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November 19, 1998
File No. 1571

Gary Lynn, P.E.
New Hampshire Department of Environmental Services
P.O. Box 95, 6 Hazen Drive
Concord, New Hampshire 03301

Re: Development of Background Metals Concentrations Database for New Hampshire Soils

Dear Mr. Lynn:

Attached, please find a report entitled "Background Metals Concentration Study, New Hampshire Soils, New Hampshire Department of Environmental Services, Concord, New Hampshire" prepared by Sanborn, Head & Associates, Inc. (SHA).

If you have any questions regarding this report, please do not hesitate to call us.

Very truly yours,
SANBORN, HEAD & ASSOCIATES, INC.

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Hydrogeologist

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Principal

NAD/CAC:nad

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Consulting Engineers & Scientists

BACKGROUND METALS CONCENTRATION STUDY
NEW HAMPSHIRE SOILS

New Hampshire Department of Environmental Services
Concord, New Hampshire

Prepared for
New Hampshire Department of Environmental Services

Prepared by
Sanborn, Head & Associates, Inc.

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1.0 INTRODUCTION

The purpose of this Background Metals Concentration Study was to assist the New Hampshire Department of Environmental Services (NHDES) in further developing the database of background metals concentrations in New Hampshire soils. This work was completed pursuant to Sanborn, Head & Associates, Inc.'s (SHA's) proposed Work Plan dated August 20, 1998, and approved by NHDES in a letter to SHA dated August 21, 1998. The scope of this study included reviewing the existing data and identifying data gaps, collecting and analyzing soils from twenty locations in New Hampshire, evaluating the newly generated data and integrating these new data with the existing data, and preparing this summary report. This report is subject to the Limitations included in Appendix A.

2.0 REVIEW OF EXISTING DATA AND IDENTIFICATION OF DATA GAPS

In the course of this study, SHA reviewed soil background metals concentration data provided by NHDES including data from the "sludge application" database, "school playground" database, and selected contaminated sites with established background data (e.g., Pease Air Force Base, Beede Waste Oil/Cash Energy Superfund Site). The existing data were reviewed to assess coverage across the State for the various metals analyzed. Average metals concentrations by municipality from the existing databases were calculated, and these averages were plotted by hand on State maps to evaluate the distribution of metals concentrations on a statewide basis. Table 1 summarizes the background metals database, both existing data and data generated as part of the current study; Table 2 summarizes average metals concentrations by municipality for both the existing data and data generated as part of the current study.

The above-referenced maps showing the distribution of existing NHDES metals data throughout the State of New Hampshire are included as Appendix B. A preliminary, qualitative review of the distribution of metals concentrations suggests several trends may be present in the data and these are discussed below. Further evaluation of the data distribution may warrant a more quantitative statistical approach (e.g. kriging).

Soils from the Connecticut River Valley, along the western border of New Hampshire appear to exhibit elevated concentrations of several metals including, chromium, molybdenum, nickel, and zinc relative to interior portions of the State. Soils from the southern portion of the Connecticut River Valley, in the vicinity of Langdon, Walpole, Alstead, and Claremont exhibit relatively elevated concentrations of cadmium, lead, and mercury.

The distribution of existing data appears to indicate that soils from the southeastern portion of the State (i.e. east of Concord to as far as approximately Rochester and Somersworth) may exhibit

relatively high levels of several metals including arsenic, cadmium, selenium, and zinc. Relatively elevated concentrations of chromium, lead, and nickel also appear to be present in this general area and extend to the vicinity of the seacoast.

Soils from the southwestern portion of the State in the vicinity of Bennington and Walpole, and possibly extending as far north as Newbury and Sunapee appear to exhibit relatively elevated concentrations of selenium. Soil from the central portion of the State near Franklin, Tilton, and Belmont, potentially extending as far north as Plymouth, seems to exhibit relatively high concentrations of zinc. Soil from the northern portion of the State, in the vicinity of Berlin, Groveton, and Pittsburg, appears to exhibit relatively elevated concentrations of nickel.

In general, the NHDES sludge application database exhibits higher average metals concentrations than the NHDES school playground data.

Twenty new soil sample locations were chosen to supplement and augment the existing metals database. The locations chosen were generally in the south-central and southeastern portions of the State which are the most populous and contain many of the State's contaminated sites. Based on our review of the existing data, and discussions with NHDES, the samples were analyzed for four metals, antimony (Sb), arsenic (As), beryllium (Be), and mercury (Hg). Antimony and beryllium were analyzed in soil samples from all locations to provide a data set for these metals which were previously not included in the existing NHDES metals database. Arsenic and mercury were analyzed in approximately half the soil samples to provide additional data on the concentrations of these metals in background urban soils.

3.0 SAMPLING AND ANALYSIS OF SOILS

Three composite soil samples were collected from each of the twenty sample locations between October 5 and 8, 1998. Sampling locations were selected by SHA with assistance from NHDES; and NHDES obtained authorization from local and State agencies for SHA to access and sample soils at the sites. Ten of these sites were selected based on their locations within generally more densely populated areas of four New Hampshire cities, Concord, Manchester, Nashua, and Rochester; these locations are summarized in Table 3A. Soils from these "urban" areas were sampled and analyzed for arsenic, antimony, beryllium, and mercury. The remaining ten sampling sites were selected from locations considered to be more representative of general background conditions and are located in suburban and rural areas. Five of these "non-urban" sites are schools where soils were sampled and analyzed previously for arsenic, cadmium, chromium, lead, mercury, and nickel, and are part of the existing NHDES database. The remaining five sites are State Parks or State protected lands. Soils from these non-urban sites were sampled and analyzed for antimony

and beryllium only. The specific locations of these non-urban background sites are summarized in Table 3B.

Each of the three samples collected at each site consisted of a composite of soil from three to seven sub-locations within the same general area at the site. Samples were collected from approximately the top six inches of soil at each sub-location. In general, soil samples were collected by driving one-inch outer diameter (O.D.), 0.625-inch inner diameter (I.D.), schedule 80 polyvinyl chloride (PVC) pipe approximately six inches into the ground using a standard (16 ounce) nail hammer. In several locations where the soil was too hard to be penetrated, or not cohesive enough to be retained in the PVC pipe, a stainless steel scoop was used to collect a sample. Where the stainless steel scoop was used, samples were generally collected from the ground surface to approximately four inches below the surface.

Soil samples were transferred from the PVC pipe or stainless steel scoop to unpreserved 8-ounce glass jars, provided by the analytical laboratory, in lifts (each lift corresponding to a different sub-location). Twigs, leaves, coarse gravel, and other undesirable material was removed from the samples. Following collection, the samples were placed on ice for transport to Amro Environmental Laboratories Corporation (Amro) of Merrimack, New Hampshire for analysis for selected metals (depending on the location). At the request of SHA, Amro homogenized the soil from each jar prior to selection of sub-samples for analysis. Chemical analysis was performed for total arsenic by United States Environmental Protection Agency (USEPA) Method 7060, total mercury by USEPA Method 7471, and total antimony and total beryllium by USEPA Method 6010.

Soil samples were visually classified in the field by SHA based on their grain size characteristics, color and odor. When discernable, the apparent general geologic setting of the sampling location was also noted. Available information on historical land use was recorded. This information is included on the Surficial Soil Field Sampling Summary forms included in Appendix C.1, and summarized on Table 1.

The general area where each composite sample was collected at each site is noted on the maps included in Appendix C.2. In some instances, the size of the site was too small relative to the scale of the map to allow for the approximate location of the composite soil samples on the map. In these instances, the approximate locations of composite soil samples were recorded with a more detailed field sketch. These field sketches are included with other field notes in Appendix C.3. Sub-samples comprising a composite sample were generally collected from within approximately twenty feet of each other, except where a larger area is designated on the attached maps/sketches.

The sampling tools were washed with detergent and rinsed in potable water between samples. Three equipment blanks were collected as a check on the field decontamination procedures. The procedure

for collecting each equipment blank included placing the PVC pipe into a jar of deionized water provided by the analytical laboratory, and agitating the water so that it came in contact with all portions of the pipe used to collect the soil samples. The height of the water was greater than six inches. The deionized water was then poured around the outside and through the pipe into the sample container. The equipment blanks were submitted to Amro with the soil samples for analysis for antimony, arsenic, beryllium and mercury.

Three blind duplicate samples were submitted to the laboratory for quality assurance / quality control (QA/QC) purposes. At each selected location where a duplicate sample was to be collected (S-15, S-24, and S-52), sub-location soils were collected and placed into a stainless steel mixing bowl. The collected soil was mixed in the bowl and split between the primary and duplicate sample jars. The duplicate samples were numbered sequentially as S-16, S-25, and S-53. The duplicates were identified as duplicates only on the Field Sampling Summary forms (not submitted to the laboratory) and were analyzed for the same metals as the associated primary sample.

4.0 ANALYTICAL RESULTS

The results of the chemical analyses completed on the soil samples are discussed below. Average concentrations by municipality for the urban and non-urban locations were plotted on State maps included in Appendix B. A copy of Amro's laboratory report is included in Appendix D.

Metals analyses performed on the three aqueous equipment blanks collected as a check on field decontamination procedures indicated that the concentrations of antimony, arsenic, beryllium, and mercury were all below the analytical method detection limits. Three blind duplicate samples were collected for QA/QC purposes, S-16 (duplicate of S-15), S-25 (duplicate of S-24), and S-53 (duplicate of S-52). Beryllium concentrations were 0.25 and 0.17 milligrams per kilogram (mg/kg), equivalent to parts per million (ppm) for S-15 and S-16, respectively; 0.50 and 0.55 mg/kg for S-24 and S-25, respectively; and 0.29 and 0.44 mg/kg for S-52 and S-53, respectively. Arsenic concentrations were 12 and 11 mg/kg for S-24 and S-25, respectively; and 9.1 and 8.4 mg/kg for S-52 and S-53, respectively. Mercury concentrations were 0.22 and 0.071 mg/kg for S-24 and S-25, respectively; and 0.039 and 0.021 mg/kg for S-52 and S-53, respectively. All antimony concentrations were below the analytical detection limit of 1 mg/kg.

4.1 Urban Locations

Soil samples were collected from more urban areas of four of the most populous cities in New Hampshire, Concord, Manchester, Nashua, and Rochester, to assess metals concentrations in background "urban" areas. Summary statistics describing these data are provided in Table 4B.

Arsenic concentrations detected in soils from these urban locations range from 5.4 to 21 mg/kg. The average arsenic concentration is 10.9 mg/kg, the standard deviation is 4.0 mg/kg, and the 95th percentile concentration is 19.9 mg/kg. The average arsenic concentrations detected in soils from "urban" locations in the four cities are 10.1, 9.8, 11.1 and 12.7 mg/kg for Concord, Manchester, Nashua, and Rochester, respectively.

Mercury concentrations detected in soils from the urban locations range from 0.021 to 1.5 mg/kg. The average mercury concentration is 0.19 mg/kg, the standard deviation is 0.28 mg/kg, and the 95th percentile concentration is 0.58 mg/kg. The highest mercury concentration of 1.5 mg/kg was detected in a soil sample collected at the Kimball School in Concord. The average mercury concentrations detected in soils from urban locations in the four cities are 0.47, 0.21, 0.10, and 0.06 mg/kg for Concord, Manchester, Nashua, and Rochester, respectively.

In general, antimony concentrations in urban soils were not detected above the method detection limit of 1 mg/kg. Only one soil sample, collected from Sullivan Park in Nashua, exhibited an antimony concentration above the method detection limit, with a result of 38 mg/kg.

Beryllium concentrations detected in soils from the urban areas range from 0.29 to 0.75 mg/kg. The average beryllium concentration is 0.49 mg/kg, the standard deviation is 0.11 mg/kg, and the 95th percentile, concentration is 0.68 mg/kg. The average beryllium concentrations detected in soils from urban locations in the four cities are 0.56, 0.40, 0.55, and 0.45 mg/kg for Concord, Manchester, Nashua, and Rochester, respectively.

4.2 Non-Urban Locations

Soil samples were collected from five suburban and/or rural schools and five State-owned parks to assess metals concentrations in "non-urban" background areas. Summary statistics for these data are provided in Table 4B.

Typically, antimony was not detected at concentrations above the method detection limit of 1 mg/kg in non-urban background soils analyzed as part of this study. Seven soil samples, one each from Adams Point in Durham and Spaulding High School in Rochester, two from Woodman State Forest in Northwood, and all three soil samples from Hirst Wildlife Area in Boscawen exhibited concentrations of antimony above the detection limit, in the range of 1.1 to 2.8 mg/kg.

Beryllium concentrations detected in soils from the non-urban locations range from 0.16 to 1.3 mg/kg. The average beryllium concentration is 0.50 mg/kg, the standard deviation is 0.28 mg/kg, and the 95th percentile concentration is 1.1 mg/kg. The average beryllium concentrations detected

in soils from suburban/rural locations are 0.53 and 0.48 mg/kg for schools and State-owned parks, respectively.

5.0 UPDATED NHDES METALS DATABASE

5.1 General Discussion

The analytical results from the current study have been combined with the data from the existing NHDES school and sludge application databases to form an updated NHDES metals database. Table 4A presents the summary statistics for metals data from the existing NHDES metals databases. Summary statistics describing SHA's 1998 urban and non-urban data are provided in Table 4B. Overall summary statistics for the combined NHDES and SHA datasets are calculated for arsenic and mercury and are presented in Table 4C. A number of other metals were included in the existing NHDES database that were not analyzed during the current study; these data are included on Table 4A and are discussed briefly in Section 2.0 above. Antimony and beryllium were not included in the existing NHDES database.

Descriptions were noted for each of the soil samples collected during the current study, however, there does not appear to be a significant correlation between soil description (in particular, grain size) and metals concentrations. Given the limited and general nature of information obtained regarding the geologic setting of each sample location, a significant relationship between geology and metals concentrations is not apparent. Land use information obtained beyond the general classifications of urban vs. non-urban was limited, and no relationship between land use and metals concentrations is apparent (beyond urban vs. non-urban discussed below). Information on soil type/description, geologic setting and land use (beyond school vs. field) is not included in the existing NHDES database.

5.2 Specific Metals

Antimony was typically not detected in the soil samples analyzed (detection limit 1.0 mg/kg). Seven soil samples from four non-urban locations exhibited concentrations in the range of 1.1 to 2.8 mg/kg. One urban sample from Sullivan Park in Nashua, exhibited a substantially higher concentration of 38 mg/kg.

On average, the arsenic concentrations detected in soil samples analyzed during the current study are significantly higher than those of the existing NHDES database, presumably related to the generally urban nature of the arsenic sampling locations in the current study. For the existing NHDES database, the average arsenic concentration is 6.1 mg/kg, the standard deviation is 6.5 mg/kg, and the 95th percentile concentration is 11 mg/kg. For the data from the current study, the

average arsenic concentration is 10.9 mg/kg, the standard deviation is 4.0 mg/kg, and the 95th percentile concentration is 19.9 mg/kg.

Average beryllium concentrations for soil samples from urban and non-urban locations are relatively similar, at 0.49 and 0.50 mg/kg, respectively, as are the average beryllium concentrations of soil samples collected from the four urban city areas (ranging from 0.40 to 0.56 mg/kg). However, within the non-urban soil group, beryllium concentrations in samples from the southeastern portion of the State, Durham and Rochester, appear to be significantly higher than from the other more interior locations (Allenstown, Boscawen, Hudson, Suncook and Warner). For the Durham and Rochester non-urban data, the average beryllium concentration is 0.94 mg/kg, the standard deviation is 0.26 mg/kg, and the 95th percentile concentration is 1.3 mg/kg. For the remaining non-urban data, the average beryllium concentration is 0.40 mg/kg, the standard deviation is 0.13 mg/kg, and the 95th percentile concentration is 0.57 mg/kg.

On average, the mercury concentrations detected in soil samples analyzed during the current study are similar to those of the existing NHDES database (0.19 and 0.22 mg/kg, respectively). However due to the generally elevated mercury concentrations detected in the samples collected from Concord as part of the current study, the 95th percentile concentration for the current study (0.58 mg/kg) is higher than that of the existing NHDES database (0.31 mg/kg).

