



## INTRODUCTION

The *Record of Decision for the Disposal of Oak Ridge Reservation Comprehensive Environmental Response Compensation, and Liability Act of 1980 Waste* (November 1999, DOE/OR-1791&D3) documents a decision by the U.S. Department of Energy (DOE), the Tennessee Department of Environment and Conservation (TDEC), and the U.S. Environmental Protection Agency (EPA) to construct a dedicated disposal facility in Oak Ridge Reservation's (ORR's) Bear Creek Valley to receive ORR Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) waste. Soon after that Record of Decision (ROD) was signed on November 2, 1999, construction began on this disposal facility – named the Environmental Management Waste Management Facility (EMWMF) – and it has been accepting ORR CERCLA waste in compliance with its waste acceptance criteria since mid-2002. Although “access roads” to the facility were specifically included as part of the remedy selected in that ROD (Fig. 1), no provision was made for extensive road construction because it was understood that waste would be transported over existing public and restricted-access roadways running between EMWMF and the three main areas on ORR that would be sending waste there: Oak Ridge National Laboratory (ORNL), Oak Ridge Y-12 National Security Complex, and East Tennessee Technology Park (ETTP).

However, DOE's experience in transporting waste shipments to EMWMF since 2002 over public roadways has led it to conclude that the original remedy should be modified to provide for construction of a major haul road extension in restricted access areas of ORR, which will eliminate all need to use public roadways for transport of ETTP waste to the EMWMF. ETTP will be the origin of approximately 800,000 cubic yards of CERCLA waste through the end of FY 2008. This haul road extension, which will involve construction of 4.8 miles of new roadway and is estimated to cost \$11

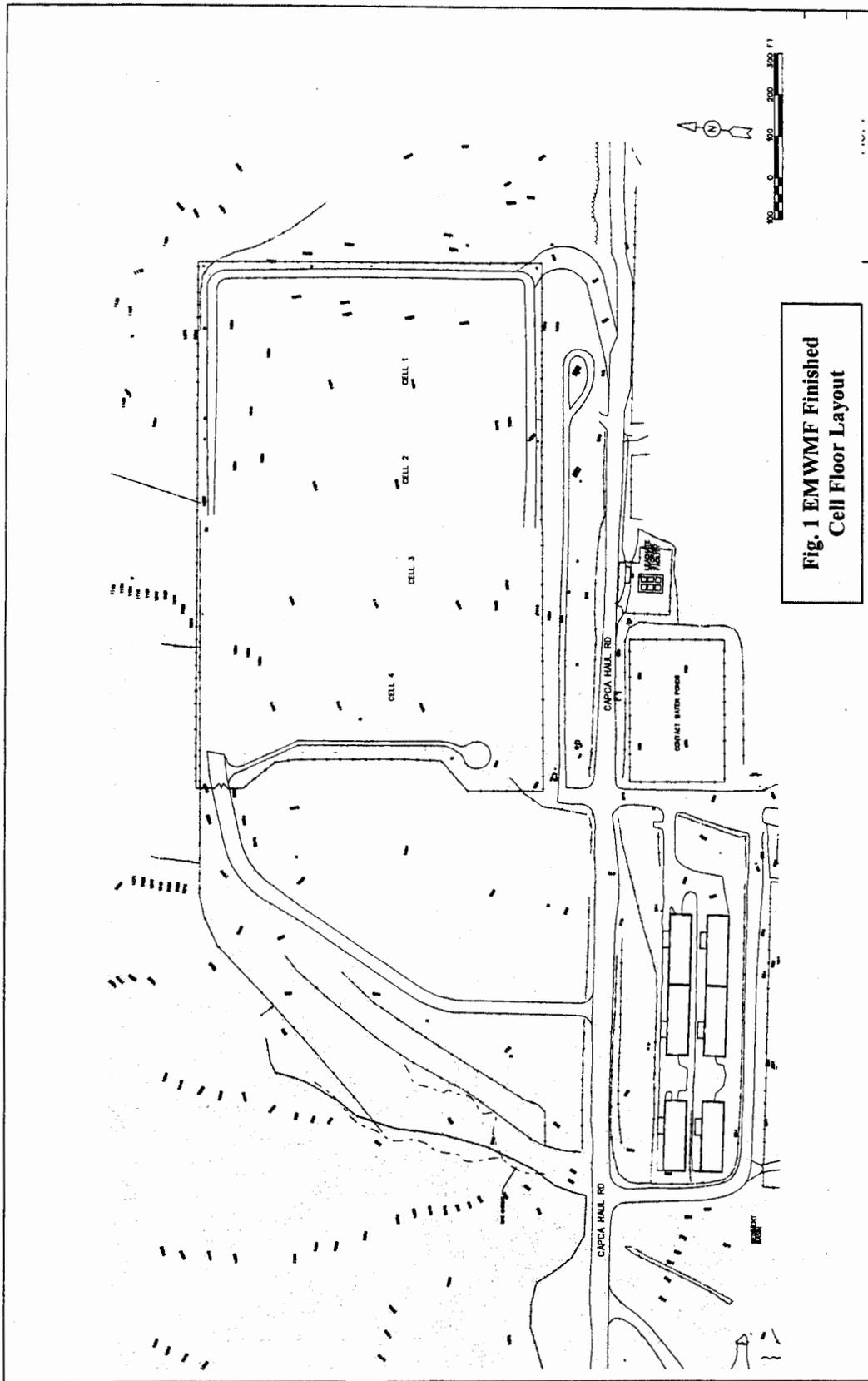
million, is considered a significant change to the original remedy selected in 1999.

Under CERCLA Sect. 117(c), DOE is required to publish an explanation of significant differences (ESD) to document a significant change to a component of a remedy selected in a ROD. This ESD is being issued by DOE, as lead agency for remedial activities at ORR, with concurrence by the EPA and TDEC, as support agencies. The purpose of this document is to announce construction of an EMWMF haul road extension within restricted areas of ORR that will accommodate transport of CERCLA waste from ETTP to that facility without use of public roadways. In accordance with Sections 300.435(c)(2)(I) and 300.825(a)(2) National Oil and Hazardous Substances Pollution Contingency Plan (NCP), DOE is issuing this explanation for the change to the original remedy selected in the 1999 ROD for the EMWMF, and making it available to the public in the Administrative Record File and at the ORR Information Center.

This ESD is part of the Administrative Record File and is available for review during normal business hours (Monday–Friday, 8 a.m.–5 p.m.) at the Information Center, 475 Oak Ridge Turnpike, Oak Ridge, Tennessee, 37830, (865) 241-4780.

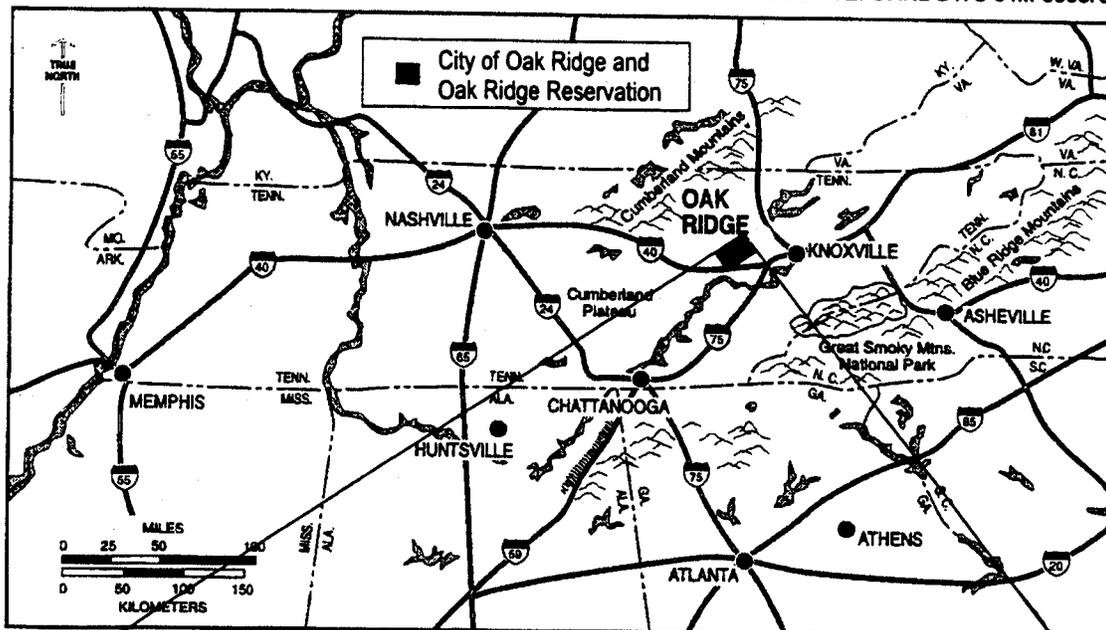
## **SUMMARY OF SITE HISTORY, CONTAMINATION PROBLEMS REQUIRING REMEDIATION, AND SELECTED REMEDY**

The 34, 516-acre ORR is located inside and adjacent to the corporate limits of Oak Ridge, Tennessee, in Roane and Anderson counties, about 12 miles west-northwest of Knoxville. Three main facilities exist on the ORR (Fig. 2): ORNL (formerly X-10), Oak Ridge Y-12 National Security Complex, and ETTP (formerly the K-25 Site). These facilities were built in the early 1940s as



**Fig. 1 EMWMF Finished Cell Floor Layout**

SOURCE: ORNL-DWG 94M-8368R2



SOURCE: ORNL-DWG 93M-9616R2

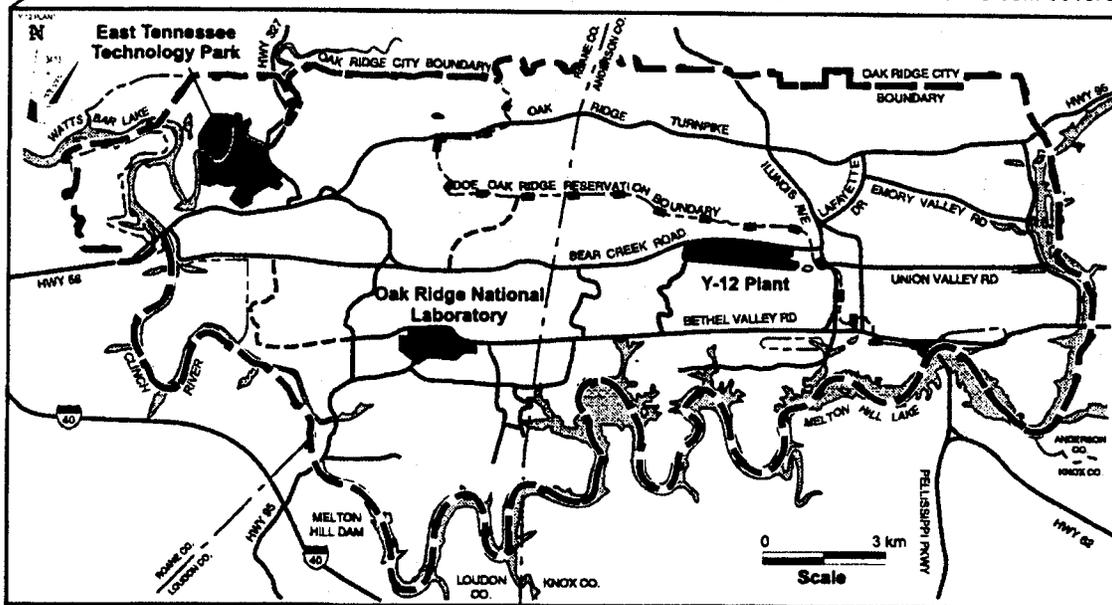


Fig. 2

**Location of Oak Ridge Reservation**

DOE - Oak Ridge Reservation - Oak Ridge, Tennessee

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research, development, and process facilities under the Manhattan Project. Wastes from DOE operations at these sites were disposed of in burial trenches, pits, and ponds. Some ORR wastes were sent to other sites in Tennessee. As a result of these disposal practices, buildings, support facilities, and nearby land became contaminated at all three facilities and in some off-site locations. With placement of ORR on the National Priorities List in 1989, CERCLA became the legal driver for investigation and cleanup of inactive waste areas and contaminated buildings.

More than 60 years of operation, production, and research activities at ORR have resulted in a legacy of contaminated inactive facilities, research areas, and waste disposal areas. Cleanup of various sites, areas, structures, and media will generate soil, construction and demolition debris, and sediments containing a range of chemical and radioactive contaminants. DOE conducted a remedial investigation (RI)/feasibility study (FS) (DOE 1998) to evaluate alternative strategies for managing this future cleanup waste. Two alternatives were developed for disposal of wastes from future DOE cleanup: on-site disposal at a new facility, or disposal at existing off-site facilities. Both of these alternatives support CERCLA cleanup through placement of wastes in engineered disposal cells. A no action alternative was also evaluated for comparison with the on- and off-site disposal alternatives. A proposed plan (DOE 1999) described the alternatives and their evaluation and indicated that DOE, EPA, and TDEC selected on-site disposal as the preferred alternative. After public review and comment on the proposed plan, the ROD was signed on November 2, 1999 and issued.

The ROD approved the design, construction, operation, and closure of an ORR disposal facility as the selected remedy for on-site disposal of CERCLA cleanup waste. Elements of the selected remedy are as follows:

- An engineered, above-grade, earthen disposal cell, leachate collection and transfer facility, support facilities, access roads, stormwater detention basins, and monitoring

systems (the EMWMF) would be constructed west of the Y-12 Plant in East Bear Creek Valley.

- The EMWMF would be designed to receive LLW, RCRA hazardous waste, TSCA waste, and mixed waste.

- Final waste acceptance criteria (WAC) for the EMWMF would be developed during the design process in accordance with applicable or relevant and appropriate requirements (ARARs), risk/performance assessments, and worker protection requirements. Upon approval by EPA and TDEC, these criteria would govern what wastes could be disposed of in the facility.

- A waste certification program would be implemented in accordance with the WAC attainment plan, a post-ROD primary document, to ensure that only waste certified for disposal would be accepted for on-site disposal.

- Waste that could not be treated to meet the EMWMF's WAC would be disposed of at DOE-approved or, as appropriate, EPA-approved off-site facilities.

- The EMWMF would be closed by placing an enhanced RCRA-compliant cover over the waste. The cover enhancements would further prevent direct exposure to the waste and would include systems designed to minimize infiltration of rainwater, resist erosion, and resist penetration by burrowing animals. The cover would be designed and constructed to minimize the potential for future human intrusion through excavation.

- Long-term institutional controls, air and groundwater monitoring, and surveillance and maintenance would be implemented during construction and operations; this could continue indefinitely after closure to restrict public access and verify cell performance.

- Facility design would contain contingencies for shallow groundwater collection and treatment. A shallow/deep groundwater monitoring program would be established.

## DESCRIPTION OF THE SIGNIFICANT DIFFERENCES AND THE BASIS FOR THOSE DIFFERENCES

While the ROD addressed on-site disposal of LLW, RCRA and TSCA hazardous waste, and mixed waste, the assumption was that waste would be transported along public and restricted-access roads running between ETPP, ORNL, and Y-12 to reach the EMWMF.

The DOE has decided to construct an extension to the existing EMWMF haul road built as a component of the remedy for the sole purpose of transporting CERCLA waste on-site to disposal sites adjacent to Y-12 (EMWMF and sanitary landfills). The extended haul road will run approximately 5.6 miles and likely utilize existing routes for the majority of the distance. The purpose of constructing the extension is to reduce public exposure to hazardous conditions associated with the frequent transport of hazardous substances over public roadways. The haul road will facilitate transportation of hazardous substances by providing segments of dedicated infrastructure to support the EMWMF ROD.

The concept of a dedicated transportation corridor between ETPP and EMWMF was validated by a DOE Office of Cleanup and Acceleration Core Technical Group report issued in April, 2004, *Optimization of Waste Disposition at the East Tennessee Technology Park* (Technical Solutions Report No. 031102-019) that identified an out-of-commerce haul road as a viable option for transporting waste from ETPP to EMWMF. The study comparing transport options gave the haul road option the most favorable ranking based on 23 criteria.

