areas: remedy effectiveness, cost effectiveness, technical improvement, site closeout, and green remediation. Optimization activities may include: document and data review and analysis, developing recommendations, drafting an optimization report, and following up on implementation of recommendations.

³⁸ For more information on EPA's optimization initiative, refer to 9200.3-75, *National Strategy to Expand Superfund Optimization Practices from Site Assessment to Site Completion*, September 2012.

Remediation Environmental Services (RES) Contract Statement of Work Subject to Task Order Specific Requirements

DRAFT – Subject to Change; RFP# SOL-HQ-00023

Task 1: General Requirements

1.4 Green Remediation⁵ and Climate Change⁶ Considerations

The contractor shall consider the environmental footprint of all activities. In particular, to the extent practicable and/or feasible, the contractor shall explore and implement green remediation strategies to reduce energy and water usage, promote carbon neutrality, promote industrial materials reuse and recycling, protect and preserve land resources. The contractors shall also integrate climate change vulnerability analyses and adaptation, as needed, to ensure the resiliency of remedies to climate change impacts.

Upon request, the contractor may be requested to present green remediation options and approaches to mitigate impacts of climate change on remedies during systematic project planning meetings, provide a cost analysis for these options in any work plan budgets, maintain records of green related activities, and report this information to EPA as needed or requested.

⁵ Refer to ASTM International's *Standard Guide for Greener Cleanups* (E2893-13), November 2013, EPA's *Principles for Greener Cleanups* (www.epa.gov/greenercleanups/epa-principles-greener-cleanups), and *Superfund's Green Remediation Strategy* (www.epa.gov/greenercleanups/superfund-green-remediation-strategy).

⁶ For more information on EPA and Superfund's Climate Change Adaptation Plan, refer to www.epa.gov/superfund/superfund-climate-change-adaptation.

1.5 Clean Diesel Requirements

The contractor shall use diesel nonroad construction equipment and generators that meet the United States Environmental Protection Agency's (EPA's) Tier 2 clean diesel standards. The contractor shall outline diesel emission control technologies, ensure proper maintenance of and minimize idling for all such nonroad equipment and generators powered by diesel engines in the task order UFP-QAPP.

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

Diesel Emission Control Technology

Contractors shall apply diesel emission control technology requirements listed below to all nonroad equipment and generators onsite powered by diesel engines, whether owned, leased or rented by the contractor.

All diesel nonroad construction equipment and generators on site for more than 10 total days must have either (1) engines meeting USEPA Tier 2 or higher nonroad emission standards⁷ or (2) emission control technology verified by USEPA or CARB for use with nonroad engines to reduce Particulate Matter emissions by a minimum of 85%⁸.

Proper Maintenance

Contractors shall ensure all diesel nonroad equipment and generators are properly maintained according to manufacturer's recommendations⁹.

Idle Reduction

During periods of inactivity, contractors shall meet minimum idle reduction requirements at the state or local level. In the absence of state or local idling regulations, contractors shall ensure idling is kept to a minimum¹⁰.

⁷ For more information on EPA nonroad diesel vehicle requirements, refer to www.epa.gov/otag/nonroad-diesel.htm.

⁸ In all instances "verified" means verified for use with the specific nonroad, or generator engine. For USEPA's list of verified technology: www.epa.gov/otag/diesel/verification/. For CARB's list of verified technology: www.arb.ca.gov/diesel/verdev/vt/cvt.htm.

⁹ For recommendations regarding maintenance practices, please refer to www.epa.gov/otag/diesel/technologies/engines.htm.

¹⁰ For recommendations and example criteria to minimize nonroad vehicle idling, please refer to www.epa.gov/smartway/forpartners/technology.htm#tabs-4.

1.6 Renewable Energy Considerations

The contractor is encouraged to evaluate reasonably feasible renewable energy sources when conducting work under this contract. Sources of renewable energy include solar, wind, and biomass and biogas. Examples of renewable energy technologies include photovoltaic panels, wind turbines, digesters, gasifiers, and micro turbines. EPA also considers purchasing green power from organizations that offer green power within the appropriate state a method for using renewable energy sources.

Upon request, contractors may be requested to conduct a cost analysis, comparing the energy costs from renewable sources versus traditional electricity sources provided by local utilities, over the expected life of the cleanup remedy.

Similarly, an evaluation of the avoided emissions as a result of using renewable energy sources versus traditional energy sources provided by local utilities may be requested.