6.0 CONCLUSIONS AND RECOMMENDATIONS

Principal conclusions and recommendations fall into two general categories:

- Those related to numerical values for background and/or NHDES Method 1 Soil Standards; and

- Those related to additional background metals database development.

According to the NHDES Risk Characterization and Management Policy (RCMP) dated January 1998, "background concentrations" for metals are defined as the 95th percentile of data representative of suburban and rural locations in New Hampshire. The background concentrations presented on Table 1, Section 1.5(4)(c) of the RCMP, are generally consistent with the 95th percentile concentrations presented for the same metal on Table 4A of this report. Metals not included on Table 1 of the RCMP for which NHDES background data exist are copper and molybdenum. NHDES may wish to consider adding copper and molybdenum with their appropriate 95th percentile concentrations (31 and 3.5 mg/kg, respectively) to Table 1.

Currently, no background concentrations are established in the RCMP for antimony or beryllium. Based on the data collected during the current study, we suggest background values for antimony and beryllium be established, and set at 3.0 mg/kg for antimony and 1.0 mg/kg for beryllium. The proposed background value for antimony is well below the Method 1 S-1, S-2 and S-3 Standards of 8, 26 and 26 mg/kg, respectively. However, the proposed value for beryllium is well above the S-1 and S-2 Standards of 0.1 mg/kg, and equal to the S-3 Standard. NHDES may wish to reconsider values for the Method 1 Standards for beryllium.

Concentrations of arsenic and mercury detected in "urban" soils analyzed as part of the current study may indicate urban background values for these metals are elevated relative to non-urban values. NHDES may wish to consider establishing, at least informally, "urban" background values for arsenic and mercury of approximately 20 and 0.5 mg/kg, respectively. The proposed urban value for arsenic exceeds the Method 1 S-1, S-2 and S-3 Standards of 12 mg/kg. The proposed urban value for mercury is below the Method 1 S-1, S-2 and S-3 Standards of 1, 7 and 7 mg/kg, respectively.

Based on our review of the existing NHDES database and completion of the October 1998 soil sampling and analysis, SHA has several recommendations for the NHDES metals database in the future. We recommend that more detailed site descriptions, soil descriptions, and site history information be obtained for the existing NHDES data (if possible) and for all future metals data to be included in the NHDES database. Correlations between metals concentrations and soil type and/or land use may provide important insight into the distribution of metals concentrations. As an example, historical agricultural practices including the use of metal-containing pesticides or herbicides could substantially affect metals concentrations in soils. In addition, we suggest that the geologic setting of each sample location be generally described based on field observations, and potentially be further characterized by reviewing published references (United States Geological Survey [USGS] surficial or bedrock geology and/or Soil Conservation Service [SCS] maps, for example). This information could be correlated with the metals data to evaluate the potential influence of geology on background metals concentrations.

We also recommend that the manner in which soil samples are collected in the future be standardized and well documented, to limit variability in the data due to sample collection procedures. We suggest future samples be collected following the general protocols established and implemented in the current study.

NAD/CAC:nad/lje/pmm

TABLES

TABLE 1
METALS DATABASE
(COMBINED DATA FROM EXISTING NHDES DATABASE and SHA 1998 DATA)

Location	Municipality	Sample ID	Site Type	Database Source	Background Setting	Geologic Setting	Soil Description	Land Use	(Concentrations in parts per million) Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc
Acworth Elementary	Acworth		School	Playgrd.						3.00		0.84	14.00		61.00	0.10		13.00		
Bear Brook State Park	Allenstown	S-13	Park	SHA 1998	Non-urban	Overbank seds.	Silty Sand		<1		0.49									
Bear Brook State Park	Allenstown	S-14	Park	SHA 1998	Non-urban	Till upland	Silty Sand		<1		0.2									
Bear Brook State Park	Allenstown	S-15	Park	SHA 1998	Non-urban	Wetland seds.	Silty Sand		<1		0.25									
Bear Brook State Park	Allenstown	S-16	Park	SHA 1998	Non-urban	Dup. of S-15	Silty Sand		<1		0.17									
Fall Mountain Regional High	Alstead		School	Playgrd.						3.00		0.94	16.00		33.00	0.14		15.00		
H.P. Wilkins Elementary	Amherst		School	Playgrd.						4.00		0.30	6.00		3.00	0.02		4.00		
Amherst St. Elementary	Amherst		School	Playgrd.						10.00		0.70	13.00		87.00	0.25		16.00		
Andover Elementary	Andover		School	Playgrd.						2.50		0.20	6.80		11.00	0.04		4.70		
Ben Pratt site	Antrim		Field	Land Apl.						3.3		0.2	11	9	17	0.07	1.3	7	0.38	20
Maplewood Cemetery	Antrim		Field	Land Apl.						4.2		0.2	18	14	13	0.05	1.7	10	0.3	26
PW #1	Antrim		Field	Land Apl.						5		0.5	13.9	104	9.89	0.34	0.66	1.21	5	74.9
Antrim Middle School	Antrim		School	Playgrd.						2.00		0.20	8.00		28.00	0.07		5.20		
Ashland Jr. High	Ashland		School	Playgrd.						3.00		0.50	14.00		36.00	0.09		6.00		
Lewis 1	Atkinson		Field	Land Apl.						3.2		2.2	12	4.8	4.3	0.02	2.2	8.2	2.2	19
Lewis 2	Atkinson		Field	Land Apl.						5.5		2.2	18	5.8	9.6	0.03	2.2	11	2.2	24
Atkinson Academy	Atkinson		School	Playgrd.						3.00		0.25	14.00		40.00	0.12		8.00		
Barrington Middle School	Barrington		School	Playgrd.						11.00		0.15	9.60		16.00	0.01		7.90		
P. Woodbury Elementary	Bedford		School	Playgrd.						5.00		0.20	5.00		15.00	0.03		4.00		
Roberts 2	Belmont		Field	Land Apl.						6.1		0.5	27	30	14	0.14	0.9	9	0.72	88
Roberts 3	Belmont		Field	Land Apl.						5		0.3	5	8	8	0.05	1	5	0.57	64
Roberts 1	Belmont		Field	Land Apl.						7.7		0.3	8	18	15	0.03	1	7	0.68	83
DB #2	Bennington		Field	Land Apl.						5		0.1	5.7	2.02	10.3	0.1	0.5	2.51	5	15.3
Pierce Elementary	Bennington		School	Playgrd.						2.00		0.50	7.60		33.00	0.07		4.90		
DB #1	Bennington		Field	Land Apl.						5		0.1	5.2	2.8	43	0.1	0.5	3.47	5	32
Berlin Sr. High	Berlin		School	Playgrd.						4.00		0.60	11.00		140.00	0.10		8.00		
Profile Jr./Sr. High	Bethlehem		School	Playgrd.						1.00		0.40	24.00		13.00	0.05		22.00		
Crete HF96	Boscawen		Field	Land Apl.						2.9		0.2	10	11	10	0.13	1	3	0.73	66
Field A: 37.4 acres	Boscawen		Field	Land Apl.						2.5		0.2	7	11	2	0.01	0.6	5	0.29	28
Field B: 28.6 acres	Boscawen		Field	Land Apl.						4.5		0.2	9	12	3	0.1	1	9	0.53	42
Field C: 33.5 acres	Boscawen		Field	Land Apl.						4.2		0.2	17	17	9	0.07	1.2	8	0.33	52
Hirst Wildlife Area	Boscawen	S-61	Park	SHA 1998	Non-urban	Till	Silty sand		2.8		0.45									
Hirst Wildlife Area	Boscawen	S-62	Park	SHA 1998	Non-urban	Till	Silty sand		1.1		0.47									
Hirst Wildlife Area	Boscawen	S-63	Park	SHA 1998	Non-urban	Marsh	Peat		1.6		0.53									
Knox 1	Boscawen		Field	Land Apl.						5.6		0.2	5	11	15	0.07	0.8	8	0.63	57
Knox 2	Boscawen		Field	Land Apl.						5.5		0.2	8	16	45	0.11	0.8	7	0.62	81
MC #2: 4 acres	Boscawen		Field	Land Apl.						3		0.3	7	5.1	9	0.2	0.2	4.6	2	39
MC #3: 2.2 acres	Boscawen		Field	Land Apl.						3		0.4	15	12	7	0.2	0.2	8.8	2	35
McKerley A	Boscawen		Field	Land Apl.						5.8		0.2	4	11	4	0.1	1	7	0.43	31
McKerley B	Boscawen		Field	Land Apl.						7		0.2	5	11	7	0.08	1.2	8	0.51	43
Mckerley Roadside	Boscawen		Field	Land Apl.						6.4		0.3	5	21	16	0.07	0.9	14	0.69	81
Boscawen Main St. School	Boscawen		School	Playgrd.						3.90		0.20	7.40		21.00	0.04		5.20		
Bradford Central	Bradford		School	Playgrd.						2.00		0.50	5.00		8.00	0.27		3.00		
104 small	Bristol		Field	Land Apl.						2		0.2	5.9	4.6	12	0.2	0.2	3.6	2	41
Newfound Memorial High	Bristol		School	Playgrd.						3.00		0.30	7.00		48.00	0.05		4.00		
104 big	Bristol		Field	Land Apl.						3		0.2	4.4	5	11	0.2	0.4	3	2	29
Brookline Elementary	Brookline		School	Playgrd.						4.00		0.20	5.00		17.00	0.05		3.00		

TABLE 1
METALS DATABASE
(COMBINED DATA FROM EXISTING NHDES DATABASE and SHA 1998 DATA)

Location	Municipality	Sample ID	Site Type	Database Source	Background Setting	Geologic Setting	Soil Description	Land Use	(Concentrations in parts per million) Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc
Mascoma Valley Regional High	Canaan		School	Playgrd.						3.00		0.35	14.00		14.00	0.06		7.00		
Canaan	Canaan		Field	Land Apl.						2		0.68	23	13	10	0.2	0.9	16	2	47
Field H	Canterbury		Field	Land Apl.						3.3		0.2	5	2	35	0.17	1.8	2	0.22	21
Canterbury Elementary	Canterbury		School	Playgrd.						2.90		0.20	6.10		5.00	0.02		6.10		
Kenneally pit	Center Barnstead		Field	Land Apl.						12		0.6	4.9	4.8	5	0.2	0.3	2.8	2	15
Farwell Elementry	Charleston		School	Playgrd.						8.00		1.30	12.00		41.00	0.17		11.00		
Chester Elementary	Chester		School	Playgrd.						7.00		0.20	14.00		44.00	0.04		7.00		
Cowdry Field	Chester		Field	Land Apl.						8.1		0.3	62	15	20	0.05	1.1	64	0.54	72
Pomp Field	Chester		Field	Land Apl.						7.6		0.3	36	20	14	0.06	0.7	62	0.85	53
Buxton	Chester		Field	Land Apl.						7.6		0.3	31	9	15	0.1	1	43	0.77	58
North St. Elementary	Claremont		School	Playgrd.						3.00		1.50	12.00		86.00	0.25		13.00		
Colebrook 2	Colebrook		Field	Land Apl.						4		2.9	39	18	10	0.2	0.2	32	2	66
Colebrook 3	Colebrook		Field	Land Apl.						9		3.5	41	17	18	0.2	0.2	34	2	88
Colebrook Academy	Colebrook		School	Playgrd.						3.00		0.25	17.00		19.00	0.08		24.00		
Colebrook 1	Colebrook		Field	Land Apl.						5		3	36	15	24	0.2	0.7	27	2	98
Birch St. 5	Concord		Field	Land Apl.						4.6		0.3	16	13	24	0.16	0.9	7	0.55	41
Cilley2	Concord		Field	Land Apl.						3.4		0.2	18	14	20	0.07	0.4	3	0.85	74
Conant Elementary - Conc.	Concord		School	Playgrd.						5.00		0.15	9.40		41.00	0.05		5.00		
Concord High	Concord		School	Playgrd.						2.40		0.20	12.00		37.00	0.05		7.10		
Concord High School	Concord	S-1	School	SHA 1998	Non-urban	Trans. to till uplands	Silty sand		<1		0.52									
Concord High School	Concord	S-2	School	SHA 1998	Non-urban	Till uplands	Silty sand		<1		0.49									
Concord High School	Concord	S-3	School	SHA 1998	Non-urban	Probable fill	Silty sand		<1		0.53									
Field 1: 33 acres	Concord		Field	Land Apl.						5		0.5	14.3		17.2	0.1			5	
Field 1: 9.8 acres	Concord		Field	Land Apl.						6.2		0.2	10	12	26	0.11	1.4	7	0.58	53
Field 2: 1.7 acres	Concord		Field	Land Apl.						1.1		0.2	7	3	28	0.09	1.2	4	0.35	58
Field 2: 60 acres	Concord		Field	Land Apl.						5		0.5	10.6		17.3	0.1			5	
Field 3: 3 acres	Concord		Field	Land Apl.						5		0.5	14.7		9.79	0.1			5	
Field 4: 8 acres	Concord		Field	Land Apl.						5		0.5	14.7		9.79	0.1			5	
Hall Street	Concord		Field	Land Apl.						4		0.2	21	15	19	0.12	0.6	10	0.57	73
Kimball School	Concord	S-4	School	SHA 1998	Urban	Probable fill	Silty sand		<1	21.00	0.52					0.49				
Kimball School	Concord	S-5	School	SHA 1998	Urban	Probable fill	Silty sand		<1	5.40	0.4					1.50				
Kimball School	Concord	S-6	School	SHA 1998	Urban	Probable fill	Silty sand		<1	7.30	0.61					0.22				
Rumford School	Concord	S-7	School	SHA 1998	Urban	Probable fill	Silty sand	1902	<1	10.00	0.66					0.11				
Rumford School	Concord	S-8	School	SHA 1998	Urban	Probable fill	Silty sand	1902	<1	11.00	0.67					0.09				
Rumford School	Concord	S-9	School	SHA 1998	Urban	Probable fill	Silty sand	1902	<1	6.00	0.47					0.40				
White1	Concord		Field	Land Apl.						8.8		0.2	20	20	50	0.12	0.5	6	0.97	65
Back Field	Concord		Field	Land Apl.						4.4		0.2	7	9	19	0.07	0.6	2	0.52	32
Maple St. Elementary	Contoocook		School	Playgrd.						2.00		0.25	22.00		12.00	0.03		10.00		
C & D	Conway		Field	Land Apl.						7.52		0.5	14.2	31	20.4	0.1	2.5	8.14	5	84.2
Conway Elementary	Conway		School	Playgrd.						2.00		0.25	7.00		21.00	0.04		4.00		
Dechambeault	Conway		Field	Land Apl.						5		0.5	8.27	4.05	13	0.1	2.5	4.9	5	47.6
Drew	Conway		Field	Land Apl.						5		0.5	10.7	14.4	8.66	0.1	2.5	55.94	5	59.3
Field 34	Conway		Field	Land Apl.						8		0.6	20	24	12	0.2	1.1	13	2	110
Field 38	Conway		Field	Land Apl.						2		0.6	16	16	7	0.2	1.5	10	2	96
A & B	Conway		Field	Land Apl.						7.52		0.5	14.2	31	20.4	0.1	2.5	8.14	5	84.2
Danville Elementary	Danville		School	Playgrd.						5.00		0.30	21.00		17.00	0.04		14.00		
South Range Elementary	Derry		School	Playgrd.						7.00		0.25	19.00		13.00	0.11		11.00		

