

ATTACHMENT A

**Environmental Baseline Survey Report
for the Title Transfer of
Parcel ED-8
at the East Tennessee Technology Park,
Oak Ridge, Tennessee**



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SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

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for the Title Transfer of
Parcel ED-8
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Oak Ridge, Tennessee**

Date Issued— February 2009

Prepared by
Science Applications International Corporation
Oak Ridge, Tennessee
under subcontract 23900-BA-PR007U
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Prepared for the
U. S. Department of Energy
Office of Nuclear Fuel Supply

BECHTEL JACOBS COMPANY LLC
managing the
Environmental Management Activities at the
East Tennessee Technology Park
Y-12 National Security Complex Oak Ridge National Laboratory
under contract DE-AC05-98OR22700
for the
U. S. DEPARTMENT OF ENERGY

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This report is intended to be used in its entirety. Excerpts, which are taken out-of-context, run the risk of being misinterpreted and are, therefore, not representative of the findings of this assessment. Opinions and recommendations presented in this report apply only to site conditions and features as they existed at the time of the site visit, and those inferred from information observed or available at that time, and cannot be applied to conditions and features of which SAIC is unaware and has not had the opportunity to evaluate.

The results of this report are based on record reviews, site reconnaissance, interviews, and the radiological report reviewed and approved by BJC. SAIC has not made, nor has it been asked to make, any independent investigation concerning the accuracy, reliability, or completeness of such information.

All sources of information on which SAIC has relied in making its conclusions are identified in Chap. 8 of this report. Any information, regardless of its source, not listed in Chap. 8 has not been evaluated or relied upon by SAIC in the context of this report.

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ABBREVIATIONS

bgs	below ground surface
BJC	Bechtel Jacobs Company LLC
CDR	Covenant Deferral Request
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
COE	U. S. Army Corps of Engineers
CROET	Community Reuse Organization of East Tennessee
DOE	U. S. Department of Energy
DVS	Dynamic Verification Strategy
EBS	environmental baseline survey
ELCR	excess lifetime cancer risk
EM	Environmental Management
EPA	U. S. Environmental Protection Agency
ETTP	East Tennessee Technology Park
EU	exposure unit
FFA	Federal Facility Agreement
FY	fiscal year
HI	hazard index
HVCC	Happy Valley Construction Camp
MCL	maximum contaminant level
NFA	No Further Action
ORGDP	Oak Ridge Gaseous Diffusion Plant
ORO	Oak Ridge Office
ORR	Oak Ridge Reservation
PCCR	Phased Construction Completion Report
PCE	tetrachloroethene
RA	Remedial Action
RL	remediation level
ROD	Record of Decision
SAIC	Science Applications International Corporation
TCE	trichloroethene
TDEC	Tennessee Department of Environment and Conservation
TVA	Tennessee Valley Authority
UST	underground storage tank
VOC	volatile organic compound

EXECUTIVE SUMMARY

This environmental baseline survey (EBS) report documents the baseline environmental conditions of the U. S. Department of Energy's (DOE's) Land Parcel ED-8 at the East Tennessee Technology Park (ETTP). DOE is proposing to transfer the title of this parcel of land to the Heritage Center, LLC, a subsidiary of the Community Reuse Organization of East Tennessee (CROET). This report provides a summary of information to support the transfer of this government-owned property at ETTP to a non-federal entity.

Like other EBSs prepared for the transfer of land parcels or buildings at the ETTP, this EBS is based upon the requirements of Sect. 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). However, this EBS differs in that it relies upon regulatory agency-approved documentation in three Phased Construction Completion Reports (PCCRs) for environmental data evaluation and human health risk evaluation, and summarizes the U. S. Environmental Protection Agency Region 4 and Tennessee Department of Environment and Conservation–Oak Ridge Office-approved No Further Action (NFA) determinations for the components of the land parcel. The three PCCRs used for source information are:

- *Fiscal Year (FY) 2008 PCCR for Exposure Units Z1-01, Z1-03, Z1-38, and Z1-49 in Zone 1 at the East Tennessee Technology Park, Oak Ridge, Tennessee (DOE/OR/01-2367&D2), March 2008 (DOE 2008);*
- *PCCR for the K-1007 Ponds Area and Powerhouse Area in Zone 1 at ETTP, Oak Ridge, Tennessee (DOE/OR/01-2294&D2), August 2006 (DOE 2006a); and*
- *FY 2007 PCCR for the Zone 2 Soils, Slabs, and Subsurface Structures at ETTP, Oak Ridge, Tennessee (DOE/OR/01-2723&D2), September 2007 (DOE 2007a).*

The NFA determinations documented in the referenced PCCRs were reached using the Environmental Management (EM) Program's Dynamic Verification Strategy (DVS) protocol (DOE 2007b and 2007c), a process designed to facilitate real-time decision-making. This process is in use for remedial action decision-making across the ETTP, which has been divided into Zones 1 and 2 and further subdivided into Geographic Areas, then Groups, then Exposure Units (EUs). For consistency with the EM nomenclature, this EBS will use the EU as the basis for discussion.

Of the approximately 84 acres of land in Parcel ED-8, approximately 49 acres are contiguous within Zone 1 and include portions of EUs Z1-01, Z1-04, and Z1-05 and all of EU Z1-03. The balance of the acreage, approximately 35 acres, is comprised of two portions of Zone 2 and includes all of EUs Z2-34 and Z2-43 and a portion of EU Z2-24. For purposes of the EBS, information is presented on the land proposed for transfer in its entirety since the parcel is proposed for transfer in its entirety. However, in order to provide context and a tie-in with the EM Program's status in these seven component EUs, the EBS provides regulatory details by EU in Chap. 3.0 and technical details by EU in Chap. 6.

Land parcel ED-8 is located in the southern portion of the ETTP and contains four prominent buildings that have either been transferred (Bldgs. K-1007, K-1580, and K-1330) or are in the process of being transferred (Bldg. K-1000.) These buildings are not included in the transfer footprint of Land Parcel ED-8. A number of temporary buildings (non-real property) are located within the footprint, such as trailers and tents. They are not included in the transfer.

Both Zone 1 and Zone 2 remedial action objectives were developed by the DVS to support the future use of ETTP as a mixed-use commercial and industrial park. Therefore, remediation criteria were designed for the protection of the future industrial worker under the assumption the worker normally would not have the potential for exposure to soils at depths below 10 ft below ground surface (bgs). Accordingly, land use controls have been established to prevent disturbance of soils below 10 ft deep and to restrict future land use to industrial/commercial activities.

The DVS process and the preparation of this report included visual and physical inspections of the property and adjacent properties, a detailed records search, sampling and analysis of soils, radiological walkover surveys, and a risk evaluation. Resources evaluated as part of the records search included Federal Government records, title documents, aerial photographs that may reflect prior uses, and interviews with current and former employees¹ involved in the operations on the real property to identify any areas on the property where hazardous substances and petroleum products, or their derivatives, and acutely hazardous wastes were stored for one year or more, known to have been released, or disposed of. The following is a summary of the findings of the evaluation that was performed:

- Geophysical surveys at two former service stations and subsequent sampling at these locations within the footprint revealed underground storage tanks (USTs) previously used for storage of fuels. These locations have undergone remedial actions according to requirements of the State of Tennessee UST regulations. Closure of these sites has been approved as noted in *Fiscal Year (FY) 2008 PCCR for Exposure Units Z1-01, Z1-03, Z1-38, and Z1-49 in Zone 1 at the East Tennessee Technology Park, Oak Ridge, Tennessee* (3/2008) and an NFA decision made.
- Based on records searches and interviews, a 200-gal UST was located outside of Bldg. K-1007 within the courtyard formed by the U-shape of the K-1007 building. The former K-1007 Gas Tank was a gasoline UST for the K-1007 emergency generator. In 1986, the UST was discovered to be leaking. The tank and 14 tons of contaminated soil were subsequently removed. The excavated area was filled and asphalt was placed on top. The tank closure was prior to external regulation; therefore, there is no correspondence with outside regulators or a closure report. However, the gasoline leak was documented in an Unusual Occurrence Report [Appendix A of K/HS-156, *RCRA Facility Investigation Plan, K-1007 Gas Tank, Oak Ridge Gaseous Diffusion Plant, Oak Ridge, Tennessee* (Energy Systems 1988)].
- Two groundwater plumes containing low levels of volatile organic compounds (VOCs) are located in the subsurface of Land Parcel ED-8. One plume located north of Bldg. K-1000 is from an off-parcel source. The source of the second plume, located in the vicinity of Bldg. K-1007, is unknown. Only two VOCs, tetrachloroethene and trichloroethene, have occurred above federal drinking water maximum contaminant levels in samples collected from wells in both plumes.
- Data and risk evaluations were conducted to allow for unrestricted industrial use to 10 ft bgs. Contamination anywhere within the 0 to 10 ft bgs interval had an equal weighting in the risk assessment (i.e., all soil in the interval was presumed to be equally accessible to an industrial worker).
- Based on the results of the DVS evaluation and the remedial actions completed, all the EUs in ED-8 have been recommended for unrestricted industrial use to 10 ft bgs.

¹ BJC 2005. Personal communications with Bob Kiser and Bobby Beasley (currently or formerly employed at the East Tennessee Technology Park) in July and October, respectively.

CONCLUSIONS

Based on the U. S. Department of Energy's (DOE's) review of the existing information, including discussions and interviews referenced herein, and evaluation of the data gathered in preparation of the environmental baseline survey (EBS) for Land Parcel ED-8, DOE recommends the following:

- Because of the uncertainty associated with the nature of the on-site groundwater and the need to evaluate and possibly address groundwater in the future, DOE recommends that the transfer of Parcel ED-8 be achieved by a covenant deferral per the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) Sect. 120(h)(3)(c).

LAND USE RESTRICTIONS

Land use restrictions are an important component of a CERCLA covenant deferral; they help to ensure that transfer of the property is protective for the intended use. The restrictions that will apply to Parcel ED-8 are summarized below. Full details are found in Sect. 6.1 of the Covenant Deferral Request (CDR).

1. The property shall not be developed in a manner that is inconsistent with the land use assumptions of "industrial use" contained in approved applicable Records of Decision (RODs) for Zone 1 (*Record of Decision for Interim Actions in Zone 1 of East Tennessee Technology Park, Oak Ridge, Tennessee, DOE/OR/01-1997&D2*) and Zone 2 (*Record of Decision for Soil, Buried Waste, and Subsurface Structure Actions in Zone 2, East Tennessee Technology Park, Oak Ridge, Tennessee, DOE/OR/01-2161&D2*).
2. Development of the property must comply with all applicable federal, state, and local laws and regulations with respect to any present or future development of the property.
3. All structures, facilities, and improvements requiring a water supply shall be required to be connected to an approved water system for any and all usage. Extraction, consumption, exposure, or use, in any way, of the groundwater underlying the property is prohibited without the prior written approval of DOE, the U. S. Environmental Protection Agency (EPA) Region 4, and the Tennessee Department of Environment and Conservation (TDEC).
4. Disturbance of any portion of the property deeper than 10 ft bgs without the prior written approval of DOE, EPA, and TDEC is prohibited.
5. Disturbance of the ground surface on the transferred property is prohibited unless the transferee complies with the site process for obtaining an excavation penetration permit. The excavation and penetration permit program will be retained by DOE until it has been determined that all necessary soil remediation on the property has been taken.
6. In order to ensure that the vapor intrusion pathway [i.e., the migration of volatile organic compounds (VOCs) in contaminated groundwater] does not contribute to an unacceptable risk to human health, DOE will address the potential for vapor intrusion in the East Tennessee Technology Park final Sitewide ROD, which is scheduled to be signed by September 30, 2013, and will take interim protective measures to ensure protectiveness until the ROD is signed. Any new building or structure built on the property that is intended to be occupied by workers 8 hours or more per scheduled work day, or by public visitors, must be designed and constructed to minimize potential exposure to VOC

vapors, including the use of engineered barriers as noted in the Quitclaim deed. A waiver from this requirement may be sought from the EPA, TDEC, and DOE based on alternative commitments or new information. No buildings are included in the transfer of ED-8.

7. DOE reserves the right of access to all portions of the property for environmental investigation, remediation, or other corrective action.

