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CLINCH RIVER BREEDER REACTOR PLANT PROJECT

SITE REDRESS PLAN

FEBRUARY 1984

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1.0 INTRODUCTION

1.1 Purpose and Objectives

The purpose of this report is to provide a description of the redress plan and the conceptual alternative developed by the CRBRP Project and TVA.

In December 1983, the CRBRP Project Director established a Redress Planning Task Force to initiate the planning effort for site redress activities. The conclusions from this planning task force were used as a starting point for the work completed by the Project presented in this report. The objectives of the Project evaluation are as follows:

A. Develop a plan to redress the site in accordance with NRC requirements or, in lieu of such specific requirements, in a manner determined by DOE and TVA to account for the site's potential industrial use wherever feasible.

B. Identify and account for environmental requirements that must be met in developing the final site redress plan.

C. Include the preferred preliminary conceptual alternative provided by the Redress Planning Task Force as an input in the development of the final redress plan.

D. Obtain local input from the City of Oak Ridge, Roane County, and other local community leaders.

E. Finalize the site redress plan incorporating input from other organizations and the local community that achieves an appropriate balance between environmental requirements and concerns and physical land characteristics consistent with the potential for industrial use.

2.0 SITE HISTORY AND DESCRIPTION

2.1 Project Status

The Applicants in this proceeding are the United States Department of Energy (DOE), Project Management Corporation (PMC), and the Tennessee Valley Authority (TVA). The Clinch River Breeder Reactor Plant (CRBRP) was intended to be a Liquid Metal Fast Breeder Reactor (LMFBR) demonstration plant with a rated output of approximately 350 megawatts of net electrical power, proposed to be located on the Clinch River in Oak Ridge, Tennessee. The land on which the site is located has previously been dedicated to industrial use.

On January 11, 1982, the Applicants filed a motion to lift the suspension of licensing hearings, which the Atomic Safety and Licensing Board granted. The Board entered an Order on February 12, 1982, establishing a schedule for the commencement of evidentiary hearings concerning LWA matters. Site suitability hearings were conducted August 23-27, 1982. The ASLB then reopened discovery on all environmental issues, and conducted environmental hearings November 16-19, 1982, and December 13-17, 1982. The ASLB Partial Initial Decision was published February 28, 1983. The NRC granted a Limited Work Authorization on May 19, 1983. The CRBRP Project had previously been granted authorization to conduct site preparation activities under 10 CFR 50.12 on August 17, 1982, and actual on-site construction commenced September 22, 1982.

The U.S. Senate voted on October 26, 1983, to table its Appropriations Committee amendment containing a multi-year appropriation for the CRBRP. The result of this action was to provide no Fiscal Year 1984 funds necessary to continue construction of the CRBRP.[1] The Applicants then concluded that there appeared no substantial likelihood that such funds will be appropriated. As a result, the Clinch River Breeder Reactor Plant Project has been terminated and the plant will not be built.

2.2 Site History

The CRBRP site is located on a peninsula formed by the Clinch River approximately two miles upstream of the Highway 58 crossing of the river (Gallaher Bridge) within the city limits of Oak Ridge, and in Roane County, Tennessee. The site is on a 1,346 acre tract of land owned by the Federal Government in the custody of TVA. The site area is typical East Tennessee ridges and valleys. TVA granted a right of entry in August 1982 to DOE-CRBRP to about 600 acres of the tract to begin site preparation activities authorized by the Nuclear Regulatory Commission (NRC).

The Constructor for the CRBRP, Stone & Webster Engineering Corporation (SWEC), started site preparation and excavation work in September 1982. Work authorized by the NRC included:

- Excavation and backfill

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1 129 Cong. Rec. S14611-S14644 (October 26, 1983). Congress completed action on the Fiscal Year 1984 Supplemental Appropriations Bill on November 18, 1983 (129 Cong. Rec. H10529, Nov. 18, 1983). See also 129 Cong. Rec. H9875 (Nov. 15, 1983) and 129 Cong. Rec. S16588 (Nov. 17, 1983).

- Non-safety related permanent improvements including a site access road, railroad spur to site, barge unloading facility, sewage treatment plant, and water line

- Construction support facilities including roads, parking areas, quarry, buildings, fire protection system, electric power, and concrete batch plant.

Site preparation and excavation and the start of the construction support facilities were curtailed on October 28, 1983. During the thirteen months of work, the following was accomplished:

- About 240 acres of the site were cleared and grubbed. This includes not only the main plant area and contiguous laydown areas but also the access road, areas for spoil, and a portion of the remote quarry area.

- About 1.5 million cubic yards of overburden were excavated. The overburden, a cohesive soil, were placed in structural fill, designated random fill, or was spoiled due to organic content, high moisture content or other unsuitable conditions.

- About 1.5 million cubic yards of rock were excavated in the Nuclear Island (NI) excavation and from two main ridges. Most of the rock (limestone and siltstone) was crushed to a three inch maximum size and placed in Class B structural fills.

- The permanent access road was completed through the top of subgrade. Subsequent to curtailment of construction, twelve inches of crushed liestone aggregate was placed on the access road to provide an all-weather surface for continuing access to the site. The on-site portion of the railroad embankment, contiguous to the access road, was completed.

- An eight-inch water line from DOE's Bear Creek Filtration Plant off-site was completed to road station 50+00 (approximately 6450 feet).

- A construction power substation was completed by TVA taking power from the Ft. Loudon - K31 161 KV transmission line and providing 25 MVA of 13.8 KV power. Approximately 2,000 feet of underground distribution to two construction substations was completed.

- Four pre-engineered metal buildings from 4,000-5,000 square feet were erected.

- A concrete ringer crane pad, approximately 80 feet by 80 feet, was constructed on the east side of the NI excavation at elevation 814.

- A dual concrete batch plant capable of producing 250 cubic yards per hour was erected and put into operation.

The full scope of authorized site preparation activities were not initiated because of funding limitations.

2.2 Site Description

The site includes an all-weather access road of approximately 6500 feet from a public road (Bear Creek Road) to the plant area and the following relatively level, stabilized areas:

The craft parking lot at average elevation of 836 (14 acres)

Plant and laydown areas at average elevation of 810 (20 acres)

Other level areas at lower elevations (10 acres)

Within and contiguous to the plant area are the Nuclear Island (NI) excavation, the normal cooling tower (NCT) excavation and the emergency cooling tower (ECT) excavation which, with their side slopes projected to plant area elevations of 810, total 24 acres. See attached Sketch 1.

Non-topographic features of the site, besides the all-weather access road, include the 8-inch water line to road station 50+00, approximately 2000 feet of underground power distribution, four pre-engineered metal buildings, concrete batch plant, construction power substation, and the concrete ringer crane pad.

3.0 ENVIRONMENTAL AND REGULATORY REQUIREMENTS

3.1 Background

On November 30, 1981, the Applicants (DOE, PMC, and TVA) submitted a request to the Nuclear Regulatory Commission (NRC) for authorization under 10 CFR 50.12 to conduct site preparation activities prior to issuance of a Limited Work Authorization. In response to questions contained in an NRC Commission Order of December 24, 1981, the Applicants committed to redress impacts resulting from site preparation if a constructon permit was not granted.[2] The Applicants' redress approach contemplated backfilling and compacting the excavations for permanent plant facilities and other depressions within the construction area.[3]

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2 Letter, Gordon L. Chipmman to Nunzio J. Palladino, "Clinch River Breeder Reactor Plant Docket No. 50-537 (Section 50.12 Request)," dated January 18, 1982, (pages 11, 12).