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Location	Municipality	Sample ID	Site Type	Database Source	Background Setting	Geologic Setting	Soil Description	Land Use	(Concentrations in parts per million) Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc
Bellamy 3	Dover		Field	Land Apl.						6.6		0.3	22	22	15	0.07	1	7	0.69	90
Bellamy 4	Dover		Field	Land Apl.						7.8		0.3	24	18	16	0.11	0.7	13	0.7	99
Bellamy 1	Dover		Field	Land Apl.						6.1		0.3	24	20	14	0.06	0.5	9	0.56	89
Adams Point	Durham	S-45	Park	SHA 1998	Non-urban	Marsh	Peat		<1.9		0.6									
Adams Point	Durham	S-46	Park	SHA 1998	Non-urban	Till uplands	Silty sand		1.7		1.1									
Adams Point	Durham	S-47	Park	SHA 1998	Non-urban	Bay seds.	Clayey silt		<1		0.93									
Oyster River High	Durham		School	Playgrd.						5.40		0.25	16.00		51.00	0.01		11.00		
Sawyer site	East Conway		Field	Land Apl.						3		0.2	6	3.7	7	0.2	1.7	3.5	2	25
East Rochester Annex	East Rochester		School	Playgrd.						6.70		0.20	6.10		59.00	0.03		5.70		
Enfield Village Elementary	Enfield		School	Playgrd.						3.00		0.60	16.00		19.00	0.02		13.00		
Epping Jr./Sr. High	Epping		School	Playgrd.						8.00		0.50	18.00		25.00	0.04		10.00		
Hill	Epping		Field	Land Apl.						7.8		0.2	21	12	12	0.07	1.3	21	0.57	74
Second A	Epping		Field	Land Apl.						5.2		0.2	62	14	12	0.07	1.1	33	0.75	79
Second B	Epping		Field	Land Apl.						5.5		0.2	44	14	11	0.04	0.8	31	0.67	74
Strip	Epping		Field	Land Apl.						11		0.2	43	11	10	0.07	1.1	20	0.74	72
Woods Field	Epping		Field	Land Apl.						5.3		0.2	32	10	5	0.08	0.5	27	0.83	62
Clover	Epping		Field	Land Apl.						6.5		0.2	17	9	7	0.1	1	16	0.65	51
Field 10: 2.5 acres	Epsom		Field	Land Apl.						6.28		0.5	8.52		10.6	0.1			5	
Field 13: 4.6 acres	Epsom		Field	Land Apl.						5		0.5	15.2		7.48	0.1			5	
Field 17A: 5 acres	Epsom		Field	Land Apl.						6.42		0.5	10.9		17.5	0.1			5	
Field 18: 2.4 acres	Epsom		Field	Land Apl.						5		0.5	8.02		12.1	0.1			5	
Field 3A: 13.3 acres	Epsom		Field	Land Apl.						5.56			0.5	7.18	7.37	0.11			5	
Field 3B: 3.2 acres	Epsom		Field	Land Apl.						5		0.5	10.3		12.1	0.1			5	
Field 5: 10.3 acres	Epsom		Field	Land Apl.						7.14		0.5	6.5		8.52	0.1			5	
Field 9: 6.2 acres	Epsom		Field	Land Apl.						6.28		0.5	8.52		10.6	0.1			5	
Filed 4: 8.3 acres	Epsom		Field	Land Apl.						5		0.5	7.82		9.51	0.1			5	
Central Elementary-Epson	Epsom		School	Playgrd.						10.00		6.20	12.00		54.00	0.11		7.00		
Field 16: 4.9 acres	Epsom		Field	Land Apl.						6.42		0.5	10.9		17.5	0.1			5	
Exeter Area High	Exeter		School	Playgrd.						8.00		0.30	24.00		59.00	0.07		7.00		
Town of Farmington	Farmington		Field	Land Apl.						4		0.2	2.8	6.2	4	0.2	0.2	2.9	2	19
Farmington High	Farmington		School	Playgrd.						4.50		0.25	6.40		13.00	0.04		4.70		
Francestown Elementary	Francestown		School	Playgrd.						16		0.60	13.00		150.00	0.19		7.50		
P. Smith Elementary	Franklin		School	Playgrd.						2.10		0.25	5.50		27.00	0.11		4.00		
Field A: 22.2 acres	Franklin		Field	Land Apl.						4.4		0.2	27	137	32	0.17	0.5	14	1.01	126
Freedom Elementary	Freedom		School	Playgrd.						3.00		0.30	8.00		27.00	0.07		4.00		
Ellis Elementary	Fremont		School	Playgrd.						7.00		0.20	16.00		16.00	0.03		9.20		
Gilford Schools	Gilford		School	Playgrd.						2.00		0.30	39.00		13.00	0.06		5.00		
Field #2 3.5 acres	Gilmanton		Field	Land Apl.						5		1.9	12	9.4	15	0.2	1.2	6.3	2	57
Field #3 6.9 acres	Gilmanton		Field	Land Apl.						4		1.9	11	8.2	13	0.2	0.9	6.4	2	53
Field #4 2.0 acres	Gilmanton		Field	Land Apl.						7		1.9	12	9.1	14	0.2	1.5	6.6	2	49
Field 17 12.7 acres	Gilmanton		Field	Land Apl.						7.14		0.5	10.9		18.3	0.1			5	
Field 18 - 5.9 acres	Gilmanton		Field	Land Apl.						7.98		0.5	10.4		18.9	0.1			5	
Field 19 - 5.9 acres	Gilmanton		Field	Land Apl.						5		0.5	10.7		14.1	0.1			5	
Field 20 - 10.6 acre	Gilmanton		Field	Land Apl.						5.56		0.5	11.3		14.6	0.1			5	
Field 28 9.6 acres	Gilmanton		Field	Land Apl.						5.08		0.5	8.55		12	0.1			5	
Field 3: 3.9 acres	Gilmanton		Field	Land Apl.						8.57		0.5	10.2		17.1	0.1			5	
Field 31A - 13.8 acr	Gilmanton		Field	Land Apl.						9.09		1	15.1		14.5	0.46			5	

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Field 31B 15.8 acres	Gilmanton		Field	Land Apl.						7.3		1	15.4		11.4	0.49			5	
Field 32A 11.8 acres	Gilmanton		Field	Land Apl.						6.29		0.5	9.8		18.3	0.1			5	
Field 32B 9.7 acres	Gilmanton		Field	Land Apl.						7.8		0.5	16.3		16	0.1			5	
Field 32C 5 acres	Gilmanton		Field	Land Apl.						5		0.5	9.7		12.3	0.1			5	
Field 33 21 acres	Gilmanton		Field	Land Apl.						5		0.5	9.4		15.8	0.21			5	
Field 34 9.8 acres	Gilmanton		Field	Land Apl.						5		0.5	7		9.97	0.1			5	
Field 5: 4.0 acres	Gilmanton		Field	Land Apl.						8.38		1	14.5		12.5	0.54			5	
Field 6 - 7 acres	Gilmanton		Field	Land Apl.						8.38		1	14.5		12.5	0.54			5	
Field 7 - 8.1 acres	Gilmanton		Field	Land Apl.						8.51		1	13.9		15.7	0.62			5	
Field 8 - 7.2 acres	Gilmanton		Field	Land Apl.						5		0.5	9.9		10.9	0.1			5	
Gilmanton Elementary	Gilmanton		School	Playgrd.						4.00		0.30	7.00		10.00	0.07		1.50		
Field #1 10.4 acres	Gilmanton		Field	Land Apl.						5		2	14	8.6	17	0.2	3.7	7.2	2	57
Gilsum Elementary	Gilsum		School	Playgrd.						3.30		0.60	12.00		10.00	0.06		7.50		
Howard pit	Glen		Field	Land Apl.						3		0.2	3.2	2.5	5	0.2	1	2.4	2	30
Goffstown High	Goffstown		School	Playgrd.						5.00		0.20	5.00		22.00	0.04		4.00		
Huckins	Groveton		Field	Land Apl.						5		1.1	28	11	7	0.2	0.92	20	2	57
Hampstead Middle School	Hampstead		School	Playgrd.						5.00		0.30	15.00		14.00	0.03		8.00		
Zimmerman	Hancock		Field	Land Apl.						5		0.5		7.03	2.5	0.1	0.5	3.88	5	17.7
Weston	Hancock		Field	Land Apl.						5		0.5		3.47	2.5	0.1	0.5	3.13	5	16.1
Hanover Sr. High	Hanover		School	Playgrd.						4.00		0.60	25.00		19.00	0.05		23.00		
Wells Memorial Elementary	Harrisville		School	Playgrd.						2.00		0.25	13.00		8.00	0.03		10.00		
Greenhouse	Haverhill		Field	Land Apl.						3.7		0.2	10	26	11	0.1	0.6	6	0.53	59
Haverhill Academy	Haverhill		School	Playgrd.						7.00		0.25	17.00		39.00	0.09		11.00		
Musty	Haverhill		Field	Land Apl.						4.4		0.3	14	36	12	0.05	0.8	13	0.79	92
Barn	Haverhill		Field	Land Apl.						5.2		0.3	13	32	9	0.08	0.9	12	0.71	73
Cogswell Memorial High	Henniker		School	Playgrd.						2.00		0.80	8.60		22.00	0.04		5.60		
Field #5	Hill		Field	Land Apl.						7.5		0.2	10	9	3	0.41	1.3	12	0.55	44
Field #8	Hill		Field	Land Apl.						6.9		0.2	12	7	6	0.29	1.2	16	0.4	39
Field #8	Hill		Field	Land Apl.						6.9		0.2	12	7	6	0.29	1.2	16	0.4	39
Field #5	HIll		Field	Land Apl.						7.5		0.2	10	9	3	0.41	1.3	12	0.55	44
Hinsdale Elementary	Hinsdale		School	Playgrd.						3.10		0.60	13.00		33.00	0.07		11.00		
Hollis Area High	Hollis		School	Playgrd.						5.00		0.30	6.00		9.00	0.06		7.00		
East Property	Hooksett		Field	Land Apl.						8.9		0.2	5	7	2	0.01	0.5	3	0.26	74
Hooksett Memorial Jr. High	Hooksett		Field	Playgrd.						6.00		0.40	7.00		18.00	0.02		5.00		
Hooksett Village School	Hooksett		School	Playgrd.						10.00		0.25	8.00		11.00	0.06		5.00		
Mac - 21	Hooksett		Field	Land Apl.						5		0.5	9.47	3.03	11.7	0.1	2.5	4.69	5	21.5
New - 1	Hooksett		Field	Land Apl.						5		0.5	15.4	4.02	7.12	0.1	2.5	8.3	5	40.1
West Property	Hooksett		Field	Land Apl.						8.9		0.2	5	7	2	0.01	0.5	3	0.26	74
Bemis III	Hooksett		Field	Land Apl.						3		0.5	3.8	5.4	2	0.2	0.2	1.2	2	10
Alvirne High School	Hudson	S-27	School	SHA 1998	Non-urban	Probable fill	Silty sand		<1		0.44									
Alvirne High School	Hudson	S-28	School	SHA 1998	Non-urban	Outwash	Silty sand		<1		0.27									
Alvirne High School	Hudson	S-29	School	SHA 1998	Non-urban	Wetland	Silty sand		<1		0.51									
Alvirne High School	Hudson		School	Playgrd.						6.00		0.25	7.00		16.00	0.03		6.00		
Webster Elementary	Hudson		Field	Playgrd.						5.00		0.50	10.00		71.00	0.09		10.00		
Jackson Grammar	Jackson		School	Playgrd.						2.00		0.30	7.00		31.00	0.05		5.00		
Conant High	Jaffery		School	Playgrd.						2.90		0.20	11.00		34.00	0.03		6.10		
Keene Sr. High	Keene		School	Playgrd.						2.00		0.25	9.10		24.00	0.06		5.00		

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J.D. Blake Elementary	Kingston		School	Playgrd.						1.00		0.20	5.70		10.00	0.02		4.50		
D. Bakie School	Kingston		School	Playgrd.						6.00		0.25	20.00		39.00	0.05		11.00		
Elm St. Elementary	Laconia		School	Playgrd.						3.00		0.25	7.00		10.00	0.04		5.00		
Lancaster Elementary	Lancaster		School	Playgrd.						2.00		0.25	15.00		41.00	0.16		8.00		
Rexford	Lancaster		Field	Land Apl.						11		0.2	12	40	7	0.2	0.4	5.8	2	32
Farnsworth F	Lancaster		Field	Land Apl.						6		0.2	15	13	13	0.1	1.1	14	0.54	69
Wood	Langdon		Field	Land Apl.						1		4.5	50	1425	117	6.53	64.5	63	1	1475
Cole #3 & #5	Lebanon		Field	Land Apl.						6.2		0.2	14	24	11	0.76	1.4	10	0.52	54
Cole #7 & #8	Lebanon		Field	Land Apl.						5.2		0.2	23	19	11	0.05	3	22	0.74	63
Daisey Hill 4	Lebanon		Field	Land Apl.						5		0.2	22	25	23	0.03	3.4	18	0.82	74
Daisy Hill 3	Lebanon		Field	Land Apl.						5.9		0.2	29	23	27	0.04	2.6	17	0.74	77
Fish and Game	Lebanon		Field	Land Apl.						6.5		0.3	17	15	10	0.05	1.3	23	0.8	66
Lebanon High	Lebanon		School	Playgrd.						5.00		0.30	15.00		19.00	0.04		10.00		
Tadmor 1A	Lebanon		Field	Land Apl.						5.3		0.3	14	39	24	0.09	1.2	22	0.55	92
********	Lebanon		Field	Land Apl.						41		39	1200	1500	300	17	18			
Goshen-Lempster Coop	Lempster		School	Playgrd.						1.00		1.70	7.00		18.00	0.07		4.00		
Lin-Wood Public School	Lincoln		School	Playgrd.						4.00		0.35	8.00		26.00	0.08		4.00		
Blue Elementary	Lisbon		School	Playgrd.						10.00		0.90	22.00		12.00	0.02		18.00		
Poulson pit	Littleton		Field	Land Apl.						2		0.2	10	4.1	3	0.2	1.2	6.7	2	15
Littleton High	Littleton		School	Playgrd.						5.00		0.35	17.00		24.00	0.04		10.00		
South Londonderry Elementary	Londonderry		School	Playgrd.						4.00		0.25	9.00		10.00	0.04		5.00		
Londonderry Sr. High	Londonderry		School	Playgrd.						5.00		0.30	8.00		20.00	0.05		5.00		
Bear Hill Grass	Loudon		Field	Land Apl.						10		0.2	9.2	4.8	9	0.2	0.8	6.3	2	37
Fillmore	Loudon		Field	Land Apl.						9.3		0.2	7	14	2	0.01	0.3	4	0.28	34
Filmore pit	Loudon		Field	Land Apl.						5		0.2	5.2	6.5	3	0.2	0.2	3.6	2	14
Foster #1	Loudon		Field	Land Apl.						8		0.2	11	5.1	10	0.2	0.6	10	2	53
Foster Corner	Loudon		Field	Land Apl.						5		0.2	9.2	4.8	11	0.2	0.6	7.9	2	43
Foster House	Loudon		Field	Land Apl.						9		0.2	9.6	12	15	0.2	0.9	6.6	2	47
Foster Orchard	Loudon		Field	Land Apl.						6		0.2	8.1	6.1	12	0.2	0.8	5.4	2	37
Lower Corn	Loudon		Field	Land Apl.						6		0.2	8.8	4.1	12	0.2	0.5	5.6	2	33
Lower Hay	Loudon		Field	Land Apl.						3		0.2	7.9	4.1	13	0.2	0.7	6.4	2	33
Upper Corn	Loudon		Field	Land Apl.						4		0.2	9.4	4.8	15	0.2	0.7	7.2	2	45
Upper Hay	Loudon		Field	Land Apl.						3		0.2	9.3	4.1	12	0.2	1.6	6.8	2	38
Bear Hill Fallow	Loudon		Field	Land Apl.						3		0.2	8.1	3.4	9	0.2	0.6	5.2	2	36
Lyme Center School	Lyme Center		School	Playgrd.						6.00		0.80	16.00		61.00	0.13		15.00		
Lyndeborough Central	Lyndeborough		School	Playgrd.						28		0.35	8.90		31.00	0.06		5.90		
Evans 1	Madbury		Field	Land Apl.						8.4		0.2	10	8	11	0.12	1.1	5	0.81	50
Evans 2	Madbury		Field	Land Apl.						9.1		0.3	28	37	28	0.08	1.5	12	0.72	58
Evans 3	Madbury		Field	Land Apl.						8		0.3	25	20	22	0.07	1.1	14	0.97	53
Horse Pasture	Madbury		Field	Land Apl.						6.8		0.3	11	9	21	0.09	1.1	8	0.83	49
Cornwell	Madbury		Field	Land Apl.						5.2		0.3	65	23	23	0.11	0.9	38	0.9	127
Coleman	Madison		Field	Land Apl.						2		0.2	2.4	0.4	6	0.2	1	0.4	2	36
Beech Street School	Manchester	S-33	School	SHA 1998	Urban	Probable fill	Silty sand		<1	10.00	0.39						0.21			
Beech Street School	Manchester	S-34	School	SHA 1998	Urban	Probable fill	Silty sand		<1	9.50	0.39						0.31			
Beech Street School	Manchester	S-35	School	SHA 1998	Urban	Probable fill	Silty sand		<1	7.80	0.36						0.40			
Central High School	Manchester	S-36	School	SHA 1998	Urban	Probable fill	Silty sand		<1	19.00	0.5						0.69			
Central High School	Manchester	S-37	School	SHA 1998	Urban	Probable fill	Silty sand		<1	9.90	0.41						0.08			