RESPONSE TO REGULATOR COMMENTS

The CDR and EBS were issued in draft form for regulator review on September 30, 2008. Comments were received from EPA Region 4 on October 30, 2008, and December 18, 2008. Comments were received from TDEC on December 16, 2008. Comments received from the regulatory agencies and DOE's responses are included in the CDR in Sect. 7.1. Comments received have been incorporated into the CDR and EBS as agreed by EPA, TDEC, and DOE.

RESPONSE TO PUBLIC COMMENTS

(This is a placeholder.)

1. PROPERTY IDENTIFICATION

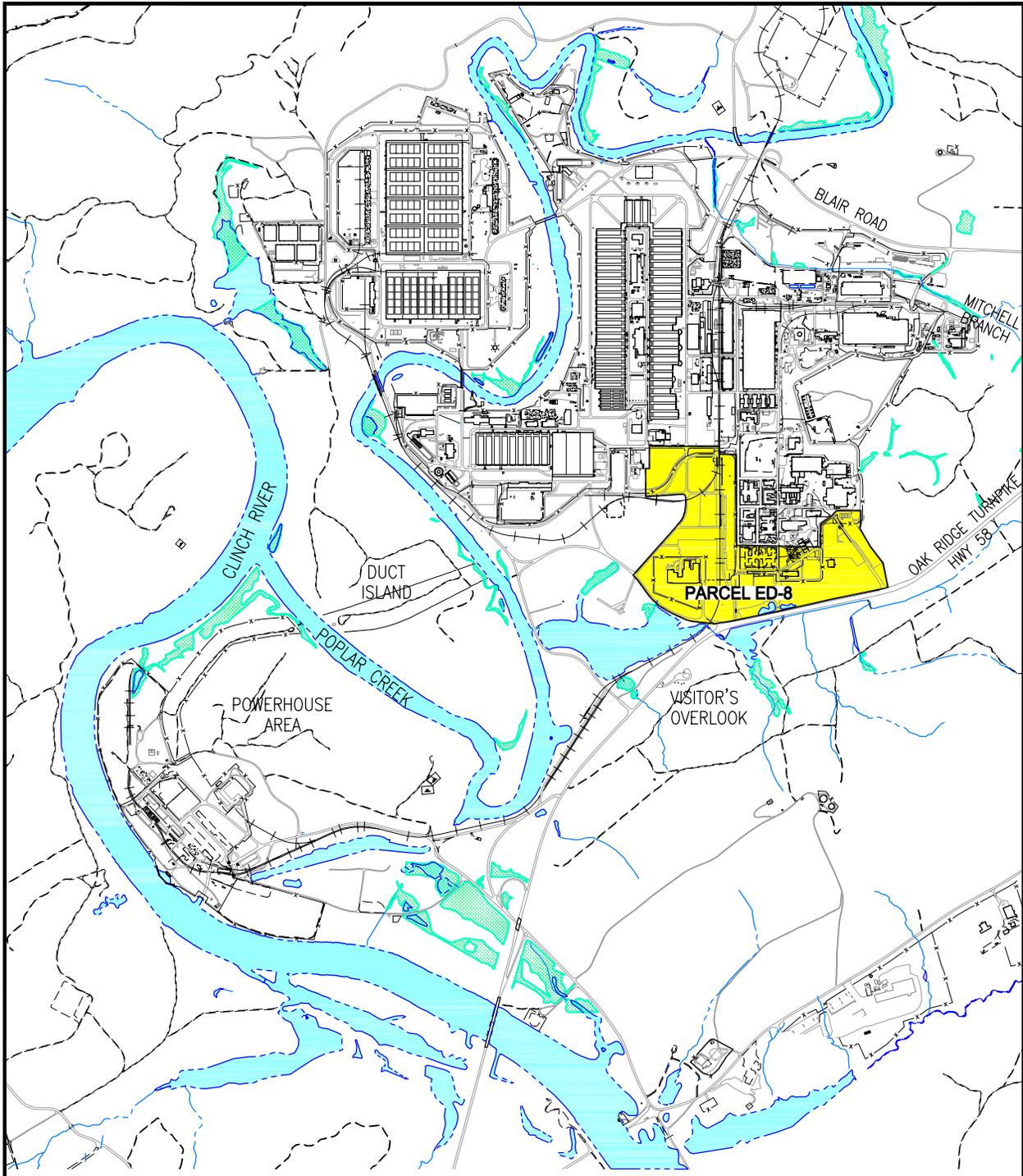
The land referred to as Parcel ED-8, discussed in this Environmental Baseline Survey (EBS), is located in the southern portion of the East Tennessee Technology Park (ETTP) [formerly the Oak Ridge Gaseous Diffusion Plant (ORGDP) and later the K-25 Site] on the Oak Ridge Reservation (ORR) in Roane County, Tennessee. The parcel contains vacant land and infrastructure and buildings located at the front of ETTP; however, the buildings are not part of the transfer footprint. Figure 1.1 is a map showing the relationship of Parcel ED-8 to ETTP, Fig. 1.2 is a map showing the footprint of the Parcel ED-8 study area, and Fig. 1.3 shows the buildings located within the parcel. An additional figure, Fig. 1.4, shows the locations of buildings that were formerly located within the parcel that have been demolished, as well as the locations of underground storage tanks (USTs) that have been removed or closed in place.

The area proposed for title transfer is comprised of approximately 84 acres. The southern boundary of the parcel follows along Oak Ridge Turnpike/State Route 58 for approximately 2,250 ft and then follows the eastern bank of the K-1007-P1 Pond to the boundary with Land Parcel ED-5 East [transferred to the Heritage Center, LLC, a subsidiary of the Community Reuse Organization of East Tennessee (CROET) in 2007]. The northern boundary of the land parcel steps around south of Bldg. K-1652 (transferred to the city of Oak Ridge in 2008), south of Portal 4, along the periphery of other features and facilities, and finally to its eastern border against Land Parcel ED-4 (also proposed for transfer). Land Parcel ED-8 contains four prominent buildings, K-1007, K-1580, K-1330, and K-1000. Buildings K-1007, K-1580, and K-1330 have been transferred, and the process for transferring K-1000 is underway. These buildings are not included in the transfer footprint of Land Parcel ED-8. A number of temporary buildings (non-real property) are located within the footprint, such as trailers and tents. They are not included in the transfer. Past and present operations at Parcel ED-8 are described in more detail in Chap. 4 of this report.

Preparation of this report and the Phased Construction Completion Reports (PCCRs) relied on for information in this report included visual and physical inspections of the property and adjacent properties, a detailed records search, sampling and analysis of soils, radiological walkover surveys, and a risk evaluation. Resources evaluated as part of the records search included the review of government records, title documents, and aerial photos, and interviews with current and former employees² involved in the operations on the real property to identify any areas on the property where hazardous substances and petroleum products, or their derivatives, and acutely hazardous wastes have been known to have been released.³ Pertinent information from this research is included as a notification in the deed [found in Sect. 6.2, Exhibit D, paragraph A of the Covenant Deferral Request (CDR)].

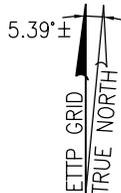
² BJC 2005. Personal communications with Bob Kiser (currently or formerly employed at ETTP) in July.

³ BJC 2005. Personal communications with Bobby Beasley (currently employed at ETTP) in October.



LEGEND:

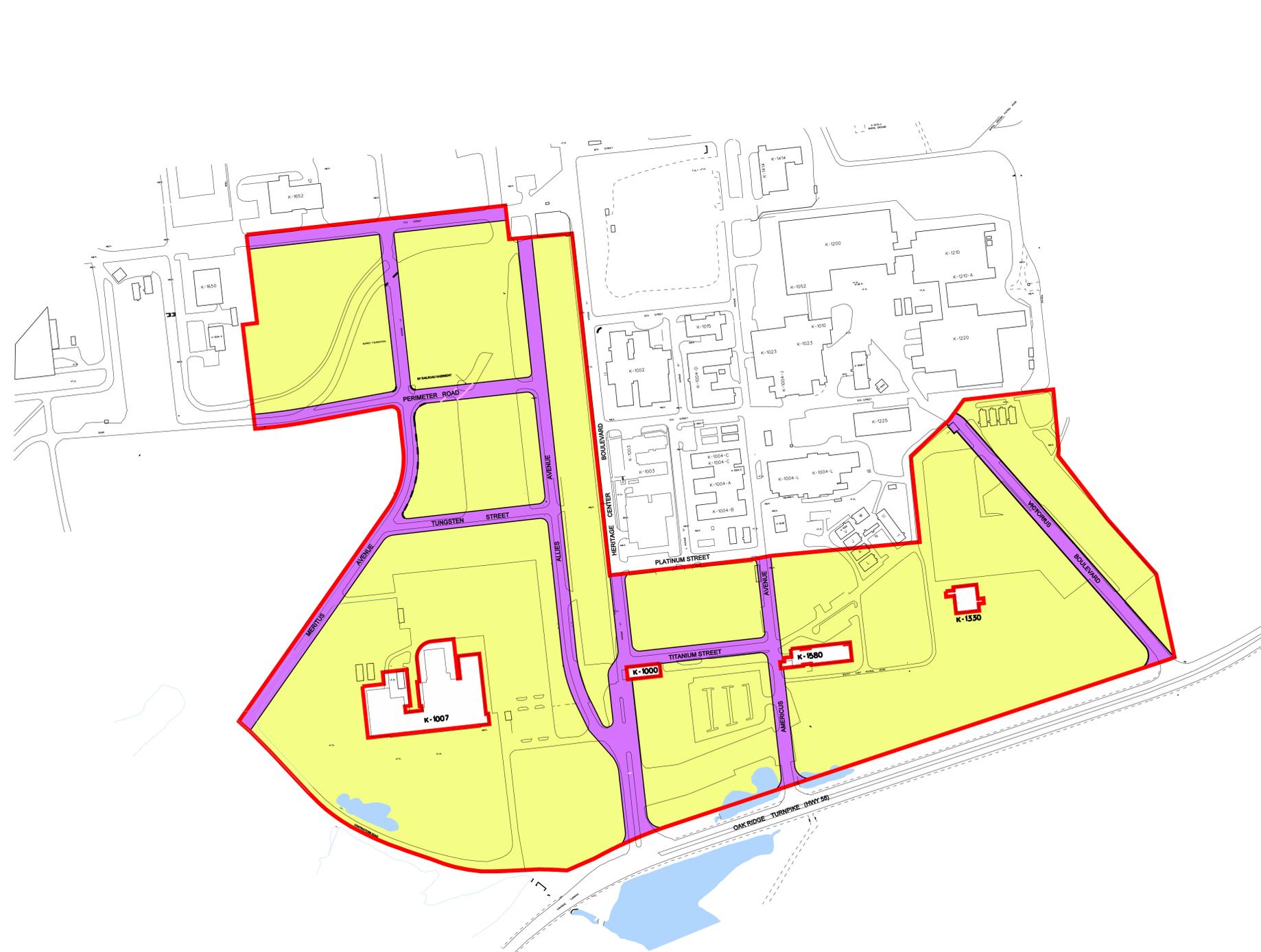
- BUILDING
- ASPHALT ROAD
- GRAVEL ROAD
- RAILROAD TRACKS
- STREAM OR CREEK
- POND OR RIVER
- MARSH
- PARCEL ED-8



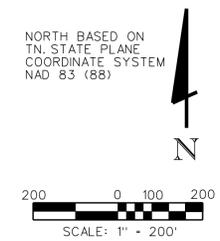
**HERITAGE CENTER
PROPERTY TRANSFERS**

**EAST TENNESSEE
TECHNOLOGY PARK
OAK RIDGE, TENNESSEE**

DRAWN BY: R. BEELER	REV. NO./DATE: REV.2/09-24-08	CAD FILE: 06020/DWGS/C76_ED8_LOC-01
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- ROADWAYS PROPOSED FOR TRANSFER TO THE CITY OF OAK RIDGE
- LAND TRACTS PROPOSED FOR TRANSFER TO CROET (APPROXIMATELY 72 ACRES)
- CDR FOOTPRINT BOUNDARY (APPROXIMATELY 84 ACRES)



DEPARTMENT OF ENERGY
OAK RIDGE RESERVATION, TN

PARCEL ED-8
AT
HERITAGE CENTER
FEBRUARY 2009

PREPARED BY:
BARGE, WAGGONER, SUMNER & CANNON
SUITE 500 1009 COMMERCE PARK DR.
OAK RIDGE, TENNESSEE 37830
PHONE: (865) 481-0496
JOB: 34011-00

