

50-331

REC: NRC
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IA ELEC LIGHT & PWR

DOCDATE: 07/19/78
DATE RCVD: 07/28/78

DOCTYPE: LETTER NOTARIZED: YES

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SUBJECT:

LTR 3 ENCL 40

FORWARDING LIC NO DPR-49 APPL FOR AMEND: APPENDIX B TECH SPEC PROPOSED CHANGE
CONCERNING REVISION TO THE ENVIRON SURVEILLANCE AND SPECIAL STUDIES AT
SUBJECT FACILITY... NOTARIZED 07/24/78... W/ATT LIC FEES.

PLANT NAME: DUANE ARNOLD

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CHANGE REQUESTS FOR ENVIRON TECH SPECS (APPEND B)
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IOWA ELECTRIC LIGHT AND POWER COMPANY

General Office

CEDAR RAPIDS, IOWA

July 19, 1978

IE-78-1099

LEE LIU

SENIOR VICE PRESIDENT — ENGINEERING

REGULATORY DOCKET FILE

RECEIVED DISTRIBUTION
SERVICES UNIT

Mr. Harold Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Denton:

Transmitted herewith, in accordance with the requirements of 10 CFR 50.59 and 50.90, is an application for amendment of DPR-49 (Appendix B to License) for the Duane Arnold Energy Center.

This application, consisting of proposed Technical Specification change ETS-26, has been reviewed and approved by the DAEC Operations Committee and the DAEC Safety Committee.

We have determined that this is a Class II amendment proposal in that it has no safety or environmental significance. Accordingly, a check in the amount of \$1200.00 is enclosed.

Three signed and notarized originals and 37 additional copies of this application are transmitted herewith. This application, consisting of the foregoing letter and enclosures hereto, is true and accurate to the best of my knowledge and belief.

IOWA ELECTRIC LIGHT AND POWER COMPANY

By Larry D. Root
Lee Liu for
Senior Vice President-Engineering

LL/OCS/D

cc: Mr. D. Arnold
Mr. K. Meyer
Mr. L. Root
Mr. R. Lowenstein
Mr. J. Keppler
Mr. R. Clark
File A-117

Subscribed and sworn to before me
on this 24th day of July, 1978.

Jean R. Smith
Notary Public in and for the State of
Iowa.

Jean R. Smith
NOTARY PUBLIC
STATE OF IOWA
Commission Expires
September 30, 1978

782090037

Coat
3/40

PROPOSED CHANGE ETS-26 TO DAEC TECHNICAL SPECIFICATIONS

I. Affected Technical Specifications

Appendix B of the Technical Specifications for the DAEC (DPR-49) provides as follows:

Specification 4.0, Environmental Surveillance and Special Studies, contains specifications for biological, physical and radiological studies and surveillance to be performed at the Duane Arnold Energy Center.

II. Proposed Changes in Technical Specifications

The licensees of DPR-49 propose the following changes in the Technical Specifications set forth in I above:

Delete sheets 4.1-1 through 4.1-3, 4.3-1 through 4.3-11, and 4.3-13 and replace with the attached sheets.

III. Justification for Proposed Change

The subject Technical Specification change is proposed in order to correct radiological sampling locations, frequency of samplings, and to clarify the procedure to be used if samples are not obtainable.

IV. Review Procedure

This proposed change has been reviewed by the DAEC Operations Committee and Safety Committee which have found that this proposed change does not involve a significant hazards consideration.

4.0 ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES

4.1 Biological

4.1.1 Aquatic

Objective

1. To continue routine water quality determination in the Cedar River in order to identify any conditions which could result in environmental or water quality problems.
2. To conduct physical, chemical and biological studies in and adjacent to the discharge canal and to compare the results with similar studies above the intake. This will make it possible to determine any water quality changes occurring as the result of chemical additions or condenser passage and to identify any impact of the plant effluent on aquatic communities adjacent to the discharge.
3. To identify and quantify organisms impinged on the intake screens and entrained in the intake water in order to estimate the magnitude and effects of impingement and condenser passage on the ecology of the Cedar River.
4. To verify the extent of the thermal plume.

Specifications

Sampling sites will be established in the discharge canal and at four locations in the Cedar River (Figure 4.1-1): 1) upstream of the plant at the Lewis Access Bridge; 2) directly above the plant intake; 3) at a point to be determined no more than 300' below the plant discharge; 4) adjacent to Comp Farm about 1/2 mile below the plant.