Grading to facilitate drainage would leave the site in a condition compatible with its previous dedication to industrial use.[4]

The Commission's authorization acknowledged that the site could be substantially returned to its original condition, but indicated that the site is set aside for industrial use and that redress to the original condition may not be necessary to minimize environmental impact.[5] The Applicants have committed to develop an appropriate plan for site redress and seek review and approval from the NRC Staff.[6]

3.2 Applicable Permit and Regulatory Approvals

Termination of the CRBRP Project has effectively eliminated the need for non-NRC permits and approvals as identified in Appendix A. Most discharges permitted under the EPA NPDES Permit and State of Tennessee Clean Water Act Section 401 Certification no longer apply. The Applicants have requested the EPA and State of Tennessee for modification to their respective authorizations.[7] Until completion of site redress and environmental stabilization of the site, the existing conditions of the NPDES effluent limitation for runoff treatment and overall site erosion control will remain in effect. During that period the Project will continue to monitor and report in accordance with mutually established frequencies of the EPA and State of Tennessee. The Federal Aviation Administration permit for structures over 200 feet in height will terminate once the on-site meteorological tower is dismantled.

The permit and approval matrix (Appendix A) provides a status report for the permits and approvals which will not be required for site redress.

Prior to commencement of site redress activities environmental

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3 ibid. (pages 81-83).

4 ibid. (page 84).

5 Docket 50-537, CLI-82-23, Commission Memorandum and Order, dated August 17, 1982, (Pages 20, 21), 16 NRC at 427-28.

6 Docket 50-537, Applicants Response to Motion of Natural Resources Defense Council, Inc., to Intervene, dated December 5, 1983, (page 6).

7 Letter CR-783:VF:83-807, P. J. Gross to A. D. McKinney and A. G. Linton, "CRBRP Project - Request for Modification on NPDES Permit No. TN0028801 and CWA Section, 401 Certification," dated December 14, 1983.

control of water quality, air quality, liquid waste, solid waste, and protection of critical ecological elements will be maintained in accordance with the Environmental Control Plan for Maintenance and Redress of the CRBRP Site (Appendix B). Tasks to assure environmental control include the following:

a. Monitor existing erosion and sediment control through regular inspections and specific inspections as required by the Environmental Control Plan.

b. Repair, replace or establish new barriers, such as straw bales and silt screens, to prevent discharge of sediments from the site.

c. Clean ditches, establish berms and take other needed actions to direct runoff water to site runoff treatment ponds with minimum erosion and transport of sediments.

d. Control water level in the five runoff treatment ponds (A, B, C, D and E) to prevent overflowing, including pumping from one pond to another.

e. Sample effluent from the runoff treatment ponds and perform analyses as required in the Environmental Control Plan.

f. Repair and/or clean sand filters at the runoff treatment ponds, if necessary, to maintain capabilities of the filter systems.

g. Maintains signs and marking ribbons designating rare and unusual plant species.

h. Maintain the Access Road and River Road.

i. During the spring growing season seed and mulch non-vegetated areas and take other remedial actions as necessary to maintain erosion control.

3.3 NRC Environmental Measures and Controls

The NRC environmental requirements during CRBRP construction are contained in NUREG-0139, "Supplement to Final Environmental Statement" (SFES).[8] The environmental control measures contained in the SFES primarily restate criteria contained in non-NRC permits and approvals identified in Appendix A. Specific NRC criteria contained in the SFES Section 4.6.1.1 which address additional conditions which could be affected by site redress and will require consideration during site restoration are as follows:

• Blasting restrictions (should rock removal be required)	Par. 3
• Access and encroachment on the Hensley Cemetary	Par. 4
• Site access road control	Par. 10, 12
• Transmission line maintenance	Par. 13
• Protection of critical ecological elements	Par. 16
• Fire prevention control	Par. 19

4.0 POTENTIAL USES FOR THE CRBRP SITE

The site was dedicated to industrial use even before it was proposed for the location of the CRBRP.[9] A subgroup of the CRBRP Site Redress Planning Task Force investigated numerous potential uses for the site. The goal of the subgroup was to provide information regarding future uses of importance to the site redress plan. Near term uses which could use some or all of the current excavation were considered, but none were identified as likely in the FY 84-85 time frame. Other specific alternative uses assumed filling in the major NI excavation but were not based on any specific redress options such as grading elevations, etc. Again, no near term uses were identified. The following list was compiled based on limited data regarding the possibility of relocating a planned project (e.g., coal gasification) or matching a potential project to the site (e.g., a DOE

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8 NUREG-0139, "Supplement to Final Environmental Statement Related to Construction and Operation of Clinch River Breeder Reactor Plant, Docket No. 50-537," October 1982.

9 Docket 50-537, CLI-82-23, Commission Memorandum and Order, dated August 17, 1982, pages 20, 16 NRC at 427.

experimental reactor).

1. TVA power plant inventory site
2. Atmospheric fluidized bed combustion demonstration plant site
3. Coal gasification site
4. Private sector fusion experiment
5. Welding research institute
6. Low level radwaste facility
7. Spent fuel storage and/or disposal
8. Industrial hazardous waste management facility
9. Experimental use by University of Tennessee
10. Oak Ridge airport
11. Experimental use by other Federal Agencies
12. DOE fusion demonstration
13. DOE experimental reactor
14. Military reactor projects
15. DOE waste repository
16. HTGR demonstration plant

Although any one of the specific uses listed above could emerge as a development option, it was concluded that generalized industrial development is considered the type of use most likely to occur in the future. Although no immediate uses of this kind have been identified, it was concluded that if redress commenced after the spring of 1985, such options would not be forclosed and, in view of the continuing maintenance of environmental controls at the site (see Sections 3.2 and 3.3) no significant adverse environmental impacts would occur.

5.0 SITE REDRESS PLAN

5.1 General

The overall objective of the plan is to reconfigure and redress the site to provide an environmentally stable, self-draining, self-maintaining and aesthetically acceptable site that can be left unattended.

In planning for site redress, two general categories of conceptual options were considered:

- Topographic approaches which accomplish the objectives noted above and which preserve the potential of the site consistent with its previous dedication to future industrial use.

- Completion or addition of site development features such as a railroad spur, a barge facility, sewage treatment plant, or a water line to enhance the value of the site for potential industrial uses.

5.2 Site Redress Criteria

In addressing redress alternatives, the following criteria were assumed to apply:

- Excavations will be filled at least to minimum elevations sufficient to provide self-drainage to the Clinch River.
- No area outside the present cleared area will be disturbed.
- Borrow materials to be used in backfilling excavations and topographic reconfigurations will be taken from locations on the site which are within the present cleared area.
- Surface stabilization to assure erosion control.
- The area identified on plant construction drawings as the Craft Parking Lot, about 14 acres, with an average elevation of 836 will remain "as is." The area is currently environmentally stable and would be useful for any future industrial development.
- Pre-engineered metal buildings and the dual batch plant will be removed while the substation will be de-energized.
- On-site meteorological station will be de-energized and removed.

5.3 Conceptual Redress Alternatives

Two conceptual schemes for accomplishing redress of the CRBRP Site were considered.

The two alternative approaches for site redress which appeared most feasible for further refinement and assessment are:

- Alternate 1 - Backfill the NI excavation, the NCT excavation and trench, and the ECT excavation to the general plant grade of 810. Material to fill excavations would be takenfrom Spoil Areas 2, 3 and 6, the East Laydown Area, the CBI Area, and the South Plant Area. This would provide a site with two major usable areas--the Craft Parking Lot (14± acres) and the general plant area at an average elevation of 810 (47± acres). See Sketch 2.
- Alternate 2 - Backfill the NI excavation, the NCT excavation and trench, and the ECT excavation to about elevation 780. Establish a drainage "spine" from the

excavations in a plant south direction to the Clinch River. Material would be taken from Spoil Areas 2, 3 and 6, the East Laydown Area and the CBI Area. This would provide a site with three major usable areas--the Craft Parking Lot (14± acres), the West Area (29± acres) and the East Area (25± acres). The excavation and redress activities would result in a perimeter road along the north side of the plant area which would provide additional access to the lower portion of the peninsula. The Bear Creek water line would be completed from the present terminus of road station 50+00 to 71+30 (approximately 2,000 feet). See Sketch 3.