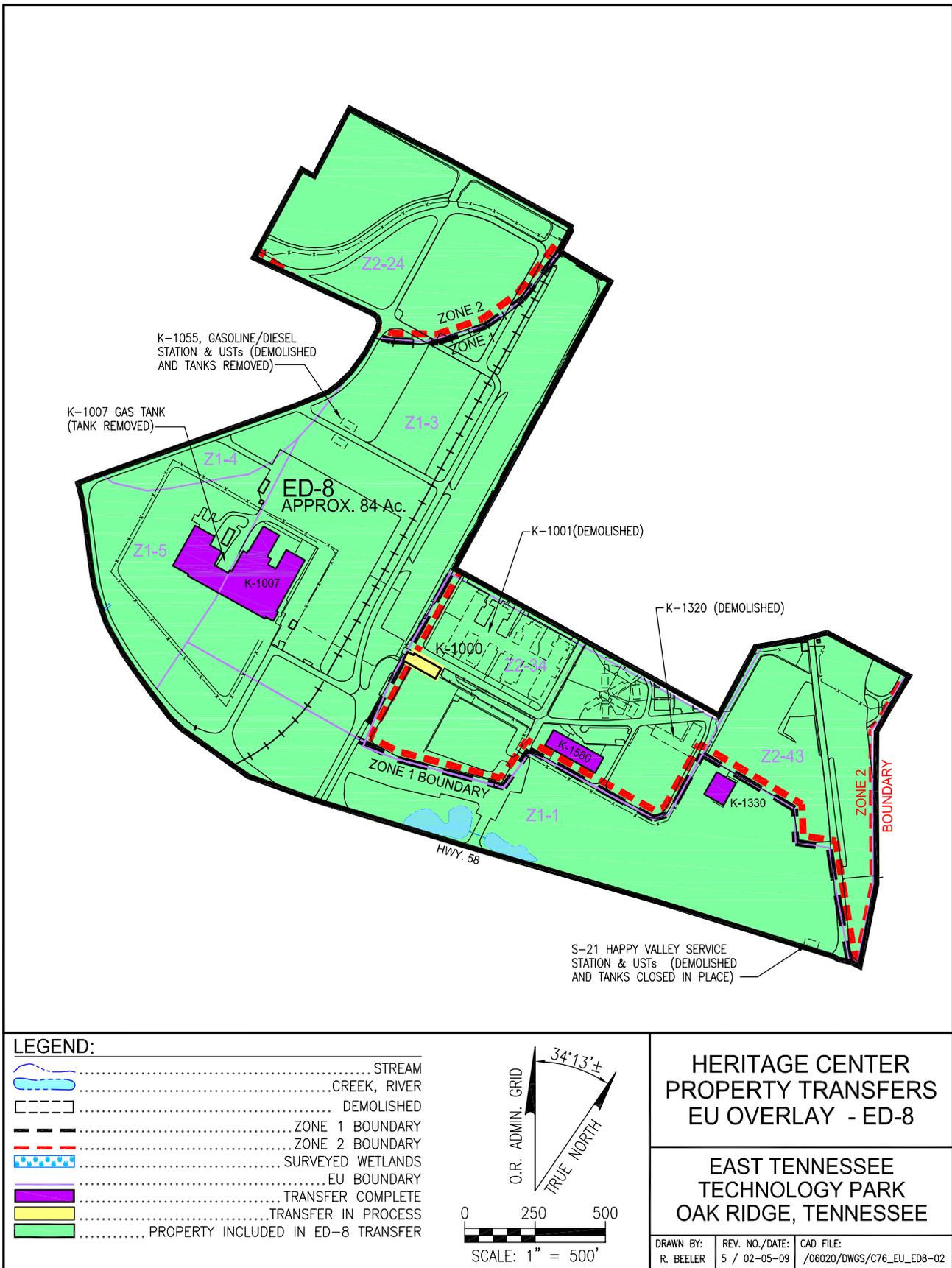


Figure 2. Map of Land parcel ED-8 components

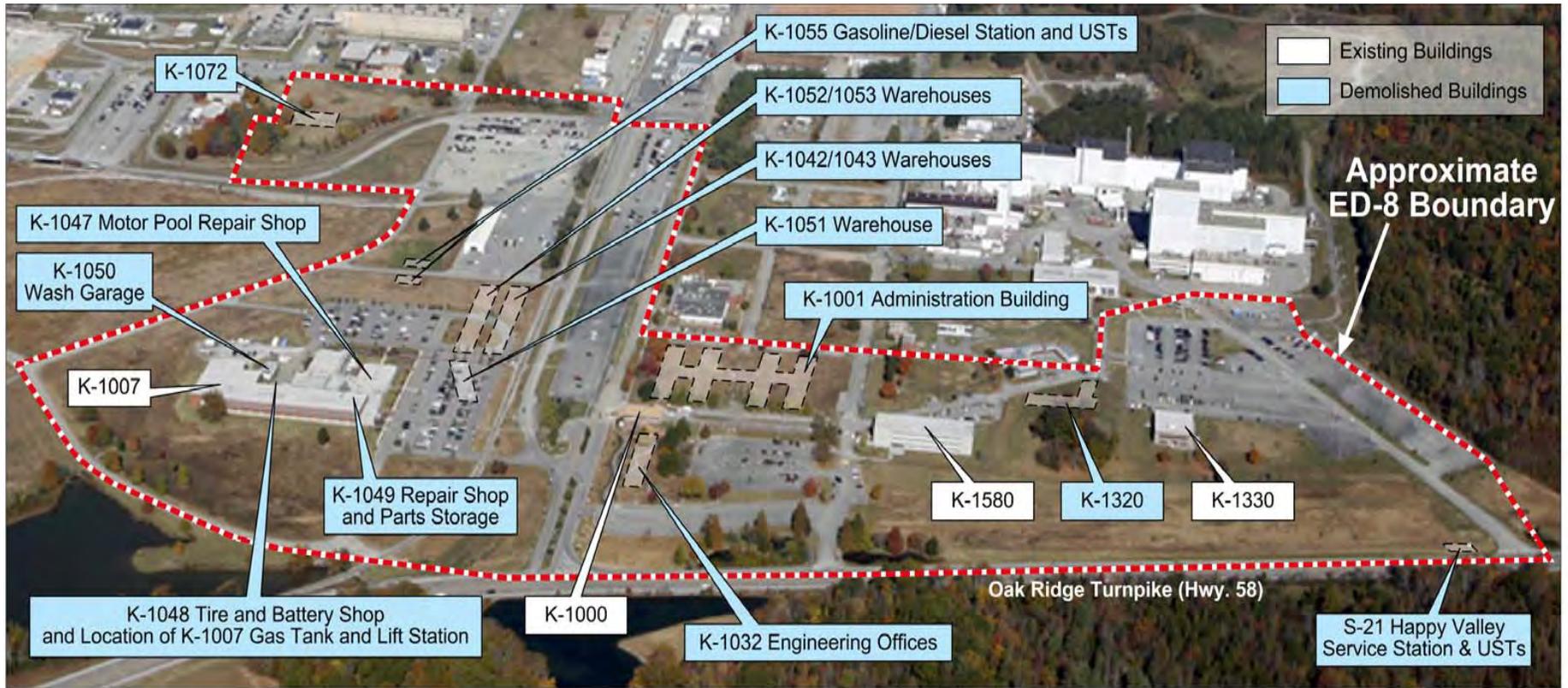


Fig. 1.4. Aerial photo of ED-8 showing approximate former locations of buildings.

2. TITLE SEARCH

On June 4, 1996, and February 27, 1997, visits were made to the state of Tennessee Roane County Recorder's Office to conduct a review of the recorded deeds documenting previous ownership of the land tract on which the ED-8 land parcel is located. The deeds contained no information or references to other recorded evidence that, prior to U. S. Department of Energy (DOE) ownership and its U. S. Government predecessor agencies, the property was utilized for the storage of hazardous substances and/or petroleum products or their derivatives. Additionally, no information contained in the deeds would indicate that hazardous substances and/or petroleum products or their derivatives were released from or disposed of on the property. Prior to acquisition by the government, the area was farmland and was a combination of cultivated fields, pastures, and forested areas.

The deeds that conveyed the property from the previous owner to the U. S. Government, and any deeds that conveyed the property to that previous owner, were reviewed as a part of the title search. Generally, the deeds from the previous two owners of a particular ORR parcel provide information that goes back to the early 1900s or even earlier. The deeds were reviewed for any references to previous land uses (e.g., homestead, farm, school, business, etc.). Also reviewed were any easements or conveyances referenced in the deeds that might indicate that portions of the land were used for pipelines, power lines, etc. Partial disposal or acquisition conveyance deeds were also reviewed because, in some instances, the land comprising a large farm had been acquired via several separate acquisitions.

In addition, property assessment records from the County Property Assessor's Office were reviewed because these documents may also contain evidence of a particular land use. Survey or subdivision maps referenced in deeds and maintained in the Register of Deeds office were also reviewed for any indications of a previous land use. Furthermore, because the Tennessee Valley Authority (TVA) was the previous owner of several large tracts of ORR land, the TVA Real Estate Office was contacted regarding their knowledge of any previous land uses. The U. S. Army Corp of Engineers (COE) was another source of information that was contacted.⁴ No information available through these sources indicates that hazardous substances and/or petroleum products or their derivatives were released from or disposed of on the property.

⁴ Energy Systems 1996. *Real Estate Section of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sect. 120(h) Review*, authored by W. W. Teer, Jr., Real Estate Manager, Lockheed Martin Energy Systems, Inc., Oak Ridge, TN, August 9, 1996.

3. FEDERAL RECORDS SEARCH AND REGULATORY SUMMARY

3.1 FEDERAL RECORDS SEARCH

The TVA in Knoxville, Tennessee, and the COE District Office in Nashville, Tennessee, were contacted in 1997, and again in 1998, to determine if they maintained any records reflecting past or present land use relative to the land presently comprising ETTP (TVA 1998; COE 1998). Neither TVA nor COE had any information regarding past or present land use that would indicate whether hazardous substances or petroleum products were stored or released on the DOE-owned property currently comprising the ETTP.

In June 1997, DOE real estate records that document previous ownership of the land tracts where Land Parcel ED-8 is located were examined. Page A-3 of Appendix A is a statement (DOE 2002a) from the Realty Officer of the DOE Oak Ridge Office (ORO) that the real estate records contained no information or references to other recorded evidence that, prior to DOE ownership and its U. S. Government predecessor agencies, the property had been used for the storage of hazardous substances. Additionally, no information contained in these records indicated that hazardous substances had been released from or disposed of on the property.

The pre-construction aerial photographs and maps listed below that reflect prior use of this land were also reviewed. Copies of these photographs and maps are on file in the DOE-ORO Real Estate Office.

Aerial Photographs:

<u>Photograph Nos. and Date</u>	<u>Flight By</u>	<u>Source</u>
No. 130-3-9, dated 1939	Unknown	DOE-ORO, Real Estate Office
Nos. 820-2-20 through -23 and 820-3-20 through -24, dated September 25, 1942	Aero Service Corp. for Stone and Webster	DOE-ORO, Real Estate Office

These photographs, which were taken in 1939 and 1942, show that the land on which the land parcel is located was predominantly used for agricultural purposes. The remaining land was wooded. A map depicting pre-World War II structures, churches, and cemeteries that were present in the area of the current ETTP is also included on page B-3 in Appendix B.

Topographic and real estate maps:

1. A November 2, 1942, topographic map identified as Section A-1 of ORR was prepared by Aero Services Corporation for Stone and Webster.
2. A February 19, 1945, real estate map (sheet 9 of 16) prepared by the U. S. Army shows the boundaries of all land tracts in Segment H of the ORR that were acquired during the early 1940s for the construction of the K-25 Site. The study area is on Land Tract A.

Neither the aforementioned photographs nor maps contained any information regarding the history of the past land use that would indicate that storage or releases of hazardous substances or petroleum products or their derivatives have occurred on the land where Land Tract A is located. Copies of the 1942 topographic map and real estate map are maintained in the DOE-ORO Real Estate Office.⁵

3.2 REGULATORY SUMMARY

3.2.1 Background

As mentioned previously, this EBS relies upon regulatory-approved documentation in three PCCRs (listed below) for the foundational information to support transfer. Approval letters from the U. S. Environmental Protection Agency (EPA) and Tennessee Department of Environment and Conservation (TDEC) for the PCCRs are presented in Appendix C. The PCCRs were prepared as part of the Environmental Management's (EM) Dynamic Verification Process (DVS). This process is in use for remedial action (RA) decision-making across the ETTP, and decisions are based on hierarchical land unit divisions of Zones, then Geographic Areas, then Groups, then Exposure Units (EUs).