### Description of Proposed Action

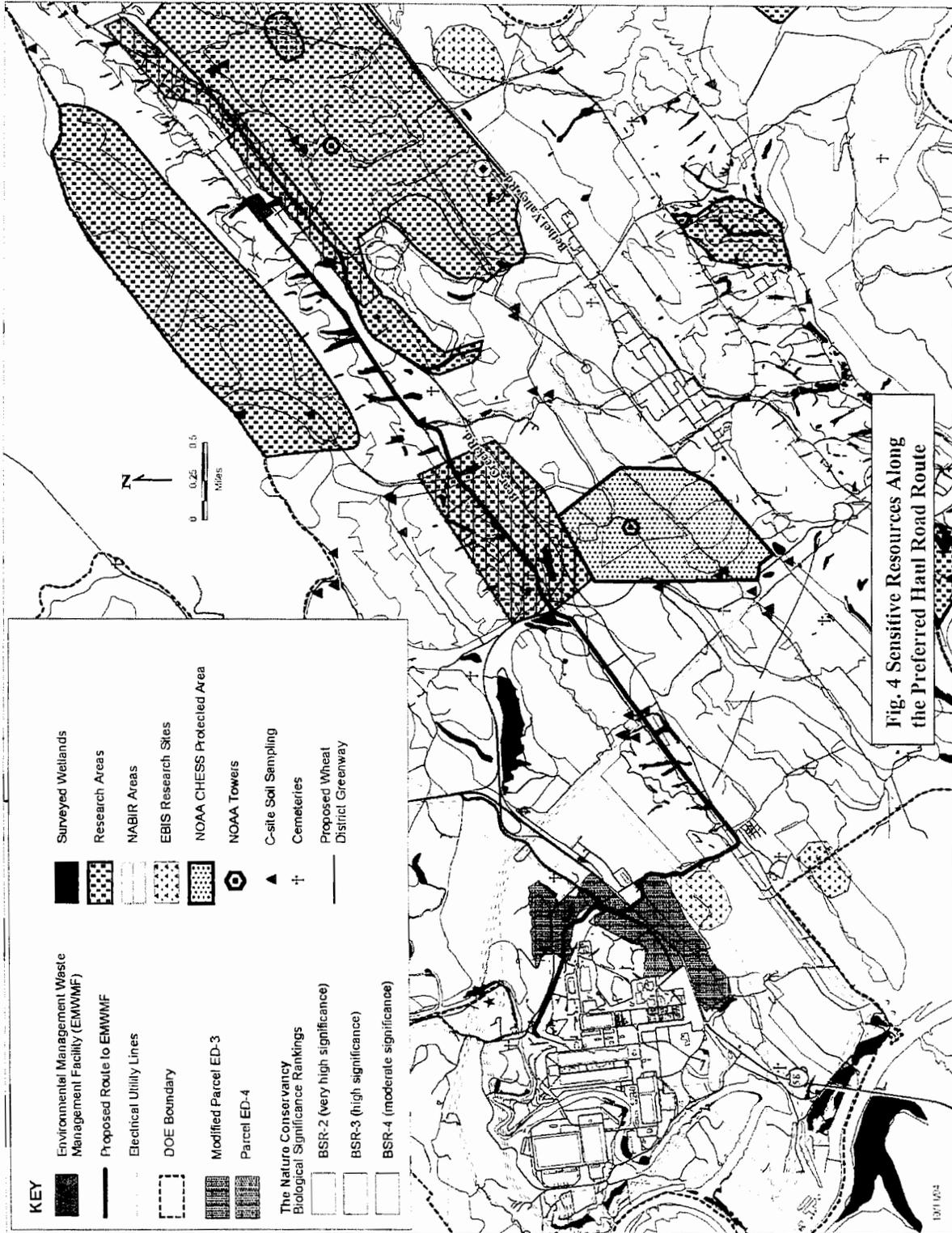
The preferred haul road route currently under consideration by DOE is shown as the orange line in Figure 3. The figure shows that portions of the route follow currently existing DOE access roads and portions would be newly constructed road. Figure 4 indicates the location of currently identified sensitive resources (e.g., wetland/floodplain areas, cultural resources, and

cemeteries) with respect to the route based on existing databases and previous cataloguing efforts, and preliminary surveys. More comprehensive surveys for sensitive resources are being conducted to assist with the design phase for this project, currently projected for the Fall and Winter of 2004.

Several alternative routes were reviewed for advantages and disadvantages. Parameters considered included, but were not limited to, travel distance, route security, opportunities to use existing roads and utility rights-of-way, most feasible locations for bridges over existing highways, and ease of construction. Significant factors in selecting the preferred route included terrain that minimized cut and fill; avoidance of existing obstacles; maximum use of existing out-of-commerce roads; minimal impact on users of adjacent or potentially affected facilities and roads; environmental constraints along the route, such as forest, wetlands, rare and endangered plant species, special animal habitat concerns, etc.; environmental research areas or sites of special concern, such as monitoring wells; cultural or historic sites/resources along the route, such as the Wheat Community archaeological sites, proposed Wheat Greenway, and the Secret City Railroad loading area; suitable bridge locations that make use of terrain to minimize the need for fill and cross roads and streams at the most favorable locations; cost and schedule of different bridge types (steel truss vs. concrete); and overall cost of each road route alternative. A summary description of each route and a detailed analysis of these parameters for each route are provided in Attachment 1. The preferred route is included and described as Orange Route Alternative 6 in Attachment 1.

Two routing options were considered for the 1.5-mile segment of the road just east of Flannigan Loop. One option was to close West Bear Creek Road (WBCR) to the public and use it to transport the waste; the other was to construct a new roadway that parallels WBCR and runs just north of it. A comparison was done of the advantages, disadvantages, impacts to the environment and users of the road, impacts to cost and schedule, security and safety concerns, potential for infringement of the road by casual





intruders, and the potential effect on emergency responder actions for the two options. Security and safety concerns, as well as negative impacts to the current users of WBCR and to emergency responders were major factors in DOE's decision to construct a new roadway north of WBCR rather than close and use WBCR. Although there are sensitive environmental resources and research stations in the area where this new segment of road would be constructed, an analysis of the impacts of the construction and operation of this road revealed there would be minimal to no impact to these resources and researchers. Mitigating measures are planned to reduce impacts to two low-quality wetlands located just north of WBCR.

Because of the nature of some of the waste, some of which will be classified waste, route security is considered critical, receiving the highest priority ratings of all parameters considered. The preferred route provides the best opportunity for protection of the shipments by minimizing the hauling distance and providing the most direct route.

The preferred route consists of a total length of 5.6 miles of 30-foot wide gravel roadway and two bridges. Of the total, 0.8 miles use previously developed areas (existing roads) and 4.8 miles are newly constructed roads. To minimize tree cutting, approximately 4 miles of the roadway construction will be along an existing cleared powerline right-of-way.

A dedicated waste transporter will be used to provide services, equipment, materials, and labor to transport waste materials to various disposal locations, including the EMWMF, Y-12 landfills, and other off-site landfills (e.g., Nevada Test Site or Envirocare). Specific transport work activities include but are not limited to vehicle maintenance, vehicle fueling, vehicle cleaning/washing, dispatching, and associated management functions. New facilities and equipment will include but are not limited to office trailers, vehicle maintenance facilities or lay-down areas, fuel tanks, a vehicle washing facility, and a variety of truck-types used to transport the waste.

Once waste hauling activities are completed, the bridges will be removed and minor re-grading of the bridge approaches will be done. Newly-constructed road segments will be allowed to revert to natural conditions, with consideration given during design to actions that could accelerate the reversion process. Future proposals for follow-on road and/or bridge uses, if any, will comply with all applicable environmental and public review requirements, including those established by NEPA.

Although transport will not be on public roads, all transport activities will comply with the substantive requirements of EPA and U.S. Department of Transportation (DOT) regulations for public commercial transport, as well as applicable DOE Orders (e.g., Order 460.1B) regarding transportation. These requirements are delineated in the table of ARARs included in Attachment 2. As required by DOE Order 460.1B, a Transportation Safety Document (TSD) will be prepared that describes the methodology and compliance process to meet safety requirements that are equivalent to the DOT Hazardous Materials Regulations applicable to transport on public roads. The TSD will be submitted for regulatory approval as part of the Remedial Design Report/Remedial Action Work Plan (RDR/RAWP) a primary Federal Facility Agreement (FFA) document. A traffic study has been completed and a transportation plan will be developed. On-site transportation risks for an estimated 80,000 truck trips were evaluated and quantified as part of the EMWMF RI/FS (Appendix F of the RI/FS); this study will be evaluated and considered for this haul road activity.

#### **Risk Rationale for Constructing Haul Road Extension**

This action is designed to support the remediation objectives of the EMWMF CERCLA ROD. Construction of support facilities and short access roads was included in the scope of the EMWMF ROD action. This action will extend those access roads to allow ETTP remediation waste to be transported to disposal sites adjacent to Y-12 (EMWMF and sanitary landfills) along restricted ("out-of-commerce") roads not available to the general

public. Transport along restricted access roads would essentially eliminate the risk and inconvenience to public motorists resulting from incidents such as the recent release of radiological contamination onto a public roadway from a truck transporting waste from ORNL to the EMWMF for disposal. That release resulted in the closure of Tennessee State Highway 95 to the public for three days while the road was surveyed and marked for remediation, and remediation was completed.

DOE plans to perform this activity as a modification to the EMWMF ROD, as supported by this ESD, based on the anticipated reduction of risk to the public associated with transport of CERCLA hazardous substances.

Current projections are that approximately 800,000 cubic yards (cy) of waste will be shipped from ETTP to the EMWMF or on-site Y-12 sanitary landfills via one of four types of trucks (27 cy dump truck, 38 cy dump truck, roll-off containers, or flatbed trailers). Restricting public access to these shipments and transporting them along DOE restricted access roads will significantly decrease risks to public health and safety. The new road will eliminate accidents involving the public; reduce current times to cycle this waste from ETTP to EMWMF or other on-site sanitary landfills thus saving on fuel, reduce wear and tear on public roads; and reduce the amount of manifesting required to transport these wastes. The use of restricted access roads of shorter length and reduced traffic volumes than the currently used public roads would also enhance security and lower the risk of accidents or spills of contaminated material on public roads and the associated cleanups.

#### **Cost Rationale for Constructing Haul Road Extension**

The haul road extension is projected to cost \$11 million, including an estimated \$500,000 for demolition and removal of the two temporary bridges and minor re-grading of the bridge approaches upon completion of waste transportation. The total projected cost for construction of the EMWMF, as outlined in the

EMWMF ROD, was \$99.8 – \$167.5 million, depending on the final size of the constructed facility (size range of 400k cy to 1.7M cy facility). Thus, the haul road extension would add approximately 10 percent to the low end cost of EMWMF construction or 3 percent to the high end cost.

#### **Impact to the Environment**

The documentation of sensitive resources in Bear Creek Valley that is available in the EMWMF RI/FS and Administrative Record file has been reviewed and input has been obtained from representatives of BWXT, UT-Battelle, and Bechtel Jacobs Company LLC (BJC) who are responsible for documenting and protecting the ORR's sensitive resources. They and the design team also conducted numerous field surveys of the proposed route to assess the impacts of haul road construction and operation on sensitive resources. Adjustments to the route to mitigate or eliminate impacts were made. After the preferred alignment is physically marked, sensitive resource subject matter experts will conduct more detailed surveys to definitively document the entire alignment. Detailed information on the sensitive resources that were identified and plans to avoid or mitigate impacts to these resources is available in the EMWMF RI/FS, the Engineering Project Notes for this activity, and the Administrative Record files. Preliminary engineering analysis indicates the proposed route can be designed to significantly reduce, although not completely eliminate, negative impacts to sensitive resources in the area.

The following sensitive resources were identified along the preferred route and initially assessed for potential impacts:

*Wheat Railway station on Blair Road* - This facility was relocated to its present site due to security concerns after September 11, 2001. DOE has worked closely with representatives of the Secret City Railroad to address impacts of the haul road on the railway boarding station north of ETTP (the road will not impact other areas of the railroad). DOE has proposed that the railway boarding station be moved south of

ETTP to the site where a museum regarding Secret City activities will be built. Secret City representatives have indicated they have no objection to moving the station to this area and, in fact, prefer that it be relocated there. The project will fund the relocation of the station (a small shed) and construction of a new gravel parking area for approximately 50 cars at the loading site south of ETTP.

*Wheat Community Historic District* – Based on previous surveys, the preferred route may go through or impact resources in this designated historic district, a large portion of which is within Reindustrialization Parcel ED-3. A formal cultural resources survey, as required by a previous DOE Memorandum of Agreement (MOA) with the State Historic Preservation Officer (SHPO) (DOE 2001), is being completed for this area. Preliminary indications are that there are no cultural resources in the Wheat Historic District that will be impacted by haul road activities. Formal consultation with the SHPO regarding planned activities and potential adverse impacts has been initiated (DOE 2004; TDEC 2004). The preferred route will be re-adjusted, if necessary, to accommodate formal National Historic Preservation Act of 1966 (NHPA) concerns. Appropriate NHPA documentation will be completed if designated areas will be impacted. The design team has also met with a representative of the Wheat Alumni Association to discuss the project impacts and receive her comments and input.

*George Jones Church and Cemetery* – This area is east of Blair Road and within the Wheat Historic District; the preferred haul road route is west of Blair Road close to ETTP, therefore, no direct impact is expected to these facilities, although the haul road may be visible across the road when standing near these facilities.

*Planned Wheat District Greenway* – Construction of a greenway is planned through the Wheat Historic District and west to the ETTP Portal 3, as shown on Figure 2. The proposed western portion of the greenway route may impact the proposed haul road route; one or both may need to be re-adjusted. DOE consultation with Greenway representatives is

ongoing to make necessary adjustments acceptable to both parties.

*Parcel ED-3* – The preferred route would have minor adverse impacts on Parcel ED-3. Potential impacts have been identified to the Wheat Historic District (see above), a portion of which is located within ED-3. The portion of the parcel that would be impacted has been previously disturbed both historically and more recently from the removal of trees damaged from pine beetles. The northwest area of the parcel is part of the headwaters for Mitchell Branch. The use of best management practices in the construction of the road would minimize potential impacts from erosion and siltation. Construction of the haul road would eliminate a small portion of the parcel from economic development purposes but would not impact the preferred areas for development. No adverse impacts are expected to the portion of Parcel ED-3 south of the Oak Ridge Turnpike since the preferred route roughly follows the eastern boundary of the parcel. Two temporary Manhattan Project housing areas identified as Happy Valley and the Ford, Bacon, and Davis Housing Area were built to the southeast of ETTP along the south side of State Route (SR) 58 and west of Blair Road during the timeframe from 1943 to 1946 to house construction workers and their families. These areas are within ED-3. The facilities have since been torn down but no formal archaeological survey of these areas was ever conducted; therefore, as required by a MOA with the SHPO (DOE 2001), these areas were included in the formal survey conducted for the haul road route. The route has also been adjusted to avoid or minimize impacts to several wetlands and forested areas within ED-3.

*Parcel ED-4* – The preferred route currently cuts from north to south through ETTP Parcel ED-4. There are potentially two cultural resource sites (729A and 732A) that are part of the Wheat Historic District that lies within ED-4. These are located in the extreme east end of ED-4 near Blair Road and are considered to be contributing to the Wheat Historic District. No formal archaeological survey of this area was ever conducted; therefore, as required by a MOA

with the SHPO (DOE 2001), this area was included in the formal survey conducted for the haul road route. A National Environmental Policy Act of 1969 (NEPA) Environmental Assessment for this parcel has already been completed that considered the impacts of developing the parcel for reindustrialization.

*Shelton and Ellis cemeteries on the north and northeast side of ETTP* – All proposed haul road routes run along or near these cemeteries. Cemeteries are protected under federal and state law. An adequate buffer will be observed for construction proposed in the area of these cemeteries.