Environmental Services and Operations (ESO) Statement of Work Subject to Task Order Specific Requirements

September 2014 DRAFT – Subject to Change; RFP# SOL-R1-14-00003

Task 1: General Requirements

1.4 Green Remediation⁴ and Climate Change⁵ Considerations

The contractor shall consider the environmental footprint of all activities. In particular, to the extent practicable and/or feasible, the contractor shall explore and implement green remediation strategies to reduce energy and water usage, promote carbon neutrality, promote industrial materials reuse and recycling, protect and preserve land resources. The contractors shall also integrate climate change vulnerability analyses and adaptation, as needed, to ensure the resiliency of remedies to climate change impacts.

Upon request, the contractor may be requested to present green remediation options and approaches to mitigate impacts of climate change on remedies during systematic project planning meetings, provide a cost analysis for these options in any work plan budgets, maintain records of green related activities, and report this information to EPA as needed or requested.

⁴ Refer to ASTM International's *Standard Guide for Greener Cleanups* (E2893-13), November 2013, *EPA's Principles for Greener Cleanups* (www.epa.gov/greenercleanups/epa-principles-greener-cleanups) and *Superfund's Green Remediation Strategy* (www.epa.gov/greenercleanups/superfund-green-remediation-strategy).

⁵ For more information on EPA and Superfund's Climate Change Adaptation Plan, refer to www.epa.gov/superfund/superfund-climate-change-adaptation.

1.5 Clean Diesel Requirements

The contractor shall use diesel nonroad construction equipment and generators that meet the United States Environmental Protection Agency's (EPA's) Tier 2 clean diesel standards. The contractor shall outline diesel emission control technologies, ensure proper maintenance of and minimize idling for all such nonroad equipment and generators powered by diesel engines in the task order UFP-QAPP.

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

Diesel Emission Control Technology

Contractors shall apply diesel emission control technology requirements listed below to all nonroad equipment and generators onsite powered by diesel engines, whether owned, leased or rented by the contractor.

All diesel nonroad construction equipment and generators on site for more than 10 total days must have either (1) engines meeting USEPA Tier 2 or higher nonroad emission standards⁶ or (2) emission control technology verified by USEPA or CARB for use with nonroad engines to reduce Particulate Matter emissions by a minimum of 85%⁷.

Proper Maintenance

Contractors shall ensure all diesel nonroad equipment and generators are properly maintained according to manufacturer's recommendations⁸.

Idle Reduction

During periods of inactivity, contractors shall meet minimum idle reduction requirements at the state or local level. In the absence of state or local idling regulations, contractors shall ensure idling is kept to a minimum⁹.

⁶ For more information on EPA nonroad diesel vehicle requirements, refer to www.epa.gov/otaq/nonroad-diesel.htm.

⁷ In all instances “verified” means verified for use with the specific nonroad, or generator engine. For USEPA’s list of verified technology: www.epa.gov/otaq/diesel/verification/. For CARB’s list of verified technology: www.arb.ca.gov/diesel/verdev/vt/cvt.htm.

⁸ For recommendations regarding maintenance practices, please refer to www.epa.gov/otaq/diesel/technologies/engines.htm.

⁹ For recommendations and example criteria to minimize nonroad vehicle idling, please refer to www.epa.gov/smartway/forpartners/technology.htm#tabs-4.

1.6 Renewable Energy Considerations

The contractor shall evaluate all reasonably feasible renewable energy sources when conducting work under this contract. Sources of renewable energy include solar, wind, and biomass and biogas. Examples of renewable energy technologies include photovoltaic panels, wind turbines, digesters, gasifiers, and micro turbines. Part of evaluating renewable energy sources and technologies will involve a cost analysis, comparing the energy costs from renewable sources versus traditional electricity sources provided by local utilities, over the expected life of the cleanup remedy. Similarly, an evaluation of the avoided emissions as a result of using renewable energy sources versus traditional energy sources provided by local utilities shall be performed. The contractor shall also evaluate the cost of purchasing green power from organizations that offer green power within the appropriate state.

Task 7: Other Technical Assistance

7.8 Optimization Reviews³³

The contractor shall provide optimization support for site activities. Support will involve the evaluation of treatment systems, cleanup approaches, characterization and monitoring strategies and data for the purpose of optimizing site cleanup. This support area involves expert review (optimization) of hazardous waste site cleanup projects by multidisciplinary teams of engineers and scientists that are independent and conflict of interest free of project activities. Optimization reviews are intended to provide comprehensive evaluations of site cleanup activities to identify opportunities for improvement in five primary areas: remedy effectiveness, cost effectiveness, technical improvement, site closeout, and green remediation. Optimization activities may include: document and data review and analysis, developing recommendations, drafting an optimization report, and following up on implementation of recommendations.

³³ For more information on EPA’s optimization initiative, refer to 9200.3-75, *National Strategy to Expand Superfund Optimization Practices from Site Assessment to Site Completion*, September 2012.