Of the approximately 84 acres of land in Parcel ED-8, approximately 49 acres are contiguous within Zone 1 and include portions of EUs Z1-01, Z1-04, and Z1-05 and all of EU Z1-03. The balance of the acreage, approximately 35 acres, is comprised of two portions of Zone 2 and includes all of EUs Z2-34 and Z2-43 and a portion of EU Z2-24. The component EUs and their extent within ED-8 are shown on Fig. 1.3. The component EUs and their entire extent are shown on Fig. 3.1.

These PCCRs and back-up documentation to the PCCRs have already evaluated the environmental data in the parcel, evaluated the potential risk to receptors, documented the RAs completed within the boundaries of the parcel, and concluded that no further RAs are needed within the component EUs within the parcel:

- *Fiscal Year (FY) 2008 PCCR for Exposure Units Z1-01, Z1-03, Z1-38, and Z1-49 in Zone 1 at the East Tennessee Technology Park, Oak Ridge, Tennessee (DOE/OR/01-2367&D2), March 2008 (DOE 2008);*
- *PCCR for the K-1007 Ponds Area and Powerhouse Area in Zone 1 at ETTP, Oak Ridge, Tennessee (DOE/OR/01-2294&D2), August 2006 (DOE 2006a); and*
- *FY 2007 PCCR for the Zone 2 Soils, Slabs, and Subsurface Structures at ETTP, Oak Ridge, Tennessee (DOE/OR/01-2723&D2), September 2007 (DOE 2007a).*

Two of the PCCRs [the *FY 2008 PCCR for Exposure Units Z1-01, Z1-03, Z1-38, and Z1-49 in Zone 1* and the *K-1007 Ponds/Powerhouse PCCR* (EUs Z1-04 and Z1-05)] cover the four ED-8 EUs located in Zone 1. The remaining PCCR (the *FY 2007 Soils, Slabs, and Subsurface Structures PCCR*) covers the three ED-8 EUs located in Zone 2.

3.2.2 The EM DVS Protocol and Land Parcel ED-8

Regulatory information for both Zone 1 and Zone 2, as it relates to Land Parcel ED-8, will be discussed below along with a summary of the EM DVS approach. Technical information for each of the component EUs will be presented in Chap. 7.

⁵ Energy Systems 1996. *Real Estate Section of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sect. 120(h) Review*, authored by W. W. Teer, Jr., Real Estate Manager, Lockheed Martin Energy Systems, Inc., Oak Ridge, TN, August 9, 1996.

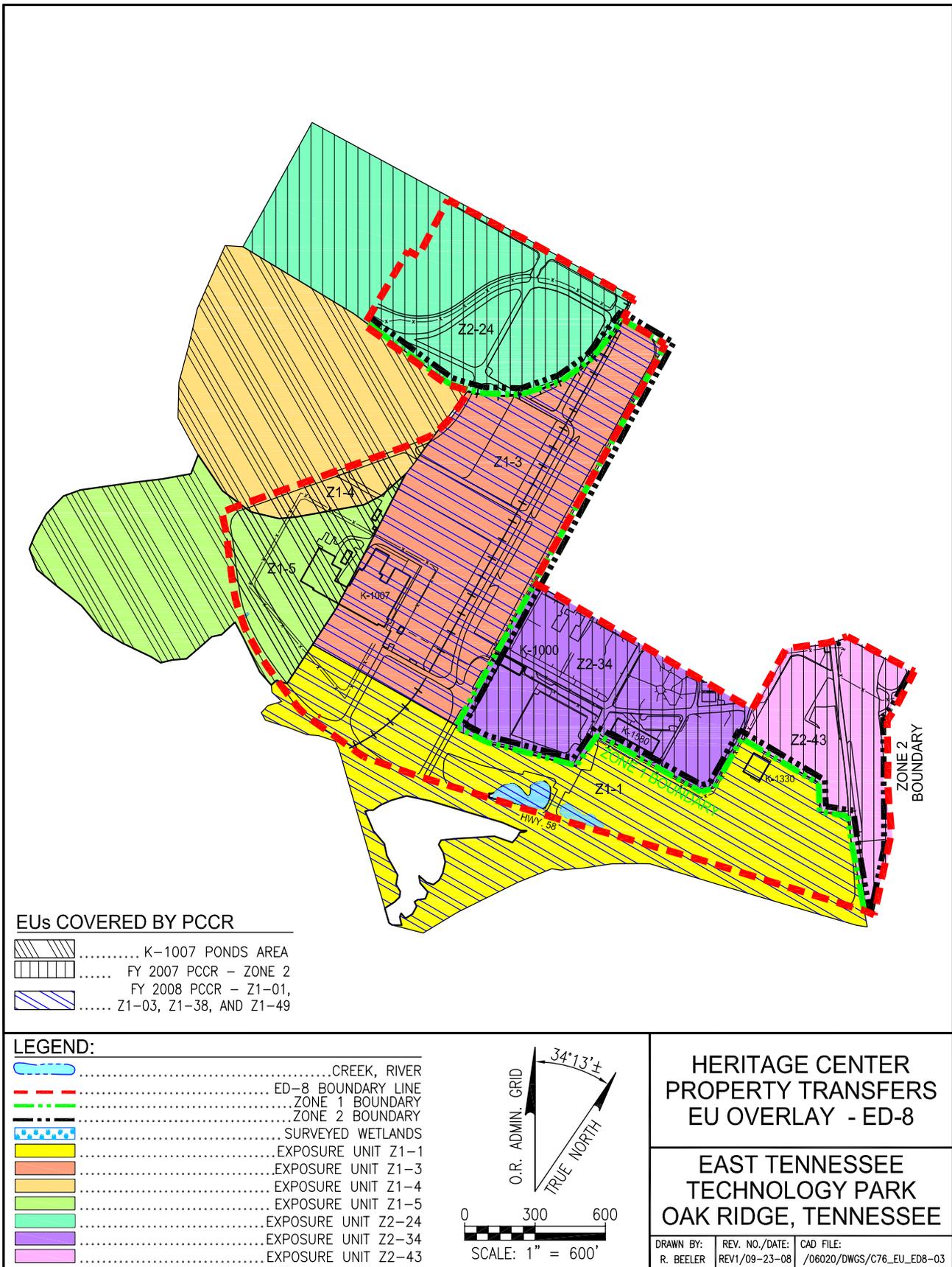


Fig. 3.1. Exposure unit coverage of Land Parcel ED-8.

The EM DVS process was designed to facilitate real-time decision-making and includes five steps:

1. preparation of Data Quality Objective scoping packages,
2. classification of soil units using a graded approach,
3. determination of additional sampling or surveying needs,
4. determination of the need for RA using decision rules, and
5. use of confirmation sampling to determine if RA is complete.

The decision rules mentioned in Step 4 were based on one or more of the following criteria:

- exceedance of a maximum remediation level (RL) at any location,
- exceedance of an average RL across the EU,
- unacceptable future threat to groundwater, or
- unacceptable cumulative excess lifetime cancer risk (ELCR) of $> 1 \times 10^{-4}$ and hazard index (HI) > 1 across the EU.

Decision rule 4, a threat to groundwater by Zone 1 or Zone 2 soils, is evaluated by reviewing historical groundwater data and, if necessary, screening soil data against established screening levels. Based on the screening, site-specific modeling may be conducted. Consideration of an action on groundwater is required if any of these steps indicate a site may be a potential source of contamination to groundwater. A Sitewide Record of Decision will evaluate all threats to groundwater.

3.2.3 Actions Taken Within ED-8 Exposure Units

As mentioned in Sect. 3.2.1, the ETPP is divided into Zones 1 and 2 and further subdivided into geographic areas. The boundaries of geographic areas are based on natural boundaries of major water bodies, topographic divides, surface water drainages, and/or property boundaries. The geographic areas are subdivided into groups and then into EUs. EUs are the smallest land areas used for assessing risks to an exposed individual.

All of EU Z1-03 and EUs Z2-34 and Z2-43 are in ED-8. Portions of EUs Z1-01, Z1-04, Z1-05, and Z2-24 are in ED-8 (see Fig. 3.1), but for purposes of risk evaluation the entire EU is considered because there are no barriers or impediments preventing access to the balance of the EUs that are not in ED-8.

Located within some of the EUs are sites designated as requiring special attention because they were listed in the Federal Facilities Agreement (FFA) as having the potential for contamination. These FFA sites have been the focus of several RAs across the ETPP. The discussion below addresses the regulatory status of each of the seven EUs located within or partially within ED-8 and summarizes any action taken at associated FFA sites. Table 3.1 summarizes the components of ED-8, the FFA sites addressed in each EU, and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) decision for each EU.

The contiguous Zone 1 component of Land Parcel ED-8 is located within the K-1007 Ponds Geographic Area. Land Parcel ED-8 contains four EUs in Zone 1 (EU Z1-01, EU Z1-03, EU Z1-04, and EU Z1-05). EU Z1-01 is part of the Happy Valley Service Station Group, and the other three EUs are part of the K-1007 Group.

Table 3.1. Land Parcel ED-8 components^a and summary of CERCLA decisions

Zone	Geographic area	Group	PCCR	EU (acreage)^b	Associated FFA sites	Decision	
Zone 1	K-1007 Ponds	Happy Valley Service Station Group	FY 2008 PCCR for EUs Z1-01, Z1-03, Z1-38, and Z1-49 in Zone 1 at ETTP	Z1-01 (28.3 acres)	S-21 Happy Valley Service Station	Completed RA under TN UST regulations; NFA concurrence from EPA.	
		K-1007 Group		K-1027 Service Station K-1047 Motor Pool Repair Shop Bldg. 665 Steam Shed South Plant Area Lab Drain Lines	Z1-03 (24.4 acres)	Completed RA under TN UST regulations; NFA concurrence from EPA.	
						K-1055 Gas/Diesel Station	Completed RA under TN UST regulations; NFA concurrence from EPA.
							Building 569 Heavy Equipment Shop
		PCCR for the K-1007 Ponds Area and Powerhouse Area in Zone 1 at ETTP		Z1-04 (20.8 acres)	Z1-05 (19.3 acres)	K-1007 Gas Tank (Residual Contamination) K-1048 Tire and Battery Shop K-1050 Wash/Paint/Grease Shop 600 Series Oil Storage Area	
Sampling and analysis of sites resulted in NFA concurrence from EPA.							
Zone 2	Main Plant	Main Plant Group	FY 2007 PCCR for Zone 2 Soils, Slabs, and Subsurface Structures at ETTP	Z2-24 (22 acres)	None	Sampling and analysis of EU resulted in NFA concurrence from EPA.	
	South Park	South Park Area Group		Z2-34 (13.2 acres)	None	Sampling and analysis of EU resulted in NFA concurrence from EPA.	
				Z2-43 (8.7 acres)	None	Sampling and analysis of EU resulted in NFA from EPA.	

^a Component names and acreages as provided in the PCCRs listed in Sect. 3.2.1.

^b Acreages given are total for the EU. Only three EUs (Z1-03, Z2-34, and Z2-43) are totally located within the ED-8 boundary.

CERCLA = Comprehensive Environmental Response, Compensation and Liability Act of 1980.

EPA = U. S. Environmental Protection Agency.

ETTP = East Tennessee Technology Park.

EU = exposure unit.

FFA = Federal Facility Agreement.

FY = fiscal year.

NFA = No Further Action.

PCCR = Phased Construction Completion Report.

RA = remedial action.

TN = Tennessee.

UST = underground storage tank.

The Zone 2 components of Land Parcel ED-8 are not contiguous, with one portion located in the northwest corner of the parcel and a second portion in the northeast part of the parcel. EU Z2-24 is located in the northwest corner of Parcel ED-8 and is part of the Main Plant Group. EU Z2-34 is located in the north-central portion of the parcel, and EU Z2-43 is located in the eastern portion of the parcel.

RAs have been completed at all three FFA sites located within ED-8 and EPA concurrence has been received for No Further Action (NFA) decisions for all of the EUs within ED-8.

