

**DuPont Louviers - Gore  
Large Bore Range**

**Proposed Plan of Remedial Action**

SCANNED

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June 1996

**Department of Natural Resources and Environmental Control  
Superfund Branch**

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# **DuPont Louviers - Gore Large Bore Range Proposed Plan**

## **1. Introduction**

In December 1995, the Department of Natural Resources ("Department") reached an agreement with E. I. du Pont de Nemours and Company, ("DuPont") (the Potentially Responsible Party) to collect information pertinent to addressing the site and to perform remedial actions as necessary to protect public health welfare and the environment under the Delaware Hazardous Substance Cleanup Act ("HSCA") 7 Del. C. Chapter 91.

## **2. Organization and Contents of the Proposed Plan**

This proposed plan is issued under provisions of HSCA and the Regulations Governing Hazardous Substance Cleanup ("Regulations"). It presents the Department's assessments of the health and the environment risks posed by the DuPont Louviers Gore Large Bore Range Site ("Site") and plans for limited further action.

The Department will provide public notice and opportunity to comment on the proposed plan in accordance with Section 12 of the Regulations. At the conclusion of the comment period, the Department, after review and consideration of the comments received, shall issue a final plan of remedial action which shall designate the selected remedial action. The proposed plan, the comments received from the public, responses to the comments and final plan will constitute the remedial decision record.

The contents of a proposed plan of remedial action are discussed in the Regulations, Section 8. This proposed plan contains a description of the Site; summary of the analytical results and conclusions of the remedial investigation; a discussion of objectives; a summary of the risk analysis; and the plan for the future of the Site.

## **3. Site Description and History**

The Former DuPont Fish and Game Association Large Bore Range ("LBR") is located north of Newark in New Castle County, Delaware. The LBR is located west of Limestone Road and in the southern most portion of the Former DuPont Louviers Facility, see Figure 1.

The LBR operated from 1952 through 1995. The area was tree covered prior to being cleared in 1952 for use as the LBR. The LBR is approximately 200 yards long by 100 yards wide and is contained within a natural valley. The backstops for the LBR are dirt berms located at 25, 50 and 100 yard intervals from the shooting station, see Figure 2.

Surrounding land use is Commercial/Laboratory. The Site is surrounded to the east and south by W. R. Gore, Inc. ("Gore") and to the north and east by MBNA, Inc. ("MBNA"). To the west of the Site, is the flood plain of the White Clay Creek with the Creek's canal located approximately 500 feet west of the Site. DuPont is in the process of transferring the Site to Gore who will continue to utilize the Site as per the Commercial/Laboratory zoning.

#### **4. Remedial Investigation Procedures**

The Department reviewed past investigations and historic practices in the area. The Department accepted the two (2) real-estate assessments (dated March 1994 and April 1994, respectively) prepared for the Site as meeting the objectives of the remedial investigation for the Site. The assessments included a review of historical information, identification of sampling point and analytical parameters of concern, sampling and analysis of collected samples, and data analysis.

The field sampling plan was developed to quantify levels of contaminants in areas in and round the berms and on the floor of the range. Media sampled included surface and subsurface soils, see Figure 3.

Areas of potential soil contamination were identified in the three (3) berms and on the floor of the range immediately in front of and to the side of the three (3) berms. Lead and antimony were the primary constituents of concern. Antimony was used as a hardening agent in the manufacture of lead bullets.

All samples were analyzed for total lead, toxicity characteristic leaching procedures (TCLP) leachate for lead, total antimony, and TCLP leachate for antimony. Analysis for total lead and antimony was conducted on the soil according to the Environmental Protection Agency's (EPA's) documented SW-846 methods. TCLP leachate analysis for lead and antimony was conducted according to procedures described in the Resource Conservation and Recovery Act ("RCRA") 40 CFR 261 and 271.

#### **5. Remedial Investigation Results**

The remedial investigation and feasibility study ("RI/FS") process revealed that the total lead concentrations in the berms ranged from 980 to 34,000 milligrams per kilogram (mg/kg). The total lead concentrations for the floor of the LBR ranged from 41 to 180 mg/kg.

The total antimony concentrations in the berms were primarily non detected with the exception of one sample which reported 410 mg/kg which was a composite of the four (4) berms with the sample being collected in all four (4) berms at a depth of 0 to 6 inches into the berm material. The total antimony concentrations for the floor of the LBR reported non detectable concentrations.