5.4 Advantages and Disadvantages of Alternatives 1 and 2

Both alternatives meet all environmental requirements. The principal advantage of Alternative 1 is that it provides the most flexibility for future use. Except for the Craft Parking Lot, the site is left at one general elevation, about 810.

The disadvantages of Alternative 1 are the higher cost and longer construction schedule and less net usable acreage for industrial use. To backfill the excavations with material to support industrial structures will require borrowing from and eliminating some presently stabilized fills.

A preliminary estimate indicates that as much as 1.3 million cubic yards of material may have to be moved at a cost of about $6 million. Optimistically, this work might be completed in seven months. However, the schedule is sensitive to the final determination of the stability required in the excavation backfills.

The principal advantage of Alternative 2, other than lower cost and schedule considerations, is that it provides the most net usable, stabilized area to support industrial structures. Since the excavations will be part of a drainage "spine," requirements for backfill will be smaller than in alternative 1 and material can be borrowed from spoil areas and other non-stabilized areas. In addition, Alternative 2 includes the completed water line and additional access to the lower portion of the peninsula, both important development parameters for the potential development of the site for industrial purposes.

The disadvantage of Alternative 2 is the less flexible site topography. The reconfigured site will have three areas--the Craft Parking Lot (14 acres), a West Area (29 acres), and an East Area (25 acres). This will not provide as much flexibility in locating future site improvements.

A preliminary estimate for Alternative 2 indicates that about 750 thousand cubic yards of material may have to be moved at a cost of $3-4 million. A schedule of six months for accomplishment

should be readily achievable.

5.5 Completion or Addition of Non-Topographic Features

The completion of the following non-topographic improvements which were planned, designed, and approved for construction by NRC in the authorization permit, were not completed during site preparation. They would, if completed, enhance the value of the site for future use, but were rejected from consideration during redress due to the extreme high cost, environmental disturbance to areas currently undisturbed and the negative effect on the redress construction schedule of about seven months.

The barge unloading facility adjacent to the access road at about road station 22+00. It is estimated to cost about $1.2 million.

The railroad spur from the K-25 spur to the site. It is estimated to cost about $1.8 million. If completed as planned, it would have limited value since it would be subject to severe security restrictions where it passes through K-25.

The sewage treatment plants on-site. The designed plants would have a capacity of 65,000 gpd and are estimated to cost about $600 thousand to complete.

The addition of the following improvements would enhance the value of the site for industrial use:

Construction of a railroad spur to the site outside of the K-25 security fence (present design utilizes existing track through K-25). An estimate has not been made for this routing, but it would be about 14,000 feet longer than the present design, would require bridges over two roads and one creek, and thus cost considerably more than present design.

Upgrading the existing gravel road that connects with State Highway 95 and the intersection of Bethel Valley Road which serves the National Laboratory. This would provide a more direct route to the Pellissippi Parkway and to East I-40 via Route 95. This would be a major and costly construction task.

None of the additional improvements considered in this subsection were incorporated into either alternative due to their high cost, potential environmental impacts, and negative effect on the redress construction schedule.

5.6 Conclusion

Because of its lower cost, larger usable land area, and schedular

advantage Alternate 2 has been selected as the preferred approach to redressing the site. Modifications to Alternate 2 have been made to provide an approximate 6 additional acres thereby maximizing usable land area.

The site will be reworked to leave it in a condition that is both environmentally and aesthetically acceptable; that is, self-maintaining and suitable for future use. This work will include excavation of borrow material from the site to fill the existing excavations for the Nuclear Island, Normal Cooling Tower and Emergency Cooling Tower. The site will also be re-graded and seeded in order that erosion and transport of sediment into the Clinch River can be kept within acceptable limits. The design of new grades and the finish grading of the site will provide access and stabilized surface area suitable for future industrial use.

The redress activities will comply with all applicable permits issued to the CRBRP and applicable requirements. Access to the Hensley Cemetery, will be maintained during redress of the site and remain after redress. No area outside the present cleared and grubbed area will be disturbed during site redress work.

A plan of the proposed Modifications to Alternative 2 is shown on Sketch 4. The major features of this scheme are: (1) fill the Nuclear Island and Emergency Cooling Tower excavations to an elevation which will facilitate natural drainage to the Clinch River and (2) fill the Normal Cooling Tower excavation to surrounding grade elevation. Materials to be used in backfilling these excavations will be taken from locations on the site which are within the present approved clearing and grubbing limits. Selection of borrow areas will give priority to areas where borrow will have the least impact on future industrial use of the site. Excavation of materials from the borrow areas will be performed by methods which will prevent run-off directly into the river. In order to assure adequate stability of filled areas intended for future industrial use placement of fill will be controlled by specifying suitable lift thickness, compactive equipment and compactive methods.

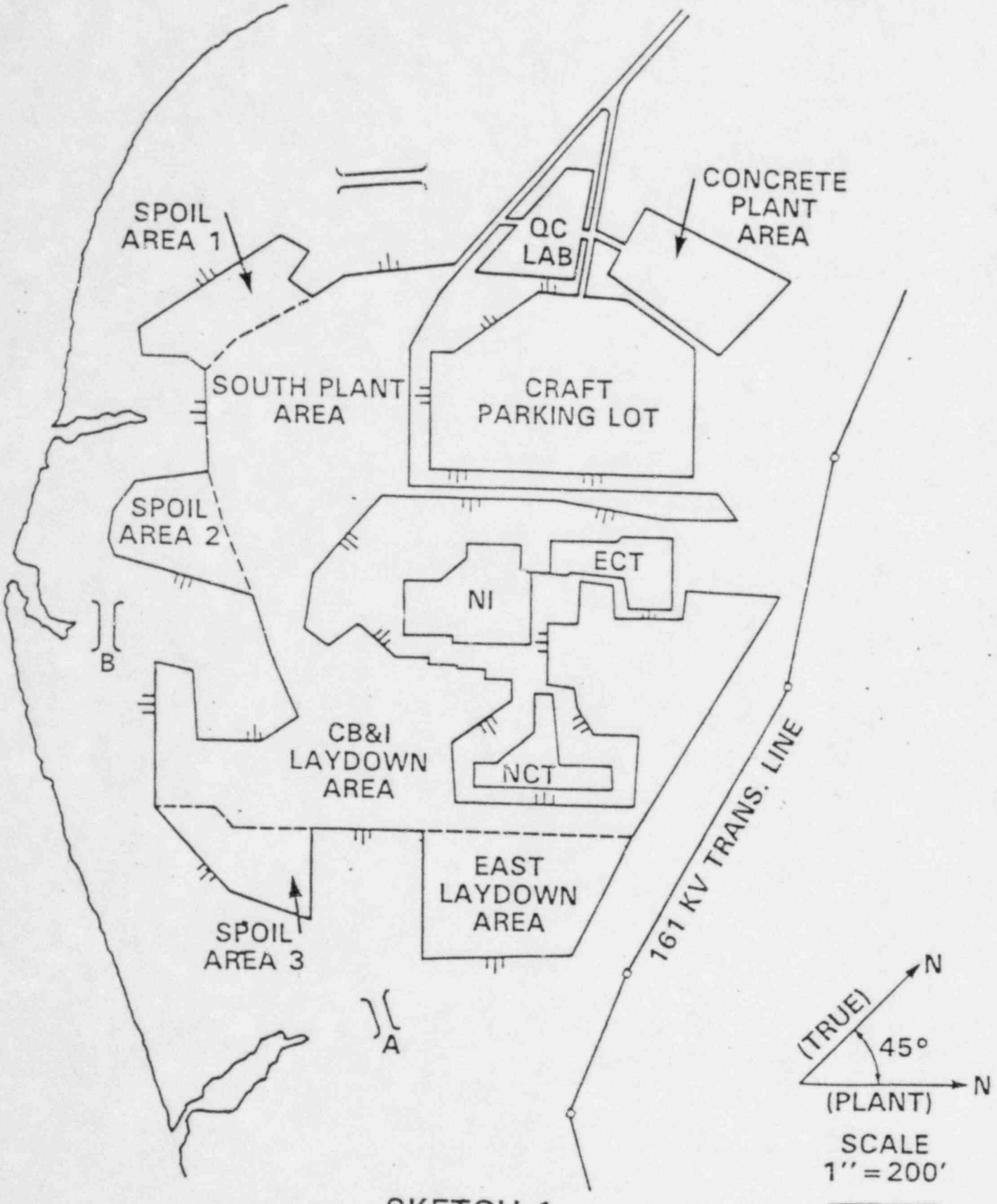
In addition to re-grading the site several non-topographic improvements are planned. Temporary buildings and the Concrete Batch Plant will be removed from the site. The foundations for these structures, the aggregate storage bins, the truck wash facility, and miscellaneous equipment footings and pads will be demolished. The 8" Bear Creek Water Line along the Access Road was terminated at WM Station 50+100. This line will be extended approximately 2,000 feet along the continuation of the Access Road to a point south of the N.I. Excavation.