*Cultural resources along, above, and below the 161kV powerline and Bear Creek* – Based on previous surveys, the preferred route will not likely impact any resources in this area. However, a formal survey was done in concert with the Wheat Community archaeological resources survey (DOE 2004). NHPA mitigation and documentation measures will be implemented if necessary. The preferred route has also been adjusted to ensure there are no adverse impacts to small cemeteries in the area (e.g., Currier Cemetery). Access to these cemeteries will be maintained.

*Natural and Accelerated Bioremediation Research (NABIR) Field Research Center (FRC)* – This is a DOE Office of Science (DOE-SC) research and background study area north of Bear Creek Road and east of SR 95 – In consultation with the NABIR FRC Manager, the preferred route was walked down and adjusted to bypass these areas to eliminate impacts. Researcher access to these areas will be maintained.

*Enriched Background Isotope Signature (EBIS) Air Research Area west of Flannigan Loop and National Oceanic and Atmospheric Administration (NOAA) Atmospheric Turbulence and Diffusion Division (ATDD) Research Area east of SR 95 and south of Bear Creek Road* – Construction and operation of the haul road may have short-term impacts to the air monitoring results at these DOE-SC research areas. The Managers for the EBIS and

NOAA/ATDD areas have been consulted and have noted this and will incorporate and consider it in assessing their monitoring results. Researcher access to these areas will be maintained.

*Wetlands along 161kV powerline, Bear Creek Road, and Bear Creek* – These wetlands include a protected canebreak community and several sightings of the rare tuberculed rein orchid that is protected under the Tennessee Rare Plant Protection Act. The preferred route was adjusted to minimize the acreage of wetlands impacted. An additional bridge span and bridge piers rather than a culvert may be used to cross the Bear Creek channel just west of SR 95 to further minimize impacts. A wetlands determination and delineation survey will be conducted during the remedial design phase by ORNL certified wetland professional scientists and a compensatory mitigation evaluation and plan will be prepared, if needed, to address any adverse effects, subject to regulatory concurrence. Compensatory mitigation may be required to ensure compliance with the Tennessee Water Quality Control Act of 1977, the State's Aquatic Resource Alteration Program, the federal Clean Water Act, DOE's wetland protection requirements (10 CFR 1022), and Executive Order 11990 (*Protection of Wetlands*) if construction and operation activities disturb or alter wetlands. GPS coordinates were taken to map the specific sightings of the tuberculed rein orchid and plan for route adjustment to protect this listed species and habitat. More detailed rare plant and animal surveys by ORNL research scientists are planned for the remedial design phase to further identify other listed species and plan for mitigation of any potential adverse impacts.

*Tennessee dace in Bear Creek* – This Tennessee-listed in-need-of-management species is found in Bear Creek and other waters of the ORR. Minimal to no long-term adverse impact to this listed species is expected. Rare species surveys to be done by ORNL research scientists during the remedial design phase will be used to adjust the project design to mitigate or eliminate any long-term impacts to this species.

*National Environmental Research Park (NERP) areas and Biologically Significant Ranking (BSR) areas identified by the Nature Conservancy* – Coordination with the NERP Area Manager is occurring to ensure that all sensitive resources in designated Natural Areas (NAs), Reference Areas (RAs), and state-designated Natural Areas (SNAs) are considered and protected, and adverse impacts to these areas are minimized to the extent possible or eliminated. The proposed route has also been adjusted and designed to minimize impacts to BSR areas.

*Forests* – Site inspections have indicated that the forest on Pine Ridge west of Highway Route 95 is of higher quality than that east of Highway Route 95. TDEC has expressed a concern regarding clearing and grubbing forested areas as an alternative to disturbing what may be considered marginal wetland areas created by past road construction and grading work. DOE will work with TDEC to ensure high value wetlands and high quality forests are protected and the largest uncut blocks of forest are maintained. Forestry officials have also been contacted to assess the potential for harvesting marketable timber.

*Reservation Hunting Activities* – The project team has consulted with personnel responsible for coordinating allowed hunting of deer and turkeys on the Reservation lands and forests to address the impacts of waste transport activities on hunting activities. A policy and procedure that considers security, transportation, and safety concerns is being developed that will ensure minimal impacts to hunting areas and seasons, based on the 10 hunting days per year currently allocated. The haul road itself will be closed to hunters but hunting will be allowed in the vicinity of the haul road. Waste will not be shipped on the haul road during hunts.

*Bridge crossings and utility systems* – DOE has met with Tennessee Department of Transportation (TDOT) officials to address bridge crossings and state highway right-of-way impacts. Electrical and natural gas utility systems and fiber-optic telecommunications officials (e.g., Tennessee Valley Authority, East

Tennessee Natural Gas, and Qwest Communications) were also contacted to discuss ways to avoid or minimize temporary impacts to these systems, particularly along Flannigan Loop road, which may need to be upgraded to support the increased truck traffic. The bridges will be dismantled and removed once waste hauling activities are completed and the bridge approaches will be re-graded. Newly-constructed road segments will be allowed to revert to natural conditions. Consideration is being given to measures that may accelerate this natural reversion process.

*Monitoring Wells and Systems* – A number of active and inactive environmental remediation and research monitoring wells located along or near the proposed route may need to undergo formal plugging and abandonment (P&A) to allow haul road construction. Representatives overseeing monitoring well activities were contacted and invited to participate in siting and design activities and provided drawings and maps of current well placements. Any necessary P&A activities will be performed and/or coordinated with these representatives.

*Air Quality, Dust and Noise Control* – There are a few points where the proposed haul road will come in close proximity to public use roads (e.g., the bridges over SR 95 and SR 58 and the short section that runs along and just north of Bear Creek Road just west of Flannigan Loop). Fugitive emissions, including dust and any associated unforeseen contamination, could be blown by the wind onto public roads. This concern will be addressed through the use of safety measures such as application of oil, water, or suitable chemicals to prevent particulate matter from becoming airborne; asphaltting the road; or planning for an adequate buffer zone. The study addressing radioactive and fugitive dust emissions from on-site waste transport that was completed as part of the EMWMF RI/FS (DOE 1998) will also be considered and incorporated into this activity and additional air quality modeling done if indicated. Although there would be some increase in noise levels from construction/operation activities, it is expected that there would be no additional disturbance to the public or the nearest sensitive

receptor (e.g., residence, church) resulting from this on-site traffic activity.

*ETTP Zone 1 & 2 soil remediation under CERCLA* – Soil sampling under the CERCLA ETTP Zone 1 and 2 RODs and remediation, if needed, will be accelerated for potentially impacted areas to ensure completion before haul road construction begins. The areas within Zones 1 and 2 that could be impacted and require sampling and/or remediation pre-construction are minimal (Zone 1: EU 70; Zone 2: EUs 27, 28, and 38). These areas are located within and outside the security fence along the northern boundary of the ETTP site.

Detailed plans will be prepared during the remedial design phase to address compliance with construction related ARARs to protect the environment. These plans will be part of the RDR/RAWP primary FFA document. Examples of such plans include a stormwater pollution prevention plan, erosion control/best management practice plan, environmental compliance plan, and a wetlands delineation/mitigation plan.

### **Impacts to Local Commerce and Community**

The haul road will be dedicated to waste transport activities and, for safety purposes, the use of the road by other DOE prime contractors or subcontractors will be limited to users with no other practical alternative for access.

Routine road and truck surveys will be performed in compliance with DOE Orders for on-site waste transportation. A TSD and an Environmental Monitoring Plan will be developed to detail transportation and monitoring requirements and to plan for emergency response.

Socioeconomic and environmental justice impacts from on-site waste transport and disposal using public roads were addressed in detail in the EMWMF RI/FS. It is expected that this on-site traffic activity would have less of a negative impact to the public since waste transport would be taken off public roads.

### **Conclusions**

DOE has worked closely with the support agencies (EPA and TDEC or “regulators”), as well as the representatives of BWXT, UT-Battelle, BJC, private industry, and the public [e.g., Oak Ridge Site-Specific Advisory Board (SSAB), Wheat Alumni Association] throughout the design process for information exchange, comment resolution, and overall remedial action discussions. The haul road extension will significantly reduce risk to the public and enhance security, and is designed to avoid sensitive resources in the area. Regulators have concurred with this approach and have directed DOE to prepare this ESD to present the modification to the public.

This modification is considered a significant enough change to the facility design contemplated in the approved ROD that an ESD is warranted. The selected remedy in the ROD is not fundamentally altered by the modifications documented in this ESD. However, DOE believes that it is appropriate to present this modification to the public and to document it in the Administrative Record through this ESD.

### **SUPPORT AGENCY COMMENTS**

DOE and its subcontractors have worked closely with the regulators throughout the siting and design process to build consensus prior to formal regulatory review and approval. Regulators have concurred that construction of this road would be acceptable, have directed DOE to prepare this ESD, and have reviewed a previous draft of this document. Their comments are incorporated in the D2 version of this document. Through signature of this document, regulators concur with this ESD and with this modification to the EMWMF ROD.

### **AFFIRMATION OF STATUTORY DETERMINATIONS**

The modified remedy meets the requirements of CERCLA Sect. 121 as described in the ROD. The siting, design, construction, and operation of the haul road will meet all ARARs identified for this action. A table of chemical-, location-, and

action-specific ARARs is included in Attachment 2. The assessment of ARARs for this action did not identify any additional sensitive resource types or categories or any additional ARARs beyond those already identified in the EMWFMF ROD.

In accordance with DOE Secretarial Policy regarding NEPA (DOE 1994) and its requirement to incorporate NEPA values into CERCLA documents, a NEPA subject matter expert has reviewed all documentation of project consultations and activities, including proposed mitigating measures, and has determined that no significant impacts to the human environment that cannot be mitigated are likely to arise from the proposed activity. Extensive consultations with sensitive resource experts and research scientists were, and continue to be, conducted for this activity to fully document potential impacts to sensitive resources and plan cooperatively to adjust the route to reduce or eliminate impacts. Impacts if no action is taken, i.e., waste continues to be transported on-site along public roads rather than on DOE restricted-access roads, are addressed in detail in Sect. 8.3 ("On-site Disposal Alternative") of the EMWFMF RI/FS (DOE 1998).

## **PUBLIC PARTICIPATION ACTIVITIES**

In April 1996, DOE began holding regular public briefings with the SSAB, a citizen's panel advising the DOE Environmental Management (EM) program. A presentation describing planned haul road activities was given to the SSAB on September 8, 2004 and a follow-up discussion with the SSAB Environmental Management Committee was conducted on September 22, 2004. Additional interactions will be held as necessary. SSAB members were also given infield tours of the proposed haul road routes.

The project team has also contacted the City of Oak Ridge, the Oak Ridge Reservation Local Oversight Committee, the Advisory Council on Historic Preservation, the Wheat Alumni Association, the Oak Ridge Heritage and Preservation Association, and the Eastern Band

of the Cherokee Indians to request comments and input on this proposed action, particularly with regard to impacts to cultural resources. In addition, the project team has consulted with representatives of the NERP, the NABIR Field Research Center, and the EBIS and NOAA/ATDD Research Centers to ensure that potential impacts of construction and operation of the haul road are identified and eliminated or mitigated to an acceptable level.

The availability of the D1 ESD was announced to the public through local newspapers and to advisory groups through mailings. A public meeting was held on November 15, 2004 to receive verbal comments from the public. Subsequent to the public meeting, written comments were received from the Citizens' Advisory Panel of the Oak Ridge Reservation Local Oversight Committee (CAP-LOC) and a recommendation statement from the SSAB. Three key areas capture most of the comments from the public meeting, the CAP-LOC comments, the SSAB recommendation, and the comments received from EPA/TDEC. The first primary public concern was that DOE consider the closure and use of WBCR as preferable to construction of a new road just north of WBCR for the 1.5-mile segment east of Flannigan Loop. Security and safety concerns, as well as negative impacts to the current users of WBCR and to emergency responders were major factors in DOE's decision to construct a new roadway rather than close and use WBCR. Although there are sensitive environmental resources and research stations in the area where this new segment of road would be constructed, an analysis of the impacts of the construction and operation of this road revealed there would be minimal to no impact to these resources and researchers. Mitigating measures are planned to reduce impacts to two low-quality wetlands located just north of WBCR. Plans in response to the other two key areas of public concern, impacts on on-ORR hunting activities and on the quality and efficiency of scientific research activities, are addressed under "Impacts to the Environment" above. Upon request, DOE will provide project progress updates to the SSAB or other appropriate forums.

## REFERENCES

DOE 2004. "National Historic Preservation Act, Section 106 Compliance, Notification of Proposed Undertaking for Construction of an Extension to the Existing Environmental Management Waste Management Facility Haul Road." Letter from Mr. Gary S. Hartman, DOE ORO Cultural Resources Management Coordinator, to Dr. Joseph Garrison, Tennessee Historical Commission, Department of Environmental and Conservation, September 17.

DOE 2001. *Project Summary, Archeological Historical Report (AHR), and Memorandum of Agreement Between the Department of Energy Oak Ridge Operations and Tennessee State Historic Preservation Officer, ED-3 Lease, Oak Ridge Reservation Roane County, Tennessee, National Historic Preservation Act Section 106*, May.

DOE 1998. *Remedial Investigation/ Feasibility Study for the Disposal of the Oak Ridge Reservation Comprehensive Environmental Response, Compensation, and Liability Act of 1980 Waste (DOE/OR02-1637&D2)*.

DOE 1999. *Proposed Plan for the Disposal of the Oak Ridge Reservation Comprehensive Environmental Response, Compensation, and Liability Act of 1980 Waste (DOE/OR/01-1761&D3)*.

DOE 1994. *Secretarial Policy Statement on the National Environmental Policy Act of 1969*. U.S. Department of Energy, June 13.

TDEC 2004. "Regarding DOE, ORNL/Waste Management Facility Haul Road, Oak Ridge, Roane County." Letter from Dr. Joseph Garrison, Tennessee Historical Commission, Department of Environmental and Conservation, to Mr. Gary S. Hartman, DOE ORO Cultural Resources Management Coordinator, September 28.