4. PAST AND PRESENT ACTIVITIES

4.1 PAST AND PRESENT ACTIVITIES FOR THE REAL PROPERTY PROPOSED FOR TRANSFER

Prior to the acquisition of the land by the government in the 1940s, the entire area now known as ETTP was farmland or forested land. Over 800 acres of land were leveled and prepared in support of the Manhattan Project (to supply enriched uranium for nuclear weapons production).

Land Parcel ED-8 is located in the southern portion of ETTP. This area of the plant was predominately used for the construction of administrative buildings, a computer support building, parking lots, and sidewalks. There are several maintained lawns around current buildings and former building sites. Although no uranium enrichment facilities were constructed in this area, all the land area in this parcel was developed in support of site operations. Three facilities (K-1007, K-1580, and K-1330) within ED-8 have previously been transferred to the Heritage Center and are discussed for contextual purposes only; they are not included within the ED-8 transfer. Following is a discussion of the EUs that comprise ED-8.

Zone 2 EU Z2- 34

This portion of the land parcel contains the K-1000 Complex, which formerly housed the Visitor and Access Center and is generally referred to as “Portal 2” although the former guard portal has been removed. The building was constructed in 1954. Former administration building K-1001 was located just north of the K-1000 Complex. It was built in 1944 and was demolished in 2000 under a Memorandum of Agreement with the state of Tennessee. The area where Bldg. K-1001 was located is now a large, grassy field. The grassy area to the south of the K-1000 Complex was the site of the K-1032 Industrial Relations Building. It was built in 1944 and demolished in 1957 and was used for offices throughout its history. Building K-1580 is located in the eastern half of EU Z2-34. This building was constructed in 1980 and was used for several years for offices for plant engineering personnel. K-1580 was transferred to the Heritage Center in 2005 and is presently used as an office building, consistent with its past use. Historical maps from 1946 show a gatehouse (K-1028-2) and a guard tower (K-1017-S2) near the footprint of Bldg. K-1580. These structures had been removed by 1955. Building K-1320 and its extension, K-1320-A, were located in the northeast corner of the EU. This building was constructed in 1982, and the extension in 1984, to provide additional office space for Engineering personnel. Buildings K-1320 and 1320-A were demolished in 2007 in accordance with the process described in *Action Memorandum for the Remaining Facilities Demolition Project at East Tennessee Technology Park, Oak Ridge, Tennessee* (DOE/OR/01-2049&D2), August 6, 2003.

Zone 2 EU Z2-43

EU Z2-43 is located in the northeast portion of the ED-8 land parcel in the southeastern boundary of the administrative section of ETTP, which generally housed offices. Site operations, including construction of roads, parking lots, and sidewalks have impacted the majority of land in this EU. This EU contains the large K-1240-3 parking lots (which comprise most of the acreage of this EU). The four-component parking lots are bisected by Boulevard Road leading to Portal 3 (Bldg. K-1028-65). In addition, a polychlorinated biphenyl storage yard was located within the boundaries of this EU.

Zone 2 EU Z2-24

EU Z2-24 is located in the northernmost area of the land parcel. This EU is comprised predominately of parking lots, grassy fields, and intersecting roads (5th, 6th, and 7th Streets).

Zone 1 EU Z1-01

EU Z1-01 is located along the southern boundary of Land Parcel ED-8 and is covered predominately with maintained lawns and mixed meadow grasses and paved parking lots. Building K-1330 is the only building located within Z1-01. The building was constructed in 1990 and has been used throughout its history for offices. Building K-1330 has been transferred to the Heritage Center.

Based on reviews of historic maps, the S-23 Maintenance Shop, which was part of the Happy Valley Construction Camp (HVCC) was located approximately 10 to 20 ft off the southeast corner of Bldg. K-1330. The S-50 Ice Plant was about 50 ft south, and the S-21 Gas Station was 200 to 300 ft to the southeast. The Gas Station had underground tanks, which were removed according to state underground storage tank (UST) regulations in 2007 (DOE 2008). S-50 and S-21 were removed by 1951; the S-23 Maintenance Shop was demolished by 1955. This EU also contains two small ponds designated K-1007-P4 and K-1007-P5.

Zone 1 EU Z1-03

EU Z1-03 is found in the western portion of the parcel. Building K-1007 is the predominant structure remaining within Z1-03 (the eastern two-thirds of the building are within Z1-03, and the western one-third is within Z1-05). The original building was built in 1960 with additions over several years ending in 1984. This building has served as the computer support facility and, more recently, contains the cafeteria, health services, and various offices. Building K-1007 has been transferred to Heritage Center.

The other main structure currently within the boundary of EU Z1-03 is the Central Receiving Facility (K-1317), a fenced-in temporary tent structure (non-real property) that is not part of the transfer property. To the east of this facility within ED-8 are the K-1240-2 parking lots, and to the northeast is the K-1240-4A parking lot. Between the parking lots and K-1007 and K-1317, the railroad right-of-way runs through the middle of EU Z1-03 for approximately one-half mile. Based on reviews of historic maps, three former buildings (K-1047 Motor Pool Repair Shop, K-1049 Repair Shop and Parts Storage, and K-1050 Wash, Grease, and Paint Shop) were previously located in the vicinity of the current K-1007 footprint. These facilities were demolished by the late 1950s, and the area was maintained as a grassy field until the construction of Bldg. K-1007 in 1960.

Other former facilities in the vicinity of K-1007 include:

- Building 665 Steam Shed – built in 1943 to clean construction vehicles, demolished in 1946.
- K-1055 Gasoline/Diesel Station – in use as early as 1944, used one UST, demolished by the 1950s.
- K-1048 Tire and Battery Shop – built in 1943, demolished by 1958.
- K-1007 Gas Tank – a 200-gal gasoline UST for the K-1007 emergency generator. In 1986, the UST was discovered to be leaking. The tank and 14 tons of contaminated soil were removed by 1988. The excavated area was filled and asphalt was placed on top. The tank closure was prior to external regulation; therefore, there is no correspondence with outside regulators or a closure report. However,

the gasoline leak was documented in an Unusual Occurrence Report [Appendix A of K/HS-156, *RCRA Facility Investigation Plan, K-1007 Gas Tank, Oak Ridge Gaseous Diffusion Plant, Oak Ridge, Tennessee* (Energy Systems 1988)]. Additional information is provided in the EBS for the K-1007 building (DOE 2004).

- Office Trailers K-1556 and K-1310-Q, -R, -CY, and -CZ – placed prior to 1996, all were removed by 2001.
- Building K-1028-70 – security portal for Bldg. K-1007 (also known as Portal 1), demolished in 2004.

Zone 1 EU Z1-04

Z1-04 lies on the western edge of the ED-8 land parcel, and only a small portion of the EU is included in the transfer property. No buildings or structures are located on the portion of the EU that is within ED-8. The only features include Avenue J, 3rd Street, and a small portion of Maple Avenue.

One former FFA site, the 600 Oil Storage Area, was located within this EU. This facility consisted of aboveground storage tanks constructed in the early 1940s and removed by 1951.

Zone 1 EU Z1-05

Z1-05 occupies the southwestern corner of the ED-8 land parcel, and only a portion of the EU is included in the transfer property. As mentioned previously, the western one-third of Bldg. K-1007 lies within this land parcel. The description of this building and the history of the larger area are provided above under the Zone 1 EU Z1-03 discussion. The other significant components of this EU are the southern portion of Contractor's Road and the former K-1007-P2 Pond, which has been filled.

4.2 PAST AND PRESENT ACTIVITIES FOR THE ADJACENT PROPERTY

The nearest non-DOE property is Highway 58/Oak Ridge Turnpike, which forms approximately three-fourths of the southern boundary of the land parcel. There is no indication that activities from this non-DOE area would have contributed any contamination to the area to be transferred.

Across Highway 58/Oak Ridge Turnpike, Land Parcel ED-3 borders Land Parcel ED-8 for approximately 950 ft. This area (the HVCC) was used for housing construction workers in the early to mid-1940s. By the mid-1950s all buildings had been demolished. Following the demolition, this land parcel was allowed to revegetate and became a mixed pine and hardwood forest. The eastern section of this land parcel is used for office trailers and is traversed by the Haul Road. The HVCC received an approved No Further Investigation determination from EPA and TDEC in March 1998.

The K-1007-P1 Holding Pond, southwest of Bldg. K-1007, historically received storm water and laboratory waste drainage from the plant. This pond is listed as a Solid Waste Management Unit under the Resource Conservation and Recovery Act of 1976. Similarly, the K-1007-P3 Pond is south of Land Parcel ED-8 across Highway 58/Oak Ridge Turnpike and west of ED-3. This pond does not receive direct storm water or waste drainage from the main plant area; however, the pond is connected to the P1 Holding Pond via a culvert under the highway.

During the 1940s, numerous shops, supply and maintenance buildings, and a railroad spur on Parcel ED-5 East, west of ED-8, supported the construction of the process facilities. ED-5 East is no longer DOE-owned or DOE-managed land. It remains undeveloped as of this writing. By 1953 temporary

buildings were demolished, leaving only concrete slabs, which were removed in the late 1960s or early 1970s, and the parcel was maintained as a grassy field. In the 1960s, the existing railroad spur was removed and replaced with the current spur. Also located on the property are underground electrical transmission lines and three sets of manholes related to the transmission lines.

Building K-1652, off the northwest corner of Land Parcel ED-8, was constructed in 1983 and has been used throughout its history as the Plant Protection Headquarters and Fire Station. During the construction of the plant, this site was used for staging of construction equipment and materials. Building K-1652 and its associated land footprint were transferred to the city of Oak Ridge in 2008.

Land Parcel ED-9 forms the north-central border of much of ED-8 and includes the former laboratory area of ETTP. The EM program has cleared EU Z2-33, which comprises ED-9.

The area to the northeast of Z2-43 was forested prior to the acquisition by the Federal Government and has remained forested throughout the history of operations at ETTP.

Finally, a portion of Land Parcel ED-4 forms part of the eastern boundary of ED-8. This area has largely been undeveloped woodland throughout the history of ETTP although a portion of this site contained buildings used to support the HVCC, which were demolished by 1963. DOE has obtained a Clean Parcel Determination for ED-4 and is in the process of transferring that land parcel.

4.3 HYDROGEOLOGIC ENVIRONMENT

ED-8 is located in the southern portion of the ETTP. This portion of the ETTP is underlain by bedrock of the Chickamauga Supergroup. The Chickamauga Supergroup formations underlying this area include the Carters Limestone, the Hermitage Formation, the Cannon Limestone, and the Catheys Formation. Although less prone to karst development than the Knox Group rocks in the vicinity of the ETTP, the Chickamauga formations are nevertheless subject to the development of karst, and pre-construction topographic maps indicate the occurrence of sinkholes in an area west of Bldg. K-1330. These sinkholes were filled during construction of the plant in the 1940s.

Solutionally enlarged fractures, joints, and bedding planes are common in exposures of Chickamauga rocks in the vicinity of ETTP. Structurally, these formations have been folded into an anticline (convex upward fold) with the axis of this structure trending northeast–southwest in a line located just north of the K-1000 Complex and just south of the K-1007 Building. Bedding in the Chickamauga generally dips northwestward on the north side of the axis and southeastward on the south side of the axis.

The water table at ETTP generally mimics topography with shallow groundwater flowing from higher topographic areas to the surrounding surface water bodies. Groundwater flow through bedrock is primarily controlled by fractures, bedding planes, and hydraulic gradient, and specific flow paths are difficult to discern. The interpretation of subsurface flow paths is further complicated by cut-and-fill activities that occurred to level the ground prior to construction of the facilities. For example, it appears that as much as 10 ft of fill material may have been placed in the area of Bldg. K-1580 during the construction of the ETTP.

Depth to bedrock across the land parcel is expected to be from 2 to 20 ft below the ground surface (bgs). The depth to groundwater across the land parcel is expected to range from 8 to 30 ft bgs. Shallow groundwater flow is anticipated to be to the south–southwest toward the shallow ponds south of ETTP.

Monitoring well BRW-113, which is completed in bedrock, is located within the ED-8 footprint approximately 250 ft north of the K-1000 Complex. This well intersects the southwestern tip of a volatile organic compound (VOC) plume and has shown contaminant concentrations in the range of 0.7 to 15 µg/L in a March 2007 sampling event. The VOCs tetrachloroethene (PCE) and trichloroethene (TCE) occurred above a federal drinking water maximum contaminant level (MCL) and TDEC domestic water supply criteria in the sample collected from this well. The source of the contamination is off-parcel to the northeast.

