

OAK RIDGE Reservation

Annual Site Environmental Report



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Growing Toward Success

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About the cover:

A flower alone in the field will struggle to reach its potential against all that compete against it, but many flowers growing together will prosper and bloom beautifully with ease. Growing and working together is a garden of opportunity for the public, industry, and government. By continuing to unite our energies, strategies, and expertise in cooperation and understanding, our difficulties can be resolved, our goals met, and our missions accomplished — ***TJ***

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Acronyms and Abbreviations

| | |
|-------|---|
| 1STCK | First Creek kilometer |
| AA | atomic absorption spectrometry |
| ACGIH | American Conference of Governmental Industrial Hygienists |
| ACM | asbestos-containing material |
| ACO | Analytical Chemistry Organization |
| AIHA | American Industrial Hygiene Association |
| ALARA | as low as reasonably achievable |
| AM | action memorandum |
| AMSE | American Museum of Science and Energy |
| ANF | amended notification form |
| ANSI | American National Standards Institute |
| APC | application for permanent closure |
| AOC | Area of Concern |
| ARAP | Aquatic Resources Alteration Permit |
| ARAR | applicable or relevant and appropriate requirement |
| ASER | Annual Site Environmental Report |
| ASO | Analytical Services Organization |
| ATDD | Atmospheric Turbulence and Diffusion Division |
| AVLIS | Atomic Vapor Laser Isotope Separation |
| BC | Bear Creek |
| BCBG | Bear Creek Burial Grounds |
| BCG | biota concentration guide |
| BCK | Bear Creek kilometer |
| BCV | Bear Creek Valley |
| BJC | Bechtel Jacobs Company LLC |
| BMAP | Biological Monitoring and Abatement Program |
| BMP | best management practice |
| BMR | baseline monitoring report |
| BNA | base/neutral and acid extractables |
| BNFL | British Nuclear Fuels Limited |
| BoP | balance of plant |
| BOA | Basic Ordering Agreement |
| BOD | biological oxygen demand |
| BV | Bethel Valley |
| BY/BY | Bone Yard/Burn Yard |
| CA | characterization area |
| CAA | Clean Air Act |
| CAP | corrective action plan |
| CAR | corrective action report |
| CBOD | carbonaceous biochemical oxygen demand |
| CCS | chlorine control strategy |
| CDI | chronic daily intake |

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| | |
|---------|---|
| CDF | Chemical Detonation Facility |
| CEI | Compliance Evaluation Inspection |
| CEQ | Council on Environmental Quality |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFC | chlorofluorocarbon |
| CFR | <i>Code of Federal Regulations</i> |
| CH | contact-handled |
| CLP | Contract Laboratory Program |
| CMC | criterion maximum concentration |
| CMTS | Central Mercury Treatment System |
| CNF | Central Neutralization Facility |
| COC | contaminant of concern |
| COE | (U.S. Army) Corps of Engineers |
| CPCF | Central Pollution Control Facility |
| CPU | compact processing unit |
| CR | closure report |
| CRADA | cooperative research and development agreement |
| CRK | Clinch River kilometer |
| CRMP | cultural resource management plan |
| CROET | Community Reuse Organization of East Tennessee |
| CST | crystalline silicotitanate |
| CWA | Clean Water Act |
| CWAP | Clean Water Action Plan |
| CWM | Center for Waste Management |
| CWSA | Containerized Waste Storage Area |
| CX | categorical exclusion |
| CY | calendar year |
| CYRTF | Coal Yard Runoff Treatment Facility |
| 1,2 DCE | 1,2 dichloroethene |
| D&D | decontamination and decommissioning |
| DAC | derived air concentration |
| DAPC | Division of Air Pollution Control |
| DARA | Disposal Area Remedial Action |
| DCF | dose conversion factor |
| DCG | derived concentration guide |
| DEAR | Department of Energy Acquisition Regulations |
| DEUSS | Discharge of Enriched Uranium to the Sanitary Sewer |
| DNAPL | dense nonaqueous phase liquid |
| DNFSB | Defense Nuclear Facilities Safety Board |
| DOE | U.S. Department of Energy |
| DOE-ALO | U.S. Department of Energy-Albuquerque Operations Office |
| DOE-EM | U.S. Department of Energy-Environmental Management |
| DOE-HQ | U.S. Department of Energy-Headquarters |
| DOE-ORO | U.S. Department of Energy-Oak Ridge Operations Office |
| DP | (Office of) Defense Programs |
| dps | disintegrations per second |
| DRH | Division of Radiological Health |
| DRS | Decontamination Recovery Services |
| DSWM | Division of Solid Waste Management |