After the site has been re-graded the area will be stabilized by seeding or surfacing with aggregate. After planted material and slopes have been established, the treatment ponds will be removed allowing the site to drain naturally to the Clinch River. The

land will be included as an integral part of the forestry management program conducted by the DOE in this area. Seedlings will be planted as a part of that forestry management program.

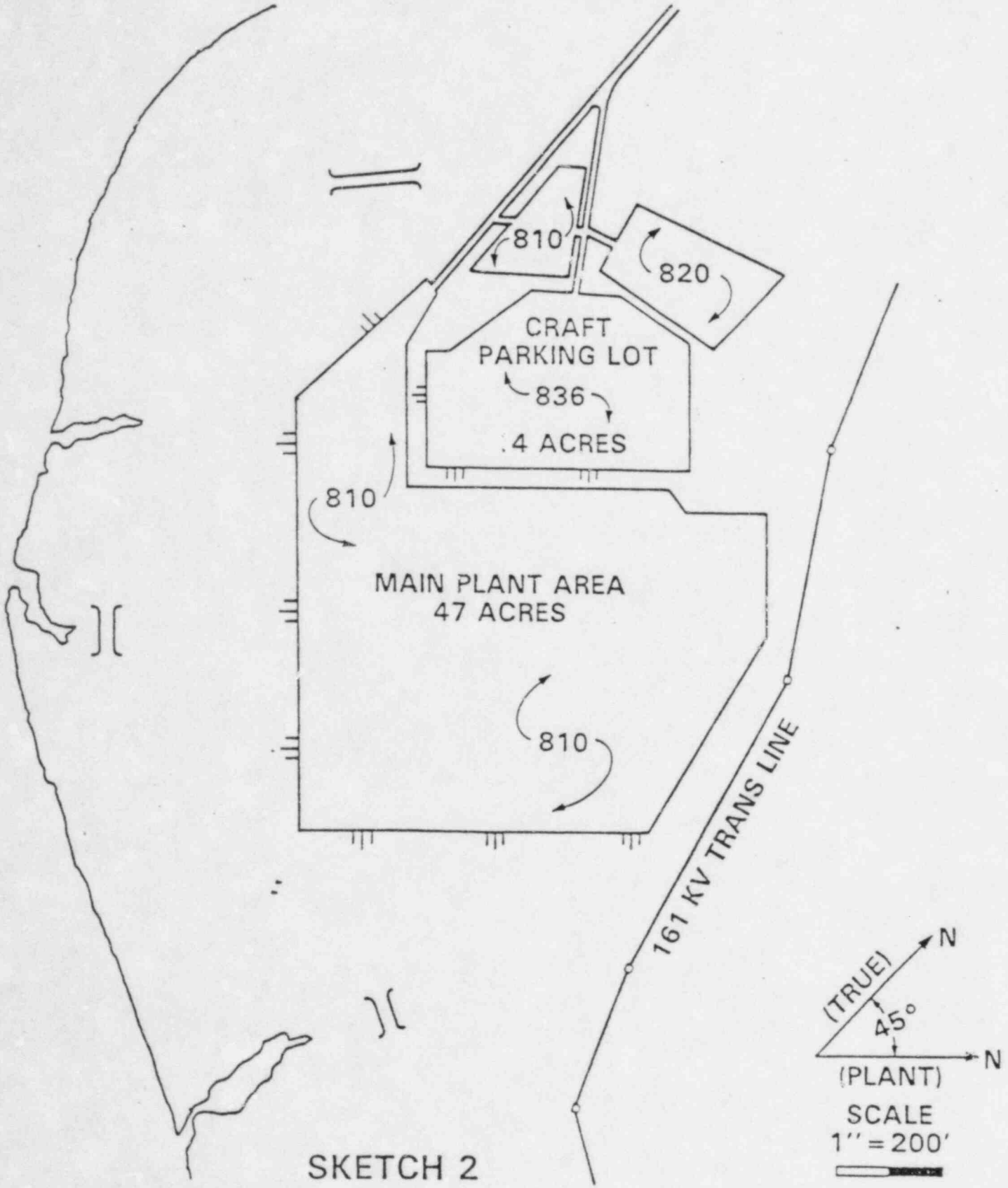
Redress activities would be scheduled to commence after the spring of 1985. Before commencement and during redress, all applicable environmental controls will be maintained (see sections 3.2 and 3.3). If prior to commencement industrial uses for the site are identified and committed which are consistent with the longstanding development plan for the site, then redress would be affected in accordance with this plan on those areas of the site not committed to industrial use. This plan will assure that the environment of the site is protected, consistent with preserving its previously dedicated potential for industrial use.