Deviations are permitted from the required sampling/analysis schedule if specimens are unobtainable due to hazardous conditions, equipment malfunction or laboratory accidents. If due to equipment malfunction every effort shall be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling/analysis schedule shall be described in the annual report.

4.1.1.1 General Water Quality Analysis

4.0 ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES

4.1.1 Specification (Cont'd)

A. Frequency: Twice per month routinely and as necessary when conditions warrant.

B. Location: At all four river sites and the discharge canal.

C. Parameters to be measured:

- | | | |
|-------------------------------|----------------------------------|----------------------|
| 1. D.O. | 7. Ca Hardness | 13. Lignins & tannen |
| 2. ph | 8. Total PO ₄ | 14. BOD |
| 3. CO ₂ | 9. Ortho PO ₄ | 15. COD |
| 4. Total Alkalinity | 10. NO ₃ | 16. Odor |
| 5. CO ₃ Alkalinity | 11. NH ₄ ⁺ | 17. Temperature |
| 6. Total Hardness | 12. Fe | 18. Turbidity |
| | | 19. Color |

4.1.1.2 Complete Water Quality Analysis

A. Frequency: Three times per year during spring, summer and fall.

B. Location: At all four river locations and the discharge canal.

C. Parameters to be measured: All general water quality parameters plus -

- | | | |
|-------|---------------------------------|---|
| 1. Cu | 5. Cr ⁺⁶ | 9. NO ₂ ⁻ |
| 2. Zn | 6. Mn | 10. Total solids |
| 3. Hg | 7. Cl ⁻ | 11. Pesticides in fish
from two sites, above
and below plant. |
| 4. Pb | 8. SO ₄ ⁻ | |

In addition, D.O., ph and alkalinity will be determined at each site every four hours over a 24-hour period.

4.0 ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES

4.1.1 Specification (cont'd)

4.1.1.3 Plankton Studies

- A. Frequency: Twice per month routinely and as necessary when conditions warrant.
- B. Location: At all four river locations and the discharge canal.
- C. Analyses to be made: Numbers and kinds (to genus whenever possible) of organisms present.

4.1.1.5 Benthic (bottom organism) Studies

- A. Frequency: Semi-annually, as available.
- B. Location: At all four river sites
- C. Analysis: Kinds (to genus whenever possible) and numbers of organisms present will be determined. Sediment type will also be determined.

4.1.1.6 Periphyton

- A. Frequency: Three times per year during spring, summer and fall, as available.
- B. Location: Artificial substrates will be installed at Site 2, above the plant intake, and at Site 3, below the plant.
- C. Analyses to be made: Substrates will be removed after two weeks to one month. The biomass and generic composition will be determined.

4.0 ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES

4.3 Radiological

4.3.1 Monitoring Requirements

Objective

An environmental radiological monitoring program shall be conducted to verify that radioactive releases are within allowable limits and that plant operations have no detrimental effects on the environment.

Specification

- A. Environmental samples shall be collected and analyzed according to Table 4.3-1.
- B. Sample locations are as shown in Figure 4.3-1. Any location from which milk, soil, and vegetation samples can no longer be obtained may be dropped from the surveillance program after notifying the NRC* in writing.
- C. Reports shall be submitted in accordance with the requirements of Section 5.4 (Plant Reporting Requirements).
- D. During the seasons that animals producing milk for human consumption are on pasture, samples of fresh milk will be obtained weekly from these animals at locations shown in Figure 4.3-1, and analyzed for their radioiodine content, calculated as iodine-131. Analysis will be carried out within eight days (one I-131 half-life) of sampling. Suitable analytical procedures will be used to determine the radioiodine concentration to a sensitivity of 0.5 picocuries per liter of milk at the time of sampling. For activity levels at or above 0.5 picocuries per liter the overall error (one sigma confidence level) of the analyses will be within $\pm 25\%$. Results will be reported, with associated calculated error, as picocuries of I-131 per liter of milk at the time of sampling.

Special attention will be paid to those locations where milk is produced for direct consumption by humans - e.g., the family farm.