| | |
|------------------|---|
| DUF ₆ | depleted uranium hexafluoride |
| DWS | drinking water standard |
| EA | environmental assessment |
| EAR | environmental assessment report |
| EDE | effective dose equivalent |
| EE/CA | engineering evaluation/cost analysis |
| EEMTF | East End Mercury Treatment Facility |
| EESSMS | East End Sanitary Sewer Monitoring Station |
| EFK | East Fork Poplar Creek kilometer |
| EFPC | East Fork Poplar Creek |
| EIS | environmental impact statement |
| ELPAT | Environmental Lead Proficiency Analytical Testing Program |
| EM | (Office of) Environmental Management |
| EMC | event mean concentration |
| EMCAP | EM Consolidated Audit Program |
| EMEF | Environmental Management and Enrichment Facilities |
| EML | Environmental Measurements Laboratory |
| EMP | environmental monitoring plan |
| EMWMF | Environmental Management Waste Management Facility |
| EO | executive order |
| EPA | U.S. Environmental Protection Agency |
| EPA-HQ | U.S. Environmental Protection Agency Headquarters |
| EPCRA | Emergency Planning and Community Right-To-Know Act |
| EPT | Ephemeroptera, Plecoptera, and Trichoptera (taxa) |
| ER | environmental restoration |
| ESD | Environmental Sciences Division (ORNL) |
| ES&H | environment, safety, and health |
| ETMC | East Tennessee Mechanical Contractors |
| ETTP | East Tennessee Technology Park |
| EUWG | Oak Ridge End Use Working Group |
| EWQP | ETTP Water Quality Project |
| FCAP | Filled Coal-Ash Pond |
| FDA | U.S. Food and Drug Administration |
| FETC | Federal Energy Technology Center |
| FEIS | final environmental impact statement |
| FFA | Federal Facility Agreement |
| FFCA | Federal Facilities Compliance Agreement |
| FIFRA | Federal Insecticide, Fungicide, and Rodenticide Act |
| FIFTHCK | Fifth Creek kilometer |
| FFK | Fifth Creek kilometer |
| FPC | flow-proportional composite |
| FPRR | free product removal report |
| FRC | Field Research Center |
| FRP | Facilities Revitalization Project |
| FS | feasibility study |
| FONSI | finding of no significant impact |
| FY | fiscal year |

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| | |
|------------------------|---|
| GAAT | Gunite and Associated Tanks |
| GCK | Grassy Creek kilometer |
| GMO | General Manufacturing Organization (Y-12 Plant) |
| GW | groundwater |
| GWPP | Groundwater Protection Program |
| GWPS | groundwater protection standard |
| GWTF | Groundwater Treatment Facility |
| Gy | gray |
| | |
| HAP | hazardous air pollutant |
| HC | Hinds Creek sampling station |
| HCDA | Hazardous Chemical Disposal Area |
| HEPA | high-efficiency particulate air (filter) |
| HEU | highly enriched uranium |
| HFIR | High Flux Isotope Reactor |
| HiVal | High Investment Value |
| HQ | hazard quotient |
| HS | hazardous substance |
| HSWA | Hazardous and Solid Waste Amendments (1984) |
| HV | high-volume |
| HVAC | heating, ventilating, and air-conditioning |
| | |
| I | intake |
| IAR | initial abatement report |
| I/I(10 ⁻⁵) | intake (estimated dose)/chronic daily intake |
| ICK | Ish Creek kilometer |
| ICP | inductively coupled plasma |
| ICP-MS | inductively coupled plasma mass spectrometry |
| ICPT | Integrated Contractor Procurement Team |
| ICRP | International Commission on Radiological Protection |
| ID | identification |
| IHgTU | Interim Mercury Treatment Unit |
| IHP | Intermediate Holding Pond |
| INEEL | Idaho National Engineering and Environmental Laboratory |
| IPIP | Integrated Performance Indicator Program |
| IRIS | Integrated Risk Information System |
| IROD | interim record of decision |
| ISCR | initial site characterization report |
| ISMS | Integrated Safety Management System |
| ITRD | Innovative Treatment Remediation Demonstration |
| IWC | instream waste concentration |
| IWMF | Interim Waste Management Facility |
| IWQP | Integrated Water Quality Program |
| | |
| JINS | Joint Institute for Neutron Sciences |
| JTU | Jackson turbidity unit |
| | |
| KAFaD | K-25 Auxiliary Facilities Area Demolition |
| KHQ | Kerr Hollow Quarry |