CRBRP SITE OCTOBER 1983



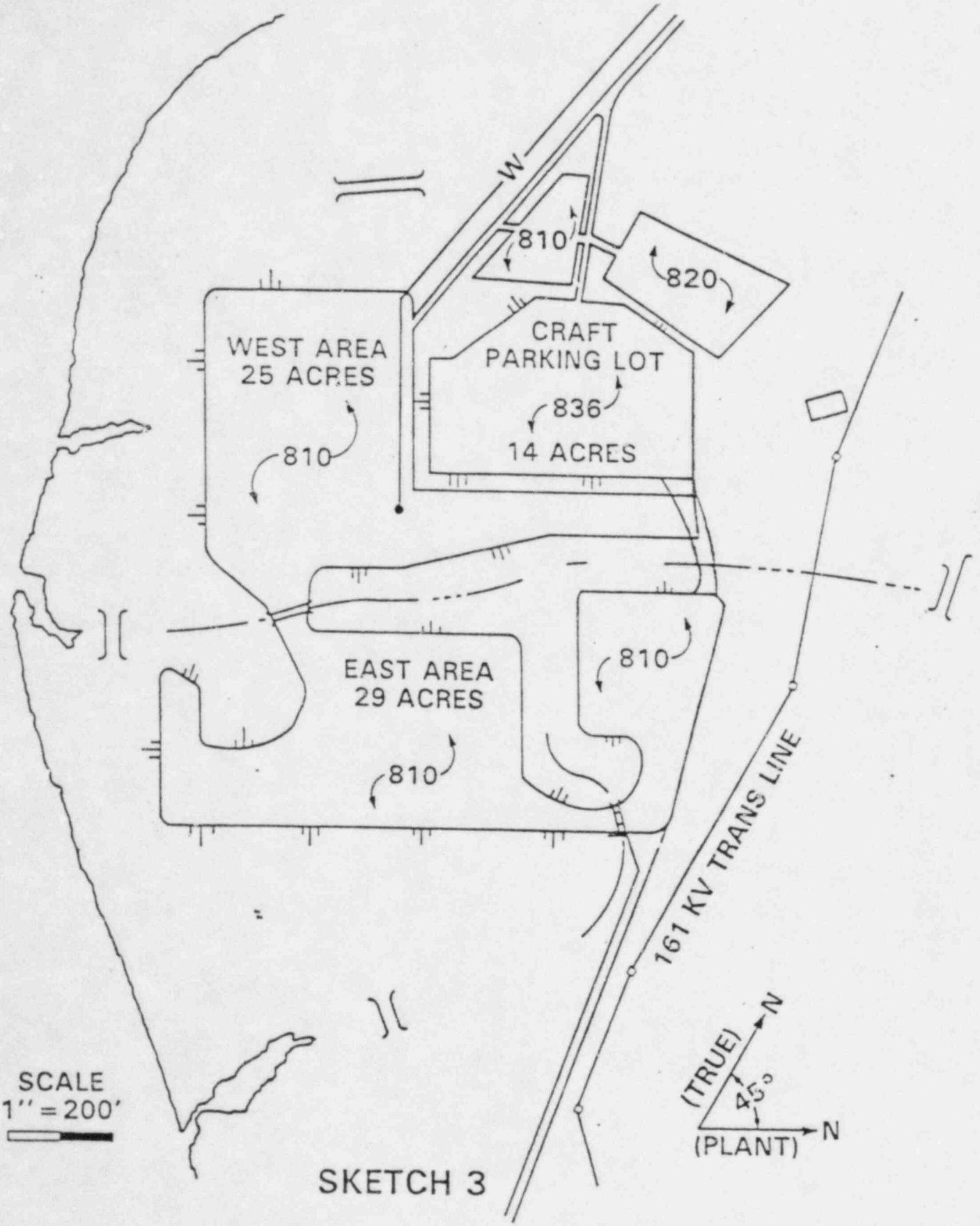
SKETCH 1

ALTERNATE 1



SKETCH 2

ALTERNATE 2



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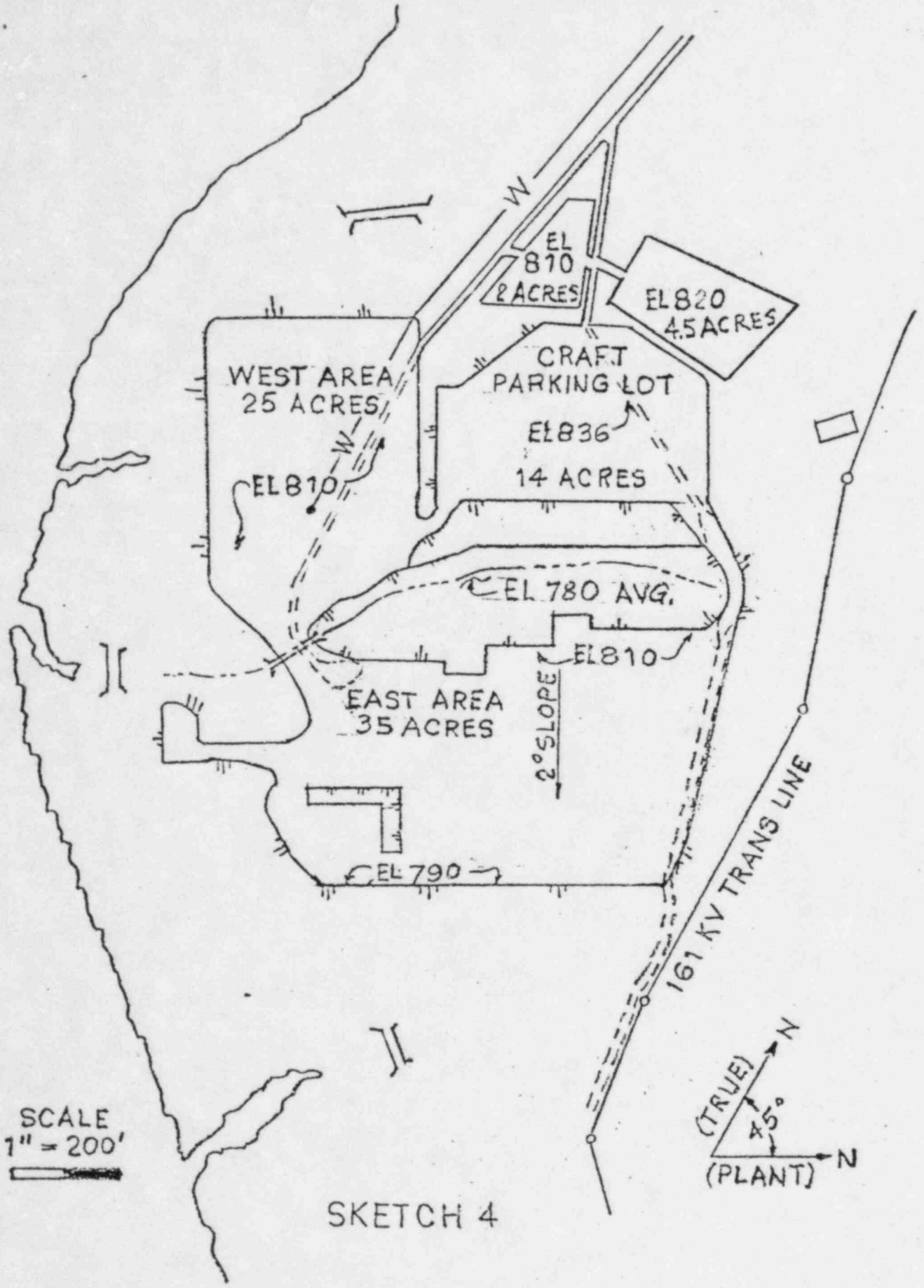
W
EL 810
2 ACRES
EL 820
4.5 ACRES
CRAFT PARKING LOT
EL 836
14 ACRES
WEST AREA
25 ACRES
EL 810
EL 780 AVG.
EL 810
2° SLOPE
EAST AREA
35 ACRES
EL 790
161 KV TRANS LINE
(TRUE) N
45°
(PLANT) N
SCALE
1" = 200'

SKETCH 4

Appendix A

Clinch River Breeder Reactor Plant Project's
Non-NRC Approvals Listing

	Agency	Type of Approval(s) or License(s)	Issue/ Effective Date	Need for Site Address	Expiration Date	Status	Method of Termination	Reporting Requirements	Comments
Federal									
1	Department of Transportation, U.S. Coast Guard	Navigational Aids Assessment	11-30-81	No	None	No private aids for navigational markings are required	None	None	Terminated on 12/7/83 by telephone call
2	Department of Army, Corps of Engineers	Permit No. 42,362, Barge facility, Intake and Outfall Structures & Fills (main site)	05-06-77	No	05-06-84	Partial completion of activities covered by this permit	Cease all activities covered by this permit	None	Terminated by CR-783:VF:84-021 (2/3/84)
3		Permit A42,362, Turn & Acceleration Lane	10-19-83	No	10-19-86	Work covered by this permit has not commenced	Do not begin this work	Notify agency when the work is begun and completed	Terminated by CR-783:VF:83-827 (1/3/84)
4	U.S. Environmental Protection Agency, Water Management Division	Authorization to discharge under the National Pollution Discharge Elimina- System Permit No. TN0028801	02-01-83	Yes	01-31-88	The conditions of the permit are in effect	Formal notification of EPA to terminate	As listed in the permit	Terminate with a letter by 6/1/85
5	Tennessee Valley Authority, Division of Land and Forest Resources	Section 26A permit Approval of Plans- for the main site activities	04-19-77	No	None	Partial completion of activities covered by this approval	Inform TVA of completed activities & other proposed activities	None	Terminated by CR-783:VF:84-021 (2/3/84)
6		Section 26A permit Approval of Plans- modification to include additional activities	02-18-83	No	None	Activities covered by this approval have been completed	Inform TVA of completed activities	None	Terminated by CR-784:VF:84-021 (2/3/84)