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Central High School	Manchester	S-38	School	SHA 1998	Urban	Probable fill	Silty sand		<1	7.50	0.41						0.07			
Manchester Memorial High	Manchester		School	Playgrd.						4.00		0.50	6.00		32.00	0.05		6.00		
Memorial High School	Manchester	S-30	School	SHA 1998	Non-urban	Probable fill	Silty sand		<1		0.36									
Memorial High School	Manchester	S-31	School	SHA 1998	Non-urban	Probable fill	Silty sand		<1		0.37									
Memorial High School	Manchester	S-32	School	SHA 1998	Non-urban	Till upland	Silty sand		<1		0.37									
West High School	Manchester	S-39	School	SHA 1998	Urban	Probable fill	Silty sand		<1	7.80	0.38						0.052			
West High School	Manchester	S-40	School	SHA 1998	Urban	Probable fill	Silty sand		<1	10.00	0.39						0.044			
West High School	Manchester	S-41	School	SHA 1998	Urban	Probable fill	Silty sand		<1	6.90	0.35						0.054			
Weston Elementary	Manchester		School	Playgrd.						9.00		0.20	9.30		8.00	0.05		6.00		
Sand Pond	Marlow		Field	Land Apl.						8.65		0.5	20.8	7.56	9.22	0.1	0.5	11	5	53.9
Newell	Marlow		Field	Land Apl.						7.5		0.5	23.5	11.2	24.9	0.77	0.5	13.2	5	62.4
Mason Elementary	Mason		School	Playgrd.						7.60		0.50	6.60		28.00	0.04		4.10		
Interlakes Jr./Sr. High	Meredith		School	Playgrd.						3.00		0.25	9.00		14.00	0.04		6.00		
Reeds Ferry Elementary	Merrimack		School	Playgrd.						6.00		0.30	9.00		12.00	0.07		7.00		
Mastricola Elementary	Merrimack		School	Playgrd.						5.00		0.60	7.00		18.00	0.02		6.00		
Milford Middle School	Milford		School	Playgrd.						7.00		0.40	4.80		10.00	0.04		4.00		
Dahl 1	Milton		Field	Land Apl.						4.9		0.2	4	16	39	0.07	0.6	4	0.43	39
Dahl 2	Milton		Field	Land Apl.						6.6		0.3	4	16	33	0.05	0.8	3	0.62	32
Dahl 3	Milton		Field	Land Apl.						7.5		0.2	2	17	37	0.09	1	2	0.54	29
Dahl 4/5	Milton		Field	Land Apl.						8.2		0.3	6	19	38	0.08	0.6	3	0.6	46
House Pasture	Milton		Field	Land Apl.						10.3		0.3	11	23	21	0.12	0.7	7	0.95	48
Milton Grammar School	Milton		School	Playgrd.						3.70		0.20	10.00		31.00	0.04		7.80		
Parker	Milton		Field	Land Apl.						6.8		0.2	2	7	19	0.07	0.9	2	0.58	30
Race Track	Milton		Field	Land Apl.						9.4		0.5	4	13	17	0.06	0.6	10	0.49	52
Stowell N	Milton		Field	Land Apl.						6.4		0.3	9	23	18	0.08	1	6	0.75	51
Stowell S	Milton		Field	Land Apl.						9.1		0.3	6	10	21	0.06	1	4	0.78	44
Milton Mills School	Milton Mills		School	Playgrd.						4.70		0.25	5.50		120.00	0.02		4.70		
Alfalfa	Milton		Field	Land Apl.						10.2		0.2	4	13	9	0.04	0.8	2	0.6	12
Field 1:	Monroe		Field	Land Apl.						2		0.4	22	6.1	5	0.2	1.6	12	2	45
Monroe Consolidated	Monroe		School	Playgrd.						3.00		0.25	11.00		40.00	0.02		8.00		
Mont Vernon Village Elementary	Mont Vernon		School	Playgrd.						4.00		0.50	8.00		10.00	0.05		6.00		
Moultonborough Academy	Moultonborough		School	Playgrd.						2.00		0.25	4.00		8.00	0.02		4.00		
Field 34: 9.5 acres	N. Conway		Field	Land Apl.						13		0.8	20	9.7	42	0.2	0.9	11	2	99
Field 33: 13.4 acres	N. Conway		Field	Land Apl.						15		1	21	14	46	0.2	1.5	13	2	120
Field 6: 16.7 acre	N. Haverhill		Field	Land Apl.						12		2.5	18	27	12	0.2	0.4	13	2	55
Field 7: 19.6 acres	N. Haverhill		Field	Land Apl.						10		2.1	17	24	12	0.2	0.6	11	2	51
Field 4: 10.9 acres	N. Haverhill		Field	Land Apl.						6		2	20	13	9	0.2	0.8	15	2	44
City Hall	Nashua	S-20	Other	SHA 1998	Urban	Probable fill	Silty sand	1938	<1	9	0.52					0.054				
City Hall	Nashua	S-21	Other	SHA 1998	Urban	Probable fill	Silty sand	1938	<1	11	0.61					0.081				
City Hall	Nashua	S-22	Other	SHA 1998	Urban	Probable fill	Silty sand	1938	<1	9.6	0.5					0.1				
Elm St. Jr. High	Nashua		School	Playgrd.						7.00		0.40	11.00		95.00	0.17		8.00		
Holman Stadium	Nashua	S-17	Other	SHA 1998	Urban	Probable fill	Sand		<1	8.5	0.5					0.082				
Holman Stadium	Nashua	S-18	Other	SHA 1998	Urban	Probable fill	Sand		<1	15	0.75					0.1				
Holman Stadium	Nashua	S-19	Other	SHA 1998	Urban	Probable fill	Sand		<1	10	0.61					0.084				
Sullivan Park	Nashua	S-23	Park	SHA 1998	Urban	Probable fill	Silty sand		38	14	0.49					0.082				
Sullivan Park	Nashua	S-24	Park	SHA 1998	Urban	Probable fill	Silty sand		<1	12	0.5					0.22				
Sullivan Park	Nashua	S-25	Park	SHA 1998	Urban	Dup of S-24	Silty sand		<1	11	0.55					0.071				
Sullivan Park	Nashua	S-26	Park	SHA 1998	Urban	Probable fill	Silty sand		<1	11	0.46					0.1				

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New Boston Central	New Boston		School	Playgrd.						6.00		0.60	9.50		17.00	0.05		7.00		
Field 3	New Hampton		Field	Land Apl.						5.4		0.2	7	10	17	0.08	0.8	8	0.71	65
Field 4	New Hampton		Field	Land Apl.						5.1		0.2	5	8	14	0.04	0.9	5	0.43	61
Field 5	New Hampton		Field	Land Apl.						5		0.2	6	11	77	0.08	1.4	8	0.72	48
Field 6	New Hampton		Field	Land Apl.						7		0.2	8	19	20	0.06	0.8	12	0.6	90
Field 7	New Hampton		Field	Land Apl.						5.5		0.2	5	7	8	0.08	0.8	8	0.65	53
Field 8	New Hampton		Field	Land Apl.						4.3		0.2	7	11	11	0.08	0.6	7	0.77	55
Field 9	New Hampton		Field	Land Apl.						5		0.2	7	8	14	0.12	0.7	10	0.71	60
New Field	New Hampton		Field	Land Apl.						5.3		0.2	7	5	18	0.07	0.5	8	0.82	47
Field 2	New Hampton		Field	Land Apl.						4.3		0.2	14	10	13	0.04	1.1	13	1.05	52
New Ipswich Central	New Ipswich		Field	Playgrd.						11.00		0.25	8.80		32.00	0.05		6.10		
Mascenic Regional High	New Ipswich		School	Playgrd.						9.30		0.25	9.60		26.00	0.08		5.40		
New London Central	New London		School	Playgrd.						4.00		0.78	8.30		25.00	0.08		5.00		
Graf	Newbury		Field	Land Apl.						2		0.6	4.9	3.8	2	0.2	0.2	2.8	2	17
Newfields Elementary	Newfields		School	Playgrd.						5.00		0.20	19.00		25.00	0.02		13.00		
Pease Air Force Base	Newington	00-7980-B002	Contam.	Contam.					ND	9.6	1.00	ND	27.0	12.7	11.6		ND	18.3	ND	46.7
Pease Air Force Base	Newington	00-7981-B002	Contam.	Contam.					ND	6.9	0.37	ND	13.8	8.8	11.5		ND	11.4	ND	23.4
Pease Air Force Base	Newington	00-7982-B002	Contam.	Contam.					ND	5.3	0.40	ND	18.4	14.3	16.7		ND	21.5	ND	31.9
Pease Air Force Base	Newington	00-7982-B012	Contam.	Contam.					ND	12.7	1.20	ND	35.5	17.4	14.3		ND	25.2	ND	79.3
Pease Air Force Base	Newington	00-7983-B002	Contam.	Contam.					ND	7.0	0.39	ND	21.5	12.4	13.3		ND	17.0	ND	24.4
Pease Air Force Base	Newington	00-7984-B002	Contam.	Contam.					ND	6.2	0.49	ND	35.9	22.9	7.0		ND	29.3	ND	36.2
Pease Air Force Base	Newington	00-7984-B015	Contam.	Contam.					ND	14.7	1.80	ND	37.5	20.0	10.9		ND	43.4	ND	92.3
Pease Air Force Base	Newington	00-7985-B002	Contam.	Contam.					ND	6.9	0.35	ND	30.6	21.6	20.1		ND	22.7	ND	38.7
Pease Air Force Base	Newington	00-7985-B006	Contam.	Contam.					ND	7.8	0.32	ND	14.8	9.0	30.1		ND	21.5	ND	25.7
Pease Air Force Base	Newington	00-7986-B002	Contam.	Contam.					ND		0.38	ND	18.6	19.2			ND	23.2	ND	ND
Pease Air Force Base	Newington	00-7986-B015	Contam.	Contam.					ND	11.9	0.19	ND	6.7	6.0	3.5		ND	11.1	ND	12.6
Pease Air Force Base	Newington	00-7986-B102	Contam.	Contam.					ND		0.40	ND	10.3	8.9			ND	11.1	ND	ND
Pease Air Force Base	Newington	00-7987-B002	Contam.	Contam.					ND	3.8	0.33	ND	11.3	11.6	4.5		ND	13.9	ND	17.8
Pease Air Force Base	Newington	00-7988-B002	Contam.	Contam.					ND	24.4	0.32	ND	18.5	14.6	21.4		ND	16.3	ND	33.5
Pease Air Force Base	Newington	00-7988-B102	Contam.	Contam.					ND	6.1	0.30	ND	19.2	16.6	20.8		ND	18.3	ND	36.0
Pease Air Force Base	Newington	00-7989-B002	Contam.	Contam.					ND	6.2	0.49	ND	18.1	11.7	9.5		ND	15.2	ND	23.0
Pease Air Force Base	Newington	00-7989-B007	Contam.	Contam.					ND	8.6	0.81	ND	28.0	12.5	9.3		ND	20.9	ND	37.6
Pease Air Force Base	Newington	00-7990-B002	Contam.	Contam.					ND	3.9	0.74	ND	11.1	13.9	65.3		ND	12.8	ND	49.8
Pease Air Force Base	Newington	00-7990-B010	Contam.	Contam.					ND	9.0	0.86	ND	27.3	16.9	11.2		ND	25.3	ND	65.1
Pease Air Force Base	Newington	00-7991-B002	Contam.	Contam.					ND	7.8	0.54	ND	14.5	18.6	13.1		ND	23.0	ND	33.8
Pease Air Force Base	Newington	00-7992-B002	Contam.	Contam.					ND	9.9	0.55	ND	10.1	16.8	16.9		ND	19.5	ND	32.1
Pease Air Force Base	Newington	00-7993-B002	Contam.	Contam.					ND	6.5	0.49	ND	12.8	16.1	54.6		ND	15.0	ND	34.3
Pease Air Force Base	Newington	00-7994-B002	Contam.	Contam.					ND	4.2	0.59	ND	13.7	9.6	9.9	ND	ND	15.0	ND	28.8
Pease Air Force Base	Newington	00-7995-B002	Contam.	Contam.					ND	8.1	0.73	ND	12.7	15.7	14.9	ND	ND	24.1	ND	35.5
Pease Air Force Base	Newington	00-7996-B002	Contam.	Contam.					ND	2.4	0.45	ND	ND	ND	3.0	ND	ND	ND	ND	13.1
Pease Air Force Base	Newington	00-7996-B008	Contam.	Contam.					ND	11.2	1.70	ND	16.3	42.0	8.3	ND	ND	21.3	ND	68.5
Pease Air Force Base	Newington	00-7996-B017	Contam.	Contam.					ND	7.0	0.52	ND	7.1	17.9	2.0	ND	ND	8.8	ND	21.2
Pease Air Force Base	Newington	00-7997-B002	Contam.	Contam.					ND	5.0	0.63	ND	19.4	ND	2.4	ND	ND	36.9	ND	ND
Pease Air Force Base	Newington	00-7997-B006	Contam.	Contam.					ND	10.0	1.40	ND	19.7	ND	11.7	ND	ND	24.6	ND	60.4
Pease Air Force Base	Newington	00-7998-B002	Contam.	Contam.					ND	4.2	0.25	ND	ND	ND	6.2	ND	ND	ND	ND	ND
Pease Air Force Base	Newington	00-7999-B002	Contam.	Contam.					ND	5.2	0.41	ND	21.6	ND	7.6	ND	ND	11.9	ND	ND
Newmarket Central School	Newmarket		School	Playgrd.						4.00		0.20	13.00		7.00	0.02		9.90		
Front Fields	Newton		Field	Land Apl.						17		0.6	41	28	24	0.3	3	25	0.6	84