| | |
|------------------|--|
| LC ₅₀ | effluent concentration lethal to 50% of test organisms |
| LDR | land disposal restriction |
| LEFPC | Lower East Fork Poplar Creek |
| LLC | limited liability company |
| LLD | lower limit of detection |
| LL/IW | low-level/industrial waste |
| LLLW | liquid low-level (radioactive) waste |
| LLW | low-level (radioactive) waste |
| LMER | Lockheed Martin Energy Research Corporation |
| LMES | Lockheed Martin Energy Systems |
| LRSPW | Lake Reality Spillway |
| LWBR | Lower Watts Bar Reservoir |
| M&EC | Material and Energy Corp. |
| M&I | management and integration |
| M&O | management and operating |
| MACT | maximum achievable control technology |
| MAP | Management Action Process |
| MAPEP | Mixed Analyte Performance Evaluation Program |
| MCCBK | McCoy Branch kilometer |
| MCL | maximum contaminant level |
| MDA | minimum detectable activity |
| MEI | maximally exposed individual |
| MEK | Melton Branch kilometer |
| Mgd | million gallons per day |
| MIK | Mitchell Branch kilometer |
| MLDUA | Modified Light-Duty Utility Arm |
| MLLW | mixed low-level waste |
| MMES | Martin Marietta Energy Systems, Inc. |
| MPI | Multi-Point Injection |
| MRF | Metal Recovery Facility |
| MSDS | material safety data sheet |
| MSRE | Molten Salt Reactor Experiment |
| MV | Melton Valley |
| MVST | Melton Valley Storage Tanks |
| NA | not applicable |
| NABIR | Natural and Accelerated Bioremediation Research |
| NEPA | National Environmental Policy Act |
| NERL-LV | National Exposure Research Laboratory at Las Vegas |
| NESHAP | National Emission Standards for Hazardous Air Pollutants |
| NFARL | no further action required letter |
| NFCS | Nationwide Food Consumption Survey |
| NHF | New Hydrofracture Facility |
| NI | not investigated |
| NHPA | National Historic Preservation Act |
| NIST | National Institute of Standards and Technology |
| NMFS | Nuclear Material and Facility Stabilization project |
| NNSA | National Nuclear Security Administration |
| NOAA | National Oceanic and Atmospheric Administration |
| NOD | notice of deficiency |