Appendix A

Clinch River Breeder Reactor Plant's
Non-NRC Approvals Listing

	Agency	Type of Approval(s) or License(s)	Issue/ Effective Date	Need for Site Redress	Expiration Date	Status	Method of Termination	Reporting Requirements	Comments
7		Section 26A permit- approval of plans for offsite storage area No. 1	06-24-81	Maybe	None	Activities covered by this approval have been completed	Inform TVA of status	None	Terminate with a letter by 3/15/84
8		Section 26A permit- approval of plans for the turn and acceleration lane	10-26-83	No	None	Work covered by this approval will not be performed	Inform TVA of intentions	None	Terminated by CR-783:VF:83-827 (1/3/84)
9	Federal Aviation Administration Air Space & Procedures Branch	Permits for structures 200 ft. or more above the ground	11-24-76	until towers are removed	Yes,				Permits are held by TVA Request TVA to terminate permit when towers are sold.
10	Federal Communications Commission, National Telecommunication and Information Agewncy	Assignment of frequency authorization for construction phase radios operational phase receives/transmitters	07-08-83	Yes	None	Construction phase authorizations obtained only	Request DOE-ORO to have authorizations invalidated	None	Authorizations are held by DOE-ORO, operational phase authorizations were never obtained. Terminate with a letter by 12/1/84
	State								
11	State of Tennessee, Division of Air Pollution Control	The determination that a Prevention of Significant Deteriation review was not required	03-18-82	No	None	In effect, the PO agreed to limit emissions	Inform TN to mutually invalidated agreement	None	Terminated by CR-783:VF:84-017 (1/30/84)
12		Three construction permits for two concrete batch plants and one boiler using No. 2 diesel fuel	04-25-83	No	09-01-83	Invalid	Not applicable	None	Expired 9/1/83

Appendix A

Clinch River Breeder Reactor Plant's
Non-NRC Approvals Listing

	Agency	Type of Approval(s) or License(s)	Issue/ Effective Date	Need for Site Redress	Expiration Date	Status	Method of Termination	Reporting Requirements	Comments
13		Three operating permits two concrete batch plants & one boiler using No. 2 diesel fuel	11-15-83	No	None	The units will no longer be operated	Inform TN that the activity will not be conducted	None	Terminated by CR-783:VF:84-017 (1/30/84).
14		Authorization to open burn		Maybe		As needed	Formal notification not required		See TN statutes and regulations for open burning
15	Division of Water Management	CWA Section 401 Certification of the NPDES permit	07-15-82	Yes	01-31-88	Partially satisfied	Request TN to terminate requirements	None	Terminate with a letter by 6/1/85
16		Approval to Construct Sewage Treatment Plants	06-30-83	No	06-30-84	Sewage treatment plants will not be constructed	Inform TN that the plants will not be constructed	None	Terminated by CR-783:VF:84-015 (1/26/84)
17		Approval to Construct Potable Water Main	06-30-83	NO	06-30-84	Water main is being constructed	Inform TN of status & completion of water main	None	Terminated by CR-783:VF:83-828 (1/3/84)
18		CWA Section 401 Certification of the Corps of Engineers Permit No. A42,362, Turn & Acceleration Lane	09-22-83	No	10-19-86	Work covered by this certification will not be performed	Inform TN of status	None	Terminated by CR-783:VF:83-827 (1/3/84)

ENVIRONMENTAL CONTROL PLAN FOR MAINTENANCE AND REDRESS OF THE CRBRP SITE

1.0 PURPOSE

The purpose of this plan is to establish and describe the environmental controls to be used during maintenance of CRBRP Site and then during redress of the site. Maintenance of the site and redress of the site are further described below.

This plan has been developed from the pertinent requirements affecting the CRBRP Site, including but not limited to the Project's NPDES Permit Number TN0028801 and the Project's Erosion and Sediment Control Plan prepared by Stone and Webster Engineering Corporation (SWEC).

This plan is to be continuously implemented from the time the Constructor for the CRBRP (SWEC) is relieved of responsibility for the site and another organization assumes responsibility for the site, by contract or agreement with DOE-CRBRP, until site redress has been completed and adequate vegetation has grown to make the site environmentally stable.

2.0 DEFINITIONS

2.1 Maintenance of the Site - Maintenance of CRBRP Site during the period from relief of the Constructor of site responsibility until the start of redress construction.

Activities at the Site during this period will be limited to control of runoff and sediments, removal of construction materials and equipment, removal of superstructures of buildings and removal of the concrete batch plant.

2.2 Redress of the Site - Redress of the site to make it environmentally stable and aesthetically acceptable for return to TVA control.

Activities to be conducted will be primarily movement of soil and rock within the site to reconfigure the topography to make the site self-draining and, to the extent deemed prudent, provide stabilized areas for future use. Standard earth moving and placing equipment will be used. Incidental blasting of rock and concrete slabs/footings is anticipated. Some drainage structures (culverts) may be required.

3.0 PLAN COVERAGE

Included in this Environmental Control Plan are measures to be taken to satisfy existing project commitments.

Measures required by the Project's NPDES Permit, number TN0028801 and the Erosion and Sediment Control Plan are covered in the section Water Quality Control.

Control of fugitive dust from unpaved roads and limitations on open burning of wood products are detailed in the section Air Quality Control.

Measures for controlling oil and oil spills are provided in the section Liquid Waste Control.

Measures for disposing of solid wastes from the site are provided in the section Solid Waste Control.

Measures for protecting rare and unusual plant species on the site are described in the section Rare and Unusual Plant Species.

Activities which are conducted at the site during either maintenance or redress and, one, not covered by this plan and, two, regulated by Federal or State Agencies, will be controlled by separate plans. Any permits required for such activities are to be obtained by the organization conducting the activity and copies of plans and permits are to be provided to the DOE-CRBRP.

4.0 DESIGNATION OF RESPONSIBLE INDIVIDUAL FOR ENVIRONMENTAL CONTROL

The organization responsible for environmental control of the site shall designate an individual to oversee environmental control activities. DOE-CRBRP shall be advised in writing of the name and qualifications of the individual so designated and that he has the authority to require implementation of environmental control measures.

The individual designated shall plan for environmental control measures for specific activities and shall insure their proper implementation.

5.0 WATER QUALITY CONTROL

5.1 Erosion and Sediment Control During Site Maintenance

During the maintenance period of the CRBRP Site erosion and sediment control will consist of maintaining the effectiveness of existing control measures. The site is to be inspected regularly for evidences of erosion and deterioration of existing control features. If problem areas are identified actions are to be implemented promptly to correct them.

Effluent samples from the runoff treatment ponds A through E are to be collected and analysed according to the limitations and monitoring requirements of the Project's NPDES permit. An extract of the pertinent requirements is at Attachment 1. Sample analyses, results and inspection findings are to be reported to DOE-CRBRP promptly.

In the event that effluent concentrations exceed 50 mg/l, the contractor shall evaluate system performance to assure that the system is operating as designed and that on-site controls are effective. Contractor shall take appropriate corrective action as required.

The water level in the runoff treatment ponds is to be controlled to prevent them from overflowing. To accomplish this it may be necessary to pump water from one pond to another that has sufficient capacity.

The runoff treatment pond filters are to be maintained in good working condition. In the event that siltation of the filters reduces flow-through below design capabilities, filters shall be cleaned in a manner approved by DOE-CRBRP.