Full draft SOWs for the EPA’s DES, RES and ESO contract suites and supporting materials used in the Superfund RAF are accessible by solicitation (SOL) reference numbers (SOL-HQ-00022, SOL-HQ-00023, SOL-R1-14-00003) on the FedConnect website (www.fedconnect.net/FedConnect/PublicPages/PublicSearch/Public_Opportunities.aspx).

Note: RAF RFP excerpts provided in this attachment have been updated where needed to reflect newer web addresses for cited background information.

Attachment 2:
Green Remediation Requirements in RAC III Statement of Work for Remedial Action for
North Ridge Estates (NRE) Superfund Site, Operable Unit #1
(June 3, 2015)

Clean Diesel & Air Emissions Requirements

The contractor shall ensure all diesel vehicles, generators, and equipment meet the standards as outlined below. These requirements must be included in any subcontract documents. The contractor shall outline diesel emission control technologies and idling requirements in the task order quality assurance project plan (QAPP).

The contractor shall establish a method of tracking and monitoring diesel equipment to ensure compliance with the below standards. The contractor may utilize existing third party tools (e.g., Clean Diesel Clearing House: www.cleandieselclearinghouse.org/) as a basis for compliance tracking. The compliance tracking program shall include a unique identifier for each piece of diesel equipment working on the site. The unique identifier should be clearly visible in the field (e.g., a compliance sticker with the unique equipment identification number clearly visible). Emission control technology shall be operated, maintained, and serviced as recommended by the emission control technology manufacturer.

Diesel Emission Control Technology

Diesel emission control technology requirements apply to all equipment onsite powered by diesel engines, whether owned, leased or rented by the contractor. Vehicles and equipment powered by alternative fuels such as propane, natural gas and electricity are considered compliant with the following requirements.

Diesel Generators

Diesel generators used on site for more than 10 total days must be either compliant with EPA Tier 4 nonroad emission standards or be equipped with emission control technology verified by EPA or CARB to reduce PM emissions by a minimum of 85%.

Diesel Nonroad Construction Equipment²

All diesel nonroad construction equipment used on site must have engines that meet at least EPA Tier 2 nonroad emission standards.

At the start of the project, a minimum of 25 percent of all nonroad construction equipment must meet EPA Tier 4 nonroad emission standards or be fitted with emission control technology verified by EPA or CARB for use with nonroad engines to reduce PM emissions by a minimum of 85 percent.

By the beginning of the second year, after the start of on-site clean-up operations, 50 percent of all nonroad construction equipment must meet EPA Tier 4 nonroad emission standards or be fitted with emission control technology verified by EPA or CARB for use with nonroad engines to reduce PM emissions by a minimum of 85 percent.

Diesel Onroad Vehicles³

At least 90 percent of diesel onroad vehicles accessing or being used in conjunction with work on the site must have either:

1. Engines that meet U.S. Environmental Protection Agency (EPA) 2007 onroad engine emissions standards; or
2. Emission control technology verified by EPA or the California Air Resources Board (CARB) to reduce particulate matter (PM) emissions by a minimum of 85%.⁴

Idling Reduction Plan

During periods of inactivity, idling of diesel onroad vehicles and nonroad equipment shall be minimized. Oregon State law allows the engine of a commercial vehicle to idle for no more than five minutes in a continuous 60-minute period with several exemptions.⁵ Idling while waiting to load or unload shall also be limited to five minutes subject only to the

² For more information on EPA nonroad diesel vehicle requirements, refer to www.epa.gov/otaq/nonroad-diesel.htm.

³ For more information on EPA onroad diesel vehicle requirements, refer to www.epa.gov/otaq/hwy.htm.

⁴ In all instances "verified" means verified for use with the specific onroad, nonroad, or generator engine. For EPA's list of verified technology: www.epa.gov/otaq/diesel/verification/. For CARB's list of verified technology: www.arb.ca.gov/diesel/verdev/vt/cvt.htm.

⁵ See Oregon Revised Statute 825.600 to 825.615 for idling regulations and exceptions (e.g., queuing, temperature control for driver comfort, situations which driver has no control, and safe operations).

exemptions outlined in Oregon state law. The contractor shall place no-idling signage on site and reinforce no-idling behavior as necessary.

Reporting on Progress Meeting Greener Cleanup Best Management Practices

The contractor shall provide an annual report on progress in meeting specific greener cleanup best management practices (BMPs) for the site. EPA will provide a spreadsheet that identifies the specific BMPs that the contractor is expected to address. The contractor shall provide the status of implementing the specific BMPs, as well as any quantifiable outcomes such as reductions in air toxics, waste, water, or energy identified in the BMP spreadsheet, in an annual report.

Note: SOW excerpts provided in this attachment have been updated where needed to reflect newer web addresses for cited background information.