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Back Fields	Newton		Field	Land Apl.						7.7		0.3	19	18	41	0.6	2	9.8	0.5	65
A-south: 5.5 acres	North Ashland		Field	Land Apl.						3.5		0.2	8	9	2	0.08	1.5	2	0.35	6
B: 5 acres	North Ashland		Field	Land Apl.						4.7		0.2	5	11	4	0.01	1.5	2	0.53	12
C : 2 acres	North Ashland		Field	Land Apl.						3.1		0.2	7	6	6	0.02	1.3	2	0.38	6
A-North: 5.5 acres	North Ashland		Field	Land Apl.						4		0.2	12	10	46	0.07	1.2	2	0.46	8
Field 31: 12.6 acres	North Conway		Field	Land Apl.						12		0.8	17	6.8	34	0.2	0.8	9.7	2	90
Field 3: 3.75 acres	North Haverhill		Field	Land Apl.						41		39	1200	1500	300	17	75	420	36	2800
Stratford Public School	North Stratford		School	Playgrd.						7.00		0.60	17.00		38.00	0.04		16.00		
Bobs Piece	Northfield		Field	Land Apl.						5.3		0.2	14	8	14	0.11	0.7	10	0.61	33
Dads Field	Northfield		Field	Land Apl.						4.2		0.2	14	8	14	0.09	0.5	13	0.51	36
Orchard Field	Northfield		Field	Land Apl.						3.8		0.2	17	17	18	0.07	0.6	17	0.76	55
Sonnys Field	Northfield		Field	Land Apl.						3.7		0.2	17	10	13	0.13	0.8	12	0.65	39
Back Cellar	Northfield		Field	Land Apl.						3.9		0.2	15	9	9	0.06	0.4	8	0.49	36
Woodman State Forest	Northwood	S-42	Park	SHA 1998	Non-urban	Wetland/marsh	Peat		1.4		0.43									
Woodman State Forest	Northwood	S-43	Park	SHA 1998	Non-urban	Till uplands	Silty sand		<1		0.58									
Woodman State Forest	Northwood	S-44	Park	SHA 1998	Non-urban	Till uplands	Silty sand		1.5		0.62									
Northwood Elementary	Northwood		School	Playgrd.						8.80		0.20	8.00		9.00	0.01		5.60		
Nottingham Elementary	Nottingham		School	Playgrd.						6.50		1.20	33.00		17.00	0.02		28.00		
Field E: 1 acre	Ossipee		Field	Land Apl.						4		0.2	5	12	12	0.04	1	8	0.51	31
Field F: 2.6 acres	Ossipee		Field	Land Apl.						4		0.2	5	12	12	0.04	1	8	0.51	31
Field C: omitted	Ossipee		Field	Land Apl.																
Field A: 0.8 acres	Ossipee		Field	Land Apl.						5.4		0.2	0.7	10	11	0.06	3.6	2	0.78	43
Oxford High	Oxford		School	Playgrd.						2.00		0.60	18.00		18.00	0.02		14.00		
Wright	Ossipee		Field	Land Apl.																
Whittemore Field	Pembroke		Field	Land Apl.						7.1		0.2	7	8	15	0.09	0.9	4	0.35	65
Field 1A: 3.1 acres	Penacook		Field	Land Apl.																
Field 2: 10.1 acres	Penacook		Field	Land Apl.						4.9		0.2	830	10	16	0.07	0.9	5	0.59	58
Field 3/4: 9.8 acres	Penacook		Field	Land Apl.						5		0.2	15	8	15	0.1	0.6	6	0.49	52
Field 3: 18.4 acres	Penacook		Field	Land Apl.						3.3		0.2	11	9	17	0.07	1.3	7	0.38	20
Field 5: 53.4 acres	Penacook		Field	Land Apl.						4.5		0.2	8	7	15	0.07	0.8	7	0.66	54
Field 6: 5.2 acres	Penacook		Field	Land Apl.						4.7		0.2	79	14	12	0.08	1.1	6	0.59	59
Field 1: 12.7 acres	Penacook		Field	Land Apl.						5.8		0.2	380	17	12	0.08	1	5	0.54	58
Peterborough Middle School	Peterborough		School	Playgrd.						2.00		0.40	10.00		27.00	0.05		6.20		
Underhill Field	Piermont		Field	Land Apl.						5.8		0.2	15	12	6	0.06	0.5	16	0.64	70
Pittsburg Schools	Pittsburg		School	Playgrd.						8.00		0.20	12.00		13.00	0.05		23.00		
Field 4: 6 acres	Pittsfield		Field	Land Apl.																
Central Elementary-Pittsfield	Pittsfield		School	Playgrd.						20		8.90	10.00		220	0.61		10.00		
Beede Waste Oil/Cash Energy Superfund Site	Plaistow	S-141	Contam.	Contam.		Glaciofluvial sands	Sand		0.25	9	0.42	0.03	11.80	3.50	7.5			6.80	0.81	22.4
Beede Waste Oil/Cash Energy Superfund Site	Plaistow	S-142	Contam.	Contam.		Glaciofluvial sands	Sand		0.24	3.9	0.42	0.04	12.80	2.80	8.1			6.00	0.74	21.9
Beede Waste Oil/Cash Energy Superfund Site	Plaistow	S-143	Contam.	Contam.		Glaciofluvial sands	Sand		0.31	5.2	0.41	0.14	11.40	4.00	16.6	0.06		5.60	0.57	18.1
Pollard Elementary	Plaistow		School	Playgrd.						5.00		0.30	12.00		15.00	0.03		7.00		
Plymouth Area High	Plymouth		School	Playgrd.						3.00		0.30	6.00		16.00	0.05		4.00		
Route 3 Field	Plymouth		Field	Land Apl.						6.3		0.2	14	17	28	0.08	1	11	0.56	98
Small field	Plymouth		Field	Land Apl.						6.1		0.2	13	20	25	0.11	1.1	13	0.77	100

TABLE 1
METALS DATABASE
(COMBINED DATA FROM EXISTING NHDES DATABASE and SHA 1998 DATA)

Location	Municipality	Sample ID	Site Type	Database Source	Background Setting	Geologic Setting	Soil Description	Land Use	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc
									(Concentrations in parts per million)											
Big field	Plymouth		Field	Land Apl.						6.7		0.2	13	7	20	0.22	0.7	13	0.6	85
Woodman Park Elementary	Portsmouth		School	Playgrd.						7.60		0.25	16.00		160.00	0.06		12.00		
Wentworth Elementary	Portsmouth		School	Playgrd.						9.00		0.60	47.00		27.00	0.05		25.00		
Rindge Memorial	Rindge		School	Playgrd.						2.80		0.30	6.10		3.00	0.09		3.60		
Field 2B: 4.1 acres	Rochester		Field	Land Apl.						11.9		0.5	6.63		15.9	0.1			5	
Field 4: 6.3 acres	Rochester		Field	Land Apl.						31.2		0.5	9.4		10.6	0.1			5	
Field 3: 1.3 acres	Rochester		Field	Land Apl.																
Gauthier	Rochester		Field	Land Apl.						7		0.7	4.6	5.1	2	0.2	1.5	2.4	2	13
Filed 5: 3.5 acres	Rochester		Field	Land Apl.																
Maple Street School	Rochester	S-52	School	SHA 1998	Urban	Probable fill	Sand	1875	<1	9.1	0.29					0.039				
Maple Street School	Rochester	S-53	School	SHA 1998	Urban	Dup. of S-52	Sand	1875	<1	8.4	0.44					0.021				
Maple Street School	Rochester	S-54	School	SHA 1998	Urban	Probable fill	Sand	1875	<1	9.1	0.34					0.038				
School Street School	Rochester	S-55	School	SHA 1998	Urban	Probable fill	Sand		<1	13	0.7					0.051				
School Street School	Rochester	S-56	School	SHA 1998	Urban	Probable fill	Sand		<1	18	0.41					0.1				
School Street School	Rochester	S-57	School	SHA 1998	Urban	Probable fill	Sand		<1	10	0.48					0.077				
Spaulding High School	Rochester	S-48	School	SHA 1998	Non-urban	Probable fill	Silty sand		1.3		1.3									
Spaulding High School	Rochester	S-49	School	SHA 1998	Non-urban	Probable fill	Silty sand		<1		0.69									
Spaulding High School	Rochester	S-50	School	SHA 1998	Non-urban	Probable fill	Silty sand		<1		1.0									
Spaulding High School	Rochester		School	Playgrd.						2.60		0.50	6.40		22.00	0.03		3.50		
Field 2A: 4.1 acres	Rochester		Field	Land Apl.						10.4		0.5	6.36		10.9	0.1			5	
Field 2B: 9.4 acres	Rollingsford		Field	Land Apl.						10.4		0.5	26.7		16.1	0.1			5	
Field 3: 5.1 acres	Rollingsford		Field	Land Apl.						5		0.5	12.2		32.3	0.1			5	
Fiels 2A: 17.6 acres	Rollingsford		Field	Land Apl.						9.91		0.5	22.9		18.7	0.1			5	
Filed 5: 12.7 acres	Rollingsford		Field	Land Apl.						6.44		0.5	8.82		5.83	0.1			5	
Filed 6: 19.8 acres	Rollingsford		Field	Land Apl.						6.07		0.5	7.83		6.16	0.1			5	
Rollingsford Grade School	Rollingsford		School	Playgrd.						8.50		0.25	5.80		17.00	0.03		5.00		
Field 1: 8 acres	Rollingsford		Field	Land Apl.						9.6		0.5	12.1		27.3	0.13			5	
Rye Sr. High	Rye		School	Playgrd.						8.00		0.60	35.00		43.00	0.04		21.00		
Salem High	Salem		School	Playgrd.						3.00		0.25	19.00		22.00	0.02		8.00		
Salisbury Elementary	Salisbury		School	Playgrd.						1.00		0.30	6.10		6.00	0.02		4.80		
Field A: 14.1 acres	Sanbornton		Field	Land Apl.						3.8		0.2	11	17	22	0.04	3.3	2	0.52	52
Paul Elementary	Sanbornton		School	Playgrd.						3.70		0.20	6.40		13.00	0.30		5.30		
Schoolhouse A/C	Sanbornton		Field	Land Apl.						4.3		0.2	11	15	10	0.07	1.1	10	0.46	64
Schoolhouse B	Sanbornton		Field	Land Apl.						4.6		0.2	9	16	9	0.07	0.7	11	0.53	67
Field 1	Sanbornton		Field	Land Apl.						4.2		0.2	15	26	13	0.1	0.9	14	0.5	92
Hoyt A2	Sandown		Field	Land Apl.						3.8		0.2	11	30	6	0.06	0.9	7	0.77	64
Hoyt A7	Sandown		Field	Land Apl.						3.9		0.2	10	7	5	0.07	1.2	11	0.76	41
Hoyt B3 & 4	Sandown		Field	Land Apl.						3.4		0.2	11	6	11	0.06	0.8	6	0.62	24
Hoyt B5 & 6	Sandown		Field	Land Apl.						3.6		0.2	18	14	38	0.04	0.5	10	0.8	36
Sandown Central Elementary	Sandown		School	Playgrd.						4.00		0.15	13.00		9.00	0.03		7.00		
Hoty A1	Sandown		Field	Land Apl.						3.8		0.2	8	6	4	0.02	1.1	6	0.44	24
Seabrook Elementary	Seabrook		School	Playgrd.						5.00		0.50	14.00		40.00	0.03		8.00		
Hilltop Elementary	Somersworth		School	Playgrd.						12.00		0.35	11.00		34.00	0.03		5.30		
Field 10: 3.6 acres	Springfield		Field	Land Apl.						4		0.2	7	12	10	0.07	0.6	2	0.16	47
Field 11: 6.2 acres	Springfield		Field	Land Apl.						3.2		0.2	8	10	4	0.11	0.8	3	0.46	21
Field 2: 5.6 acres	Springfield		Field	Land Apl.						3.5		0.2	11	17	14	0.1	0.7	4	0.36	49
Field 3: 2.8 acres	Springfield		Field	Land Apl.						4.2		0.5	10	15	10	0.06	0.9	4	0.29	82
Field ABC	Springfield		Field	Land Apl.						4.4		0.37	12	11	13	0.04	1.03	7	0.55	96.3

TABLE 1
METALS DATABASE
(COMBINED DATA FROM EXISTING NHDES DATABASE and SHA 1998 DATA)

Location	Municipality	Sample ID	Site Type	Database Source	Background Setting	Geologic Setting	Soil Description	Land Use	(Concentrations in parts per million) Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc
Field A	Springfiled		Field	Land Apl.						5		0.2	11	7.6	10	0.2	0.2	6.1	2	34
Field 1: 2.7 acres	Springfield		Field	Land Apl.						3.2		0.2	7	27	14	0.07	0.6	6	0.28	51
Field 1	Strafford		Field	Land Apl.						106		0.2	16	22	12	0.11	0.7	7	1	40
Field 1	Strafford		Field	Land Apl.						10.3		0.2	10	18	7	0.4	0.6	8	0.78	54
Field 10	Strafford		Field	Land Apl.						11.7		1	13	23	41	0.09	0.9	13	0.95	70
Field 2	Strafford		Field	Land Apl.						8.6		0.7	12	20	32	0.06	0.6	10	0.4	65
Field 3	Strafford		Field	Land Apl.						6.5		0.2	8	19	52	0.06	0.9	7	0.53	43
Field 4	Strafford		Field	Land Apl.						8.5		0.2	12	17	16	0.33	1.2	6	1.03	64
Field 4	Strafford		Field	Land Apl.						10.6		1	11	17	32	0.02	0.7	5	0.73	49
Field 5	Strafford		Field	Land Apl.						7.3		0.7	13	19	28	0.11	0.5	8	0.78	68
Field 6	Strafford		Field	Land Apl.						9.8		0.2	14	22	29	0.03	0.6	11	0.64	57
Field 7	Strafford		Field	Land Apl.						10.1		0.2	12	12	7	0.07	0.9	7	0.83	50
Field 8	Strafford		Field	Land Apl.						11.7		1	13	23	41	0.09	0.9	13	0.95	70
Field 9	Strafford		Field	Land Apl.						11.7		1	13	23	41	0.09	0.9	13	0.95	70
Orchard Field	Strafford		Field	Land Apl.						11		0.2	11	19	42	0.11	1.1	7	0.71	80
Strafford Elementary	Strafford		School	Playgrd.						10.00		3.60	8.00		31.00	0.31		7.00		
Field 7: 18.6 acres	Stratford		School	Land Apl.						8		2.2	27	13	12	0.2	1.3	18	2	54
Big Field	Strafford		Field	Land Apl.						10.1		0.2	7	13	21	0.07	1.4	2	0.65	63
Abbott	Sunapee		Field	Land Apl.						4		0.2	18	8.9	3	0.2	0.3	11	2	39
Sunapee Jr./Sr. High	Sunapee		School	Playgrd.						5.00		0.50	10.00		21.00	0.04		8.80		
A.R. Dupont School	Suncook		School	Playgrd.						12.00		0.25	9.00		44.00	0.09		6.00		
Dupont School	Suncook	S-10	School	SHA 1998	Non-urban	Probable fill	Silty sand		<1		0.38									
Dupont School	Suncook	S-11	School	SHA 1998	Non-urban	Probable fill	Silty sand		<1		0.3									
Dupont School	Suncook	S-12	School	SHA 1998	Non-urban	River seds.	Silty sand		<1		0.47									
Jackman Pit	Tamworth		Field	Land Apl.						3.5		0.2	3	8	9	0.03	1	3	0.46	57
Field 1: 0.6 acre	Tamworth		Field	Land Apl.																
Field 3: 7.9 acres	Tamworth		Field	Land Apl.																
Powerline Pit	Tamworth		Field	Land Apl.						4.5		0.2	5	9	3	0.04	0.8	3	0.48	56
Upper East Pit	Tamworth		Field	Land Apl.						3.3		0.2	6	10	7	0.04	1.1	5	0.65	62
Upper West Pit	Tamworth		Field	Land Apl.						3.3		0.2	6	10	5	0.03	0.8	2	0.6	64
Field 2: 15.3 acres	Tamworth		Field	Land Apl.						4.5		0.2	7	12	7	0.05	1.2	6	0.4	52
Field 3	Tilton		Field	Land Apl.						6.7		0.3	17	21	14	0.11	0.8	11	0.62	106
School St. Gravel	Tilton		Field	Land Apl.																
Field 6: 28.2 acres	Walpole		Field	Land Apl.						5		1	23.9		13.2	0.31			5	
Field 7: 6.0 acres	Walpole		Field	Land Apl.																
Walpole	Walpole		School	Playgrd.						5.00		1.60	10.00		24.00	0.25		13.00		
Carroll State Forest	Warner	S-58	Park	SHA 1998	Non-urban	Till uplands	Silty sand		<1		0.41									
Carroll State Forest	Warner	S-59	Park	SHA 1998	Non-urban	Base of till upland	Sand		<1		0.16									
Carroll State Forest	Warner	S-60	Park	SHA 1998	Non-urban	Till uplands	Sand		<1		0.33									
Simonds Elementary	Warner		School	Playgrd.						3.00		0.30	8.00		33.00	0.10		6.00		
Swain Hill Rd.	Warren		Field	Land Apl.																
Washington Center	Washington		School	Playgrd.						2.00		2.80	8.00		570	0.17		5.00		
Weare School	Weare		School	Playgrd.						3.00		0.20	7.00		2.00	0.03		5.00		
Field 1: 17.8 acres	Webester		Field	Land Apl.						5		0.5	11.2		11.8	0.1			5	
Field A : 7.5 acres	Wentworth		Field	Land Apl.						4		0.2	8	12	23	0.03	0.9	9	0.46	26
Field B: 3.7 acres	Wentworth		Field	Land Apl.						4		0.2	10	8	4	0.05	1.1	6	0.51	15

TABLE 1
METALS DATABASE
(COMBINED DATA FROM EXISTING NHDES DATABASE and SHA 1998 DATA)

Location	Municipality	Sample ID	Site Type	Database Source	Background Setting	Geologic Setting	Soil Description	Land Use	(Concentrations in parts per million)										
									Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc
Westmoreland Elementary	Westmoreland		School	Playgrd.						4.50		0.60	13.00		20.00	0.07		12.00		
C.D. McIntyre	Whitefield		School	Playgrd.						2.00		0.25	13.00		14.00	0.15		9.00		
Avery Field	Wilton		Field	Land Apl.						1		0.5	1	2.5	7	0.25	10	4	1	2
Bee Hive Field	Wilton		Field	Land Apl.						1		0.5	1	2.5	7	0.25	10	4	1	2
Maple Field	Wilton		Field	Land Apl.						1		0.5	1	2.5	7	0.25	10	4	1	2
Russell Hill	Wilton		Field	Land Apl.						1		0.5	1	2.5	7	0.25	10	4	1	2
Todd Field	Wilton		Field	Land Apl.						1		0.5	1	2.5	7	0.25	10	4	1	2
Wilton High	Wilton		School	Playgrd.						7.20		0.20	8.60		21.00	0.08		5.00		
Windham MIddle School	Windham		School	Playgrd.						8.00		0.35	21.00		9.00	0.15		10.00		
Cornish Elementary	Windsor		School	Playgrd.						2.00		1.50	15.00		12.00	0.44		17.00		
Kingswood Regional High	Wolfeboro		School	Playgrd.						10.00		0.30	8.00		26.00	0.07		2.00		
Towle Elementary	Unknown		School	Playgrd.						40		1.60	8.00		130.00	0.22		5.00		

TABLE 1
Metals Database
(Combined Data from Existing NHDES Database and SHA 1998 Data)

Notes:

1. Analytical data concentrations are presented in parts per million (ppm), which are equivalent to milligrams per kilogram (mg/kg).