Four unconsolidated zone monitoring wells (UNW-047, located north of Bldg. K-1007, and UNW-070, UNW-071, and UNW-072, located south of Bldg. K-1007) and three bedrock wells (BRW-036, BRW-042, and BRW-043, all located north of Bldg. K-1007) have been installed in the ED-8 land parcel.

Groundwater samples have been collected from these seven wells since 1994 and have indicated sporadic occurrences of concentrations of TCE and other VOCs. The source of the contamination is unknown. Only TCE has occurred in concentrations greater than the MCL (ranging from 8 to 15 µg/L), and that occurred only three times in the mid-1990s. With the exception of 2-butanone and acetone, two common laboratory contaminants, the concentration of all VOCs in the vicinity of K-1007 has decreased to below analytical detection limits in the most recent sampling events.

As will be established in the deed restrictions in the CDR, extraction, consumption, exposure, or use, in any way, of the groundwater underlying the property, or water from streams or ponds located on the property, is prohibited without the prior written approval of DOE, EPA Region 4, and TDEC.

5. RESULTS OF VISUAL AND PHYSICAL INSPECTIONS

5.1 VISUAL AND PHYSICAL INSPECTIONS OF THE PROPERTY FOR TRANSFER

A visual and physical inspection of the property was conducted on February 25, 2008. At that time, the area was largely grass-covered with a small number of buildings and trailers, several large parking lots, numerous paved access roads, railroad tracks, and a small stand of trees in the northwestern corner.

Existing buildings located within ED-8 that have been, or are in the process of being transferred, include K-1000, K-1007, K-1330, and K-1580. Several trailers are located north of K-1580, adjacent to K-1007, and at the Portal 3 entrance. A large engineered fabric structure, used as the Bechtel Jacobs Company Central Receiving, and an associated trailer are located on an asphalt-paved area north of Bldg. K-1007. The area occupied by the Central Receiving facility (K-1317) is enclosed in temporary fencing. A former wooden guard house that has been converted to the Wheat Union Station, which is used as the ticket station for the Secret City Railroad excursions, is located northeast of K-1007 adjacent to the railroad spur.

Parking lots occupy large areas east, north, and northeast of K-1007; the area southwest of K-1580; the area north and northeast of K-1330; and an area in the northwestern portion of ED-8. The K-1007-P4 and -P5 Ponds are located adjacent to Highway 58 at the southern boundary of ED-8. Large, open, grass-covered areas are located south of K-1007, K-1330, and K-1580. Open, grass-covered areas are also present in the northwestern corner of the property. The grass-covered area north of Bldg. K-1000 has small, concrete and asphalt areas that remain from the K-1001 Building (demolished in 2000). Another grassy area is located to the northeast of K-1580. A railroad spur used by the Heritage Railroad (the short-line railroad operating at the site), as well as the Secret City Railroad for tours of the ETTP and surrounding area, transects ED-8 from north to south in the western portion of the tract. Another railroad spur running from northeast to southwest passes through the northwestern corner of ED-8. In addition, numerous paved roads crisscross the land parcel.

5.2 VISUAL AND PHYSICAL INSPECTIONS OF ADJACENT PROPERTY

During the walkdown of February 25, 2008, the properties immediately adjacent to Parcel ED-8 were also visually and physically inspected.

Parcel ED-3 occupies the area south of the southeastern corner of ED-8. Parcel ED-3 is partially grass-covered and partially wooded. The K-1007-P1 and K-1007-P3 Ponds are also located southwest and south of Parcel ED-8, respectively. The K-1007-P1 Pond peninsular area, located southwest of ED-8, is the site of the K-1209 Meteorological Tower and the K-1209-A Thunderstorm Indicator. These structures are used by the ETTP Park Shift Superintendent during emergencies and inclement weather to aid in the protection of ETTP personnel.

Parcel ED-4 is located east of the southeast corner of ED-8. This tract is partially grass-covered and partially wooded. A wooded area is located adjacent to the eastern parking lot of ED-8.

Parcel ED-5 East, a large grass-covered land parcel that was transferred to the Heritage Center in 2007, adjoins ED-8 to the west. Also located at the northwestern corner of ED-8 are the K-1650 and K-1034-A Buildings, and the K-1652 Fire Station. The former K-1004 Laboratory area lies to the north of ED-8. With the exception of the K-1006 Building, the buildings that formerly occupied the K-1004 Laboratory area have been demolished and the area re-vegetated with grass. Other facilities

adjacent to the northern portion of ED-8 that have been transferred, or are proposed for transfer, include Bldgs. K-1225 and K-1008-F.

Based on the results of the walkdown, there are no physical or visual indications of potential impacts to ED-8 from adjacent properties.

6. SAMPLING RESULTS

The seven EUs that comprise Land Parcel ED-8 and/or the associated FFA sites listed in Table 3.1 were assessed under approved Work Plans that address sampling and analysis prepared according to the DVS protocol. All verified and validated data used to make regulatory decisions have been placed in the Oak Ridge Environmental Information System database (www-oreis.bechteljacobs.org/oreis/help/oreishome.html) and are available for review. The sampling results and data evaluation can be found in Appendix A of the applicable PCCRs (DOE 2006a, DOE 2007a, and DOE 2008). These data were deemed sufficient to reach NFA decisions for each EU in the ED-8 land parcel.

7. RISK EVALUATION

Both Zone 1 and Zone 2 remedial action objectives were developed by the DVS to support the future use of ETTP as a mixed-use commercial and industrial park. Therefore, remediation criteria were designed for the protection of the future industrial worker under the assumption the worker normally would not have the potential for exposure to soils at depths below 10 ft bgs.

Within that constraint the decision rules established in the DVS were based on one or more of the following criteria:

- exceedance of a maximum RL at any location,
- exceedance of an average RL across the EU,
- unacceptable future threat to groundwater, or
- unacceptable cumulative ELCR of $> 1 \times 10^{-4}$ and HI > 1 across the EU.

Table 7.1 summarizes the decisions for the seven component EUs within Land Parcel ED-8 and/or the decisions for the FFA sites located within the EUs. While all of EU Z1-03 and EUs Z2-34 and Z2-43 are in ED-8, only portions of EUs Z1-01, Z1-04, Z1-05, and Z2-24 are in ED-8. However, for purposes of risk evaluation, the entire EU is considered because there are no barriers or impediments preventing access to the balance of the EUs that are not in ED-8.

Table 7.1. Land Parcel ED-8 risk evaluation results

EU	Associated FFA sites	Decision rule evaluation				Risk evaluation
		Max RL	Avg RL	Risk	GW	
Z1-01	S-21 Happy Valley Service Station ^a	NFA	NFA	NFA	NFA	Passes
Z1-03	K-1027 Service Station ^b	NFA	NFA	NFA	NFA	Passes
	K-1047 Motor Pool Repair Shop ^b	NFA	NFA	NFA	NFA	Passes
	Bldg. 665 Steam Shed ^b	NFA	NFA	NFA	NFA	Passes
	South Plant Area Lab Drain Lines ^b	NFA	NFA	NFA	NFA	Passes
	K-1055 Gas/Diesel Station ^b	NFA	NFA	NFA	NFA	Passes
Z1-04	Bldg. 569 Heavy Equipment Shop ^a	NFA	NFA	NFA	NFA	Passes
Z1-05	K-1007 Gas Tank (Residual Contamination) ^a	NFA	NFA	NFA	NFA	Passes
	K-1048 Tire and Battery Shop ^a	NFA	NFA	NFA	NFA	Passes
	K-1050 Wash/Paint/Grease Shop ^a	NFA	NFA	NFA	NFA	Passes
	600 Series Oil Storage Area ^a	NFA	NFA	NFA	NFA	Passes
Z2-24 ^c	None	NFA	NFA	NFA	NFA	Passes
Z2-34 ^c	None	NFA	NFA	NFA	NFA	Passes
Z2-43 ^c	None	NFA	NFA	NFA	NFA	Passes

^a Decision rule and risk evaluation information are from DOE/OR/01-2294&D2.

^b Decision rule and risk evaluation information are from DOE/OR/01-2367&D2.

^c Decision rule and risk evaluation information are from DOE/OR/01-2723&D1.

FFA = Federal Facility Agreement.

GW = groundwater.

NFA = No Further Action.

RL = remediation level.

RAs have been completed and confirmatory sampling has been obtained to support numerous NFA decisions in both Zone 1 and Zone 2. All of the EU components to Land Parcel ED-8 have obtained NFA concurrence; therefore, the entire footprint of the land parcel is suitable for transfer.

DOE also considered risks from exposure to the larger ETTP site through evaluation of a “roving worker” who may access multiple areas at ETTP. The purpose of this effort was to evaluate the risk posed to workers when they are not inside the buildings. The roving worker scenario is considered to be applicable to all facilities at ETTP, including those transferred.

This evaluation was based on certain assumptions, including: (1) the worker will not be exposed to areas that are inaccessible due to radiological or other controls, such as fences or other barriers, or postings that prevent casual entry by a worker at a nearby building, and (2) there are no “hot spots” of contamination at ETTP that are accessible to these workers. The results of the roving worker risk screen, which used all available data, show that risks/hazards are within EPA’s acceptable risk range.

8. REFERENCES

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Division of Union Carbide Corporation, Oak Ridge Gaseous Diffusion Plant, Oak Ridge, TN.

APPENDIX A
REAL ESTATE ACQUISITION LETTER

**PROPOSED REAL ESTATE ACTION, OAK RIDGE RESERVATION, TN
FILES RESEARCH FOR HAZARDOUS SUBSTANCE ACTIVITY**

The following statement is provided in support of guidance promulgated under Section 120(h) of the Comprehensive Environmental Response, Compensation and Liability Act, as amended (CERCLA) 42 U.S.C. 9620(h) and in support of regulations issued by the Environmental Protection Agency at 40 CFR Part 373.

The undersigned has made a complete search of existing and available Department of Energy (DOE) records, documentation, and data within the real estate files relating to the property that is subject to the proposed transfer action of Parcel ED-8 at the East Tennessee Technology Park within the Oak Ridge Reservation, Tennessee. The proposed action would result in a transfer to the Heritage Center, LLC. The search conducted was considered reasonable with a good faith effort expended to identify whether any hazardous substances were known to have been released or disposed of on the property. The available real estate records of this office do not reflect any determinable reference that hazardous substance activity as defined by Section 101(14) of CERCLA took place on or in the property during the time the property was owned by the United States of America.

Lands affected by this action are identified as portions of the following original acquisition tracts in which the United States of America acquired title, (having been acquired for the Atomic Energy Commission as a forerunner of the Department of Energy) by Civil Action No. 429 filed in the United States District Court for the Eastern District of Tennessee, Northern Division:

Parcel ED-8 is located on a portion of Tract H-719. Title to this land was vested in the United States of America by Declaration of Taking No. 26. Judgment on Declaration of Taking was filed for public record on March 30, 1943, in Vol. Y-5, Page 515, in the Roane County Register's Office, Tennessee.

Parcel ED-8 is located on a portion of Tract H-720. Title to this land was vested in the United States of America by Declaration of Taking No. 19. Judgment on Declaration of Taking was filed for public record on February 23, 1943, in Vol. Y-5, Page 138, in the Roane County Register's Office, Tennessee.

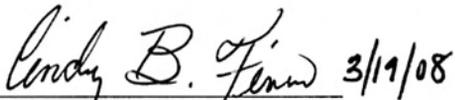
Parcel ED-8 is located on a portion of Tract H-731. Title to this land was vested in the United States of America by Declaration of Taking No. 19. Judgment on Declaration of Taking was filed for public record on February 23, 1943, in Vol. Y-5, Page 120, in the Roane County Register's Office, Tennessee.

Parcel ED-8 is located on a portion of Tract H-732. Title to this land was vested in the United States of America by Declaration of Taking No. 19. Judgment on Declaration of Taking was filed for public record on February 23, 1943, in Vol. Y-5, Page 139, in the Roane County Register's Office, Tennessee.