5.2 Erosion and Sediment Control During Site Redress

The primary method for controlling erosion on the site is to be by diverting as much runoff as possible into the runoff treatment ponds to be filtered and discharged to the Clinch River. This is to be accomplished by maintaining the slopes of cut and fill areas so they will drain into treatment ponds. Earthwork must be sequenced to control the size of areas draining into each treatment pond to prevent their being overloaded. The approximate maximum drainage area for each of the treatment ponds is:

Pond A	44 acres
Pond B	34 acres
Pond C	48 acres
Pond D	32 acres
Pond E	82 acres

If the size of drainage areas is not maintained, overloading of individual ponds may result. In these circumstances it will be necessary to control the water level in the overloaded ponds. To accomplish this it will be necessary to have the capability of pumping water from the overloaded ponds to the ponds with excess capacity.

Spoil areas and areas where large volumes of materials will be moved shall have barriers placed along the toe of the outer most slopes (where runoff flows toward the river), prior to start of earthwork until they are stabilized, well vegetated and erosion is prevented. All affected areas shall be inspected after each rainfall to verify that erosion is minimized and that erosion and sediment control structures are being effective. Erosion control features shall be repaired, replaced, or added as required to maintain effectiveness.

Existing erosion control measures presently in place protecting previously disturbed areas of the site are to be maintained as long as necessary. If new problems develop new control measures are to be installed.

Effluent samples from the runoff treatment ponds are to be collected and analysed according to the limitations and monitoring requirements of the Project's NPDES permit. An extract of the pertinent requirements is at Attachment 1. Sample analyses, results and inspection findings are to be reported to the DOE-CRBRP promptly.

In the event that effluent concentration exceeds 50 mg/l, the contractor shall evaluate system performance to assure that the system is operating as designed and that on-site controls are effective. Contractor shall take appropriate corrective action as required.

Disturbed areas which do not drain into treatment ponds are to have separate erosion control measures installed. These measures are to include straw dams, silt fences and others as required to minimize sediments reaching the Clinch River.

The runoff treatment pond filters are to be maintained in good working condition. In the event that siltation of the filters reduces flow-through below design capabilities, filters shall be cleaned in a manner approved by DOE-CRBRP.

Rainfall data representative of the site shall be collected.

5.3 Other Water Quality Control

There are two potential sources of water on the site: a well at the Concrete Batch Plant Area and the Bear Creek Water Line. The well will be capped and not used. The Bear Creek Water Line has been installed from the K-25 Water Filtration Plant, along the site Access Road to water line station 74+50 where it terminates with a fire hydrant. The line has had a hydrostatic test performed on it but is not connected to the K-25 Water Filtration Plant and has not been flushed or disinfected.

No discharges from the site, other than those permitted by the project's NPDES permit from the runoff treatment ponds, are permitted. If any other discharge occurs the contractor is to immediately inform the DOE-CRBRP.

6.0 AIR QUALITY CONTROL

6.1 Dust Control

Water sprinkling of laydown, storage, and parking areas, unpaved roads and other areas of the site is to be used to control dust formation. This can be accomplished through the use of sprinkler trucks which can obtain water from the Clinch River. A specific area along the river at which the trucks may obtain water will be designated. The area will be regularly inspected and any observed damage to the riverbank at this area will be repaired and corrective actions taken. The area will be protected against erosion by placement of crushed stone and curbing, and by limiting the distance from the river the trucks may approach, or by designating a different area.

6.2 Open Burning

Open burning is to be done in accordance with the Rules of Tennessee Department of Public Health, Bureau of Environmental Health Services, Division of Air Pollution Control, Chapter 1200-3-4, Open Burning. Burning of waste materials consisting of wood products, trees and brush is permissible, within the limits shown and the requirements specified in notes on drawing 12720-YSK-007-11.

If any new air contaminant sources are to be constructed on the site all required construction and operating air quality permits are to be obtained by the organization responsible for the sources.

7.0 LIQUID WASTE CONTROL

7.1 Oil Control

Equipment maintenance activities such as lubrication or equipment repair which could result in spills of oil or grease shall be performed in an enclosed building if possible. In the event it is not possible to conduct equipment maintenance in an enclosed building oil sorbent materials shall be used to clean up any spills. Oil contaminated materials shall be stored in metal containers and disposed of off-site in accordance with environmental regulations. Materials shall be maintained for cleanup of oil spills on both land and in the river. All pumps shall have drip pans and an enclosure provided for protection from rainfall.

Storage of fuel and oil shall be in a manner that provides containment of a spill and protection from surface runoff. If on-site oil storage facilities are developed with an underground capacity of more than 42,000 gallons, or an above ground capacity of more than 1,320 gallons with any single container larger than 660 gallons the requirements of 40 CRF112 for a Spill Prevention Control and Countersmeasures Plan must be implemented.

In the event that a spill of oil occurs, the following reporting actions are to be taken immediately:

1. The DOE-CRBRP shall be notified immediately.

2. Notification shall include:

   a) Time and location of spill.
   b) Source and type of material spilled.
   c) Estimated quantity of spill.
   d) Potential health or fire hazard.
   e) Initial action taken for containment of spill.

3. The person notified in 1 above shall immediately inspect the reported spill and if appropriate report the information from 2 above to the following:

   Duty Officer, National Response Center, U. S. Coast Guard
   400 7th Street S. W., Washington, D. C. 20590
   Telephone (800) 424-8802

4. The contractor responsible for the site will take immediate actions to contain the spill. He will then determine to use either available construction forces or to contract a commercial waste collector for cleanup of the spill.

5. Within 5 days of a spill the contractor shall submit a written report to the DOE-CRBRP. The report will provide details of the spill and measures taken for its containment and cleanup.

7.2 Other Liquid Waste

Liquid waste materials from the site are to be handled on an individual basis. If the organization responsible for the site produces any potentially hazardous materials, the materials are to be transported and/or disposed in accordance with the Resource Conservation and Recovery Act and appropriate State of Tennessee requirements.

8.0 SOLID WASTE CONTROL

8.1 Solid Waste Control During Site Maintenance

During the site maintenance period the organization responsible for the site is to remove all solid waste to an off-site approved disposal point. If he produces any potentially hazardous materials, the materials are to be transported and/or disposed in accordance with the Resource Conservation and Recovery Act and appropriate State of Tennessee requirements.

8.2 Solid Waste Control During Site Redress

During the site redress period solid waste materials listed below may be buried on site:

a. Ashes
b. Tree Stumps
c. Masonry
d. Concrete
e. Lumber

Paper, wrappers, lunch debris, and other garbage shall not be disposed of on-site. This material shall be hauled off-site to an approved disposal point.

If any potentially hazardous materials are produced on-site they are to be transported and/or disposed in accordance with the Resource Conservation and Recovery Act and appropriate State of Tennessee requirements.

9.0 RARE AND UNUSUAL PLANT SPECIES DURING MAINTENANCE AND REDRESS

Various rare and unusual plant species have been located on the site and are shown on drawing 12720-YSK-010-2. The area around these plants have

been marked with yellow ribbons and signs labeled "OFF LIMITS - FRAGILE ECOSYSTEM". All of these areas are located outside the disturbed areas of the site. These areas are to remain undisturbed and the contractor is to maintain the ribbons and signs marking the areas.

10.0 REPORTING

10.1 Reporting During Maintenance Period

1. Report sample analysis of discharges from runoff treatment ponds. Samples are to be analysed in accordance with the "Monitoring Requirements" of Attachment 1.

   Test procedures for the analysis of pollutants shall conform to all regulations published pursuant to Section 304(h) of the Clean Water Act, as amended (40 CRF 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants").

   For each measurement or sample taken pursuant to the requirements of the Project's NPDES permit, the contractor shall record the following information:

   a. The exact place, date, and time of sampling;

   b. The person(s) who obtained the samples or measurements;

   c. The dates the analyses were performed;

   d. The person(s) who performed the analyses;

   e. The analytical techniques or methods used; and

   f. The results of all required analyses.