Oak Ridge Reservation

| | |
|--------------|---|
| NOEC | no-observed-effect concentration |
| NOEL | no-observed-effect level |
| NOI | Notice of Intent |
| NOV | notice of violation |
| NPDES | National Pollutant Discharge Elimination System |
| NPL | National Priorities List |
| NRC | Nuclear Regulatory Commission |
| NRDC | National Resources Defense Council, Inc. |
| NRWTF | Nonradiological Wastewater Treatment Facility |
| NTRC | National Transportation Research Center |
| NTS | Nevada Test Site |
| NTU | nephelometric turbidity unit |
| NURP | Nationwide Urban Runoff Program |
| NWTK | Northwest Tributary kilometer |
| | |
| OE | overexcavation |
| ODS | ozone depleting substance |
| OHF | Old Hydrofracture Facility |
| OLF | Oil Landfarm |
| OMI | Operations Management International, Inc. |
| OPA | Oil Pullution Act |
| ORAU | Oak Ridge Associated Universities |
| ORCMT | Oak Ridge Centers for Manufacturing Technology |
| OREIS | Oak Ridge Environmental Information System |
| ORGDP | Oak Ridge Gaseous Diffusion Plant |
| ORISE | Oak Ridge Institute for Science and Education |
| ORNL | Oak Ridge National Laboratory |
| ORO | Oak Ridge Operations |
| ORR | Oak Ridge Reservation |
| ORR-PCB-FFCA | Oak Ridge Reservation Polychlorinated Biphenyl Federal Facilities Compliance Agreement |
| OSTI | Office of Scientific and Technical Information |
| OU | operable unit |
| | |
| P&A | plugging and abandonment |
| PAM | perimeter air monitoring (station) |
| PBT | persistent, bioaccumulative, or toxic |
| PCB | polychlorinated biphenyl |
| PCE | perchloroethene |
| PCK | Poplar Creek kilometer |
| PCP | post-closure permit |
| PCR | permanent closure report |
| PE | Performance Evaluation |
| PIDAS | Perimeter Intrusion Detection Assessment System |
| PIF | Partners in Flight |
| | performance indicator factor |
| PM10 | particulate matter less than 10 microns in diameter |
| POTW | publicly owned treatment works |
| PP | proposed plan |
| ppm | parts per million |
| ppt | parts per trillion |

| | |
|------------|---|
| PVC | polyvinyl chloride |
| PWMP | Pond Waste Management Project |
| PWTC | Process Waste Treatment Complex |
| PWTF | Process Wastewater Treatment Facility |
| PWTP | Process Waste Treatment Plant |
| QA | quality assurance |
| QA/QC | quality assurance/quality control |
| QC | quality control |
| R&D | research and development |
| RA | remedial action |
| RAC | reference air concentration |
| rad | radiation absorbed dose |
| RAD-BCG | Radionuclide Biota Concentration Guide |
| Rad-NESHAP | Radionuclide National Emission Standards for Hazardous Air Pollutants |
| RAM | remote air monitoring (station) |
| RAWP | remedial action work plan |
| RCK | Raccoon Creek kilometer |
| RCRA | Resource Conservation and Recovery Act |
| RCW | recirculating cooling water |
| REDC | Radionuclide Engineering Development Center |
| rem | roentgen equivalent man |
| RER | Remediation Effectiveness Report |
| RFA | RCRA Facility Assessment |
| RfC | reference concentration |
| RfD | reference dose |
| RFI | Remedial Feasibility Investigation |
| RH | remote-handled |
| RI | remedial investigation |
| RI/FS | remedial investigation/feasibility study |
| RIR | release investigation report |
| RmAWP | remedial action workplan |
| RMP | Radiological Monitoring Plan |
| RMPE | Reduction of Mercury in Plant Effluents |
| ROD | record of decision |
| ROI | return on investment |
| RQ | reportable quantity |
| RSD | risk-specific dose |
| RSE | remedial site evaluation |
| RTCS | Radioactive Tank Cleaning System |
| RWDP | remedial design workplan |
| RY | reporting year |
| S&A | sampling and analysis |
| S&M | surveillance and maintenance |
| SARA | Superfund Amendments and Reauthorization Act |
| SD | standard deviation |
| SDWA | Safe Drinking Water Act |
| SE | standard error |
| SF | slope factor |