2. "Playgrd." indicates the source of the data is the existing NHDES "school playground" database.

3. "Land Apl." indicates the source of the data is the existing NHDES "sludge application" database.

4. "SHA 1998" indicates data generated by SHA as part of the October 1998 soil sampling/analysis effort. The site type is noted, and includes "School", "Park", and "Other" (namely City Hall and Holman Stadium in Nashua). Amro Environmental Laboratories Corporation (Amro) of Merrimack, New Hampshire performed the chemical analyses.

5. Data generated by SHA during 1998 was either from "urban" or "non-urban" background locations. Samples collected from urban locations were analyzed for antimony, arsenic, beryllium, and mercury. Samples collected from non-urban locations were analyzed for antimony and beryllium only.

6. "Contam." indicates background soil samples collected from contaminated sites in New Hampshire as part of other studies.

7. Where apparent, the "Geologic Setting" of each sample location from the current (SHA 1998) study is described. Refer to the Surficial Soil Field Summary Forms included in Appendix C.1 for further description. Descriptions of geologic settings for samples in the existing NHDES school playground and sludge application databases are not available.

8. A description of the soil from each sample location from the current (SHA 1998) study is provided. In general "silty sand" refers to soils with relatively equal percentages of fine sand and silt; "sand" refers to soils consisting of fine to coarse sand, and lesser amounts of silt and gravel; "clayey silt" refers to soils consisting of silt with some clay and lesser amounts of fine sand; "peat" refers to highly organic soils. Refer to the Surficial Soil Field Summary Forms included in Appendix C.1 for further description. Soil descriptions for samples in the existing NHDES school playground and sludge application databases are not available.

9. Where readily available the "Land Use" of each sample location from the current (SHA 1998) study is stated. Land use information gathered during the current study (presented above) consists of the date the school was established, as posted at the school. Descriptions of land use for samples in the existing NHDES school playground and sludge application databases are not available.

10. "ND" indicates that the analytical result was below the detection limit. "<1" indicates that the result was below the analytical detection limit of 1 ppm.

11. A blank cell indicates that no analysis for this metal was performed.

12. Shading indicates that the concentration is considered an outlier.

TABLE 2
AVERAGE METALS CONCENTRATIONS (ppm) BY MUNICIPALITY
(COMBINED DATA FROM EXISTING NHDES DATABASE AND SHA 1998 DATA)

	SHA 1998		Existing NHDES Data		SHA 1998	SHA 1998		Existing NHDES Data							Existing NHDES Data		SHA 1998	Existing NHDES Data						
Municipality	**Antimony Urban**	**Antimony Non-Urban**	**Arsenic Playgrd.**	**Arsenic Land Apl.**	**Arsenic Urban**	**Beryllium Urban**	**Beryllium Non-Urban**	**Cadmium Playgrd.**	**Cadmium Land Apl.**	**Chromium Playgrd.**	**Chromium Land Apl.**	**Copper Land Apl.**	**Lead Playgrd.**	**Lead Land Apl.**	**Mercury Playgrd.**	**Mercury Land Apl.**	**Mercury Urban**	**Molybdenum Land Apl.**	**Nickel Playgrd.**	**Nickel Land Apl.**	**Selenium Playgrd.**	**Selenium Land Apl.**	**Zinc Playgrd.**	**Zinc Land Apl.**
Acworth			3.0					0.84		14			61		0.10				13					
Allenstown		<1					0.278																	
Alstead			3.0					0.94		16			33		0.14				15					
Amherst			7.0					0.50		10			45		0.14				10					
Andover			2.5					0.20		6.8			11		0.04				4.7					
Antrim			2.0	4.2				0.20	0.3	8.0	14	12	28	13	0.07	0.15		1.22	5.2	6.1		1.9		40
Ashland			3.0					0.50		14			36		0.09				6.0					
Atkinson			3.0	4.4				0.25	2.2	14	15	5.3	40	7.0	0.12	0.03		2.20	8.0	9.6		2.2		22
Barrington			11					0.15		10			16		0.01				7.9					
Bedford			5.0					0.20		5.0			15		0.03				4.0					
Belmont				6.3					0.37		13	19		12		0.07		0.97		7.0		0.66		78
Bennington			2.0	5.0				0.50	0.10	7.6	5.5	2.4	33	27	0.07	0.10		0.50	4.9	3.0		5.0		24
Berlin			4.0					0.60		11			140		0.10				8.0					
Bethlehem			1.0					0.40		24			13		0.05				22					
Boscawen		1.83	3.9	4.6			0.483	0.20	0.24	7.4	8.4	13	21		0.04	0.10		0.81	5.2	7.5		0.80		50
Bradford			2.0					0.50		5.0			8.0		0.27				3.0					
Bristol			3.0	2.5				0.30	0.20	7.0	5.2	4.8	48	12	0.20	0.20		0.30	4.0	3.3		21	35	
Brookline			4.0					0.20		5.0			17		0.05				3.0					
Canaan			3.0	2.0				0.35	0.68	14	23	13	14	10	0.06	0.20		0.90	7.0	16		2.0		47
Canterbury			2.9	3.3				0.20	0.20	6.1	5.0	2.0	5	35	0.02	0.17		1.80	6.1	2.0		0.22		21
Center Barnstead				12				1.3	0.60		4.9	4.8		5.0		0.20		0.30		2.8		2.0		15
Charleston			8.0							12			41		0.17				11					
Chester			7.0	7.8				0.20	0.30	14	43	15	44	16	0.04	0.07		0.93	7.0	56		0.72		61
Claremont			3.0					1.5		12			86		0.25				13					
Colebrook			3.0	6.0				0.25	3.1	17	39	17	19	17	0.08	0.20		0.37	24	31		2.0		84
Concord	<1		3.7	4.8	10	0.555		0.18	0.32	11	14	12	39	22	0.05	0.10	0.47	0.80	6.1	5.6		2.2		57
Contoocook			2.0					0.25		22			12		0.03				10					
Conway			2.0	5.8				0.25	0.53	7.0	14	20	21	14	0.04	0.13		2.10	4.0	17		4.0		80
Danville			5.0					0.30		21			17		0.04				14					
Derry			7.0					0.25		19			13		0.11				11					
Dover				6.8					0.30		23	20		15		0.08		0.73		9.7		0.65		93
Durham		1.05	5.4				0.877	0.25		16			51		0.01				11					
East Conway				3.0					0.20		6.0	3.7		7.0		0.20		1.70		3.5		2.0		25
East Rochester			6.7					0.20		6.1			59		0.03				5.7					
Enfield			3.0					0.60		16			19		0.02				13					
Epping			8.0	6.9				0.50	0.20	18	37	12	25	9.5	0.04	0.07		0.97	10	25		0.70		69
Epsom			10	5.8				6.2	0.50	12	8.7	7.2	54	11	0.11	0.10			7.0			5.0		
Exeter			8.0					0.30		24			59		0.07				7.0					
Farmington			4.5	4.0				0.25	0.20	6.4	2.8	6.2	13	4.0	0.04	0.20		0.20	4.7	2.9		2.0		19
Francestown			16												0.19				7.5					
Franklin			2.1	4.4				0.25	0.20	5.5	27	137	27	32	0.11	0.17		0.50	4.0	14		1.0		126
Freedom			5.0					0.30		8.0			27		0.05				4.0					
Gilford			2.0					0.30		39			13		0.06				5.0					
Gilmanton			4.0	6.5				0.30	0.89	7.0	12	8.8	10	14	0.07	0.23		1.83	1.5	6.6		4.4		54
Gilsum			3.3					0.60		12			10		0.06				7.5					
Glen				3.0					0.20		3.2	2.5		5.0		0.20		1.00		2.4		2.0		30
Goffstown			5.0					0.20		5.0			22		0.04				4.0					
Groveton				5.0					1.1		28	11		7.0		0.20		0.92		20		2.0		57
Hampstead			5.0					0.30		15			14		0.03				8.0					
Hancock				5.0					0.50			5.3		2.5		0.10		0.50		3.5		5.0		17
Hanover			4.0					0.60		25			19		0.05				23					

TABLE 2
AVERAGE METALS CONCENTRATIONS (ppm) BY MUNICIPALITY
(COMBINED DATA FROM EXISTING NHDES DATABASE AND SHA 1998 DATA)

	SHA 1998		Existing NHDES Data		SHA 1998	SHA 1998		Existing NHDES Data							Existing NHDES Data		SHA 1998	Existing NHDES Data						
Municipality	Antimony Urban	Antimony Non-Urban	Arsenic Playgrd.	Arsenic Land Apl.	Arsenic Urban	Beryllium Urban	Beryllium Non-Urban	Cadmium Playgrd.	Cadmium Land Apl.	Chromium Playgrd.	Chromium Land Apl.	Copper Land Apl.	Lead Playgrd.	Lead Land Apl.	Mercury Playgrd.	Mercury Land Apl.	Mercury Urban	Molybdenum Land Apl.	Nickel Playgrd.	Nickel Land Apl.	Selenium Playgrd.	Selenium Land Apl.	Zinc Playgrd.	Zinc Land Apl.
Harrisville			2.0					0.25		13			8.0		0.03				10					
Haverhill			7.0	4.4				0.25	0.27	17	12	31	39	11	0.09	0.08		0.77	11	10		0.68		75
Henniker			2.0					0.80		8.6			22		0.04				5.6					
Hill				7.2					0.20		11	8.0		4.5		0.35		1.25		14		0.48		42
Hinsdale			3.1					0.60		13			33						11					
Hollis			5.0					0.30		6.0			9.0		0.06				7.0					
Hooksett			8.0	6.2				0.40	0.38	7.0	7.7	5.3	11	5.0	0.04	0.08		1.24	5.0	4.0		2.5		44
Hudson		<1	5.5				0.407	0.25		7.0			16		0.06				6.0					
Jackson			2.0					0.30		7.0			31		0.05				5.0					
Jaffery			2.9					0.20		11			34		0.03				6.1					
Keene								0.25		9.1			24						5.0					
Kingston			3.5					0.23		13			25		0.04				7.8					
Laconia			3.0					0.25		7.0			10		0.04				5.0					
Lancaster			2.0	8.5				0.25	0.20	15	14	27	41	10	0.16	0.15		0.75	8.0	9.9		1.3		51
Langdon				1.0																		1.0		
Lebanon			5.0	5.7				0.30	0.23	15	20	24	19	18	0.04	0.17		2.15	10	19		0.70		71
Lempster			1.0					1.7		7.0			18		0.07				4.0					
Lincoln			4.0					0.35		8.0			26		0.08				4.0					
Lisbon			10					0.90		22			12		0.02				18					
Littleton			5.0	2.0				0.35	0.20	17	10	4..1	24	3.0	0.04	0.20		1.20	10	6.7		2.0		15
Londonderry			4.5					0.28		8.5			15		0.05				5.0					
Loudon				5.9					0.20		8.6	6.2		10		0.18		0.69		6.3		1.9		38
Lyme Center			6.0					0.80		16			61		0.13				15					
Lyndeborough			28												0.06				5.9					
Madbury				7.5					0.28		28	19		21		0.09		1.14		15		0.85		67
Madison				2.0					0.20		2.4	0.4		6.0		0.20		1.00		0.4		2.0		36
Manchester	<1		6.5		9.8	0.398		0.50		6.0			32		0.05		0.21		6.0	6.0				
Marlow				8.1					0.50		22	9.4		17		0.44		0.50		12		5.0		58
Mason			7.6					0.50		6.6			28		0.04				4.1					
Meredith			3.0					0.25		9.0			14		0.04				6.0					
Merrimack			5.5					0.45		8.0			15		0.05				6.5					
Milford			7.0					0.40		4.8			10		0.04				4.0					
Milton			4.2	7.9				0.20	0.28	10	5.2	16	31	25	0.03	0.07		0.80	7.8	4.3		0.63		38
Monroe			3.0	2.0				0.25	0.40	11	22	6.1	40	5.0	0.02	0.20		1.60	8.0	12		2.0		45
Mont Vernon			4.0					0.50		8.0			10		0.05				6.0					
Moultonborough			2.0					0.25		4.0			8.0		0.02				4.0					
N. Conway				13.3					0.87		19	10		41		0.20		1.07		11		2.0		103
N. Haverhill				9.3					2.2		18	21		11		0.20		0.60		13		2.0		50
Nashua	<1		7.0		11	0.549		0.40		11			95		0.17		0.10		8.0					
New Boston			6.0					0.60		10			17		0.05				7.0					
New Hampton				5.2					0.20		7.3	9.9		21		0.07		0.84		8.8		0.72		59
New Ipswich			10					0.25		9.2			29		0.07				5.8					
New London			4.0					0.78		8.3			25		0.08				5.0					
Newbury				2.0					0.60		4.9	3.8		2.0		0.20		0.20		2.8		2.0		17
Newfields			5.0					0.20		19			25		0.02				13					
Newmarket			4.0					0.20		13			7.0		0.02				9.9					
Newton				12.4					0.45		30	23		33		0.45		2.50		17		0.55		75
North Ashland				3.8					0.20		8.0	9.0		15		0.05		1.38		2.0		0.43		8
North Haverhill				41.0												17.00		75.00		420		36		2800
North Stratford				7.0				0.60		17			38			0.04		0.00	16	16				
Northfield				4.2					0.20		15	10		14		0.09		0.60		12		0.60		40

TABLE 2
AVERAGE METALS CONCENTRATIONS (ppm) BY MUNICIPALITY
(COMBINED DATA FROM EXISTING NHDES DATABASE AND SHA 1998 DATA)