TCLP for lead reported concentrations ranging from 22 to 100 milligram per liter (mg/l) for the berms composite samples with the higher concentration present near the surface of the berm in the 0 to 6 inch range. The TCLP for lead reported concentration from non detectable to 0.42 mg/l for the floor of the range with the highest concentration located in the central portion of the range in the 0 to 6 inch surface soil horizon.

TCLP results for antimony reported concentrations ranging from non detectable to 0.56 mg/l with the highest concentration present in the near surface sample of the berm in the 0 to 6 inch range. The TCLP for antimony reported below detection concentrations across the floor of the range.

The conclusions of the investigations are as follows:

1. The berms contain elevated concentrations of lead and in one instance antimony above acceptable concentrations for commercial/laboratory use and should be disposed of properly; and
2. The floor of the LBR contains non detectable concentrations of antimony and slightly elevated concentrations of lead. However, please note the slightly elevated concentrations of lead found on the floor of the range are not considered a significant health risk to human health, welfare or the environment and can remain in place.

Various remedies for the site were considered as a function of the RI/FS process and the objective setting process, they included: (1) leaving the material in place, (2) washing the soil and recovering the lead recovery and disposing of the remaining soil, and (3) excavation, stabilization, and disposal of the soils.

## **6. Facility Remedial Action Objectives**

The Regulations provide that the Department set objectives for land use, resource use, and cleanup levels that are protective of human health and the environment. The following two (2) objectives are determined to be appropriate for the DuPont Louviers - LBR Site:

- To continue to use the site as a Commercial/Laboratory with supplied public water for all purposes
- That routine construction, excavation and maintenance activities can occur without any special chemical hazard precaution once the remedial action plan is implemented.

These objectives are consistent with the value of the zoning as a commercial/laboratory facility and the surrounding land use, New Castle zoning policies, state regulations, and worker health and safety.

## **7. Risk Assessment Summary**

An assessment was conducted to evaluate the possible effects on human health, welfare and the environment from the use of the site consistent with the objectives discussed above. The assessment assumes a worst case scenario. It combines site specific environmental data with more generalized information concerning chemical toxicity and exposure from standard references.

In the first step, chemicals are identified as contaminants of concern relative to toxicity, frequency of detection and comparison to background levels and to established standards. At the completion of the screening process a metal (lead) was identified to be considered in the assessment. The assessment then identified potentially exposed individuals for the current and future land use and identified only the on-site worker as exposed via dermal absorption and incidental inhalation of soil.

Potential exposures to the chemical was evaluated based upon exposure point concentrations and frequency, duration, and magnitude of contact using standard EPA guidance. Due to the limited number of site data points, the maximum detected on-site concentration was used to assess the exposure concentrations, which produces a more conservative estimate.

## **8. Proposed Remedial Action Plan**

In view of the elevated lead concentrations the following activities will be performed by DuPont at the site.

1. DuPont will excavate the soil berms and a soil arc around the berms;
2. DuPont will excavate soils down to 1,000 mg/kg for lead in soils (industrial exposure);
3. DuPont will conduct post excavation sampling to confirm the removal of all soils contaminated above 1,000 mg/kg in soils;
4. DuPont will submit samples for analysis to a HSCA approved laboratory for analysis;
5. DuPont will re-fill the excavated area with clean fill from an off-site location so as to leave the excavation level with the pre-existing grade;
6. DuPont will grade and seed the excavated area to promote vegetative growth and prevent erosion; and
7. DuPont will treat the excavated materials and dispose of them properly; and
8. DuPont will conduct the work as per all appropriate state and federal regulations.

The Regulations provide that when a restricted cleanup number is utilized an institutional control is established. This institutional control will be described in a restrictive covenant executed by the property owner and recorded with registrar of deeds for the county in which the facility is located. The restrictive covenant shall run with the land and be binding on the owner's successors and assignees.