Oak Ridge Reservation

| | |
|------------|--|
| SHPO | state historic preservation officer |
| SI | site investigation |
| SI | International System of Units (metric system) |
| SIOU | surface impoundments operable unit |
| SIR | site investigation report |
| SMCL | secondary maximum contaminant level |
| SMO | Sample Management Office |
| SNF | spent nuclear fuel |
| SNS | Spallation Neutron Source |
| SOP | standard operating procedure |
| SPCC | Spill Prevention Control and Countermeasures Plan |
| SPMD | semipermeable membrane device |
| SPOT | Sampling, Planning, and Oversight Team |
| SRF | site ranking form |
| S/RIDs | Standards/Requirements Identification Documents |
| SRM | standard reference material |
| SRS | site ranking system |
| SSAB | Site-Specific Advisory Board |
| SSF | Solid Storage Facility |
| SSMR | site status monitoring report |
| SSS | site-specific standard |
| SSSR | Site-Specific Standard Request |
| ST | strong-tight |
| STP | Sewage Treatment Plant |
| | Site Treatment Plan |
| SWDF | solid waste disposal facility |
| SWEIS | Site Wide Environmental Impact Statement |
| SWHIS | Surface Water Hydrological Information Support System |
| SWM | solid waste management |
| SWMU | solid waste management unit |
| SWP3 | Storm Water Pollution Prevention Plan |
| SWPP | Storm Water Pollution Prevention |
| SWSA | solid waste storage area |
| Sv | sievert |
| SYDD | salvage yard drum deheader |
| | |
| T&E | threatened and endangered |
| TBD | to be determined |
| TCE | trichloroethene |
| TCGRS | Transportable Compressed Gas Recontainerization System |
| TCLP | toxicity characteristic leaching procedure |
| TCMP | Toxicity Control and Monitoring Program |
| TDEC | Tennessee Department of Environment and Conservation |
| TDECD | Tennessee Department of Economic and Community Development |
| TDEC/DOE-O | Tennessee Department of Environment and Conservation/DOE Oversight Division |
| TEMA | Tennessee Emergency Management Agency |
| TN | Tennessee |
| TN-WQC | Tennessee Water Quality Criteria |
| TOA | Tennessee Oversight Agreement |
| TOC | total organic carbon |

| | |
|--------------|---|
| TPF | Transuranic Processing Facility |
| TPH | total petroleum hydrocarbons |
| TRC | total residual chlorine |
| TRI | Toxic Release Inventory |
| TRK | Tennessee River kilometer |
| TRO | total residual oxidant |
| TRU | transuranic |
| TSCA | Toxic Substances Control Act |
| TSCAI | Toxic Substances Control Act Incinerator |
| TSDR | treatment, storage, disposal, and recycle |
| TSF | Tower Shielding Facility |
| TSP | total suspended particulates |
| TSS | total suspended solids |
| TVA | Tennessee Valley Authority |
| TVS | transportable vitrification system |
| TWQC | Tennessee General Water Quality Criteria |
| TWRA | Tennessee Wildlife Resources Agency |
| TWRF | TRU Waste Remediation Facility |
| UEFPC | Upper East Fork Poplar Creek |
| UE-PCB-FFCA | Uranium Enrichment Polychlorinated Biphenyl Federal Facilities Compliance Agreement |
| UE-TSCA-FFCA | Uranium Enrichment Toxic Substances Control Act Federal Facilities Compliance Agreement |
| UIC | Underground Injection Control |
| UNCS | United Nuclear Corporation Site |
| USEC | U.S. Enrichment Corp. |
| USGS | U.S. Geological Survey |
| UST | underground storage tank |
| UV | ultraviolet |
| VDRIF | Variable Dose Rate Irradiation Facility |
| VEE | visible emissions evaluation |
| VOC | volatile organic compound |
| WAC | waste acceptance criteria |
| WAG | waste area grouping |
| WBK | Walker Branch kilometer |
| WCK | White Oak Creek kilometer |
| WDP | Waste Disposal Project |
| WETF | West End Treatment Facility |
| WFPC | West Fork Poplar Creek |
| WIPP | Waste Isolation Pilot Plant |
| WMP | waste management program |
| WMRAD | Waste Management and Remedial Action Division (ORNL) |
| WOC | White Oak Creek |
| WOD | White Oak Dam |
| WOL | White Oak Lake |
| WOP | Waste Operations Program |
| WQC | water quality criteria |

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| | |
|--------------|--|
| WQP | Water Quality Projects |
| WQS | water quality standard |
| WRRP | Water Resources Restoration Program |
| WSS | work smart standards |
| | |
| XWQP | ORNL (X-10) Water Quality Project |
| | |
| Y-12 Complex | Oak Ridge Y-12 National Security Complex |
| YOY | young of the year |
| YWQP | Y-12 Water Quality Project |

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