- E. A census of milch animals shall be conducted at the beginning and at the middle of the grazing season (May through September) to determine their location and number with respect to the site. The census shall be conducted in May and July under the following conditions:

* Notify the appropriate Regional Office.

4.0 ENVIRONMENTAL SURVEILLANCE AND SPECIAL STUDIES

4.3.1 Specification (Cont'd.)

1. Within a 2 mile radius from the plant site or the 15 mrem/yr isodose line - whichever is larger: a door to door or equivalent counting technique shall be utilized.
2. Within 5 miles: Enumeration by using referenced information from such as county agricultural agents or other reliable sources.

If it is learned from this census that milch animals are present at a location which yields a calculated infant thyroid dose greater than from previously sampled animals, the new location shall be added to the surveillance program as soon as practicable, provided samples can be obtained from that location. The sampling location having the lowest calculated dose may then be dropped from the surveillance program at the end of the grazing season during which the census was conducted.

- F. Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability or to malfunction of automatic sampling equipment. If the latter, every effort shall be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling schedule shall be described in the Annual Report.

Bases

The number and distribution of sampling locations and the various types of measurements described in Table 4.3-1, together with the preoperational background data, will provide verification of the effectiveness of plant effluent control and indication of measurable changes in the activity of the environment.

A concentration of I-131 in milk of 2.4 picocuries per liter will result in a dose to the thyroid of a 0-2 year old child of 15 mrem/year, based upon consumption of one liter per day for the year. To assure that no child will receive a dose of greater than 15 mrem/year to the thyroid, it is necessary to know the radioiodine concentration in the milk to the sensitivity given above, 0.5 pCi/liter.

Table 4.3-1

ENVIRONMENTAL RADIOACTIVITY PROGRAM FOR THE DUANE ARNOLD ENERGY CENTER

Type of Sample	Sample Point	Sampling Point Description	Sample Frequency	Analysis	Remarks
Airborne Particulates	1	Cedar Rapids	Weekly Analysis	Gross Beta	Analyzed for Gross Beta after a minimum of 24 hr decay.
	2	Marion			
	3	Hiaŵatha	Continuous Collection	Gamma Isotopic SR-89,90	Gamma spectrum analysis will be performed on each sample showing measurable gross beta activity. ₃ (e.g. 10 pCi/m ³)
	4	Morris			
	5	Palo			
	6	Center Point			
	7	Shellsburg			
	8	Urbana			
	9	Route W26			
	10	Atkins			
	11	Toddville	Quarterly Composite		Gamma isotopic and SR-89,90 analyses will be performed quarterly on a composite of each sample station.
	12	Iowa City			
	13	Alburnett			
	14	Alice			
	15	On-site			
	16	On-site			

Table 4.3-1

ENVIRONMENTAL RADIOACTIVITY PROGRAM FOR THE DUANE ARNOLD ENERGY CENTER

Type of Sample	Sample Point	Sampling Point Description	Sample Frequency	Analysis	Remarks
Airborne Radioiodine	4	Morris	Weekly Analysis	Radioiodine	Analyzed weekly as two composite samples. If radioiodine is detected, each charcoal cartridge will be analyzed individually.
	5	Palo			
	7	Shellsburg	Continuous Collection		
	8	Urbana			
	11	Toddville			
	12	Iowa City			
	14	Alice			
	15	On-site			
Ambient Radiation	1 - 16	Same as Airborne Particulates	Quarterly Analysis	Radiation Dose	Two badges at each location changed quarterly.
			Continuous Collection		
	17 - 32	At centerline of each 22½° sector intersecting the site boundary.			
	33 - 48	At centerline of each 22½° sector at a distance of 1 to 3 miles from the plant stack.			

4.3-4

Table 4.3-1

ENVIRONMENTAL RADIOACTIVITY PROGRAM FOR THE DUANE ARNOLD ENERGY CENTER

Type of Sample	Sample Point	Sampling Point Description	Sample Frequency	Analysis	Remarks
Surface Water	49	Lewis Access	Monthly	Gross Beta	Perform on each sample.
	50	Plant Intake			
	51	Plant Discharge *		Gamma Isotopic	Perform on each sample.
	52	Cedar Rapids City Park	Quarterly	Tritium	Composite monthly samples for quarterly tritium analysis.
				Sr-89,90	Perform if gross beta activity exceeds 10pCi/l and quarterly.
	73	Hansen Farm Pond	Monthly	Gross Beta	Perform on each sample.
	75	Krewson Farm Pond		Gamma Isotopic	Perform on each sample.
				Tritium	Composite monthly samples for quarterly tritium analysis.
		* In addition to the routine monthly sample sampling is to be performed during liquid waste discharge operation.			