## **8. Public Participation**

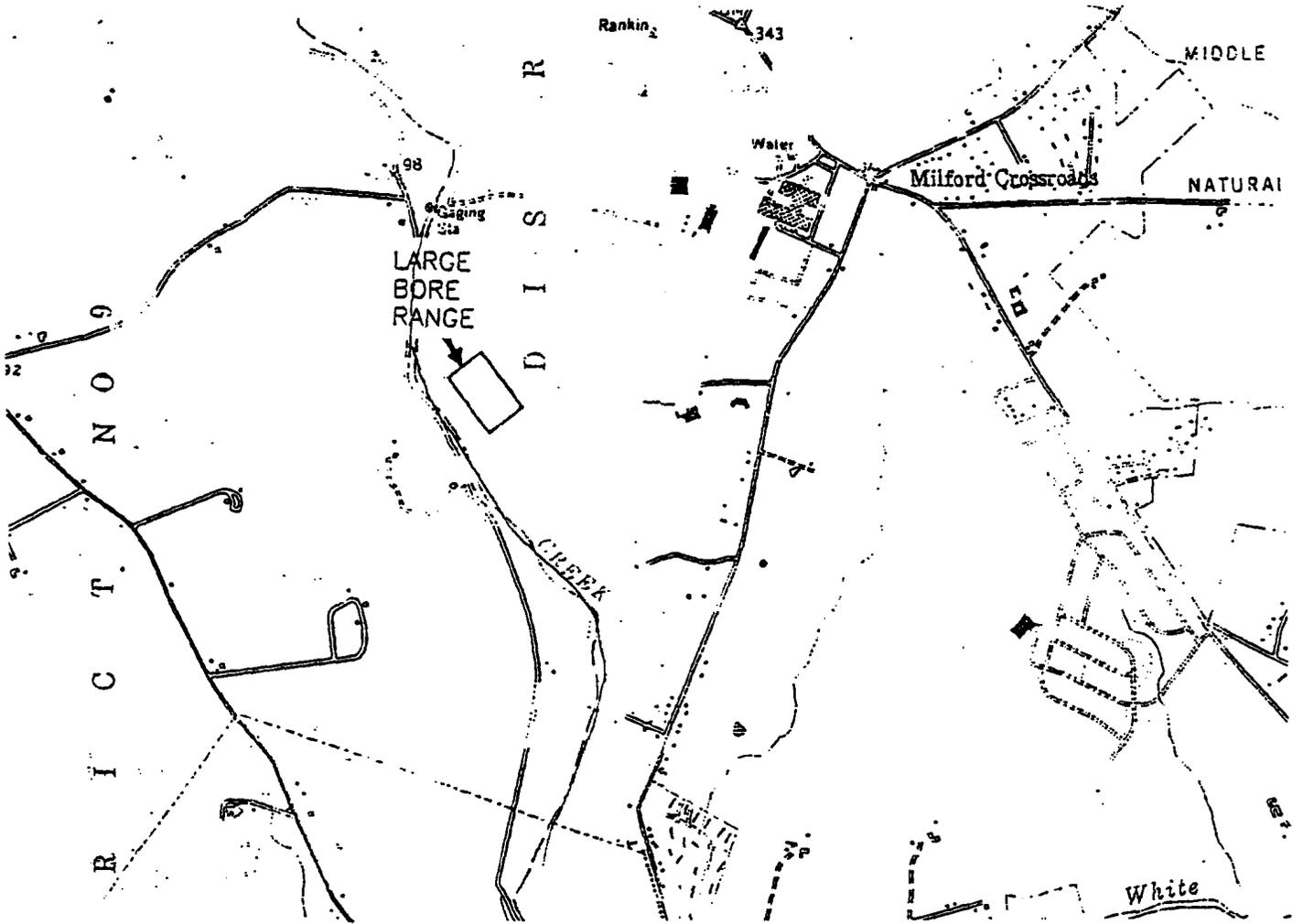
The Department actively solicits public comments or suggestions on the proposed plan and welcome opportunities to answer questions. Please direct written comments to:

Superfund Branch  
ATTN: Jane Biggs Sanger  
715 Grantham Lane  
New Castle, Delaware 19720

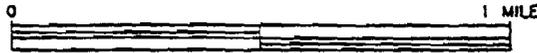
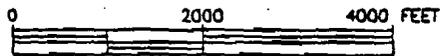
or call (302)323-4540. The public comment period closes on June 30, 1996. A public informational meeting will be held if requested.