2. Report findings of the regular site inspection.

3. Reports on oil spills are to be submitted as described in section 7.1.

10.2 Reporting During Site Redress Period

1. Report sample analyses of discharges from runoff treatment ponds. Samples are to be analysed in accordance with the "Monitoring Requirements" of Attachment 1.

Test procedures for the analysis of pollutants shall conform to all regulations published pursuant to Section 304 (h) of the Clean Water Act, as amended (40 CFR 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants").

For each measurement or sample taken pursuant to the requirements of the Project's NPDES permit, the contractor shall record the following information:

a. The exact place, date, and time of sampling.

b. The person(s) who obtained the samples of measurements;

c. The dates the analyses were performed;

d. The person(s) who performed the analyses;

e. The analytical techniques or methods used; and

f. The results of all required analyses.

2. Report findings of the inspections of disturbed areas after each rainfall.

3. Report rainfall records for the site. All periods of rainfall which exceed the 10-year, 24-hour event or cause discharge from any overflow shall be reported to DOE-CRBRP to be reported to the EPA.

4. Reports on oil spills are to be submitted as described in Section 7.1.

5. Report findings of inspections of the area along the Clinch River where sprinkler trucks obtain water.

6. A report summarizing the implementation of the erosion and sediment control measures shall be submitted covering a period of the first three months of site redress. The report shall be submitted within 30 days of the end of the first period. A final report shall be submitted by November 1, 1984, covering the overall status of the implementation of erosion and sedimentation control measures.

11.0 REFERENCES

1. Clinch River Breeder Reactor Plant Environmental Report.

2. Supplement to Final Environmental Statement Related to Construction and Operation of Clinch River Breeder Reactor Plant, Docket No. 50-537.

3. National Pollutant Discharge Elimination System, permit number TN0028801

4. Erosion and Sediment Control Plan, Clinch River Breeder Reactor Plant, dated December 10, 1982

5. SWEC Drawing 12720-YSK-007-11

6. SWEC Drawing 12720-YSK-010-2

12.0 ATTACHMENTS

1. Extract of Effluent Limitations and Monitoring Requirements of National Pollutant Discharge Elimination System (NPDES) Permit Number TN0028801 Applicable to Maintenance and Redress of the CRBRP Site

Attachment 1 to Environmental Control Plan for Maintenance and Redress of the CRBRP Site.

January 18, 1984

EXTRACT OF EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS OF NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT NUMBER TN0028801 APPLICABLE TO MAINTENANCE AND REDRESS OF THE CRBRP SITE

The attached pages I-3 and I-4 of Permit No. TN0028801 contain the effluent limitations and monitoring requirements applicable to the following authorized point source discharges from runoff from areas of construction which remain in effect during maintenance and redress of the CRBRP site:

Serial Number	Locations
003	From Pond A
004	From Pond B
005	From Pond C
006	From Pond D
007	From Pond E

References to discharge point 008 are not applicable since the onsite quarry and quarry pond were cancelled and not developed.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on start of discharge and lasting through expiration the permittee is authorized to discharge from outfall(s) serial number(s) 003 through 008 - Point source runoff from areas of construction and yard drainage to unnamed ditches to the Clinch River. (003, 004 and 006 may also receive dewatering wastes and/or other small sources and 007 may also receive overflow from the Concrete Wash Settling Pond and the Aggregate Washing Settling Pond during abnormal rainfall periods.)

Such discharges shall be limited and monitored by the permittee as specified below:

Effluent characteristic	Discharge Limitations	Monitoring Requirements	
	Instantaneous Maximum	Measurement Frequency	Sample Type
Flow - m^3/day (MGD)	N/A	1/week 1/	Grab
Total Suspended Solids (mg/l)	2/	1/week 1/, 3/	Grab
Oil and Grease (mg/l) 5/	5/	1/week 1/, 5/	Grab 5/
Detention Volume	See Below	1/six months	Calculation(s)

The runoff treatment ponds shall be capable of processing the 10-year, 24-hour rainfall event plus all accumulated silt without overflow of the standpipe. Not less than once per six months for the first year, permittee shall ascertain that available settling volume meets this requirement and shall report this finding when submitting Discharge Monitoring Reports. Frequency during subsequent years shall be determined based on assessment of the information for the first year.

Permittee shall maintain or obtain records of rainfall representative of site conditions. All periods of rainfall which exceed the 10-year, 24-hour event or cause discharge from any overflow shall be reported to EPA.

The drain value on 008 (Quarry Pond) shall be locked at all times with the key placed only in the custody of the Senior Construction Site Representative and/or his supervisors and shall not be provided to his subordinates. In the event that this valve must be opened for maintenance purposes, all resonable precautions shall be taken to minimize any silt released to the Clinch River. Monitoring shall be 2/day by grab sample with analyses to include TSS, pH and flow.

NOTE: No direct discharge from tempotary ponds T1, T2, or T3 is permitted by this Authorization to Discharge (Discharge to OSN 003 through 007 is permitted.). Any direct discharge to waters of the U.S. shall be reported in accordance with requirements of Part II.A.3.b, except that reporting shall be within five days. Monitoring shall be 2/day by grab sample with analyses to include TSS, pH and flow.

CONTINUED

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

During the period beginning on start of discharge and lasting through expiration the permittee is authorized to discharge from outfall(s) serial number(s) 003 through 008 - Point source runoff from areas of construction and yard drainage to unnamed ditches to the Clinch River. (003, 004 and 006 may also receive dewatering wastes and/or other small sources and 007 may also receive overflow from the Concrete Wash Settling Pond and the Aggregate Washing Settling Pond during abnormal rainfall periods.) Continued

The pH shall not be less than 6.0 standard units nor greater than 9.0 standard units and shall be monitored 1/week 1/, 4/.

There shall be no discharge of floating solids or visible foam in other than trace amounts.

Samples taken in compliance with the monitoring requirements specified above shall be taken at the following location(s): points of discharge from treatment ponds A, B, C, D, E and the quarry pond, respectively, prior to mixing with any other waste stream 3/.

1/ Sampling and inspection of the filter and water level shall be conducted at least two times per week during periods when the water level is within 36 inches of the top of the overflow pipe. All periods of overflow shall be reported and representative samples collected and analyzed, with the first sample collected within 12 hours of start of overflow.

In the event that effluent concentration exceeds 50 mg/l, permittee shall evaluate system performance to assure that the system is operating as designed and that on-site controls are effective. Permittee shall take appropriate corrective action as required.

3/ All periods of discharge from the Concrete Wash and Aggregate Washing Settling Ponds to OSN 007 shall be reported and monitored 1/day for total suspended solids, total dissolved solids and pH on grab samples at the individual Settling Pond discharge points.

4/ Applicable to any flow up to the flow resulting from a 24-hour rainfall event with a probable recurrence interval of once in ten years.

5/ Applicable to OSN 003 only.

Attachment 2 to Scope of Work for Maintenance of the CRBRP Site

January 18, 1984

WATER PUMPS AND ACCESSORIES FOR CONTROL

OF CRBRP SITE RUNOFF

1 each	Pump, 8 inch, CH&E Co. Model 2976W, Diesel Engine, Serial No. 2976R66
1 each	Pump, 6 inch, Eupo Pump Co. Model R690D, Gasoline Engine, Serial No. C11514
1 each	Pump, 4 inches, LFE Co. Model 4W-8004, Gasoline Engine, Serial No. 651507
3 each	Pump, 2 inch, Model 121TP2-1A, Homelite Engine, Serial Nos. 31100525, 31100527, 91992157
2,000 feet	Pipe, 6 inch, Aluminum, Irrigation with Fittings
4,000 feet	Hose, 3 inch, Yellow Air/Water