Table 4.3-1

ENVIRONMENTAL RADIOACTIVITY PROGRAM FOR THE DUANE ARNOLD ENERGY CENTER

Type of Sample	Sample Point	Sampling Point Description	Sample Frequency	Analysis	Remarks
Ground Water	53	Treated Municipal Water	Monthly	Gross Beta	Perform on each sample.
	54	Inlet to Municipal Water Treatment System			Daily grab sample of untreated municipal water is composited for monthly analysis.
	57	Off site well			Two hour grab sample of treated municipal is composited for monthly analysis.
	58	Off site well			Gamma isotopic, Sr-89,90 analysis will be performed on each sample in which the gross beta activity exceeds 10 pCi/l.
	59	Off site well			
	60	Off site well	Quarterly	Tritium	Composite monthly samples for quarterly tritium analysis.
				Sr-89,90	

Table 4.3-1

ENVIRONMENTAL RADIOACTIVITY PROGRAM FOR THE DUANE ARNOLD ENERGY CENTER

Type of Sample	Sample Point	Sampling Point Description	Sample Frequency	Analysis	Remarks
Bottom Sediments	49	Lewis Access	Semi-annually	Gamma Isotopic Sr-90	
	50	Plant Intake			
	51	Plant Discharge			
	52	One-half mile below plant discharge			
Soil	15	On-site	Once per 3 years	Gamma Isotopic Sr-90	Surface sample from undisturbed area.
	16	On-site			
	63	Farm (within 10 miles of site).			
	66	Farm (within 10 miles of site).			
	72	Farm (within 10 miles of site).			
	73	Farm (greater than 10 miles from site).			
	93	Farm (within 10 miles of site).			
	94	Farm (within 10 miles of site).			
	96	Farm (within 10 miles of site).			
	97	Farm (within 10 miles of site).			
	100	Farm (within 10 miles of site).			
	101	Farm (within 10 miles of site).			
	102	Farm (greater than 10 miles from site).			

Table 4.3-1

ENVIRONMENTAL RADIOACTIVITY PROGRAM FOR THE DUANE ARNOLD ENERGY CENTER

Type of Sample	Sample Point	Sampling Point Description	Sample Frequency	Analysis	Remarks
Vegetation	63 66 72 73 93 94 96 97 100 101 102	Same as soil samples	Annually at harvest time	Gamma Isotopic	Only the edible portion of crops will be analyzed.
Meat and Poultry		Farms (within 10 miles of site) that raise poultry or animals for human consumption.	Annually during or immediately following grazing season.	Gamma Isotopic on edible portions	Sample locations will vary with availability.

Table 4.3-1

ENVIRONMENTAL RADIOACTIVITY PROGRAM FOR THE DUANE ARNOLD ENERGY CENTER

Type of Sample	Sample Point	Sampling Point Description	Sample Frequency	Analysis	Remarks
Aquatic Biota		Cedar River	Semi-annually	Gamma Isotopic	
Fish		Cedar River	Semi-annually	Gamma Isotopic	
Milk	63 66 72 73 93 94 96 97 100 101 102	Same as Soil Samples	Weekly (During grazing season)	I-131	During grazing season samples from locations 63, 93, 94 and 101 will be analyzed individually. Samples from locations 73 and 102 will be composited and analyzed. Sample from locations 66, 72, 96, 97, and 100 will be composited and analyzed. If a composite sample is greater than 2.4 pCi/l the locations will be resampled and analyzed individually.

Table 4.3-1

ENVIRONMENTAL RADIOACTIVITY PROGRAM FOR THE DUANE ARNOLD ENERGY CENTER

Type of Sample	Sample Point	Sampling Point Description	Sample Frequency	Analysis	Remarks
Milk	63 66 72 73 93 94 96 97 100 101 102	Same as Soil Samples	Monthly (During non-grazing season)	I-131	During the non-grazing season samples from locations 73 and 101 will be composited and analyzed. Samples from locations 63, 66, 72, 93, 94, 96, 97, 100 and 101 will be composited and analyzed.
			Monthly (During grazing season)	Sr-89,90 Cs-137 Ba-140 La-140 Elemental Ca	During the grazing season a portion of the weekly sample from each location will be composited and analyzed.