## ACRONYMS

ARAR	applicable or relevant and appropriate requirements
ATDD	Atmospheric Turbulence and Diffusion Division
BJC	Bechtel Jacobs Company LLC
BSR	Biological Significance Ranking
CAP-LOC	Citizens' Advisory Panel of the Oak Ridge Reservation Local Oversight Committee
CERCLA	Comprehensive Environmental Response, Compensation & Liability Act of 1980
CFR	<i>Code of Federal Regulations</i>
CHESS	Chestnut Ridge Ecosystem Site
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EBIS	Enriched Background Isotope Signature
EM	Environmental Management
EMWMF	Environmental Management Waste Management Facility
EPA	U.S. Environmental Protection Agency
ESD	Explanation of Significant Difference
ETTP	East Tennessee Technology Park
FFA	Federal Facilities Agreement
FRC	Field Research Center
LLW	low-level radioactive waste
MOA	Memorandum of Agreement
NABIR	Natural and Accelerated Bioremediation Research
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NEPA	National Environmental Policy Act of 1969
NERP	National Environmental Research Park
NHPA	National Historic Preservation Act of 1966
NOAA	National Oceanic and Atmospheric Administration
ORNL	Oak Ridge National Laboratory
ORR	Oak Ridge Reservation
P&A	Plugging and abandonment
RCRA	Resource Conservation and Recovery Act of 1976
RDR/RAWP	Remedial Design Report/Remedial Action Work Plan
RI/FS	Remedial Investigation / Feasibility Study
ROD	Record of Decision
SHPO	State Historic Preservation Officer
SR	State Route
SSAB	Site Specific Advisory Board
TDEC	Tennessee Department of Environment and Conservation
TDOT	Tennessee Department of Transportation
TSCA	Toxic Substances Control Act of 1976
TSD	Transportation Safety Document
WAC	waste acceptance criteria
WBCR	West Bear Creek Road

## APPROVALS

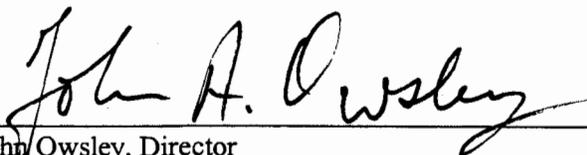
### Explanation of Significant Differences for the Record of Decision for the Disposal of Oak Ridge Reservation Comprehensive Environmental Response, Compensation, and Liability Act of 1980 Waste, Oak Ridge, Tennessee

January 2005



Gerald Boyd, Manager  
Oak Ridge Operations  
U.S. Department of Energy

1/18/05  
Date



John Owsley, Director  
U.S. Department of Energy Oversight Division  
Tennessee Department of Environment and Conservation

1/20/05  
Date



Winston A. Smith, Director  
Waste Management Division  
U.S. Environmental Protection Agency - Region 4

2/17/05  
Date



**Attachment 1**

**Haul Road Route Descriptions and Analysis**



## ETTP-EMWMF HAUL ROAD ROUTE DESCRIPTIONS AND ANALYSIS

*Note: Route 11 is the preferred route; it builds on and is a combination of other routes. The choice of colors to describe each route option is random and used only to distinguish one route from the other on maps. A color was assigned to each major route option so that the variations for that major route (e.g. slight route alterations, different termination points) could be tracked with the major route option.*

### Routes 1 – 5 begin at Burchfield Road west of ETTP.

#### 1. Yellow Route

Total length of roadway – 5.3 miles

Begins on west side of ETTP at Burchfield Road

Goes under State Route (SR) 58 via a new tunnel

Follows existing utility inspection road to Flannigan Loop

Uses Flannigan Loop to cross Pine Ridge, then turns east

Follows most favorable terrain and parallels a gas line right-of-way (ROW) to SR 95

Crosses SR 95 on a new bridge

Follows existing power line ROW to west end of CAPCA haul road

#### Advantages:

- Tunnel is approach that follows the most favorable terrain. Burchfield Road is at elevation 750'; SR 95 is at elevation 770'. Tunnel option goes under SR 58 at Burchfield Road elevation
- Tunnel would be a more permanent solution than a temporary bridge
- Makes maximum use of existing Flannigan Loop
- Makes maximum use of existing cleared utility maintenance road
- East end of utility maintenance road to Flannigan Loop is nearly flat

#### Disadvantages:

- Tunnel would require substantial traffic diversion for months to install; would require agreement from Tennessee Department of Transportation (TDOT) for major traffic impact
- If an at-grade crossing is used temporarily at Burchfield Road, it would interfere significantly with diversion of SR 58 traffic for tunnel construction.
- Tunnel construction may impact existing culvert under SR 58
- Route impacts (minimal impact) three surveyed wetlands
- From tunnel halfway to Flannigan Loop is rugged terrain
- Utility maintenance road is along a 22 inch gas main
- Concrete utility vault in middle of cleared roadway; would have to divert around it
- Route climbs over Pine Ridge from low point on Flannigan Loop. Climb begins at a sharp curve (slow speed). Elevation gain from 820' to 930' = 110 vertical feet
- Tunnel would have to be really long to go under 5 lanes, shoulders, and embankments at 3:1 slopes

#### Environmental and cultural concerns (see resource locations in Fig. 4 in main text of document):

- Impacts to surveyed wetlands south of ETTP and along Bear Creek
- Route south of ETTP intersects, from west to east, ETTP re-industrialization Parcels ED-3 and ED-4
- Potential impacts to cultural resources that are part of the Wheat Historic District within Parcel ED-4, and to the former Happy Valley temporary Manhattan Project housing area within Parcel ED-3
- Cultural resources survey along entire route to document presence/location of resources is required, as well as formal consultation with the Tennessee State Historic Preservation Officer (SHPO)
- Potential impacts to Natural and Accelerated Bioremediation (NABIR), Enriched Background Isotope Signature (EBIS), and National Oceanic and Atmospheric Administration (NOAA)/Atmospheric Turbulence and Diffusion Division (ATDD) research areas north and south of Bear Creek Road
- Presence of state-listed rare plants (tuberculed reined orchid) and fish (*Tennessee dace*) in areas route passes through
- Route passes through National Environmental Research Park (NERP) and Nature Conservancy Biological Significance Ranking (BSR) areas in Bear Creek Valley

## 2. Yellow Route Alt 1

Total length of roadway – 5.4 miles

Begins on west side of ETTP at Burchfield Road

Crosses a 5-lane section of SR 58 via a new bridge

Follows existing utility inspection road to Flannigan Loop

Uses Flannigan Loop to cross Pine Ridge, then turns east

Follows most favorable terrain and parallels a gas line ROW toward SR 95

Crosses SR 95 on a new bridge and follows the existing power line ROW to west end of CAPCA haul road

### Advantages:

- Bridge over 5-lane section of SR 58 would be located to take advantage of terrain for abutments
- Bridge would have less of an impact to SR 58 traffic
- No diversion of SR 58 traffic would be required to install bridge
- Bridge avoids one surveyed wetland on the Yellow Route

### Disadvantages:

- From bridge to main Yellow Route is rugged terrain requiring substantial cut and fill
- Bridge over 5-lane section of SR 58 would be long
- Embankment for bridge on north side of SR 58 would be 40 vertical feet above Burchfield Road; it would require a large embankment and long grade to climb to bridge level

Environmental and cultural concerns (see resource locations in Fig. 4 in main text of document):

- Impacts to surveyed wetlands south of ETTP and along Bear Creek
- Route south of ETTP intersects, from west to east, ETTP re-industrialization Parcels ED-3 and ED-4
- Potential impacts to cultural resources that are part of the Wheat Historic District within Parcel ED-4, and to the former Happy Valley temporary Manhattan Project housing area within Parcel ED-3
- Cultural resources survey along entire route to document presence/location of resources is required, as well as formal consultation with the SHPO
- Potential impacts to NABIR, EBIS, and NOAA/ATDD research areas north and south of Bear Creek Road
- Presence of state-listed rare plants (tubercled reined orchid) and fish (*Tennessee dace*) in areas route passes through
- Route passes through NERP and Nature Conservancy BSR areas in Bear Creek Valley

## 3. Yellow Route Alt 2

Total length of roadway – 5.6 miles

Begins on west side of ETTP at Burchfield Road

Goes west on Connector Road

Crosses SR 58 entrance and exit ramps via a new bridge near West Bear Creek Road

Goes under existing SR 58 bridge at Bear Creek Road

Runs beside West Bear Creek Road

Turns immediately left and follows the existing utility inspection road to Flannigan Loop

Uses Flannigan Loop to cross Pine Ridge, then turns east

Follows most favorable terrain and parallels a gas line ROW toward SR 95

Crosses SR 95 on a new bridge and follows existing power line ROW to west end of Existing CAPCA haul road

### Advantages:

- Makes maximum use of existing roads and bridges by using Connector Road and by going under the existing SR 58 bridge
- No diversion of SR 58 traffic would be required to install bridge
- Bridge over existing entrance and exit ramps would be much smaller than bridge over SR 58 needed for other routes
- Takes advantage of existing closed road that was abandoned when SR 58 was widened and entrance/exit ramps were re-worked
- Avoids existing wetlands along the Yellow Route
- Avoids parallel gas lines
- Avoids 22" gas main and concrete gas line vault 751

Disadvantages:

- Total route is longer than other routes that use Flannigan Loop
- From bridge to main Yellow Route is very rugged terrain
- Significant earthwork required to construct road from West Bear Creek Road to level of SR 58. Embankment on south side of SR 58 would require climb of 40 vertical feet from Bear Creek Road; it would require a retaining wall, sharp curve, moderately steep climb and significant road cut

Environmental and cultural concerns (see resource locations in Fig. 4 in main text of document):

- Impacts to surveyed wetlands along Bear Creek
- Route south of ETTP intersects, from west to east, ETTP re-industrialization Parcels ED-3 and ED-4
- Potential impacts to cultural resources that are part of the Wheat Historic District within Parcel ED-4, and to the former Happy Valley temporary Manhattan Project housing area within Parcel ED-3
- Cultural resources survey along entire route to document presence/location of resources is required, as well as formal consultation with the SHPO
- Potential impacts to NABIR, EBIS, and NOAA)/ATDD research areas north and south of Bear Creek Road
- Presence of state-listed rare plants (tuberculed reined orchid) and fish (*Tennessee dace*) in areas route passes through
- Route passes through NERP and Nature Conservancy BSR areas in Bear Creek Valley

**4. Green Route**

Total length of roadway – 5.1 miles

Begins on west side of ETTP at Burchfield Road

Crosses SR 58 via a new tunnel

Follows most favorable terrain to Flannigan Loop

Uses Flannigan Loop to cross Pine Ridge, then turns east

Follows most favorable terrain and parallels a gas line ROW toward SR 95

Crosses SR 95 on a new bridge

Follows existing power line ROW to west end of existing CAPCA haul road

Advantages:

- Better terrain than Yellow Route
- Avoids wetlands near ETTP
- Avoids parallel gas lines
- Avoids 22" gas main and concrete gas line vault 751
- Road is higher on the ridge, resulting in more gradual climb over Pine Ridge
- Shorter road distance

Disadvantages:

- Would require more tree clearing
- Would require substantial cut and fill as it approaches Flannigan Loop

Environmental and cultural concerns (see resource locations in Fig. 4 in main text of document):

- Impacts to surveyed wetlands along Bear Creek
- Route south of ETTP intersects, from west to east, ETTP re-industrialization Parcels ED-3 and ED-4
- Potential impacts to cultural resources that are part of the Wheat Historic District within Parcel ED-4
- Cultural resources survey along entire route to document presence/location of resources is required, as well as formal consultation with the SHPO
- Potential impacts to NABIR, EBIS, and NOAA)/ATDD research areas north and south of Bear Creek Road
- Presence of state-listed rare plants (tuberculed reined orchid) and fish (*Tennessee dace*) in areas route passes through
- Route passes through NERP and Nature Conservancy BSR areas in Bear Creek Valley

**5. Blue Route**

Total length of roadway – 5.7 miles

Begins on west side of ETTP at Burchfield Road

Goes west on Connector Road  
Crosses SR 58 entrance and exit ramps via a new bridge  
Goes under existing SR 58 bridge beside West Bear Creek Road  
Beginning under the SR 58 bridge, uses existing West Bear Creek Rd for approximately 1000 ft.  
A new 1000-ft section of paved public road would be required parallel to West Bear Creek Road  
Turns east onto an existing power line ROW  
Follows most favorable terrain along south side of Pine Ridge to SR 95  
Crosses SR 95 on a new bridge  
Follows existing power line ROW to west end of existing CAPCA haul road

Advantages:

- Better terrain than Yellow or Green routes
- Avoids parallel gas lines
- Avoids 22" gas main and concrete gas line vault 751
- Road goes around instead of climbing over Pine Ridge
- Route takes advantage of some existing roads
- Makes maximum use of existing roads and bridges by using Connector Road and by going under the existing SR 58 bridge
- No diversion of SR 58 traffic would be required to install bridge
- Bridge over existing entrance and exit ramps would be much shorter than bridge over SR 58 needed for other routes

Disadvantages:

- Would require more tree clearing than other routes
- Would require construction of a new Bear Creek Road for the public; approximately 1000 feet long
- New Bear Creek Road would be partly in surveyed wetland – less than 1 acre
- Much longer than Green and Yellow routes

Environmental and cultural concerns (see resource locations in Fig. 4 in main text of document):

- Impacts to surveyed wetlands southwest of ETTP and along Bear Creek
- Cultural resources survey along entire route to document presence/location of resources is required, as well as formal consultation with the SHPO
- Potential impacts to NABIR, EBIS, and NOAA/ATDD research areas north and south of Bear Creek Road
- Presence of state-listed rare plants (tubercled reined orchid) and fish (*Tennessee dace*) in areas route passes through
- Route passes through NERP and Nature Conservancy BSR areas in Bear Creek Valley

**Routes 6 – 9 begin at Portal 5 on the north side of ETTP.**

**6. Orange Route Alt 1 (Pipeline Route)**

Total length of roadway – 5.2 miles; length of new roadway – 4.8 miles  
Begins at ETTP Portal 5 (north side of ETTP)  
Goes east parallel to Blair Road  
Crosses SR 58 on a new bridge located west of existing Blair Road intersection  
Uses Flannigan Loop to cross Pine Ridge, then turns east  
Follows most favorable terrain and parallels a gas line ROW toward SR 95  
Crosses SR 95 on a new bridge  
Follows the existing 161kV powerline ROW to the west end of the existing CAPCA haul road

Advantages:

- Follows best terrain from Flannigan Loop to SR 95
- Avoids wetlands along the 161kV powerline west of SR 95
- Minimizes climb over Pine ridge by entering Flannigan Loop near crest
- Shortest overall distance of all routes

Disadvantages:

- Would require most tree clearing
- Some of the forest along this route is higher quality than other routes; TDEC representative has expressed preference not to disturb this forest

Environmental and cultural concerns (see resource locations in Fig. 4 in main text of document):

- Impacts to surveyed wetlands east and south of ETTP and along Bear Creek
- Route east and south of ETTP intersects, from west to east, ETTP re-industrialization Parcels ED-3 and ED-4
- Potential impacts to cultural resources that are part of the Wheat Historic District within Parcels ED-3 and ED-4, and to the former Happy Valley and Ford, Davis, Bacon temporary Manhattan Project housing area within Parcel ED-3
- Cultural resources survey along entire route to document presence/location of resources is required, as well as formal consultation with the SHPO
- Requires re-location of Wheat Railway Station from present location north of ETTP
- Intersects planned Wheat District Greenway path, requiring temporary re-routing
- Impacts high quality forested areas
- Potential impacts to NABIR, EBIS, and NOAA)/ATDD research areas north and south of Bear Creek Road
- Presence of state-listed rare plants (tuberculed reined orchid) and fish (*Tennessee dace*) in areas route passes through
- Route passes through NERP and Nature Conservancy BSR areas in Bear Creek Valley

**7. Orange Route Alt 2 (Powerline Route)**

Total length of roadway – 5.5 miles; length of new roadway – 4.8 miles

Begins at ETTP Portal 5 (north side of ETTP)

Goes east parallel to Blair Road

Crosses SR 58 on a new bridge located west of existing Blair Road intersection

Uses Flannigan Loop to cross Pine Ridge, then turns east

Follows existing power line ROW toward SR 95

Crosses SR 95 on a new bridge

Follows the existing 161kV powerline ROW to the west end of the existing CAPCA haul road

Advantages:

- Avoids construction along the Duke Energy Resources right-of-way (one crossing only)
- Avoids high quality forest areas
- Maximizes use of cleared ROW

Disadvantages:

- The return trips would have to climb all of the south side of Flannigan Loop
- The route is longer than Pipeline route
- Route crosses seven wetland areas
- The west end of the powerline ROW near Flannigan Loop crosses very rugged terrain
- Costs more than other routes due to the terrain

Environmental and cultural concerns (see resource locations in Fig. 4 in main text of document):

- Impacts to surveyed wetlands east and south of ETTP and along Bear Creek
- Route east and south of ETTP intersects ETTP re-industrialization Parcels ED-3 and ED-4
- Potential impacts to cultural resources that are part of the Wheat Historic District within Parcels ED-3 and ED-4, and to the former Happy Valley and Ford, Davis, Bacon temporary Manhattan Project housing area within Parcel ED-3
- Cultural resources survey along entire route to document presence/location of resources is required, as well as formal consultation with the SHPO
- Requires re-location of Wheat Railway Station from present location north of ETTP
- Intersects planned Wheat District Greenway path, requiring temporary re-routing
- Potential impacts to NABIR, EBIS, and NOAA)/ATDD research areas north and south of Bear Creek Road
- Presence of state-listed rare plants (tuberculed reined orchid) and fish (*Tennessee dace*) in areas route passes through

- Route passes through NERP and Nature Conservancy BSR areas in Bear Creek Valley