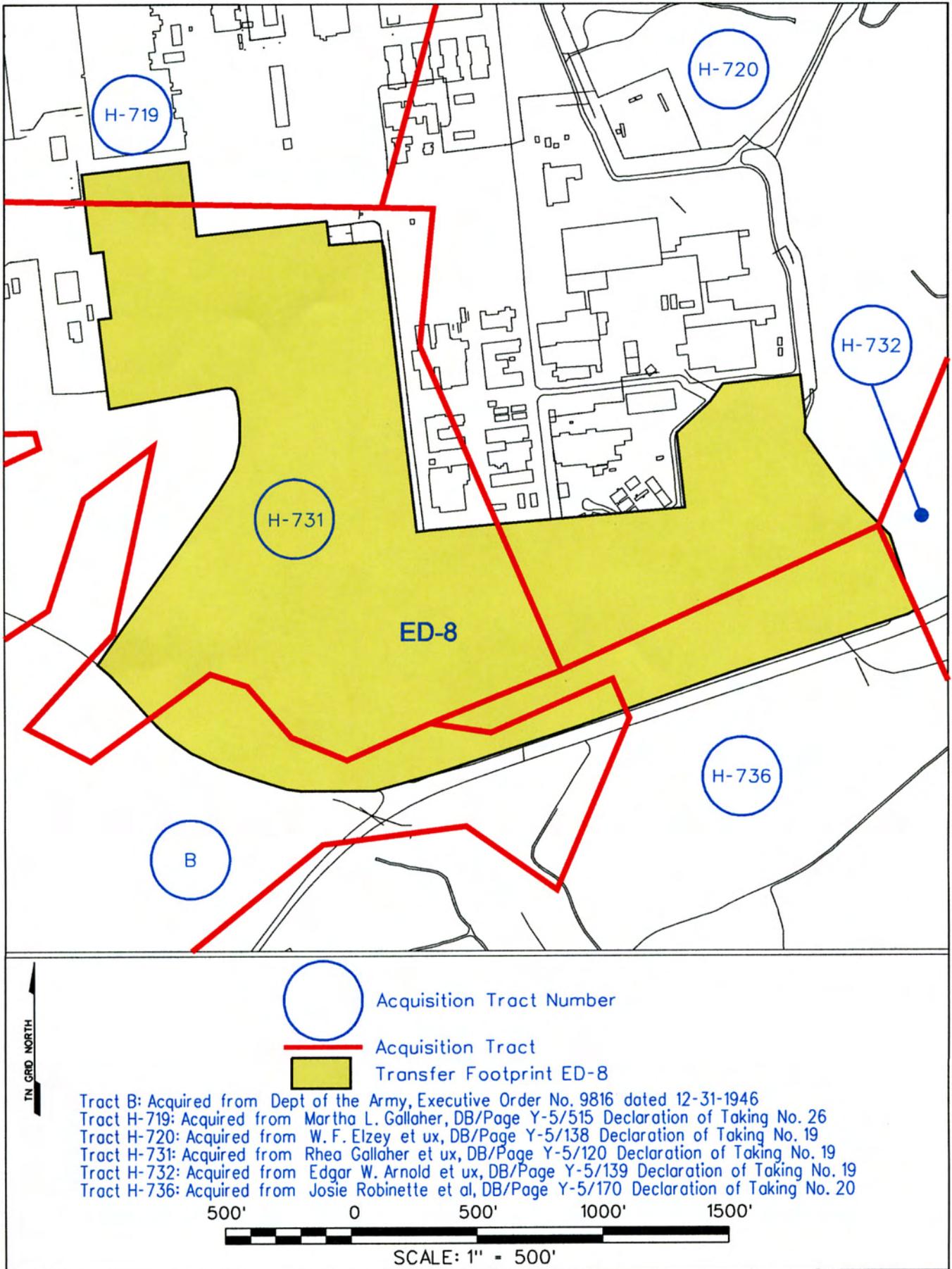
Parcel ED-8 is located on a portion of Tract H-736. Title to this land was vested in the United States of America by Declaration of Taking No. 20. Judgment on Declaration of Taking was filed for public record on February 23, 1943, in Vol. Y-5, Page 170, in the Roane County Register's Office, Tennessee.

Parcel ED-8 is located on a portion of Tract B which was acquired from the Department of Army, Executive Order No. 9816, dated December 31, 1946.

This record shall be made a part of the CERCLA report currently being prepared.

 3/19/08
Cindy B. Finn, Realty Officer
Oak Ridge Office
U. S. Department of Energy

Attachment
Acquisition Tract Map

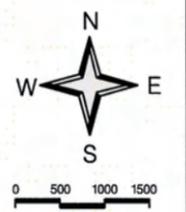
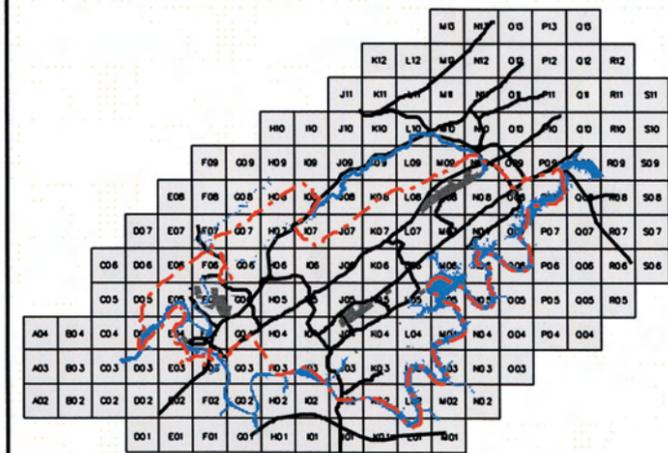
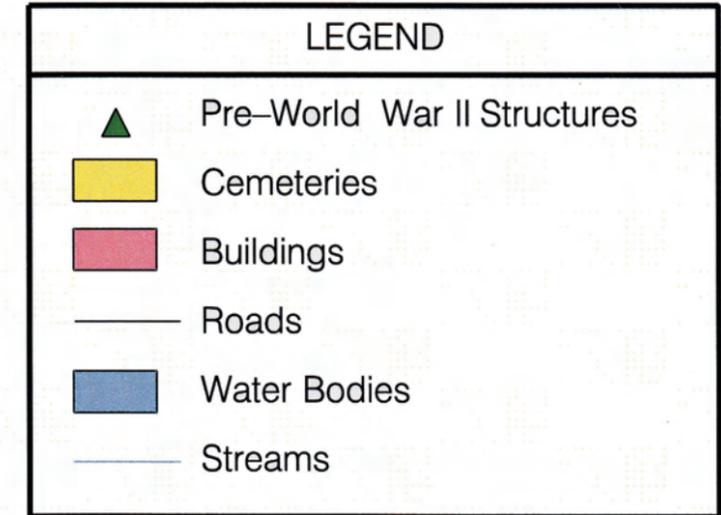
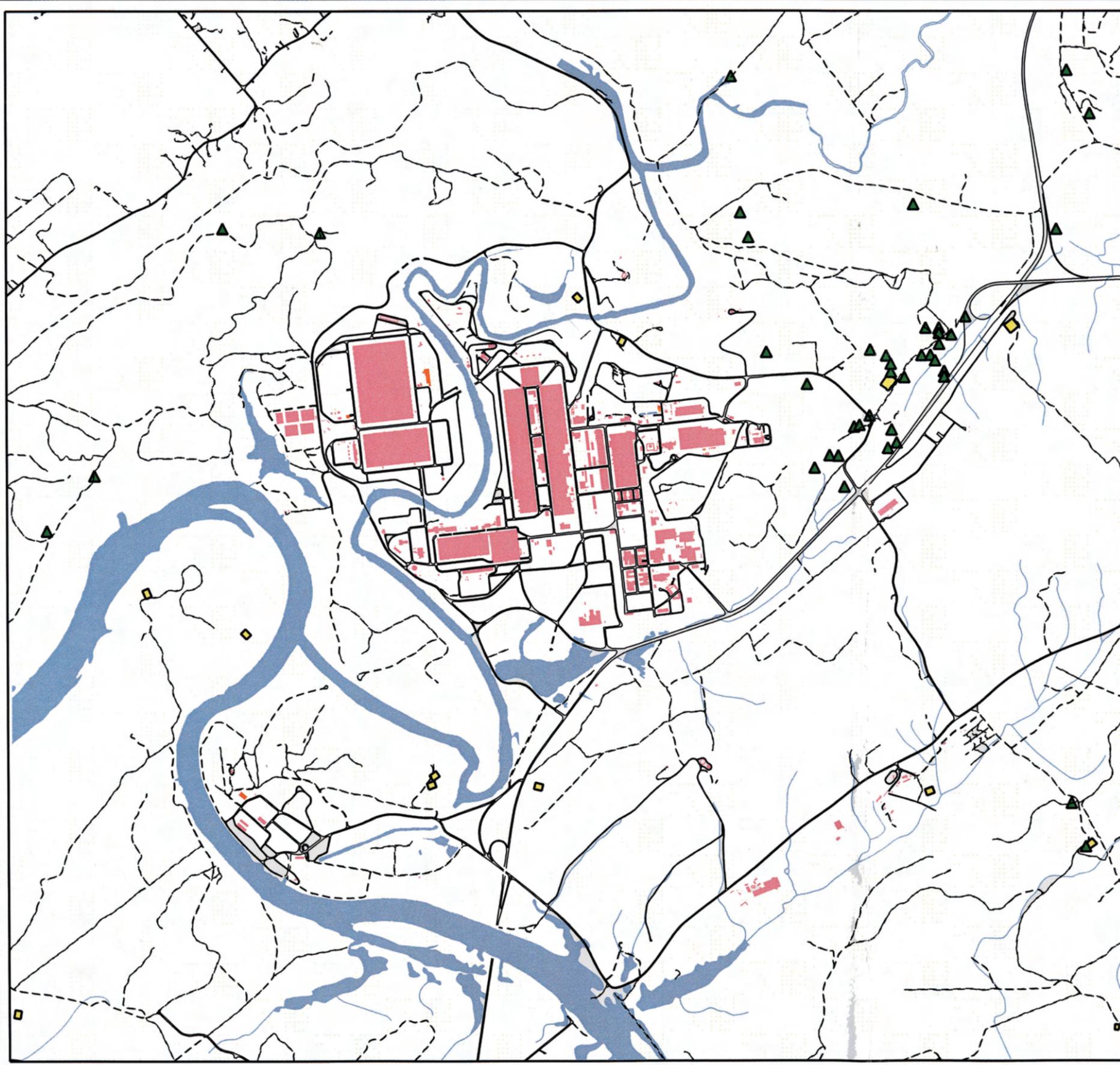


Tract B: Acquired from Dept of the Army, Executive Order No. 9816 dated 12-31-1946
 Tract H-719: Acquired from Martha L. Gallaher, DB/Page Y-5/515 Declaration of Taking No. 26
 Tract H-720: Acquired from W. F. Elzey et ux, DB/Page Y-5/138 Declaration of Taking No. 19
 Tract H-731: Acquired from Rhea Gallaher et ux, DB/Page Y-5/120 Declaration of Taking No. 19
 Tract H-732: Acquired from Edgar W. Arnold et ux, DB/Page Y-5/139 Declaration of Taking No. 19
 Tract H-736: Acquired from Josie Robinette et al, DB/Page Y-5/170 Declaration of Taking No. 20

APPENDIX B

STUDY AREA MAP FROM RECORDS SEARCH

Location of Pre-World War II Structures
and Cemeteries in or near the
East Tennessee Technology Park



DATA COMPILED BY ER REMOTE SENSING PROGRAM
ENVIRONMENTAL INFORMATION MANAGEMENT PROGRAM
GEOGRAPHIC INFORMATION SCIENCES AND TECHNOLOGY GROUP
ORIGINAL BY: BARGE, WAGGONER, SUMNER AND CANNON, INC.
REVISED BY: TETRA TECH, INC. 2/1001

APPENDIX C
PCCR APPROVAL LETTERS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

OCT - 2 2006

Certified Mail
Return Receipt Requested

4WD-FFB

Mr. David G. Adler, Project Manager
Federal Facilities Agreement
Oak Ridge Reservation Management Group
Department of Energy
P.O. Box 2001
Oak Ridge, TN 37831

SUBJ: EPA Approval of the Phased Construction Completion Report for the K-1007 Ponds Area and the Powerhouse North Area in Zone 1 at East Tennessee Technology Park, Oak Ridge, Tennessee (DOE/OR/01-2994&D2)

Dear Mr. Adler:

The Environmental Protection Agency (EPA) has reviewed the document which was submitted on August 29, 2006. The Phased Construction Completion Report (PCCR) for the K-1007 Ponds Area and the Powerhouse North Area in Zone 1 documents:

- the characterization results of the Dynamic Verification Strategy (DVS) for 21 of the accessible 36 Exposure Units (EU) in the K-1007 Ponds and Powerhouse Area addressing 404.1 acres;
- the risk evaluation for each EU evaluated under the DVS and the determination of whether the EU met the Zone 1 Record of Decision (ROD) requirements for unrestricted industrial use to 10 feet below ground surface;
- evaluated 25 Federal Facility Agreement (FFA) sites and recommends no further action for 16 of these sites;
- final status assessments of nine FFA sites which are contingent on completion of remedial action at the site or in the associated EU;
- recommends 326 acres for unrestricted industrial use to 10 feet below ground surface;
- 9.2 acres of water bodies that will be addressed by the Site-wide Remedial Investigation and ROD;

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- four of the remaining 15 EUs await removal of the K-770 Scrap prior to completion of the characterization and associated remedial action; and
- eleven of the remaining 15 EUs await completion of decontamination and decommissioning actions prior to final sampling activity.