4.3-10

4.3-11

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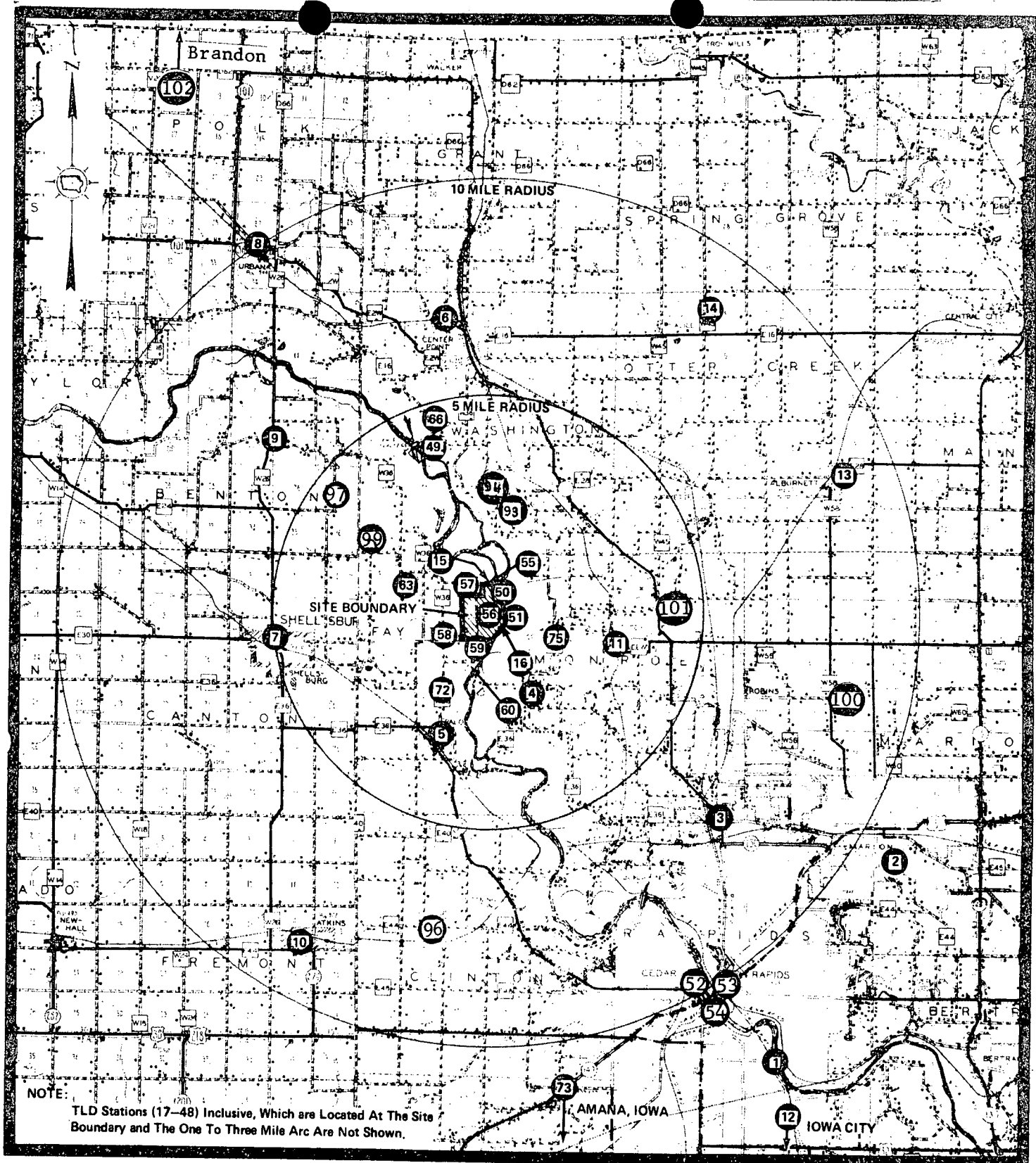


FIGURE 4.3-1 RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM SAMPLING STATION