### **8. Orange Route Alt 3 (West Bear Creek Road)**

Total length of roadway – 5.6 miles; length of new roadway – 3.4 miles

Begins at ETP Portal 5 (north side of ETP)

Goes east parallel to Blair Road

Crosses SR 58 on a new bridge located west of existing Blair Road intersection

Uses Flannigan Loop to cross Pine Ridge, then turns east and follows West Bear Creek Road

Leaves Bear Creek Road and crosses SR 95 on a new bridge

Follows the existing 161kV powerline ROW to the west end of the existing CAPCA haul road

#### Advantages:

- Over a mile and a half of this route makes use of the existing Bear Creek Road
- Avoids construction along the 161kV Powerline west of SR 95
- Avoids construction along the Duke Energy Resources right-of-way (one crossing only)
- Avoids wetlands and forest areas for the 1.5 mile length that uses Bear Creek Road
- Costs less than the alternative routes

#### Disadvantages:

- Would require closure of West Bear Creek Road for a minimum of 4 years
- The return trips would have to climb all of the south side of Flannigan Loop
- The total length of this route is longer than other routes to Portal 5

Environmental and cultural concerns (see resource locations in Fig. 4 in main text of document):

- Impacts to surveyed wetlands east and south of ETP and along Bear Creek
- Route east and south of ETP intersects ETP re-industrialization Parcels ED-3 and ED-4
- Potential impacts to cultural resources that are part of the Wheat Historic District within Parcels ED-3 and ED-4, and to the former Happy Valley and Ford, Davis, Bacon temporary Manhattan Project housing area within Parcel ED-3
- Cultural resources survey along entire route to document presence/location of resources is required, as well as formal consultation with the SHPO
- Requires re-location of Wheat Railway Station from present location north of ETP
- Intersects planned Wheat District Greenway path, requiring temporary re-routing
- Potential impacts to NABIR, EBIS, and NOAA/ATDD research areas north and south of Bear Creek Road
- Presence of state-listed rare plants (tuberculed reined orchid) and fish (*Tennessee dace*) in areas route passes through
- Route passes through NERP and Nature Conservancy BSR areas in Bear Creek Valley
- Impacts (air quality, fugitive dust, noise) to public (i.e., employees using Bear Creek Road) due to use of West Bear Creek Road

### **9. Orange Route Alt 4 (North Side)**

Total length of roadway – 5.6 miles; length of new roadway – 4.9 miles

Begins at ETP Portal 5 (north side of ETP)

Goes east parallel to Blair Road

Crosses SR 58 on a new bridge located west of existing Blair Road intersection

Uses Flannigan Loop to cross Pine Ridge, then turns east and runs along north side of West Bear Creek Road

Leaves West Bear Creek Road and crosses SR 95 on a new bridge

Follows the existing 161kV powerline ROW to the west end of the existing CAPCA haul road

#### Advantages:

- Avoids construction along the Duke Energy Resources right-of-way (one crossing only)
- Avoids rugged terrain on the west end of the other routes
- Costs less than the power line route
- Forest along this route is of lesser quality than the forest along the pipeline route

Disadvantages:

- Would require significantly more clearing than powerline route
- Proximity to existing West Bear Creek Road could be a safety and environmental concern
- Would impact wetlands along the north side of West Bear Creek Road
- The return trips would have to climb all of the south side of Flannigan Loop
- The total length of this route is longer than other routes to Portal 5

Environmental and cultural concerns (see resource locations in Fig. 4 in main text of document):

- Impacts to surveyed wetlands east and south of ETTP and along Bear Creek
- Route east and south of ETTP intersects ETTP re-industrialization Parcels ED-3 and ED-4
- Potential impacts to cultural resources that are part of the Wheat Historic District within Parcels ED-3 and ED-4, and to the former Happy Valley and Ford, Davis, Bacon temporary Manhattan Project housing area within Parcel ED-3
- Cultural resources survey along entire route to document presence/location of resources is required, as well as formal consultation with the SHPO
- Requires re-location of Wheat Railway Station from present location north of ETTP
- Intersects planned Wheat District Greenway path, requiring temporary re-routing
- Potential impacts to NABIR, EBIS, and NOAA)/ATDD research areas north and south of Bear Creek Road
- Presence of state-listed rare plants (tuberculed reined orchid) and fish (*Tennessee dace*) in areas route passes through
- Route passes through NERP and Nature Conservancy BSR areas in Bear Creek Valley
- Impacts (air quality, fugitive dust, noise) to public (i.e., employees using Bear Creek Road) due to use of West Bear Creek Road

**10. Orange Route Alt 5 (South Side)**

Total length of roadway – 5.6 miles; length of new roadway – 4.9 miles

Begins at ETTP Portal 5 (north side of ETTP)

Goes east parallel to Blair Road

Crosses SR 58 on a new bridge located west of existing Blair Road intersection

Uses Flannigan Loop to cross Pine Ridge, then turns east and runs parallel to West Bear Creek Road for approximately 1,500 feet, then uses West Bear Creek Road for approximately 6,500 feet

New paved public road south of existing Bear Creek Road would be required

Leaves West Bear Creek Road and crosses SR 95 on a new bridge

Follows the existing 161kV powerline ROW to the west end of the existing CAPCA haul road

Advantages:

- Over a mile of this route makes use of the existing Bear Creek Road
- Terrain along West Bear Creek Road is better than the west end of the powerline route

Disadvantages:

- Would require new paved public road along West Bear Creek Road
- Cost is highest of all options
- Would require significantly more clearing than powerline route
- Proximity of hauling and public traffic could be a safety concern
- Would impact wetlands along the north side of West Bear Creek Road
- The return trips would have to climb all of the south side of Flannigan Loop
- The total length of this route is longer than other routes to Portal 5

Environmental and cultural concerns (see resource locations in Fig. 4 in main text of document):

- Impacts to surveyed wetlands east and south of ETTP and along Bear Creek
- Route east and south of ETTP intersects ETTP re-industrialization Parcels ED-3 and ED-4
- Potential impacts to cultural resources that are part of the Wheat Historic District within Parcels ED-3 and ED-4, and to the former Happy Valley and Ford, Davis, Bacon temporary Manhattan Project housing area within Parcel ED-3
- Cultural resources survey along entire route to document presence/location of resources is required, as well as formal consultation with the SHPO

- Requires re-location of Wheat Railway Station from present location north of ETTP
- Intersects planned Wheat District Greenway path, requiring temporary re-routing
- Potential impacts to NABIR, EBIS, and NOAA)/ATDD research areas north and south of Bear Creek Road
- Presence of state-listed rare plants (tuberculed reined orchid) and fish (*Tennessee dace*) in areas route passes through
- Route passes through NERP and Nature Conservancy BSR areas in Bear Creek Valley
- Impacts (air quality, fugitive dust, noise) to public (i.e., employees using Bear Creek Road) due to proximity to Bear Creek Road

**Note: Orange Route Alt 6 (Hybrid) is the preferred route. It is a combination of parts of Orange Routes Alt 2 and Alt 4. It has been recommended because it avoids most of the environmentally sensitive areas and generally follows favorable terrain.**

**11. Orange Route Alt 6 (Preferred Route: Hybrid of Orange Route Alternatives 2 and 4)**

Total length of roadway – 5.6 miles; length of new roadway – 4.7 miles

Begins at ETTP Portal 5 (north side of ETTP)

Goes east parallel to Blair Road

Crosses SR 58 on a new bridge located west of existing Blair Road intersection

Uses Flannigan Loop to cross Pine Ridge, then turns east and runs along north side of West Bear Creek Road

At approximately 1,500 feet east of Flannigan Loop, route leaves West Bear Creek Road and goes northeast to the existing powerline ROW

Goes east along power line ROW

Crosses SR 95 on a new bridge

Follows the existing 161kV powerline ROW to the west end of the existing CAPCA haul road

**Advantages:**

- Avoids rugged terrain on the west end of the other routes; route has most favorable terrain of all routes except the pipeline route (pipeline route has significant environmental concerns)
- Costs less than the powerline route
- Would require less forest clearing than other routes
- Forest that must be cleared is of lesser quality than the forest along the pipeline route

**Disadvantages:**

- Would impact two low quality wetlands along the north side of West Bear Creek Road and other small wetlands along the powerline ROW
- The return trips would have to climb all of the south side of Flannigan Loop
- Total length of this route is longer than other routes to Portal 5

**Environmental and cultural concerns (see resource locations in Fig. 4 in main text of document):**

- Impacts to surveyed wetlands east and south of ETTP and along Bear Creek
- Route east and south of ETTP intersects ETTP re-industrialization Parcels ED-3 and ED-4
- Potential impacts to cultural resources that are part of the Wheat Historic District within Parcels ED-3 and ED-4, and to the former Happy Valley and Ford, Davis, Bacon temporary Manhattan Project housing area within Parcel ED-3
- Cultural resources survey along entire route to document presence/location of resources is required, as well as formal consultation with the SHPO
- Requires re-location of Wheat Railway Station from present location north of ETTP
- Intersects planned Wheat District Greenway path, requiring temporary re-routing
- Potential impacts to NABIR, EBIS, and NOAA)/ATDD research areas north and south of Bear Creek Road
- Presence of state-listed rare plants (tuberculed reined orchid) and fish (*Tennessee dace*) in areas route passes through
- Route passes through NERP and Nature Conservancy BSR areas in Bear Creek Valley
- Fewer impacts (air quality, fugitive dust, noise) to public (i.e., employees using Bear Creek Road) because length of constructed road proximal to West Bear Creek Road is less

**Attachment 2**

**Applicable or Relevant and Appropriate Requirements**



## 1.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, specifies that remedial actions for cleanup of hazardous substances must comply with requirements and standards under federal or more stringent state environmental laws and regulations that are applicable or relevant and appropriate to the hazardous substances or particular circumstances at a site or obtain a waiver [40 *Code of Federal Regulations (CFR)* 300.430(f)(1)(ii)(B)]. Inherent in the interpretation of applicable or relevant and appropriate requirements (ARARs) is the assumption that protection of human health and the environment is ensured. The purpose of this attachment is to summarize potential federal and state chemical-, location-, and action-specific ARARs identified for the construction and operation of a temporary haul road from East Tennessee Technology Park (ETTP) to the Environmental Management Waste Management Facility (EMWMF) located at the Y-12 National Security Complex (Y-12) for the purpose of transporting CERCLA waste generated from ETTP remediation activities. This haul road would be an extension to the existing CAPCA haul road constructed as part of the EMWMF.

ARARs include only federal and state environmental or facility siting laws/regulations designed to protect the environment; they do not include occupational safety or worker radiation protection requirements [55 *Federal Register (FR)* 8679-8680, March 8, 1990]. The U. S. Environmental Protection Agency (EPA) requires compliance with the Occupational Safety and Health Administration (OSHA) standards through Sect. 300.150 of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), independent of the ARARs process; therefore, neither the regulations promulgated by OSHA nor U. S. Department of Energy (DOE) Orders related to occupational safety are addressed as ARARs. These regulations would appear in the appropriate health and safety plans for this action.

In the absence of federal- or state-promulgated regulations, other advisories, criteria, proposed standards, or guidance values may be considered in determining remedies and setting protective cleanup levels [40 *CFR* 300.400(g)(3)]. These are not potential ARARs but are to-be-considered (TBC) guidance.

CERCLA on-site remedial response actions must comply only with the substantive requirements of a regulation to obtain federal, state, or local permits [CERCLA Sect. 121(e)]. To ensure that CERCLA response actions proceed as rapidly as possible, EPA has reaffirmed this position in the final NCP (55 *FR* 8756, March 8, 1990). Substantive requirements pertain directly to the actions or conditions at a site, while administrative requirements facilitate their implementation.

In accordance with 40 *CFR* 300.400(g), ARARs and TBCs have been identified for the preferred remedial action. Table 1 lists the chemical-, location-, and action-specific ARARs/TBCs for the proposed construction along the preferred route. A brief description of key ARAR/TBC issues follows.

### 1.1 CHEMICAL-SPECIFIC ARARs/TBCs

Chemical-specific ARARs provide health- or risk-based concentration limits or discharge limitations in various environmental media (i.e., surface water, groundwater, soil, air) for specific hazardous substances, pollutants, or contaminants. Chemical-specific ARARs identified for the proposed action are listed on Table 1 and discussed below.

**Radiation Protection.** The radiation dose to members of the public must not exceed 100-mrem/year total effective dose equivalent (EDE) from all sources excluding dose contributions from background

radiation, medical exposures, or voluntary participation in medical/research programs [10 *CFR* 20.1301(a)(1)] and must be reduced below this limit as low as reasonably achievable (ALARA) in accordance with 10 *CFR* 20.1101(b). This dose limit, which would be relevant and appropriate, addresses exposure to radiation from all sources and activities (including both operations and removal/remedial actions) at a facility. In addition, DOE Order 5400.5 limits radiation dose exposure to an EDE of 100 mrem/year from all exposure pathways and all DOE sources of radiation as measured at the plant boundary. The overriding principle of the DOE Order is that all releases of radioactive material shall be ALARA. The actual dose that the public might receive is expected to be a very small fraction of the 100-mrem/year dose limit.

## 1.2 LOCATION-SPECIFIC ARARs/TBCs

Location-specific requirements establish restrictions on permissible concentrations of hazardous substances or requirements for how activities will be conducted because they will take place in special locations (e.g., wetlands, floodplains, critical habitats, historic districts, streams). Location-specific ARARs identified for the proposed action are listed on Table 1 and discussed below.

**Aquatic Resources.** Any remedial activity with the potential to impact surface water runoff must be designed and implemented using best management practices (BMPs), as well as erosion and sedimentation controls, to comply with the substantive requirements of the aquatic resource alteration regulations [*Tennessee Code Annotated (TCA)* 69-3-108(b)(1)(j)], as detailed in TDEC's ARAP General Permits. Additionally, the Clean Water Act of 1972 (CWA), as amended, Section 404 requirements for protection of aquatic resources at 40 *CFR* 230.10 must be met if the action involves any discharges of dredged or fill material into aquatic ecosystems.

**Wetlands/Floodplains.** Certain wetlands/floodplains adjacent to Mitchell Branch and Bear Creek have the potential to be adversely impacted by haul road construction activities. The route has been adjusted to avoid or minimize impacts to these wetlands wherever possible. Executive Order 11990 and 10 *CFR* 1022 requires remedial actions to avoid, to the extent possible, adverse impacts to wetlands and floodplains. Mitigation measures listed in 10 *CFR* 1022.12, which include minimum grading requirements, runoff controls, and design and construction constraints, would need to be implemented if adverse impacts do occur. Mitigation strategies for any destroyed or disturbed wetlands, which include restoration, enhancement, or creation of new wetlands areas, will be detailed in a post-ESD document as part of the RDR/RAWP primary FFA document (i.e., wetlands delineation/mitigation/compensation plan). In addition, Rules of the TDEC Chap. 1200-4-7-.04(7)(b)(1) is a potentially applicable ARAR, as wetland areas located along the northern and eastern boundary of ETTP and north of Bear Creek exceed 0.25 acres in size. This rule requires mitigation where an activity would result in an appreciable permanent loss of resource value of wetlands. Compensatory measures must be at a ratio of 2:1 for restoration, 4:1 for creation and enhancement, and 10:1 for preservation for wetlands that are greater than 0.25 acres in size. The requirements of 10 *CFR* 1022.3(a) require that activities avoid, to the extent possible, the long- and short-term adverse effects associated with occupancy and modification of floodplains. Mitigation measures must be taken to reduce the risk of flood loss, minimize the impact of floods on human safety and health, and restore/preserve the beneficial values of the floodplain. Mitigative measures to address the requirements of 10 *CFR* 1022.3 will be detailed in a post-ESD document (i.e., wetlands delineation/mitigation/compensation plan) to support the proposed action and adverse effects to floodplains will be avoided or minimized.