JFBS/jfbs  
JFB96092.LBR

**Figure 1: Site Location Map**



SCALE 1:24,000



SOURCE: NEWARK EAST & WEST, DELAWARE QUADRANGLE 7.5' SERIES

FIGURE 1 	SITE LOCATION MAP			
	SCALE 1" = 2000'	DESIGNED BY SMF	DRAWN BY SMF	CAD DRAWING NO.
DATE 7/7/94	CHECKED	APPROVED	PROJECT NO. 3113	
LOUVIERS GUN CLUB NEWARK, DELAWARE				
DuPont Environmental Remediation Services				

**Figure 2: Site Large Bore Range Site Map**

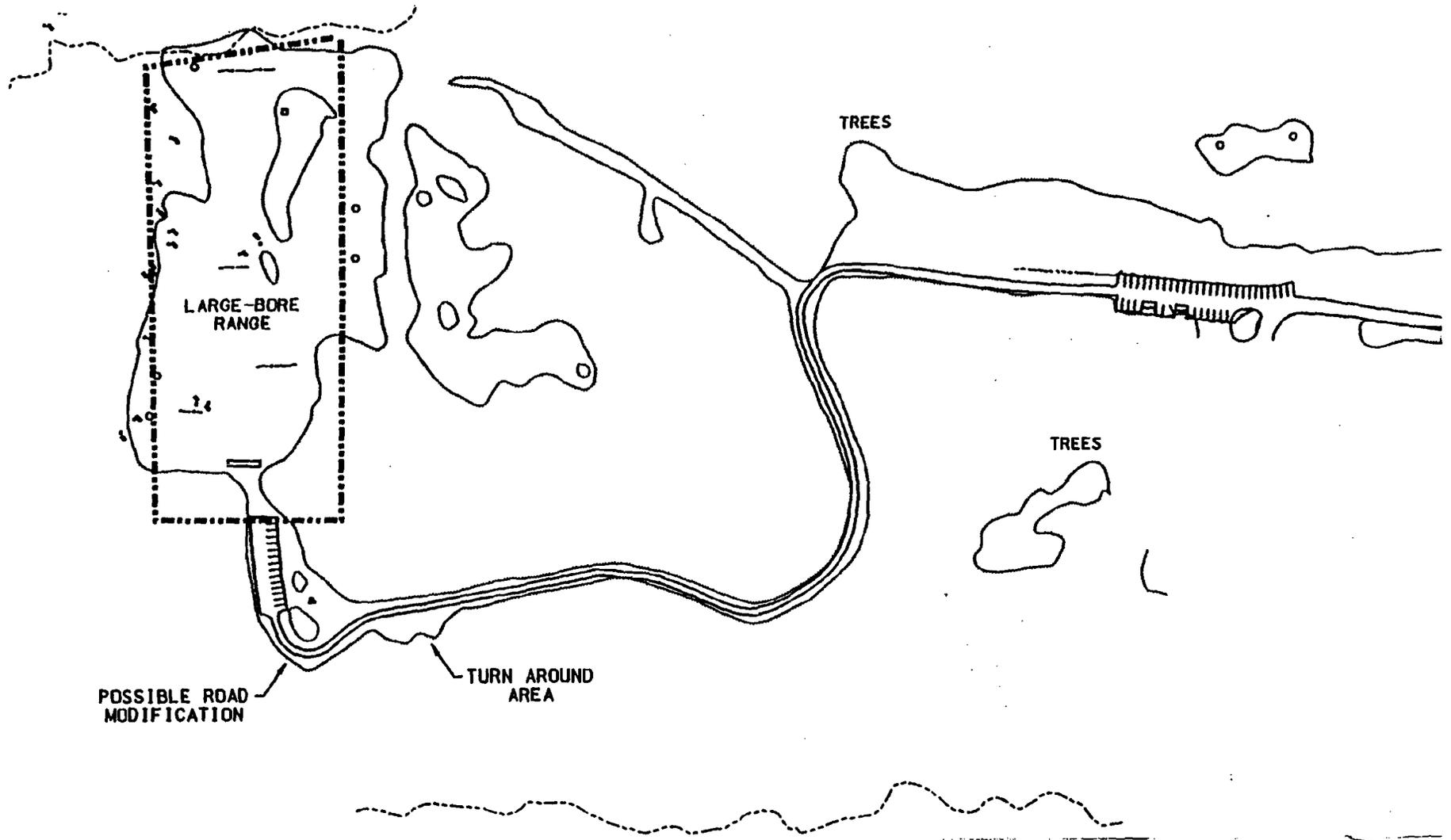
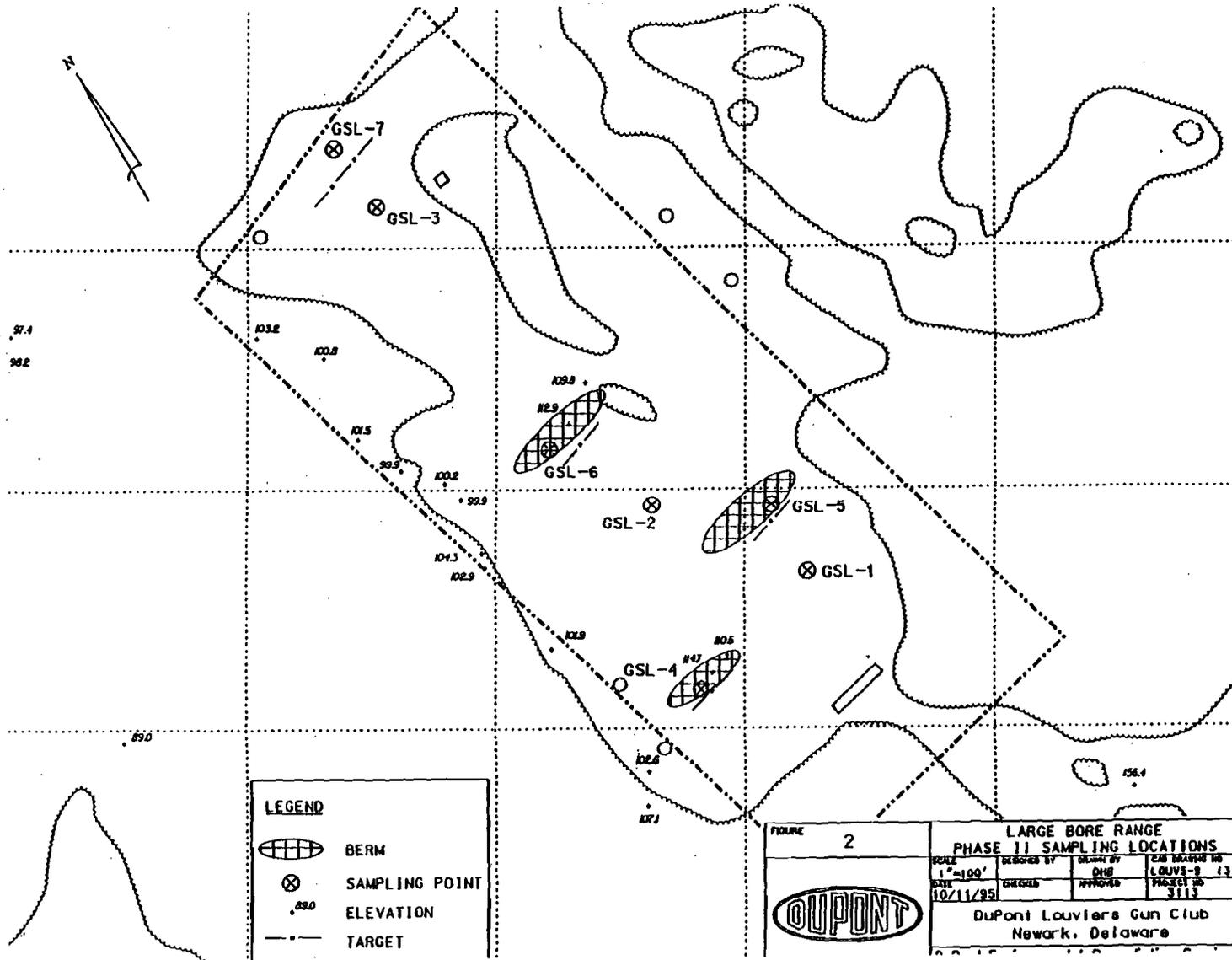