The EPA has no further comments on this document and is approving the PCCR as submitted. Although, this interim remedial action is approved, the Department of Energy should ensure that the Zone 1 Remedial Action Report (RAR) clearly specifies all land use controls implemented for all acreage within Zone 1 including all changes to the dig restrictions below 10 feet. Revising the industrial land use restrictions may require further specification of the remaining land use controls (e.g., restrictions on digging into contaminated aquifers). The current discussions to remove these controls need to conclude with an agreement between the FFA Parties regarding the specific conditions to apply prior to submitting the D1 RAR.

The EPA commends the efforts of the Remedial Action Core Team to achieve this major milestone. If you have any questions regarding this matter, please feel free to contact Constance Jones of my staff at (404) 562-8551.

Sincerely,


Earl L. Bozeman, Jr., Acting Chief
Federal Facilities Branch
Waste Management Division

cc: R. Doug McCoy, TDEC
Patricia Halsey, DOE
James Kopotic, DOE
Thomas Gebhart, TDEC
SSAB
LOC

bcc: Martha Brock, OEA
Reading File
ETTP Site File
Constance Jones, FFB

C.Jones/caj:4WD-FFB/404-562-8551/9-21-2006/My Documents\Backup\ORR\Zone
1\PCCRs\Approval of PCCR for the K-1007 Ponds Area and Powerhouse North
Area.doc

Jones caj 9/21/06 Crane JK Taylor _____
9/21/06



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

April 4, 2008

Certified Mail
Return Receipt Requested

4SF-FFB

Mr. David G. Adler, Project Manager
Federal Facilities Agreement
Oak Ridge Remediation Group
Department of Energy
P.O. Box 2001
Oak Ridge, TN 37831

SUBJ: Review and Approval of the FY 2008 Construction Completion Report for
Exposure Units Z1-01, Z1-03, Z1-38 and Z1-49 in Zone 1 at East Tennessee
Technology Park, Oak Ridge, Tennessee (DOE/OR/01-2367&D2)

Dear Mr. Adler:

The Environmental Protection Agency (EPA) has reviewed the Phased Construction Completion Report (PCCR) which was submitted March 26, 2008. The PCCR addresses exposure units (EU) in the Dust Island, K-901, and K-1007 Ponds Areas and presents information on:

- the characterization and remediation results for the K-895 Cylinder Destruct Facility in the K-901 Area (EU Z1-49) which covers 0.8 acres. Remediation for the site was identified in the Zone 1 ROD, which was approved November 2002. Remediation activities occurred in September 2007 and clears the 4.3 acres contained in this EU;
- the remediation of six (6) earthen mounds in EU Z1-38, which was identified in the K-901/Duct Island PCCR and approved by EPA on September 21, 2006. The remedial action occurred September 2007 and clears the 20.3 acres contained in this EU;
- EU Z1-1 at the Happy Valley Service Station Group of the K-1007 Ponds Area. The EPA approved the PCCR for the K-1007 Ponds Area and Powerhouse North Area in Zone 1 on April 26, 2006. The Happy Valley Service Station site was identified as needing additional characterization. Based on the results of the subsequent characterization activities, four (4) underground storage tanks were closed in placed in accordance with the Tennessee Department of Environment and Conservation (TDEC) UST

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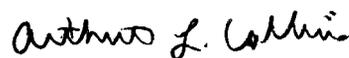
regulations. The remedial action was completed on August 28, 2007. The remedial action clears the 28.0 acres in EU Z1-1;

- the characterization activities at EU Z1-03 in the K-1055 Gasoline/Diesel Station Tanks of the K-1007 Ponds Group. The remedial action removed five tanks. Although the tanks met the criteria for closure in place under the TDEC UST regulations, they were removed in support of the Re-industrialization Program at ETTP. The remedial action clears the 24.4 acres contained in EU Z1-03;
- the total of 81.1 acres that have been evaluated under the Dynamic Verification System and determined that each EU meets the Zone 1 Record of Decision (ROD) requirements for unrestricted industrial use to 10 feet below ground surface; and
- recommends no further action on four (4) additional Federal Facility Agreement (FFA) sites in Z1 UE-03 that were referenced in an earlier PCCR.

The EPA has no further comments on this document and is approving the PCCR as submitted. Although this interim remedial action is approved, the Department of Energy should ensure that the Zone 1 Remedial Action Report (RAR) clearly specifies all land use controls implemented for all acreage within Zone 1, including all changes to the dig restrictions below 10 feet. Revising the industrial land use restrictions may require further specification of the remaining land use controls (e.g., restrictions on digging into contaminated aquifers). Discussions to remove these controls need to conclude with an agreement between the FFA Parties regarding the specific conditions to apply prior to submitting the D1 RAR.

If you have any questions, please feel free to contact Constance Jones of my staff at (404) 562-8551 or electronically at: Jones.Constance@epa.gov.

Sincerely,



Arthur L. Collins, Chief
Federal Facility Branch
Superfund Division

cc: Roger Petrie, TDEC
Patricia Halsey, DOE
Jack Howard, DOE
Thomas Gebhart, TDEC
SSAB
LOC



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4

ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

June 9, 2008

Certified Mail

Return Receipt Requested

4SF-FFB

Mr. David G. Adler, Project Manager
Federal Facilities Agreement
Oak Ridge Reservation Management Group
Department of Energy
P.O. Box 2001
Oak Ridge, TN 37831

SUBJ: EPA Approval of the Fiscal Year 2007 Phased Construction Completion Report for the Zone 2 Soils, Slabs, and Subsurface Structures at East Tennessee Technology Park, Oak Ridge, Tennessee (DOE/OR/01-2723&D2)

Dear Mr. Adler:

The Environmental Protection Agency (EPA) reviewed the D2 of the Fiscal Year 2007 Phased Construction Completion Report (PCCR) for the Zone 2 Soils, Slabs, and Substructures at East Tennessee Technology Park, which was submitted March 2008. The Department of Energy has addressed all comments submitted by the EPA.

Based on the information provided, the PCCR serves to:

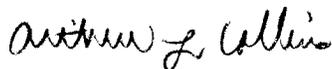
- provide information on the execution of the Dynamic Verification Strategy (DVS) for 11 Exposure Units (EU) in Zone 2 completed in FY 2007;
- describe and document the risk evaluation for each EU evaluated under the DVS and the determination of whether the EU met the Zone 2 Record of Decision (ROD) requirements for unrestricted industrial use to 10 feet below ground surface;
- describe remedial actions performed in EUs Z2-33, Z2-35, and Z2-36;
- identify two additional areas not defined in the Zone 2 ROD that require remediation based on the DVS evaluation results;
- describe the Remedial Actions performed in Zone 2;
- evaluate approximately 195.5 acres and recommends 143 acres for unrestricted industrial use to 10 feet below ground surface;

- evaluate 16 Federal Facility Agreement sites and recommend No Further Action for 14;
- describe remaining remedial action in EU Z2-28 and EU Z2-41; and
- provide a qualitative assessment that 5 of the 11 EUs that have a probability of being released for unrestricted industrial land use throughout the soil zone.

The EPA has no further comments on this document and is approving the PCCR as submitted, which includes the erratum on that corrects Figures C.2 through C.5 in Appendix C and updates to Figures F.2 and F.4 through F.6 in Appendix F. Although this interim remedial action document is approved, the Department of Energy should ensure that the Zone 2 Remedial Action Report (RAR) clearly specifies all land use controls implemented for all acreage within Zone 2, including all changes to the dig restrictions below 10 feet. Revising the industrial land use restrictions may require further specification of the remaining land use controls (e.g., restrictions on digging into contaminated aquifers). The current discussions to remove these controls need to conclude with an agreement between the FFA Parties regarding the specific conditions to apply prior to submitting the D1 RAR.

If you have any questions regarding this matter, please feel free to contact Constance Jones of my staff at (404) 562-8551.

Sincerely,



Arthur L. Collins, Chief
Federal Facilities Branch
Superfund Division

cc: Roger Petrie, TDEC
Patricia Halsey, DOE
James Kopotic, DOE
Michael Travaglini, DOE
Greg Eidam, Bechtel-Jacobs
Thomas Gebhart, TDEC
SSAB
LOC



STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DOE OVERSIGHT DIVISION
761 EMORY VALLEY ROAD
OAK RIDGE, TENNESSEE 37830-7072

September 28, 2006

Mr. David Adler
DOE FFA Project Manager
PO Box 2001
Oak Ridge, TN 37830

Dear Mr. Adler

**TDEC Approval Letter
Phased Construction Completion Report for the
K-1007 Ponds Area and Powerhouse North Area in Zone 1
East Tennessee Technology Park
Oak Ridge, Tennessee
DOE/OR/01-2294&D2
August, 2006**

The Tennessee Department of Environment and Conservation, DOE Oversight Division has reviewed the above referenced document pursuant to the Federal Facility Agreement for the Oak Ridge Reservation and approves the document as presented.

Questions or comments concerning the contents of this letter should be directed to Erin Dixon or Thomas Gebhart at the above address or by phone at (865) 481-0995.

Sincerely

R. Doug McCoy
FFA Project Manager

cc: Jeff Crane – EPA
Pat Halsey – DOE
Donna Perez – DOE

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I-10033-0385

**STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DOE OVERSIGHT DIVISION
781 EMORY VALLEY ROAD
OAK RIDGE, TENNESSEE 37830-7072**

February 6, 2008

David Adler
DOE FFA Project Manager
PO Box 2001
Oak Ridge, TN 37830

Dear Mr. Adler

**TDEC Approval Letter
Fiscal Year 2007 Phased Construction Completion Report for the Zone 2 Soils,
Slabs, and Subsurface Structures at East Tennessee Technology Park
Oak Ridge, Tennessee
DOE/OR/01-2723&D1
September, 2007**

The Tennessee Department of Environment and Conservation, DOE Oversight Division has reviewed the above referenced document pursuant to the Federal Facility Agreement for the Oak Ridge Reservation and approves the document contingent on satisfaction of comments submitted by the EPA in their transmittal dated December 17, 2007.

Questions or comments concerning the contents of this letter should be directed to Thomas Gebhart at the above address or by phone at (865) 481-0995.

Respectfully

A handwritten signature in black ink, appearing to read "Roger Petrie".

Roger Petrie
FFA Project Manager

cc Jeff Crane – EPA
Pat Halsey – DOE
Jack Howard – DOE

er865

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**STATE OF TENNESSEE
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
DOE OVERSIGHT DIVISION
761 EMORY VALLEY ROAD
OAK RIDGE, TENNESSEE 37830-7072**

April 23, 2008

Mr. David Adler
DOE FFA Project Manager
PO Box 2001
Oak Ridge, TN 37830

Dear Mr. Adler

**TDEC Approval Letter
FY2008 Phased Construction Completion Report for Exposure Units Z1-01, Z1-03,
Z1-38, and Z1-49
East Tennessee Technology Park
Oak Ridge, Tennessee
DOE/OR/01-2367-D2
March, 2008**

The Tennessee Department of Environment and Conservation, DOE Oversight Division has reviewed the above referenced document pursuant to the Federal Facility Agreement for the Oak Ridge Reservation and approves the document as presented.

Questions or comments concerning the contents of this letter should be directed to Thomas Gebhart at the above address or by phone at (865) 481-0995.

Respectfully

A handwritten signature in black ink, appearing to read "Roger Petrie".

Roger Petrie
FFA Project Manager

cc Jeff Crane – EPA
Pat Halsey – DOE
Jack Howard – DOE

er880

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