**Threatened or Endangered Species.** A preliminary walk-down of the proposed route by botanists have identified several sightings of a state-listed threatened plant species, the tubercled rein-orchid (*Platantera flava var heriola*) along Bear Creek north of Pine Ridge and in the Grassy Creek watershed

area, and an unusual rare canebrake community in wetlands north of Bear Creek and just west of State Route (SR) 95. The *Tennessee dace*, a state-listed in-need-of-management species, is found in Bear Creek and other waters of the ORR. Minimal to no long-term adverse impact to this listed species is expected. No federally designated threatened or endangered species have been identified in the area, although the potential exists for such species. Once the civil survey to mark the centerline and construction limits of the proposed route is completed, a more detailed survey of the route to identify threatened and endangered species and mark their location/habitat will be completed. Precautions will then be taken during construction such that state-listed species (and federally-listed species if identified) will not be adversely affected by remedial actions.

**Archaeological Resources.** A number of cemeteries exist along the preferred route of the haul road. The preferred route has been adjusted to ensure there are no adverse impacts to the small cemeteries in the area. Potential adverse effects from construction activities on such properties will be considered further during the remedial design phase, however, and measures to avoid or mitigate effects will be implemented per applicable requirements. An adequate buffer will be observed for construction proposed in the area of these cemeteries and access to the cemeteries will be maintained.

Based on previous surveys, the preferred route may go through or impact resources in the Wheat Community designated historic district east of ETTP, a large portion of which is within re-industrialization Parcel ED-3. A formal cultural resources survey, as required by a previous DOE Memorandum of Agreement (MOA) with the State Historic Preservation Officer (SHPO), is planned for this area. Formal consultation with the SHPO regarding planned activities and potential adverse impacts has also been initiated (DOE 2004; TDEC 2004). The preferred route may need to be re-adjusted to accommodate formal National Historic Preservation Act of 1966 (NHPA) concerns. Appropriate NHPA documentation will be completed if designated areas will be impacted. The design team has also met with representatives of the Wheat Alumni Association to discuss the project impacts and receive their comments and input

No adverse impacts are expected to the portion of Parcel ED-3 south of the Oak Ridge Turnpike since the preferred route roughly follows the eastern boundary of the parcel. Two temporary Manhattan Project housing areas identified as Happy Valley and the Ford, Bacon, and Davis Housing Area were built to the southeast of ETTP along the south side of SR 58 and west of Blair Road during the timeframe from 1943 to 1946 to house construction workers and their families. These areas are within ED-3. The facilities have since been torn down but no formal archaeological survey of these areas was ever conducted; therefore, as required by an MOA with the SHPO, these areas will be included in the formal survey planned for the haul road route.

Based on previous surveys, the preferred route will not likely impact any cultural resources along, above, and below the 161kV powerline and Bear Creek. However, a formal survey will be done in concert with the Wheat Community archaeological resources survey. NHPA mitigation and documentation measures will be implemented if necessary.

### 1.3 ACTION-SPECIFIC ARARs/TBCs

Action-specific ARARs include operation, performance, and design requirements or limitations based on the waste types, media, and remedial activities. ARARs for each component of the proposed haul road construction action are listed in Table 1 and discussed below. In accordance with EPA guidance, there are no ARARs for a no-action alternative (EPA 1991).

**General Construction Activities.** Requirements for the control of fugitive dust and storm water runoff are listed in Table 1 and potentially provide ARARs for all site preparation, construction,

demolition, and excavation activities. Reasonable precautions will be taken and include the use of best management practices for erosion control to prevent runoff and application of water on exposed soil/debris surfaces to prevent particulate matter from becoming airborne. A stormwater pollution prevention plan will be prepared as part of the RDR/RAWP primary FFA document to ensure activities comply with the ARARs listed in Table 1 for control of stormwater runoff. In addition, diffuse or fugitive emissions of radionuclides to the ambient air from the remediation activities, which are only one of potentially many sources of radionuclide emissions at a DOE facility, must comply with the Clean Air Act of 1970 (CAA), as amended, requirements in 40 *CFR* 61.92.

**Transfer of Contaminated ETTP Wastes.** Remediation wastes transported from ETTP to EMWMF as part of this action could potentially be considered Toxic Substances Control Act of 1976 (TSCA) polychlorinated biphenyls (PCBs), low-level waste (LLW), Resource Conservation and Recovery Act of 1976 (RCRA) solid or hazardous waste, or mixed waste, depending on the extent of contamination. The wastes will be characterized prior to transport and either disposed of at the Environmental Management Waste Management Facility (EMWMF) or another on-site (e.g., Y-12 Sanitary Landfill) or appropriate off-site facility. CERCLA Section 104(d)(4) states where two or more noncontiguous facilities are reasonably related on the basis of geography, or on the basis of the threat or potential threat to the public health or welfare or the environment, these related facilities may be treated as one for the purpose of conducting response actions. Section 104(d)(4) allows the lead agency to manage waste transferred between such noncontiguous facilities without having to obtain a permit. Under this authority, all on-ORR disposal facilities and noncontiguous sites where CERCLA response actions will generate waste requiring disposal are considered as a single facility, i.e., "on-site" for response purposes. Thus, waste transfer to EMWMF, the Y-12 Sanitary Landfill, or other on-ORR disposal facility would be considered "on-site" disposal. (See waste generation, characterization, management, storage, treatment, and disposal requirements listed in Table 1)

The assumption for this activity is that no RCRA-listed waste is present in the ETTP wastes. Due diligence efforts are currently being conducted, however, to identify and review historical records to determine if contaminated media associated with remedial activities may contain listed wastes. If this research reveals the potential presence of RCRA-listed waste in any of the remediation waste being transported, the wastes will be managed accordingly. EPA's contained-in policy and its guidance for the management of remediation waste under RCRA (EPA 1998), as well as EPA Region IV guidance for the management of RCRA-contaminated media (EPA 1992), allow a generator to determine that environmental media no longer contain listed waste if the medium meets site-specific risk-based criteria approved by EPA or an authorized state. The policy also includes provisions to allow the use of a risk assessment protocol to determine that the environmental medium no longer contains a listed hazardous waste. EPA Region 9 industrial preliminary remediation goals (PRGs) will be used for making initial "no longer contains" determinations for remediation wastes. If the wastes are determined to contain listed wastes at concentrations in excess of these PRGs, further site-specific risk evaluation may be performed to establish site-specific risk-based criteria. These criteria will be based on the proposed future land use for ETTP, i.e., industrial.

**Water Treatment.** Wastewaters collected during construction, dewatering, or decontamination activities will be characterized and, if they exceed direct discharge criteria to be established as part of remedial design, transported to an on-site industrial wastewater treatment unit subject to regulation under the Clean Water Act of 1972 (CWA), such as the Y-12, the ORNL, or the ETTP wastewater treatment facilities. Industrial wastewater discharges that are point source discharges subject to regulation under Sect. 402 of the CWA are excluded from the hazardous waste regulations [40 *CFR* 261.4(a)(2); Rules of the TDEC Chap. 1200-1-11-.02(1)(d)1.(ii)]. In addition, wastewaters that are hazardous only because they exhibit a hazardous characteristic, and which are otherwise restricted from land disposal, are not prohibited if such wastes are managed in a treatment system that subsequently discharges to waters of the

United States pursuant to a permit issued under Sect. 402 of the CWA [40 *CFR* 268.1(c)(4)(i); Rules of the TDEC Chap. 1200-1-11-.10(1)(a)3.(iv)(I)].

**Transportation.** Although transport along the haul road will be “out of commerce,” all transport activities will comply with the substantive requirements of EPA and U.S. Department of Transportation (DOT) regulations for public commercial transport, as well as applicable DOE Orders (e.g., Order 460.1B) regarding transportation. These requirements are delineated in the Table 1. As required by DOE Order 460.1B, a Transportation Safety Document will be prepared that describes the methodology and compliance process to meet safety requirements that are equivalent to the DOT Hazardous Materials Regulations. Any wastes that cannot meet facility waste acceptance criteria for on-site disposal will be transferred off-site and transported in commerce along public rights-of-way. Off-site transport activities must meet the U. S. Department of Transportation requirements summarized in Table 1 for hazardous materials, as well as the specific requirements for the type of waste (e.g., RCRA, PCB, LLW, or mixed). These include packaging, labeling, marking, manifesting, and placarding requirements for the specific waste type. In addition, CERCLA Sect. 121(d)(3) provides that the off-site transfer of any hazardous substance, pollutant, or contaminant generated during CERCLA response actions be to a treatment, storage, or disposal facility that is in compliance with applicable federal and state laws and that has been approved by EPA for acceptance of CERCLA waste. [See also the “Off-Site Rule” at 40 *CFR* 300.440 et seq.] Accordingly, DOE will verify with the appropriate EPA regional contact that any needed off-site facility is acceptable for receipt of CERCLA wastes before transfer.

#### **REFERENCES:**

DOE 2004. “National Historic Preservation Act, Section 106 Compliance, Notification of Proposed Undertaking for Construction of an Extension to the Existing Environmental Management Waste Management Facility Haul Road.” Letter from Mr. Gary S. Hartman, DOE ORO Cultural Resources Management Coordinator, to Dr. Joseph Garrison, Tennessee Historical Commission, Department of Environmental and Conservation, September 17.

EPA (U. S. Environmental Protection Agency) 1991. *ARARs Q's & A's: General Policy, RCRA, CWA, SDWA, Post-ROD Information, and Contingent Waivers*, EPA OSWER Directive 9234.2-01/FS-A, June.

EPA 1992. *EPA Region IV RCRA Guidance: Management of Contaminated Media*, Guidance Number TSC-92-02, August.

EPA 1998. *Management of Remediation Waste Under RCRA*, EPA-530-F-98-026, October 14.

TDEC 2004. “Regarding DOE, ORNL/Waste Management Facility Haul Road, Oak Ridge, Roane County.” Letter from Dr. Joseph Garrison, Tennessee Historical Commission, Department of Environmental and Conservation, to Mr. Gary S. Hartman, DOE ORO Cultural Resources Management Coordinator, September 28.



**Table 1. ARARs and TBC guidance for haul road construction and operation along the preferred route, Oak Ridge Reservation**

Contaminants/medium	Requirements	Prerequisites	Citation(s)
Release of radionuclides into the environment	<p><b>Chemical-Specific</b></p> <p>Exposure to individual members of the public from radiation shall not exceed a total EDE of 0.1 rem/year (100 mrem/year), exclusive of the dose contributions from background radiation, any medical administration the individual has received, or voluntary participation in medical/research programs.</p>	<p>Release of radionuclides to the environment from an active NRC licensed operation – <b>relevant and appropriate</b></p>	<p>10 CFR 20.1301(a)(1) DOE Order 5400.5 (TBC)</p>
	<p>Shall use, to the extent practicable, procedures and engineering controls based on sound radiation protection principles to achieve doses to members of the public that are ALARA.</p>	<p>Release of radionuclides to the environment from an active NRC licensed operation – <b>relevant and appropriate</b></p>	<p>10 CFR 20.1101(b) DOE Order 5400.5 (TBC)</p>
Presence of floodplain as defined in 10 CFR 1022.4(i)	<p><b>Location-Specific</b></p> <p><i>Floodplains/Wetlands</i></p> <p>Avoid, to the extent possible, the long- and short-term adverse effects associated with occupancy and modification of floodplains. Measures to mitigate adverse effects of actions in a floodplain include, but are not limited to, minimum grading requirements, runoff controls, design and construction constraints, and protection of ecology-sensitive areas as provided in 10 CFR 1022.12(a)(3).</p>	<p>Federal actions that involve potential impacts to, or take place within, floodplains — <b>applicable</b></p>	<p>10 CFR 1022.3(a) 10 CFR 1022.12(a)(3)</p>
	<p>Potential effects of any action taken in a floodplain shall be evaluated. Identify, evaluate, and implement alternative actions that may avoid or mitigate adverse impacts on floodplains.</p>		<p>10 CFR 1022.3(c) and (d)</p>
Presence of wetlands as defined in 10 CFR 1022.4(v)	<p>Design or modify selected alternatives to minimize harm to or within floodplains and restore and preserve floodplain values.</p> <p>Avoid, to the extent possible, the long- and short-term adverse effects associated with destruction, occupancy, and modification of wetlands. Measures to mitigate adverse effects of actions in a wetland include, but are not limited to, minimum grading requirements, runoff controls, design and construction constraints, and protection of ecology-sensitive areas as provided in 10 CFR 1022.12(a)(3).</p>	<p>Federal actions that involve potential impacts to, or take place within, wetlands — <b>applicable</b></p>	<p>10 CFR 1022.5(b)  10 CFR 1022.3(a) 10 CFR 1022.12(a)(3)</p>
	<p>Take action, to the extent practicable, to minimize destruction, loss, or degradation of wetlands and to preserve, restore, and enhance the natural and beneficial values of wetlands.</p> <p>Potential effects of any new construction in wetlands that are not in a floodplain shall be evaluated. Identify, evaluate, and, as appropriate, implement alternative actions that may avoid or mitigate adverse impacts on wetlands.</p>		<p>10 CFR 1022.3(b)(5) and (6)</p>

**Table 1. ARARs and TBC guidance for haul road construction and operation along the preferred route, Oak Ridge Reservation**

Contaminants/medium	Requirements	Prerequisites	Citation(s)
Presence of jurisdictional wetlands as defined in 40 CFR 230.3; 33 CFR 328.3(a) and 33 CFR 328.4	The discharge of dredged or fill material into Waters of the United States including jurisdictional (adjacent) wetlands is prohibited if there is a practical alternative that would have less adverse impact. No discharge shall be permitted that results in violation of State water quality standards, violates any toxic effluent standard and/or jeopardizes an endangered species or its critical habitat. No discharge will be permitted that will cause significant degradation of Waters of the United States. No discharge is permitted unless mitigation measures have been taken in accordance with 40 CFR 230 Subpart H.	Actions that involve the discharge of dredged or fill material into Waters of the United States including jurisdictional (adjacent) wetlands – <b>applicable</b>	10 CFR 230.10(a), (b), (c) and (d) 40 CFR 230 Subpart H
Presence of wetlands as defined under Rules of the TDEC Chap. 1200-4-7-.03	Mitigation must be provided where any activity would result in an appreciable permanent loss of resource value wetlands. Compensatory mitigation for loss of wetlands shall be provided for wetlands > 0.25 acre. Compensatory mitigation shall be at a ratio of 2:1 for restoration, 4:1 for creation and enhancement, and 10:1 for preservation.	Activity that would cause loss of wetlands of > 0.25 acre – <b>applicable</b>	Rules of the TDEC Chap. 1200-4-7-.04 (7)(b)
Presence of minor isolated wetlands of < 0.25 acre	For isolated wetlands of less than 0.25 acre, compensatory mitigation is not required. Alteration of minor isolated wetlands of < 0.25 acre must meet certain requirements as follows: <ul style="list-style-type: none"> <li>• The alteration shall not adversely affect adjacent wetlands;</li> <li>• Excavation and fill shall be kept to a minimum and all excess material shall be hauled upland;</li> <li>• Clearing, grubbing or other disturbance of areas immediately adjacent to Waters of the State shall be limited to the minimum necessary to accomplish the proposed activity. Unnecessary vegetation removal is prohibited and disturbed areas shall be stabilized and re-vegetated as soon as practicable;</li> <li>• any material discharged into wetlands shall be free of contaminants including toxic pollutants and hazardous substances;</li> <li>• erosion and sedimentation control measures must be maintained throughout the construction period, and;</li> <li>• upon achievement of final grade, all disturbed areas shall be stabilized and re-vegetated within 30 days.</li> </ul>	Alteration of minor wetlands – <b>TBC</b>	TDEC General Permit for Minor Wetlands Alteration
<b>Aquatic Resources</b>			
Within an area potentially impacting "waters of the State" as defined in TCA 69-3-103(33)	Must comply with the substantive requirements of the ARAP for erosion and sediment control to prevent pollution.	Action potentially altering the properties of any "waters of the State" — <b>applicable</b>	TCA 69-3-108(j)

**Table 1. ARARs and TBC guidance for haul road construction and operation along the preferred route, Oak Ridge Reservation**