	SHA 1998		Existing NHDES Data		SHA 1998	SHA 1998		Existing NHDES Data							Existing NHDES Data		SHA 1998	Existing NHDES Data						
Municipality	Antimony Urban	Antimony Non-Urban	Arsenic Playgrd.	Arsenic Land Apl.	Arsenic Urban	Beryllium Urban	Beryllium Non-Urban	Cadmium Playgrd.	Cadmium Land Apl.	Chromium Playgrd.	Chromium Land Apl.	Copper Land Apl.	Lead Playgrd.	Lead Land Apl.	Mercury Playgrd.	Mercury Land Apl.	Mercury Urban	Molybdenum Land Apl.	Nickel Playgrd.	Nickel Land Apl.	Selenium Playgrd.	Selenium Land Apl.	Zinc Playgrd.	Zinc Land Apl.
Northwood			8.8					0.20		8.0			9.0		0.01				5.6					
Nottingham			6.5					1.2		33			17		0.02				28					
Ossipee				4.7					0.20		2.9	11		12		0.05		2.30		5.0		0.65		37
Oxford			2.0					0.60		18			18		0.02				14		0.00			
Pelham			3.0					0.25		8.0			19		0.07				6.0		0.00			
Pembroke				7.1					0.20		7.0	8.0		15		0.09		0.90		4.0		0.35		65
Penacook				4.6					0.20		192	11		14		0.07		1.06		6.6		0.51		47
Peterborough			2.0					0.40		10			27		0.05				6.2		0.00			
Piermont				5.8					0.20		15	12		6.0		0.06		0.50		16		0.64		70
Pittsburg			8.0					0.20		12			13		0.05				23		0.00			
Pittsfield			20	5.0					0.50		6.0			12	0.61	0.10			10.0					
Plaistow			5.0					0.30		12			15		0.03				7.0					
Plymouth			3.0	6.4				0.30	0.20	6.0	13	15	16	24	0.05	0.14		0.93	4.0	12		0.64		94
Portsmouth			8.3					0.43		32			94		0.06				19					
Rindge			2.8					0.30		6.1			3.0		0.09				3.6					
Rochester	4.25	0.77	2.6	15	13	0.452	0.997	0.50	0.55	6.4	7.5	5.1	22	9.9	0.03	0.13	0.06	1.50	3.5	2.4		4.3		13
Rollingsford			8.5	7.9				0.25	0.50	5.8	15		17	18	0.03	0.11						5.0		
Rye			8.0					0.60		35			43		0.04				21					
Salem			3.0					0.25		19			22		0.02				8.0					
Salisbury			1.0					0.30		6.1			6.0		0.02				4.8					
Sanbornton			3.7	4.2				0.20	0.20	6.4	12	19	13	14	0.30	0.07		1.50	5.3	9.3		0.50		69
Sandown			4.0	3.7				0.15	0.20	13	12	13	9.0	13	0.03	0.05		0.90	7.0	8.0		0.68		38
Seabrook			5.0					0.50		14			40		0.03				8.0					
Somersworth			12					0.35		11			34		0.03				5.3					
Springfield				3.9					0.27		9.4	14		11		0.09		0.69		4.6		0.59		54
Strafford			10	9.8				3.6	0.52	8.0	11	19	31	30	0.31	0.12		0.86	7.0	8.5		0.76		62
Stratford				8.0					2.2		27	13		12		0.20		1.30		18		2.0		54
Sunapee			5.0	4.0				0.50	0.20	10	18	8.9	21	3.0	0.04	0.20		0.30	8.8	11		2.0		39
Suncook		<1	12				0.383	0.25		9.0			44		0.09				6.0					
Tamworth			2.0	3.5				0.30	0.20	9.0	5.0	8.6	23	5.5	0.05	0.07		0.98	6.0	3.5		0.77		50
Tilton				6.7					0.30		17	21		14		0.11		0.80		11		0.62		106
Tuftonboro			4.0					0.25		4.0			19		0.02				1.5					
Walpole			5.0	5.0				1.6	1.0	10	23		24	14	0.25	0.38			13			5.0		
Warner		<1	3.0				0.300	0.30		8.0			33		0.10				6.0					
Warren			6.0					0.60		9.0			42		0.04				6.0					
Washington			2.0					2.8		8.0			570		0.17				5.0					
Weare			3.0					0.20		7.0			2.0		0.03				5.0					
Webester				5.0					0.50		11			12		0.10						5.0		
Wentworth				4.0					0.20		9.0	10		14		0.04		1.00		7.5		0.49		21
Westmoreland			4.5					0.60		13			20		0.07				12					
Whitefield			2.0					0.25		13			14		0.15				9.0					
Wilton			7.2	1.0				0.20	0.50	8.6	1.0	2.5	21	7.0	0.08	0.25		10.00	5.0	4.0		1.0		2.0
Windham			8.0					0.30		21			9.0		0.15				10					
Windsor			2.0					1.5		15			12		0.44				17					
Wolfeboro			10					0.30		8.0			26		0.07				2.0					

TABLE 2
Average Metals Concentrations (ppm) by Municipality
(Combined Data from Existing NHDES Database and SHA 1998 Data)

Notes:

1. Concentrations are presented in parts per million (ppm), which are equivalent to milligrams per kilogram (mg/kg).

2. Analytical data presented as "SHA 1998" were generated during the supplemental October 1998 sampling and analysis by Sanborn, Head & Associates, Inc. (SHA). Samples were analyzed for selected metals by Amro Environmental Laboratories Corporation of Merrimack, New Hampshire.

3. "Existing NHDES Data" was provided to SHA by the New Hampshire Department of Environmental Services (NHDES) and is from "sludge application" database and "school playground" database.

4. A blank cell indicates that no analysis for this metal was performed.

5. "<1" indicates that the result was below the analytical detection limit of 1 ppm.

6. Average concentrations (ppm) of metals from background soils analyzed as part of contaminated site investigations are presented below. ("ND" indicates that all measurements were below the analytical detection limit).

Location	Municipality	Antimony	Arsenic	Beryllium	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Selenium	Zinc
Beede Waste Oil/Cash Energy Site	Plaistow	0.27	6.0	0.42	0.07	12	3.4	10.7	0.06	6.1	0.71	20.8
Pease Airforce Base	Newington	ND	8.02	0.63	ND	18	13.2	14.9	ND	18.7	ND	32.3

TABLE 3A
BACKGROUND URBAN LOCATIONS
(ANALYZED FOR ANTIMONY, ARSENIC, BERYLLIUM, AND MERCURY)

MUNICIPALITY	LOCATION	SAMPLE IDS
Concord	Kimball School	S-4, S-5, S-6
	Rumford School	S-7, S-8, S-9
Manchester	Beech Street School	S-33, S-34, S-35
	Central High School	S-36, S-37, S-38
	West High School	S-39, S-40, S-41
Nashua	Holman Stadium	S-17, S-18, S-19
	Nashua City Hall	S-20, S-21, S-22
	Sullivan Park	S-23, S-24, S-25 (Dup. of S-24), S-26
Rochester	Maple Street School	S-51, S-52, S-53 (Dup. of S-52), S-54
	School Street School	S-55, S-56, S-57

Notes:

1. Locations were selected in cooperation with NHDES representatives. Locations were chosen to be generally representative of more heavily developed areas of the above-indicated New Hampshire cities.

2. "Sample IDs" indicate the sample identification as referenced in the analytical laboratory report (Appendix D).

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TABLE 3B
BACKGROUND NON-URBAN LOCATIONS
(ANALYZED FOR ANTIMONY AND BERYLLIUM ONLY)

MUNICIPALITY	LOCATION	SAMPLE IDS
Allenstown	Bear Brook State Park	S-13, S-14, S-15, S-16 (Dup. of S-15)
Boscawen	Hirst Wildlife Area	S-61, S-62, S-63
Concord	Concord High School	S-1, S-2, S-3
Durham	Adams Point	S-45, S-46, S-47
Hudson	Alvirne High School	S-27, S-28, S-29
Manchester	Memorial High School	S-30, S-31, S-32
Northwood	Woodman Marsh	S-42, S-43, S-44
Rochester	Spaulding High School	S-48, S-49, S-50
Suncook	DuPont School	S-10, S-11, S-12
Warner	Carroll State Forest	S-58, S-59, S-60

Notes:

1. Locations were selected in cooperation with NHDES representatives. Locations were chosen to be generally representative of suburban and rural areas of New Hampshire.

2. "Sample IDs" indicate the sample identification as referenced in the analytical laboratory report (Appendix D).

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TABLE 4A
SUMMARY STATISTICS FOR METALS CONCENTRATION DATA BY DATA SOURCE
Existing NHDES Metals Database
(Concentrations in parts per million)

Parameter	(Concentrations in parts per million)									
	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc
NHDES Sludge Application Sites										
Mean (Average)	6.7	0.77	27	35	18	0.29	2.0	12	2.0	72
Median	5.2	0.23	11	11	12	0.10	0.90	7.0	0.83	52
Standard Deviation	7.6	3.4	120	174	28	1.5	7.0	30	2.8	215
95-percentile	12	1.9	40	31	41	0.41	3.5	29	5.0	98
NHDES School Playgrounds										
Mean (Average)	4.8	0.58	12		29	0.08		8.2		
Median	4.0	0.30	9.6		21	0.05		6.1		
Standard Deviation	2.6	1.0	6.8		27	0.08		5.0		
95-percentile	10	1.6	23		87	0.25		20		
Combined NHDES Database										
Mean (Average)	6.1	0.71	22	35	21	0.22	2.0	10	2.0	72
Median	5.0	0.30	11	11	14	0.09	0.90	7.0	0.83	52
Standard Deviation	6.5	2.9	98	174	28	1.27	7.0	24	2.8	215
95-percentile	11	1.9	33	31	51	0.31	3.5	23	5.0	98

use 2.2 since the 5's are detection limits.

Notes:

1. All concentrations are presented in parts per million (ppm) which are equivalent to milligrams per kilogram (mg/kg).
2. A blank cell indicates that no analysis for this metal was performed.
3. "Combined NHDES Database" includes both sludge application sites and school playgrounds.

TABLE 4B
SUMMARY STATISTICS FOR METALS CONCENTRATION DATA BY DATA SOURCE
SHA's 1998 Supplemental Data
(Concentrations in parts per million)

Parameter	(Concentration in parts per million)			
	Antimony	Arsenic	Beryllium	Mercury
Urban Locations				
Mean (Average)	1.67	10.9	0.49	0.19
Median	0.50	10.0	0.49	0.09
Standard Deviation	6.63	4.00	0.11	0.28
95-percentile	0.59	19.9	0.68	0.58
Non-Urban Locations				
Mean (Average)	0.77		0.50	
Median	0.50		0.46	
Standard Deviation	0.54		0.28	
95-percentile	1.70		1.1	
Total 1998 Database				
Mean (Average)	1.23	10.9	0.50	0.19
Median	0.50	10.0	0.47	0.09
Standard Deviation	4.72	4.00	0.20	0.28
95-percentile	1.64	19.9	0.95	0.58

Notes:

1. All concentrations are presented in parts per million (ppm) which are equivalent to milligrams per kilogram (mg/kg).

2. A blank cell indicates that no analysis for this metal was performed.

3. The statistics presented above for antimony assume a concentration of one-half the analytical detection limit where the measured concentration was below the detection limit.

TABLE 4C
SUMMARY STATISTICS FOR METALS CONCENTRATION DATA
Existing NHDES Database and SHA's 1998 Supplemental Data
(Concentrations in parts per million)

Parameter	(Concentrations in parts per million)	
	Arsenic	Mercury
Mean (Average)	6.4	0.22
Median	5.0	0.09
Standard Deviation	6.4	1.23
95-percentile	12	0.34

Notes:

1. All statistics are presented in parts per million (ppm) which are equivalent to milligrams per kilogram (mg/kg).

APPENDIX A

LIMITATIONS

APPENDIX A
LIMITATIONS

1. The observations described in this report were made under the conditions stated herein. The conclusions presented in this report were based solely upon the services described herein, and not on scientific tasks or procedures beyond the scope of these described services.

2. The conclusions and recommendations contained in this report are based in part upon the data obtained from a limited number of soil samples obtained from widely spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until further exploration.

3. In preparing this report, SHA has relied on certain information and data provided by state and local officials and other parties referenced herein, and on information contained in the files of state and/or local agencies available to us at the time of this assessment. Although there may have been some degree of overlap in the information provided by these various sources, we did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this assessment.

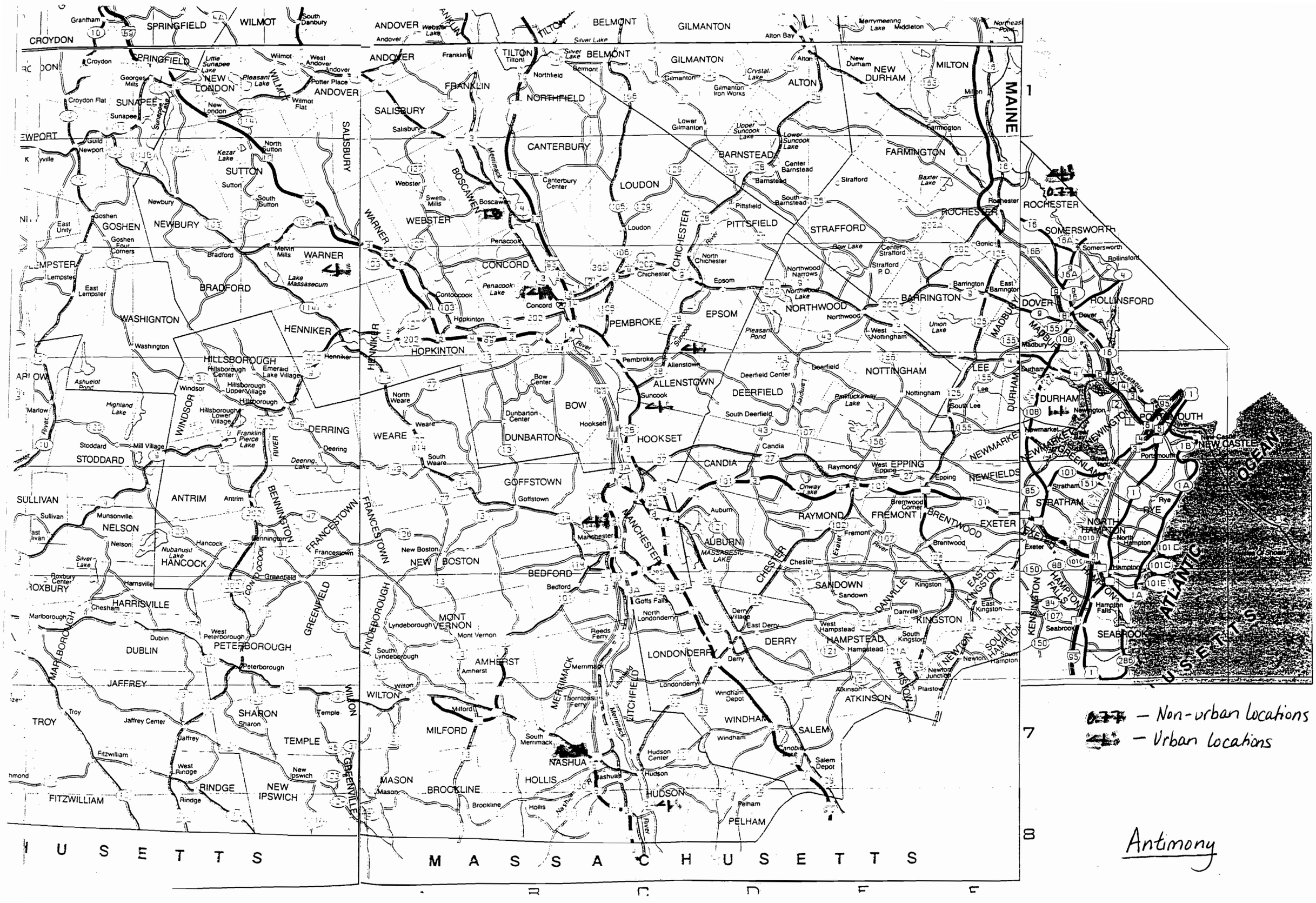
4. Quantitative laboratory analyses were performed as part of the investigation as noted within the report. The analyses were performed for specific parameters that were selected during the course of this study. It must be noted that additional compounds not searched for during the current study may be present in soil. SHA has relied upon the data provided by the analytical laboratory, and has not conducted an independent evaluation of the reliability of these data. Moreover, it should be noted that variations in the types and concentrations of contaminants and variations in their distributions within the soil may occur due to the passage of time, seasonal water table fluctuations, recharge events, and other factors.