Figure 3: Site Sampling Location Map



DuPont Louviers Gore - Large Bore Range  
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**Table 1: Louviers Phase II Assessment Analytical Results - Large Bore Range**

Sample Location	Sample ID	Sample Depth	Sample Date	Total Lead (wet weight)	Total Lead (dry weight)	Total Antimony (wet weight)	Total Antimony (dry weight)	TCLP Lead	TCLP Antimony	Notes
GSL-1	GS1	0-6	4/22/94	53	82	ND	ND	0.37	<2	Floor Sample
GSL-1	GS4	6-12	4/22/94	110	130	ND	ND	<1	<2	Floor Sample
GSL-1	GS7	18-24	4/22/94	86	102	ND	ND	<1	<2	Floor Sample
GSL-2	GS2	0-6	4/22/94	180	250	ND	ND	0.42	<2	Floor Sample
GSL-2	GS5	6-12	4/22/94	60	74	ND	ND	<1	<2	Floor Sample
GSL-2	GS8	18-24	4/22/94	41	50	ND	ND	<1	<2	Floor Sample
GSL-3	GS3	0-6	4/22/94	150	200	ND	ND	0.37	<2	Floor Sample
GSL-3	GS6	6-12	4/22/94	59	72	ND	ND	<1	<2	Floor Sample
GSL-3	GS9	18-24	4/22/94	66	82	ND	ND	<1	<2	Floor Sample
GSL-4,5,6,7	GS10	0-6	4/22/94	34,000	42,900	410	520	100	0.56	Composite Berm Sample
GSL-4,5,6,7	GS11	6-12	4/22/94	980	1,200	ND	ND	16	ND	Composite Berm Sample
GSL-4,5,6,7	GS12	18-24	4/22/94	1,100	1,300	ND	ND	22	ND	Composite Berm Sample

Notes: "Totals" results in mg/kg  
 "TCLP" results in mg/l  
 "ND" not detected  
 "Depth" in inches