Contaminants/medium	Requirements	Prerequisites	Citation(s)
	Erosion and sediment control requirements include, but are not limited to:	Action potentially altering the properties of any "waters of the State" — TBC	TDEC Aquatic Resource Alteration General Permit Program Requirements
•	Limit clearing, grubbing, and other disturbances in areas in or immediately adjacent to waters of the State to the minimum necessary to accomplish the proposed activity.		
•	Unnecessary vegetation removal is prohibited, and all disturbed areas must be properly stabilized and revegetated as soon as practicable.		
•	Limit excavation, dredging, bank reshaping, or grading to the minimum necessary to install authorized structures, accommodate stabilization, or prepare banks for revegetation.		
•	Maintain the erosion and sedimentation control measures throughout the construction period.		
•	Upon achievement of final grade, stabilize and revegetate within 30 days all disturbed areas by sodding, seeding, or mulching, or using appropriate native riparian species.		
	Must also comply with the specific requirements delineated in each general permit that applies to this activity (i.e., bank stabilization; surveying and geotechnical exploration; minor wetlands alterations; road crossings; alteration of wet weather conveyances; minor dredging; stream restoration and habitat enhancement; wetlands restoration and enhancement).	Action potentially altering the properties of any "waters of the State" — TBC	TDEC Aquatic Resource Alteration Permit Program Specific Requirements
Within area impacting stream or any other body of water —and - presence of wildlife resources (e.g., fish)	The effects of water-related projects on fish and wildlife resources and their habitat should be considered with a view to the conservation of fish and wildlife resources by preventing loss of and damage to such resources.	Action that impounds, modifies, diverts, or controls waters, including navigation and drainage activities — relevant and appropriate	Fish and Wildlife Coordination Act (16 USC 661 <i>et seq.</i> )
Location encompassing aquatic ecosystem as defined in 40 CFR 230.3(c)	Except as provided under Section 404(b)(2) of the CWA, no discharge of dredged or fill material into an aquatic ecosystem is permitted if there is a practicable alternative that would have less adverse impact.	Action that involves the discharge of dredged or fill material into "waters of the U.S.," including jurisdictional wetlands — applicable	40 CFR 230.10(a) 40 CFR 230.10(d)
No discharge of dredged or fill material shall be permitted unless appropriate and practicable steps per 40 CFR 230.70 <i>et seq.</i> have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem.			
Presence of historic properties (including artifacts, records, or remains located within such properties)	Must take into account the adverse effects on historic properties per Sect. 106 of the NHPA  Determine adverse effects per 36 CFR 800.5(a)(1) and, if found, evaluate alternatives or modifications to the undertaking to avoid, minimize, or mitigate the adverse effects on the property	Undertaking [as defined in 36 CFR 800.16(y)] that has the potential to cause effects on historic property or eligible for inclusion on the National Register of Historic Places — applicable	36 CFR 800.1(a) 36 CFR 800.3  36 CFR 800.5(a) and (d) 36 CFR 800.6
	<b>Cultural Resources</b>		

**Table 1. ARARs and TBC guidance for haul road construction and operation along the preferred route, Oak Ridge Reservation**

Contaminants/medium	Requirements	Prerequisites	Citation(s)
Presence of archaeological resources	May not excavate, remove, damage, or otherwise alter or deface such resource unless by permit or exception.	Action that would impact archaeological resources on public land — <b>applicable</b>	43 CFR 7.4(a)
	Must protect any such archaeological resources if discovered.	Excavation activities that inadvertently discover archaeological resources — <b>applicable</b>	43 CFR 7.5(b)(1)
Presence of human remains, funerary objects, sacred objects, or objects of cultural patrimony for Native Americans	Must stop activities in the area of discovery and make a reasonable effort to secure and protect the objects discovered.	Excavation activities that inadvertently discover such resources on federal lands or under federal control — <b>applicable</b>	43 CFR 10.4(c)
	Must consult with Indian tribe likely to be affiliated with the objects to determine further disposition per 40 CFR 10.5(b).		43 CFR 10.4(d)
Presence of a cemetery	Intentional desecration of a place of burial is prohibited.	Action that would alter or destroy property in a cemetery — <b>applicable</b>	TCA 39-17-311
<b>Endangered, Threatened or Rare Species</b>			
Presence of Tennessee nongame species (e.g., Tennessee dace) as defined in TCA 70-8-103	May not take (i.e., harass, hunt, capture, kill or attempt to kill), possess, transport, export, or process wildlife species.	Action impacting Tennessee nongame species, including wildlife species which are "in need of management" (as listed in TWRCPC 94-16 and 94-17) — <b>applicable</b>	TCA 70-8-104(c)
	May not knowingly destroy the habitat of such wildlife species.		TWRCPC 94-16(1)(1)(a) and TWRCPC 94-17(1)(1)(b) <b>(TBC guidance)</b>
	Upon good cause shown and where necessary to protect human health or safety, endangered or threatened species may be removed, captured, or destroyed.		TCA 70-8-106(e) TWRCPC 94-16(1)(1)(c) <b>(TBC guidance)</b>
Presence of Tennessee-listed endangered or rare plant species as listed in TDEC 0400-6-2-04	It is a violation for any person other than the landowner, lessee, or other person entitled to possession (or the manager, in the case of publicly owned land) or a person with the written permission of the landowner (or manager) to knowingly uproot, dig, take, remove, damage or destroy, possess or otherwise disturb for any purposes any endangered species.	Action impacting rare plant species including but not limited to federally listed endangered species — <b>relevant and appropriate</b>	TCA 70-8-309(a)
Presence of federally endangered or threatened species, as designated in 50 CFR 17.11 and 17.12 or critical habitat of such species	Actions that jeopardize the existence of a listed species or results in the destruction or adverse modification of critical habitat must be avoided or reasonable and prudent mitigation measures taken	Action that is likely to jeopardize fish, wildlife, or plant species or destroy or adversely modify critical habitat — <b>applicable</b>	USC 1531 et seq., Sect. 7(a)(2)

**Table 1. ARARs and TBC guidance for haul road construction and operation along the preferred route, Oak Ridge Reservation**

Contaminants/medium	Requirements	Action-Specific ARARs	Prerequisites	Citation(s)
Activities causing fugitive dust emissions	<p><i>General construction standards—site preparation, excavation, drilling, trenching, etc. activities</i></p> <p>Shall take reasonable precautions to prevent particulate matter from becoming airborne; reasonable precautions shall include, but are not limited to, the following:</p> <ul style="list-style-type: none"> <li>• use, where possible, of water or chemicals for control of dust, and</li> <li>• application of asphalt, oil, water, or suitable chemicals on dirt roads, materials stock piles, and other surfaces which can create airborne dusts;</li> </ul> <p>Shall not cause or allow fugitive dust to be emitted in such a manner as to exceed 5 minute/hour or 20 minute/day beyond property boundary lines on which emission originates</p>	<p>Fugitive emissions from demolition of existing buildings or structures, construction operations, grading of roads, or the clearing of land—<b>applicable</b></p>	<p>Rules of the TDEC Chap. 1200-3-8-.01(1)</p> <p>Rules of the TDEC Chap. 1200-3-8-.01(1)(a)</p> <p>Rules of the TDEC Chap. 1200-3-8-.01(1)(b)</p> <p>Rules of the TDEC Chap. 1200-3-8-.01(2)</p>	<p>Rules of the TDEC Chap. 1200-3-8-.01(1)</p> <p>Rules of the TDEC Chap. 1200-3-8-.01(1)(a)</p> <p>Rules of the TDEC Chap. 1200-3-8-.01(1)(b)</p> <p>Rules of the TDEC Chap. 1200-3-8-.01(2)</p>
Activities causing radionuclide emissions	<p>Shall not exceed those amounts that would cause any member of the public to receive an EDE of 10 mreem per year</p>	<p>Radionuclide emissions from point sources, as well as diffuse or fugitive emissions, at a DOE facility—<b>applicable</b></p>	<p>40 CFR 61.92</p> <p>Rules of the TDEC Chap. 1200-3-11-.08(6)</p>	<p>40 CFR 61.92</p> <p>Rules of the TDEC Chap. 1200-3-11-.08(6)</p>
Activities causing storm water runoff	<p>Implement good construction management techniques (including sediment and erosion controls, vegetative controls, and structural controls) in accordance with the substantive requirements of <i>General Permit No. TNR10-0000 Appendix F</i>, to ensure storm water discharge:</p> <ul style="list-style-type: none"> <li>• does not violate water quality criteria as stated in TDEC 1200-4-3-.03, including but not limited to prevention of discharges that cause a condition in which visible solids, bottom deposits, or turbidity impairs the usefulness of waters of the state for any of the uses designated for that water body by TDEC 1200-4-4;</li> <li>• does not contain distinctly visible floating scum, oil, or other matter;</li> <li>• does not cause an objectionable color contrast in the receiving stream;</li> <li>• results in no materials in concentrations sufficient to be hazardous or otherwise detrimental to humans, livestock, wildlife, plant life, or fish and aquatic life in the receiving stream.</li> </ul> <p>The following conditions apply to all land disturbance work:</p> <ul style="list-style-type: none"> <li>• clearing and grubbing must be held to the minimum necessary for grading and equipment operation;</li> </ul>	<p>Storm water discharges from land disturbed by construction activity - disturbance of 1 acre or more total—<b>applicable</b></p> <p>Storm water discharges from construction activities — <b>TBC</b></p>	<p>TCA 69-3-108(j)</p> <p>TDEC 1200-4-10-.03(2)(a)</p> <p><i>General Permit No. TNR10-0000 Part III D.2.a</i></p> <p><i>General Permit No. TNR10-0000 Part III D.2.b</i></p> <p><i>General Permit No. TNR10-0000 Part III D.2.c</i></p> <p><i>General Permit No. TNR10-0000 Part III D.2.d</i></p>	<p>TCA 69-3-108(j)</p> <p>TDEC 1200-4-10-.03(2)(a)</p> <p><i>General Permit No. TNR10-0000 Part III D.2.a</i></p> <p><i>General Permit No. TNR10-0000 Part III D.2.b</i></p> <p><i>General Permit No. TNR10-0000 Part III D.2.c</i></p> <p><i>General Permit No. TNR10-0000 Part III D.2.d</i></p>

**Table 1. ARARs and TBC guidance for haul road construction and operation along the preferred route, Oak Ridge Reservation**

Contaminants/medium	Requirements	Prerequisites	Citation(s)
	<ul style="list-style-type: none"> <li>construction must be sequenced to minimize the exposure time of cleared surface area;</li> <li>construction must be staged or phased for large projects, areas of one phase must be stabilized before another can be initiated; stabilization shall be accomplished by temporarily or permanently protecting the disturbed soil surface from rainfall impacts and runoff;</li> </ul>		<p>General Permit No. TNR10-0000 Appendix F(2)(b)            General Permit No. TNR10-0000 Appendix F(2)(c)</p>
	<ul style="list-style-type: none"> <li>erosion and sediment control measures must be in place and functional before earthmoving operations begin, and must be constructed and maintained throughout the construction period;</li> </ul>		<p>General Permit No. TNR10-0000 Appendix F(2)(d)</p>
	<ul style="list-style-type: none"> <li>all control measures shall be checked and repaired as necessary, weekly in dry periods and within 24 hr after any rainfall of 0.5 inch within a 24-hr period. During prolonged rainfall, daily checking and repairing is necessary;</li> </ul>		<p>General Permit No. TNR10-0000 Appendix F(2)(e)</p>
	<ul style="list-style-type: none"> <li>pre-construction vegetative ground cover shall not be destroyed, removed, or disturbed more than 20 calendar days prior to grading or earth moving;</li> </ul>		<p>General Permit No. TNR10-0000 Appendix F(2)(g)</p>
	<ul style="list-style-type: none"> <li>to the extent feasible, appropriate cover (e.g. grass, sod, straw, mulch, fabric mats) shall be applied within seven days on areas that will remain unfinished for more than 30 calendar days;</li> </ul>		<p>General Permit No. TNR10-0000 Appendix F(2)(h)</p>
	<ul style="list-style-type: none"> <li>permanent soil stabilization with perennial vegetation shall be applied as soon as practicable after final grading;</li> </ul>		<p>General Permit No. TNR10-0000 Appendix F(2)(i)</p>
	<ul style="list-style-type: none"> <li>all surface water flowing toward the construction area shall be diverted by using berms, channels, or sediment traps, as necessary;</li> </ul>		<p>General Permit No. TNR10-0000 Appendix F(2)(j)</p>
	<ul style="list-style-type: none"> <li>erosion and sediment control measures shall be designed according to the size and slope of disturbed or drainage areas to detain runoff and trap sediment;</li> </ul>		<p>General Permit No. TNR10-0000 Appendix F(2)(k)</p>
	<ul style="list-style-type: none"> <li>discharges from sediment basins and traps must be through a pipe or lined channel so that the discharge does not cause erosion;</li> </ul>		<p>General Permit No. TNR10-0000 Appendix F(2)(l)</p>
	<ul style="list-style-type: none"> <li>muddy water to be pumped from excavation and work areas must be held in settling basins or treated by filtration prior to its discharge into surface waters, and water must be discharged through a pipe or lined channel so that the discharge does not cause erosion and sedimentation.</li> </ul>		<p>General Permit No. TNR10-0000 Appendix F(2)(m)</p>
<p>Shall develop and implement storm water management controls to insure compliance with the terms and conditions of <i>General Permit No. TNR050000</i> or any applicable site-specific permit [<i>ETTP NPDES Permit No. TN0002950</i>] and with TDEC 1200-4-10.03(2)(c)</p>	<p>Storm water discharges associated with industrial activity—<b>applicable</b></p>		<p>TCA 69-3-108(j)            TDEC 1200-4-10-.03(2)(a)</p>

**Table 1. ARARs and TBC guidance for haul road construction and operation along the preferred route, Oak Ridge Reservation**

Contaminants/medium	Requirements	Prerequisites	Citation(s)
	<p>Shall develop and maintain a storm water pollution prevention/control plan prepared in accordance with good engineering practices and with the factors outlined in 40 CFR 125.3(d)(2) or (3) as appropriate and any additional requirements listed in Part XI for the particular sector of industrial activity. The plan shall identify potential sources of pollution that may reasonably be expected to affect the quality of storm water discharges associated with industrial activity.</p> <p>Storm water pollution prevention plans shall include, at a minimum, the items identified in <i>General Permit No. TNR050000 Sector K.3</i>, including a description of potential pollution sources, storm water management measures and controls, preventive maintenance, spill prevention and response procedures, and sediment and erosion controls.</p> <p>Shall monitor at least annually the identified storm water outfalls for the parameters specified in <i>General Permit No. TNR050000 Part Y.B</i> (i.e., total dissolved solids and pH) and in Table K-1 of <i>General Permit No. TNR050000 Sector K</i>, as listed below, and in <i>ETTP NPDES Permit No. TN0002950</i>, as appropriate. Sampling waivers are available under the conditions specified in <i>General Permit No. TNR050000 Sector K.5(a)(3)</i>.</p> <ul style="list-style-type: none"> <li>• ammonia</li> <li>• chemical oxygen demand</li> <li>• total cyanide</li> <li>• total recoverable magnesium, cadmium, lead, mercury, selenium, and silver</li> </ul>	<p>Storm water discharges associated with industrial activity—TBC</p> <p>Storm water discharges associated with industrial activity at hazardous waste treatment, storage or disposal facilities—TBC</p>	<p><i>General Permit No. TNR050000, IV</i> <i>ETTP NPDES Permit No. TN0002950, IV</i></p> <p><i>General Permit No. TNR050000 Sector K.3</i> <i>ETTP NPDES Permit No. TN0002950</i></p> <p><i>General Permit No. TNR050000 Sector K.3</i> <i>ETTP NPDES Permit No. TN0002950</i></p> <p><i>General Permit No. TNR050000 Sector K, Table K-1</i> <i>ETTP NPDES Permit No. TN0002950</i></p>
<p><b>Waste generation, characterization, segregation, and storage—excavated soils, buried wastes, slabs, and subsurface structures, and secondary wastes</b></p>			
Characterization of solid waste (all primary and secondary wastes)	<p>Must determine if solid waste is hazardous waste or if waste is excluded under 40 CFR 261.4(b); and</p> <p>Must determine if waste is listed under 40 CFR Part 261; or</p> <p>Must characterize waste by using prescribed testing methods or applying generator knowledge based on information regarding material or processes used, and must manage waste in accordance with 40 CFR 260-272 if determined to be hazardous waste</p> <p>Must refer to Parts 261, 262, 264, 265, 266, 268, and 273 of Chapter 40 for possible exclusions or restrictions pertaining to management of the specific waste</p>	<p>Generation of solid waste as defined in 40 CFR 261.2 and which is not excluded under 40 CFR 261.4(a)—applicable</p> <p>40 CFR 262.11(b) Rules of the TDEC Chap. 1200-1-11-.03(1)(b)(2)</p> <p>40 CFR 262.11(c) Rules of the TDEC 1200-1-11-.03(1)(b)(3)</p> <p>40 CFR 262.11(d); Rules of the TDEC Chap. 1200-1-11-.03(1)(b)(4)</p>	<p>40 CFR 262.11(a) Rules of the TDEC Chap. 1200-1-11-.03(1)(b)(1)</p>

**Table 1. ARARs and TBC guidance for haul road construction and operation along the preferred route, Oak Ridge Reservation**

Contaminants/medium	Requirements	Prerequisites	Citation(s)
Characterization of hazardous waste ( <i>all primary and secondary wastes</i> )	<p>Must obtain a detailed chemical and physical analysis on a representative sample of the waste(s), which at a minimum contains all the information that must be known to treat, store, or dispose of the waste in accordance with pertinent sections of 40 <i>CFR</i> 264 and 268</p> <p>Must determine the underlying hazardous constituents [as defined in 40 <i>CFR</i> 268.2(i)] in the waste</p> <p>Must determine if the waste is restricted from land disposal under 40 <i>CFR</i> 268 <i>et seq.</i> by testing in accordance with prescribed methods or use of generator knowledge of waste</p> <p>Must determine each EPA Hazardous Waste Number (Waste Code) to determine the applicable treatment standards under 40 <i>CFR</i> 268.40 <i>et seq.</i></p>	<p>Generation of RCRA-hazardous waste for storage, treatment, or disposal—<b>applicable</b></p> <p>Generation of RCRA characteristic hazardous waste (and is not D001 non-wastewaters treated by CMBST, RORGS, or POLYM of Section 268.42 Table 1) for storage, treatment or disposal—<b>applicable</b></p>	<p>40 <i>CFR</i> 264.13(a)(1) Rules of the TDEC Chap. 1200-1-11-.06(2)(d)(1)</p> <p>40 <i>CFR</i> 268.9(a) Rules of the TDEC Chap. 1200-1-11-.10(1)(i)(1)</p> <p>40 <i>CFR</i> 268.7 Rules of the TDEC Chap. 1200-1-11-.10(1)(g)(1)(i)</p> <p>40 <i>CFR</i> 268.9(a) Rules of the TDEC Chap. 1200-1-11-.10(1)(i)(1)</p> <p>40 <i>CFR</i> 262.34(a); Rules of the TDEC Chap. 1200-1-11-.03(4)(e)</p>
Temporary storage of hazardous waste in containers (e.g., <i>lead contaminated debris</i> )	<p>A generator may accumulate hazardous waste at the facility provided that</p> <ul style="list-style-type: none"> <li>waste is placed in containers that comply with 40 <i>CFR</i> 265.171–173, and</li> <li>the date upon which accumulation begins is clearly marked and visible for inspection on each container</li> <li>container is marked with the words “hazardous waste,” or</li> <li>container may be marked with other words that identify the contents</li> </ul>	<p>Accumulation of RCRA hazardous waste on-site (as defined in 40 <i>CFR</i> 260.10)—<b>applicable</b></p>	<p>40 <i>CFR</i> 262.34(a)(1)(i); Rules of the TDEC Chap. 1200-1-11-.03(4)(c)(2)(ii)(1)</p> <p>40 <i>CFR</i> 262.34(a)(2); Rules of the TDEC Chap. 1200-1-11-.03(4)(c)(2)(ii)</p> <p>40 <i>CFR</i> 262.34(a)(3); Rules of the TDEC Chap. 1200-1-11-.03(4)(c)(2)(iv)</p> <p>40 <i>CFR</i> 262.34(c)(1); Rules of the TDEC Chap. 1200-1-11-.03(4)(c)(5)(i)(II)</p> <p>40 <i>CFR</i> 264.171; Rules of the TDEC Chap. 1200-1-11-.05(9)(b)</p> <p>40 <i>CFR</i> 264.172; Rules of the TDEC Chap. 1200-1-11-.05(9)(c)</p>
Use and management of hazardous waste in containers	<p>If container is not in good condition (e.g., severe rusting, structural defects) or if it begins to leak, must transfer waste into container in good condition</p> <p>Use container made or lined with materials compatible with waste to be stored so that the ability of the container is not impaired</p>	<p>Accumulation of 55 gal. or less of RCRA hazardous waste at or near any point of generation—<b>applicable</b></p> <p>Storage of RCRA hazardous waste in containers—<b>applicable</b></p>	<p>40 <i>CFR</i> 264.171; Rules of the TDEC Chap. 1200-1-11-.05(9)(b)</p> <p>40 <i>CFR</i> 264.172; Rules of the TDEC Chap. 1200-1-11-.05(9)(c)</p>

**Table 1. ARARs and TBC guidance for haul road construction and operation along the preferred route, Oak Ridge Reservation**

Contaminants/medium	Requirements	Prerequisites	Citation(s)
Keep container closed during storage, except to add/remove waste			40 <i>CFR</i> 264.173(a); Rules of the TDEC Chap. 1200-1-11-.05(9)(d)(1)
Open, handle, and store containers in a manner that will not cause containers to rupture or leak			40 <i>CFR</i> 264.173(b); Rules of the TDEC Chap. 1200-1-11-.05(9)(d)(2)
Storage of hazardous waste in container area	Area must have a containment system designed and operated in accordance with 40 <i>CFR</i> 264.175(b)	Storage in containers of RCRA-hazardous waste with free liquids— <b>applicable</b>	40 <i>CFR</i> 264.175(a); Rules of the TDEC, Chap. 1200-1-11-.06(9)(f)(1)
Area must be sloped or otherwise designed and operated to drain liquid from precipitation, or		Storage in containers of RCRA-hazardous waste that does not contain free liquids— <b>applicable</b>	40 <i>CFR</i> 264.175(c); Rules of the TDEC Chap. 1200-1-11-.06(9)(f)(3)
Containers must be elevated or otherwise protected from contact with accumulated liquid			
Characterization and management of universal wastes	A large quantity handler of universal waste must manage universal waste in accordance with 40 <i>CFR</i> 273 Subpart C (TDEC 1200-1-11-.12) in a way that prevents releases of any universal waste or component of a universal waste to the environment.	Generation of universal waste [as defined in 40 <i>CFR</i> 273.9 and TDEC 1200-1-11-.12(1)(b)] for disposal— <b>applicable</b>	40 <i>CFR</i> 273.1(a) Rules of the TDEC Chap. 1200-1-11-.12(1)(a)
Characterization of LLW	Shall be characterized using direct or indirect methods and the characterization documented in sufficient detail to ensure safe management and compliance with the WAC of the receiving facility	Generation of LLW for storage or disposal at a DOE facility— <b>TBC</b>	DOE M 435.1-1-1(IV)(1)
Characterization data shall, at a minimum, include the following information relevant to the management of the waste:			DOE M 435.1-1-1(IV)(1)(2)(a)
• physical and chemical characteristics;			DOE M 435.1-1-1(IV)(1)(2)(a)
• volume, including the waste and any stabilization or absorbent media;			DOE M 435.1-1-1(IV)(1)(2)(b)
• weight of the container and contents;			DOE M 435.1-1-1(IV)(1)(2)(c)
• identities, activities, and concentration of major radionuclides;			DOE M 435.1-1-1(IV)(1)(2)(d)
• characterization date;			DOE M 435.1-1-1(IV)(1)(2)(e)
• generating source; and			DOE M 435.1-1-1(IV)(1)(2)(f)
• any other information that may be needed to prepare and maintain the disposal facility performance assessment, or demonstrate compliance with performance objectives			DOE M 435.1-1-1(IV)(1)(2)(g)

**Table 1. ARARs and TBC guidance for haul road construction and operation along the preferred route, Oak Ridge Reservation**

Contaminants/medium	Requirements	Prerequisites	Citation(s)
Temporary storage of LLW	Shall not be readily capable of detonation, explosive decomposition, reaction at anticipated pressures and temperatures, or explosive reaction with water	Management of LLW at a DOE facility—TBC	DOE M 435.1-1 (IV)(N)(1)
	Shall be stored in a location and manner that protects the integrity of waste for the expected time of storage		DOE M 435.1-1 (IV)(N)(3)
	Shall be managed to identify and segregate LLW from mixed waste		DOE M 435.1-1 (IV)(N)(6)
Packaging of solid LLW	Shall be packaged in a manner that provides containment and protection for the duration of the anticipated storage period and until disposal is achieved or until the waste has been removed from the container	Storage of LLW in containers at a DOE facility—TBC	DOE M 435.1-1(IV)(L)(1)(a)
	Vents or other measures shall be provided if the potential exists for pressurizing or generating flammable or explosive concentrations of gases within the waste container		DOE M 435.1-1(IV)(L)(1)(b)
	Containers shall be marked such that their contents can be identified		DOE M 435.1-1(IV)(L)(1)(c)
Management of asbestos-containing waste prior to disposal	Discharge no visible emissions to the outside air, or use one of the emission control and waste treatment methods specified in paragraphs (a)(1) through (a)(4) of 40 <i>CFR</i> 61.150	Collection, processing, packaging or transporting of any asbestos-containing waste material generated by demolition activities— <b>applicable</b>	40 <i>CFR</i> 61.150(a) Rules of the TDEC Chap. 1200-3-11-.02(2)(1)
Management of PCB waste	Any person storing or disposing of PCB waste must do so in accordance with 40 <i>CFR</i> 761, Subpart D	Generation of waste containing PCBs at concentrations $\geq 50$ ppm— <b>applicable</b>	40 <i>CFR</i> 761.50(a)
	Any person cleaning up and disposing of PCBs shall do so based on the concentration at which the PCBs are found	Generation of PCB remediation waste as defined in 40 <i>CFR</i> 761.3— <b>applicable</b>	40 <i>CFR</i> 761.61

***Well plugging and abandonment***

Closure of groundwater monitoring well(s)	Well shall be completely filled and sealed in such a manner that vertical movement of fluid either into or between formation(s) containing groundwater classified pursuant to Rules of the TDEC Chap. 1200-4-6-.05(1) through the borehole is not allowed	Permanent plugging and abandonment of a well— <b>relevant and appropriate</b>	Rules of the TDEC Chap. 1200-4-6-.09(6)(d)
	Shall be performed in accordance with the provisions for Seals at Rules of the TDEC Chap. 1200-4-6-.09(6)(e), (f), and (g); for Fill Materials at TDEC Chap. 1200-4-6-.09(6)(h) and (i); for Placement of Sealing Materials at TDEC Chap. 1200-4-6-.09(7)(a) and (b); and for Special Conditions at TDEC Chap. 1200-4-6-.09(8)(a) and (b), as appropriate		

**Table 1. ARARs and TBC guidance for haul road construction and operation along the preferred route, Oak Ridge Reservation**

Contaminants/medium	Requirements	Prerequisites	Citation(s)
Transportation of hazardous materials	Shall be subject to and must comply with all applicable provisions of the HMTA and HMR at 49 <i>CFR</i> 171-180	Any person who, under contract with a department or agency of the federal government, transports "in commerce," or causes to be transported or shipped, a hazardous material— <b>applicable</b>	49 <i>CFR</i> 171.1(c)
Transportation of radioactive waste	Shall comply with 49 <i>CFR</i> 171-180 or the site- or facility-specific Operations or Field Office approved Transportation Safety Document that describes the methodology and compliance process to meet equivalent safety for any deviation from the HMR.	On-site transfer of hazardous materials— <b>TBC</b>	DOE O 460.1B(4)(B)
Transportation of radioactive waste	Shall be packaged and transported in accordance with DOE Order 460.1B and DOE Order 460.2	Shipment of LLW off-site— <b>TBC</b>	DOE M 435.1-11(1)(E)(11)
Transportation of LLW	To the extent practical, the volume of the waste and the number of the shipments shall be minimized	Shipment of LLW off-site— <b>TBC</b>	DOE M 435.1-1(IV)(L)(2) DOE M 435.1-1(III)(L)(2)
Transportation of PCB wastes	Must comply with the manifesting provisions at 40 <i>CFR</i> 761.207 through 40 <i>CFR</i> 761.218	Relinquishment of control over PCB wastes by transporting, or offering for transport— <b>applicable</b>	40 <i>CFR</i> 761.207 (a)
Transportation of hazardous waste off-site	Must comply with the generator requirements of 40 <i>CFR</i> 262.20-23 for manifesting, Sect. 262.30 for packaging, Sect. 262.31 for labeling, Sect. 262.32 for marking, Sect. 262.33 for placarding, Sect. 262.40, 262.41(a) for record keeping requirements, and Sect. 262.12 to obtain EPA ID number	Off-site transportation of RCRA hazardous waste— <b>applicable</b> if any wastes are determined to be hazardous	40 <i>CFR</i> 262.10(h) Rules of the TDEC Chap. 1200-1-11-.03(1)(a)(8)
Transportation of hazardous waste on-site	Must comply with the requirements of 40 <i>CFR</i> 263.11-263.31	Transportation of hazardous waste within the United States requiring a manifest— <b>applicable</b> if any wastes are determined to be hazardous	40 <i>CFR</i> 263.10(a) Rules of the TDEC Chap. 1200-1-11-.04(1)(a)(1)
Transportation of hazardous waste on-site	A transporter who meets all applicable requirements of 49 <i>CFR</i> 171-180 and the requirements of 40 <i>CFR</i> 263.11 and 263.31 will be deemed in compliance with 40 <i>CFR</i> 263	Transportation of hazardous wastes on a public or private right-of-way within or along the border of contiguous property under the control of the same person, even if such contiguous property is divided by a public or private right-of-way— <b>applicable</b>	40 <i>CFR</i> 262.20(f) Rules of the TDEC Chap. 1200-1-11-.03(3)(a)(6)

**Table 1. ARARs and TBC guidance for haul road construction and operation along the preferred route, Oak Ridge Reservation**

ALARA = as low as reasonably achievable  
ARAP = Aquatic Resource Alteration Permit  
ARAR = applicable or relevant and appropriate requirement  
CFR = Code of Federal Regulations  
CWA = Clean Water Act of 1972  
DEACT = deactivation  
DOE = U.S. Department of Energy  
DOEM = DOE *Radioactive Waste Management Manual*  
DOEO = DOE Order  
EDE = effective dose equivalent  
EPA = U.S. Environmental Protection Agency  
EITP = East Tennessee Technology Park  
HMR = Hazardous Materials Regulations  
HMTA = Hazardous Materials Transportation Act  
ID = identification  
LLW = low-level (radioactive) waste  
mrem = millirem  
NHPA = National Historic Preservation Act of 1966  
NPDES = National Pollutant Discharge Elimination System  
NRC = U.S. Nuclear Regulatory Commission  
PCB = polychlorinated biphenyl  
pCi = picocuries  
ppm = parts per million  
RCRA = Resource Conservation and Recovery Act of 1976  
TBC = to be considered (guidance)  
TCA = *Tennessee Code Annotated*  
TDEC = Tennessee Department of Environment and Conservation  
TWRCP = Tennessee Wildlife Resources Commission Proclamation  
*USC = United States Code*

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