Figure 3: Site Sampling Location Map

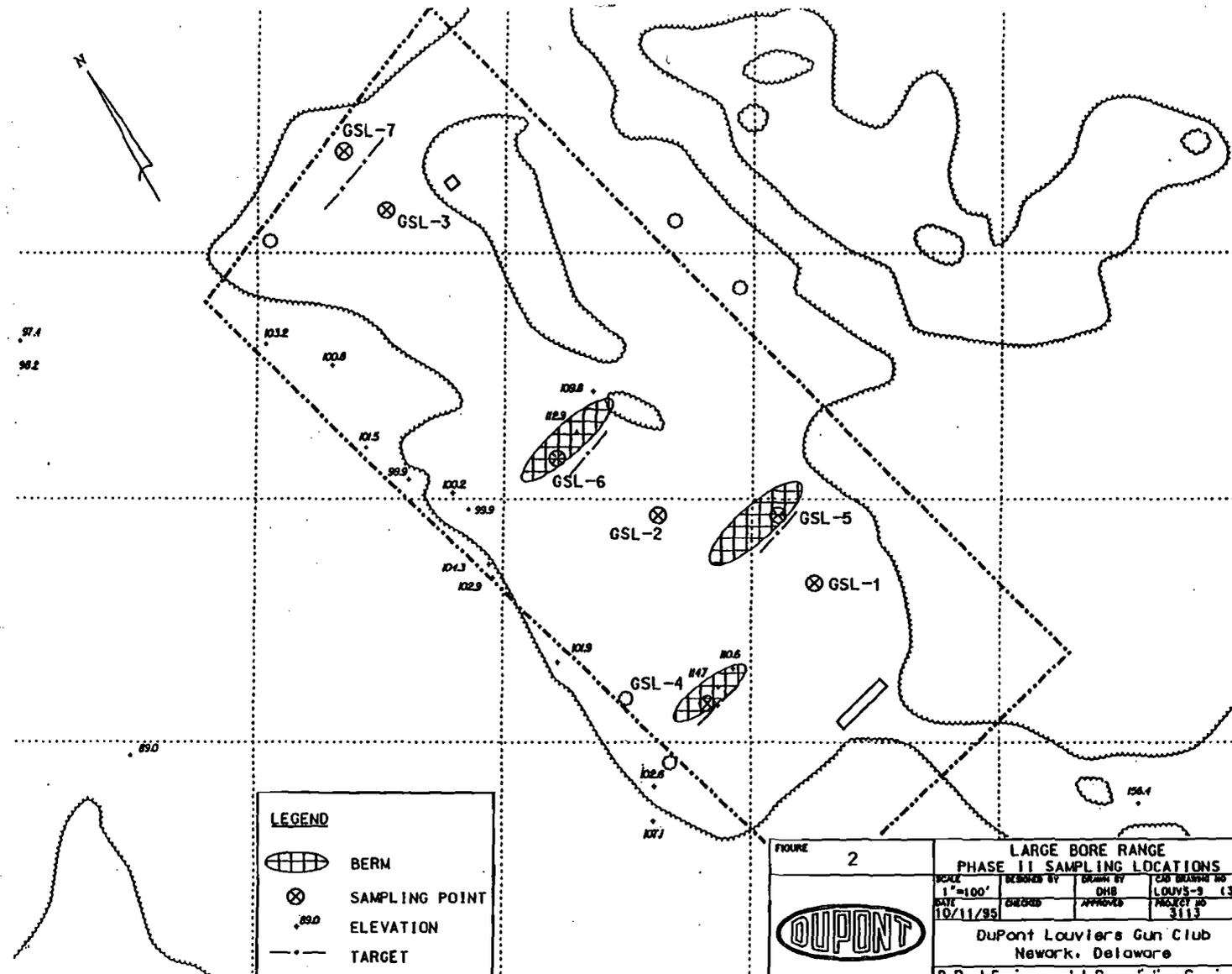
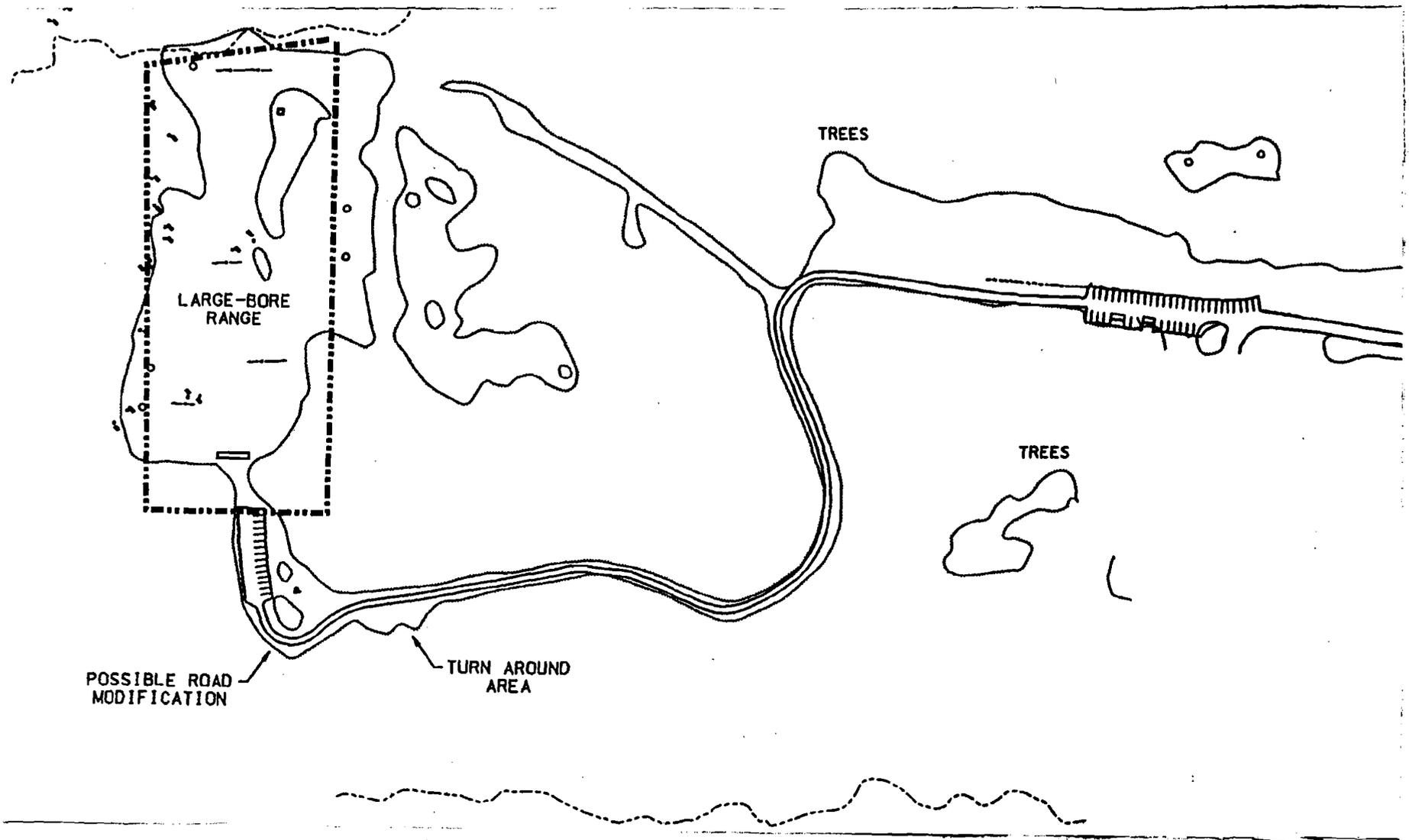
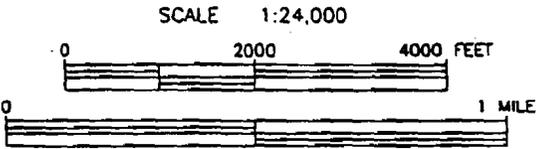
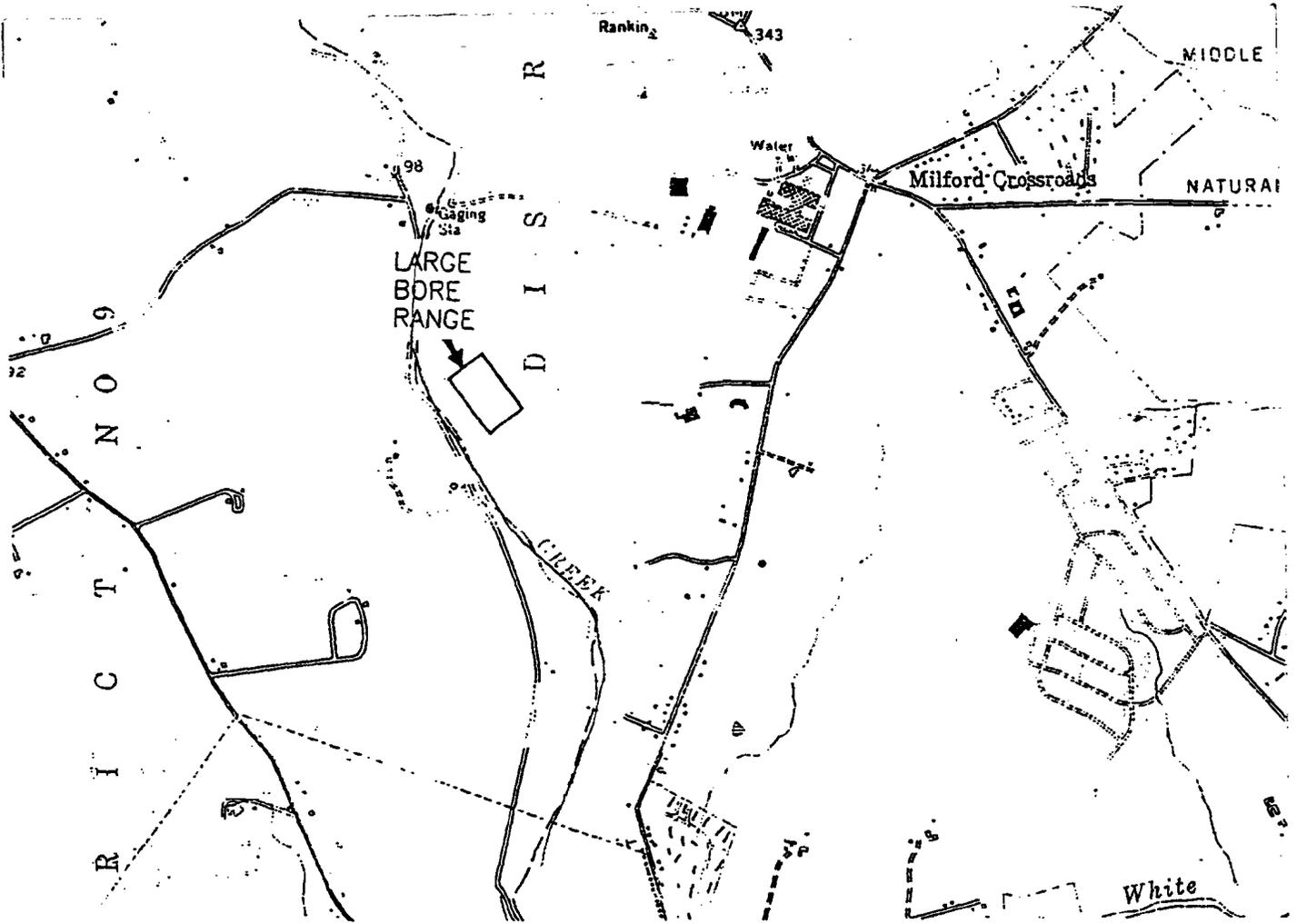


Figure 2: Site Large Bore Range Site Map



**Figure 1: Site Location Map**



SOURCE: NEWARK EAST & WEST, DELAWARE QUADRANGLE 7.5' SERIES

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