5. The conclusions and recommendations contained in this report are based in part upon various types of chemical data. While SHA has reviewed that data and information as stated in this report, any of SHA's interpretations, conclusions, and recommendations that have relied on that information will be contingent on its validity. Should additional chemical data, historical information, or hydrogeologic information become available in the future, such information should be reviewed by SHA and the interpretations, conclusions and recommendations presented herein should be modified accordingly.

6. This report has been prepared for the exclusive use of the New Hampshire Department of Environmental Services (NHDES) for specific application to background metals concentrations in New Hampshire soils, in accordance with generally accepted hydrogeologic practices. No other warranty, express or implied, is made.

APPENDIX B

STATE MAPS SHOWING DISTRIBUTION OF METALS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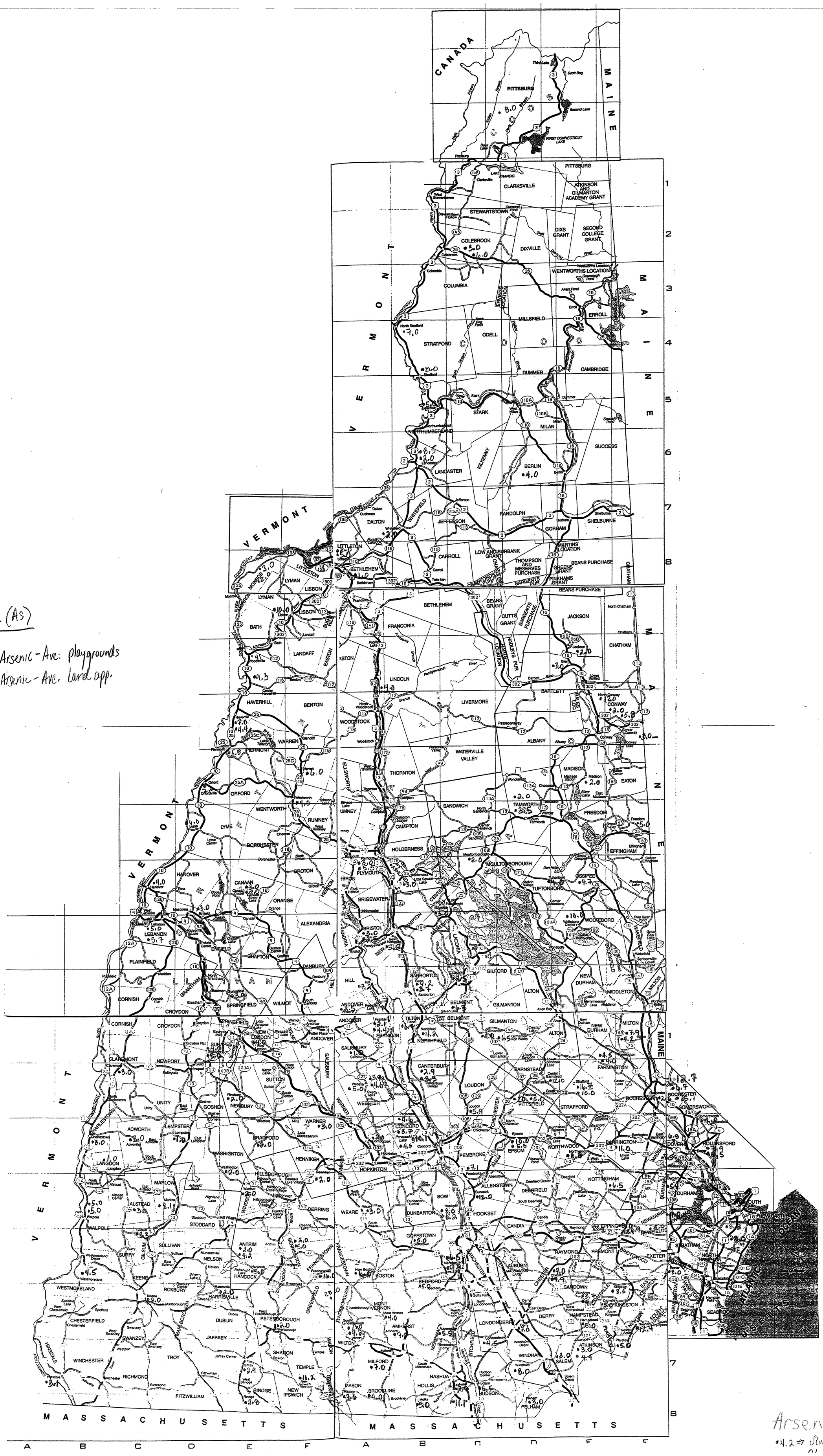
MASSACHUSETTS
ATLANTIC OCEAN
NEW CASTLE
PORTSMOUTH
— Non-urban locations
— Urban locations

Antimony



Arsenic (As)

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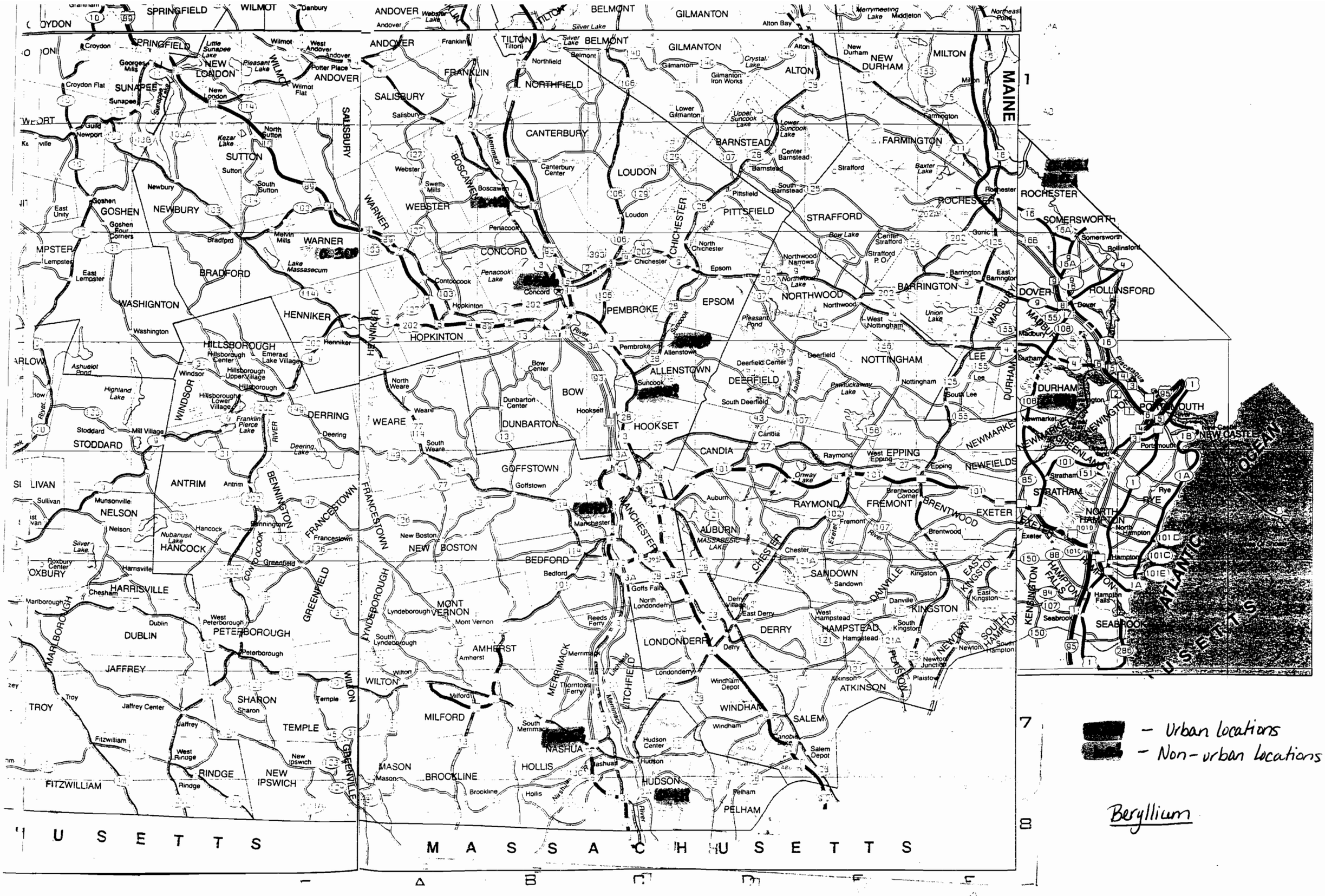
- 4.2 – Arsenic – Ave. land app.

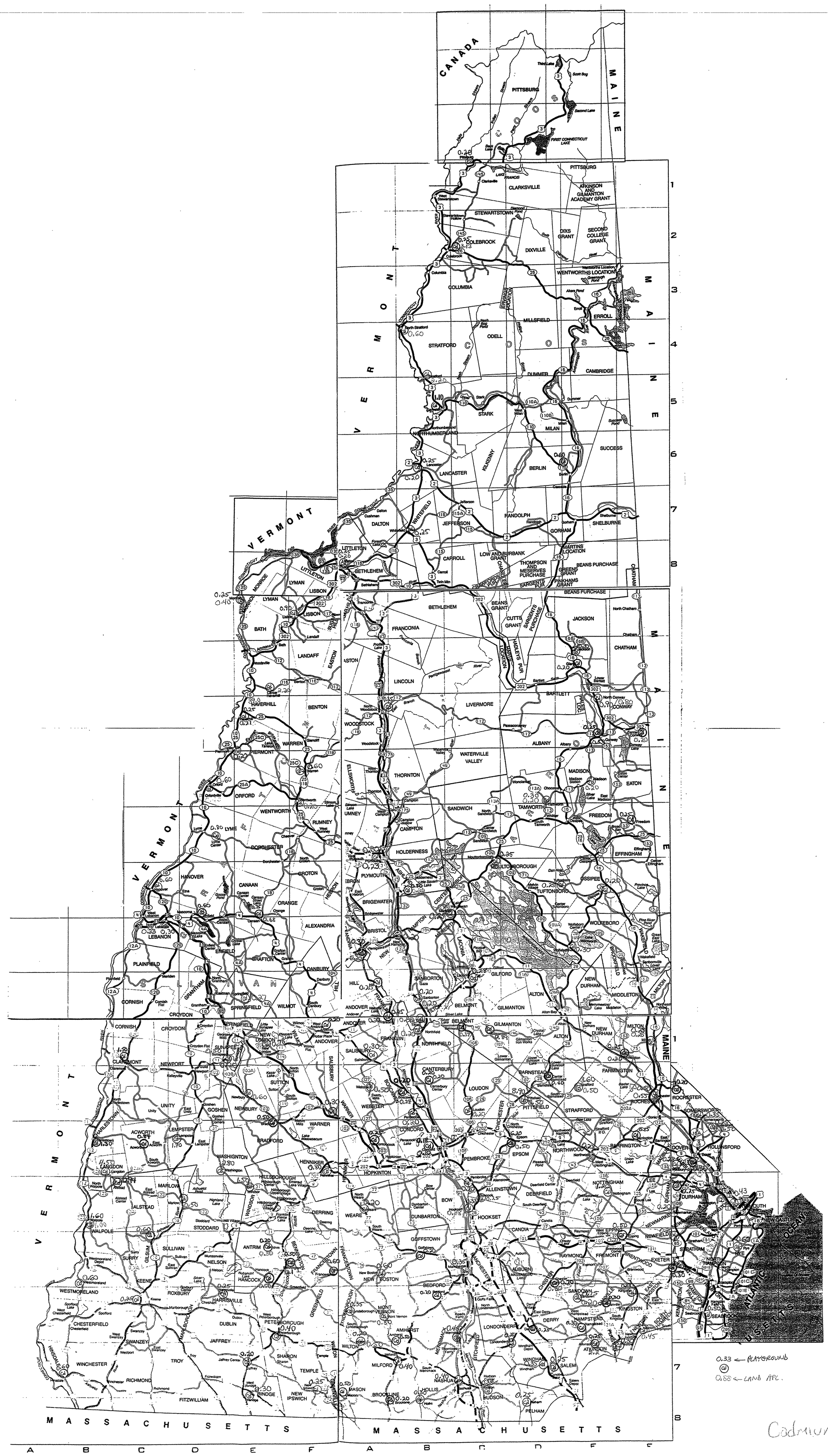
Arsenic (As)

- 4.2 ⇒ Sludge Application Data



- Urban locations
- Non-urban locations

Beryllium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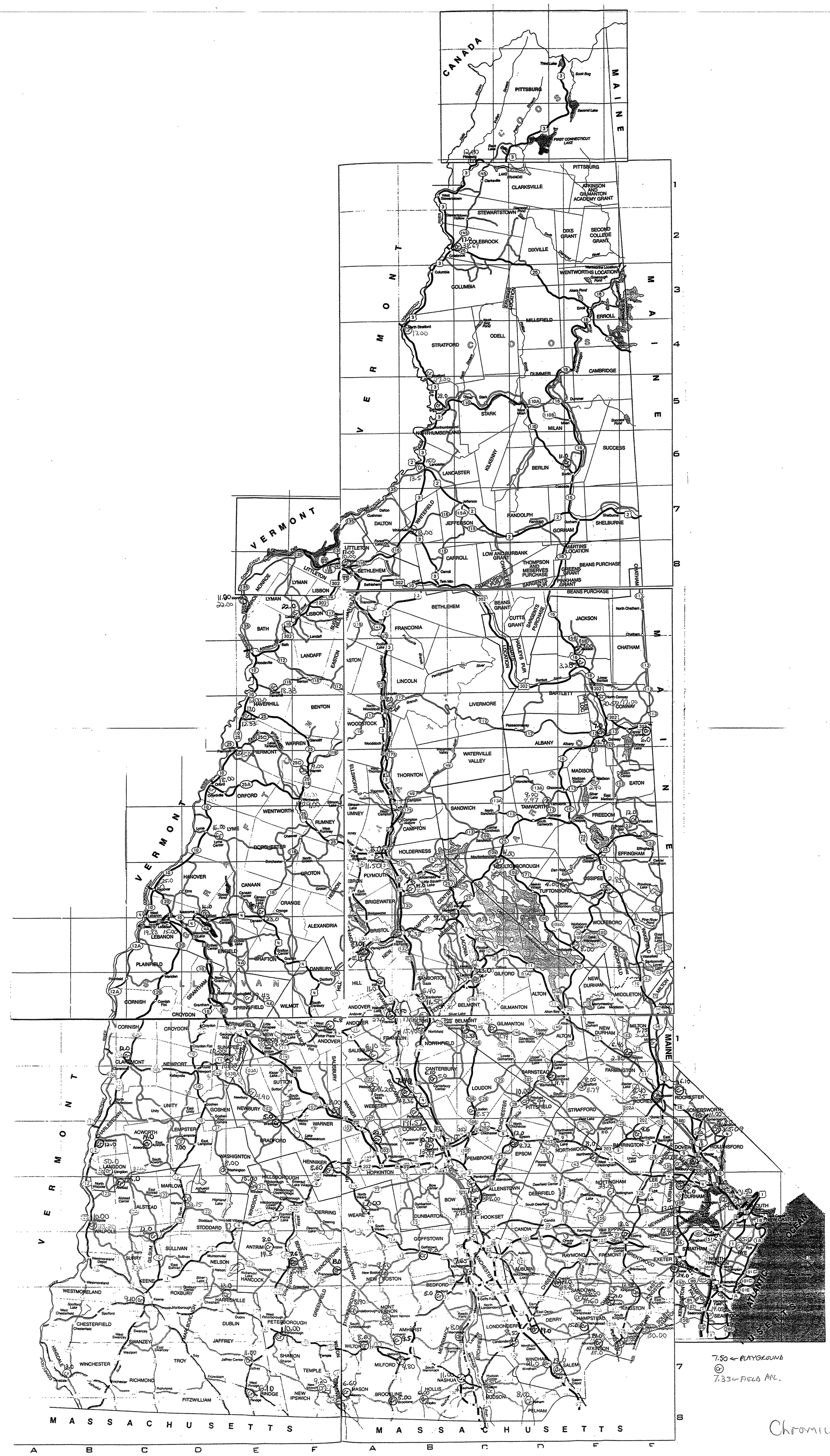
0.88 ← LAND APL.

Cadmium (Cd)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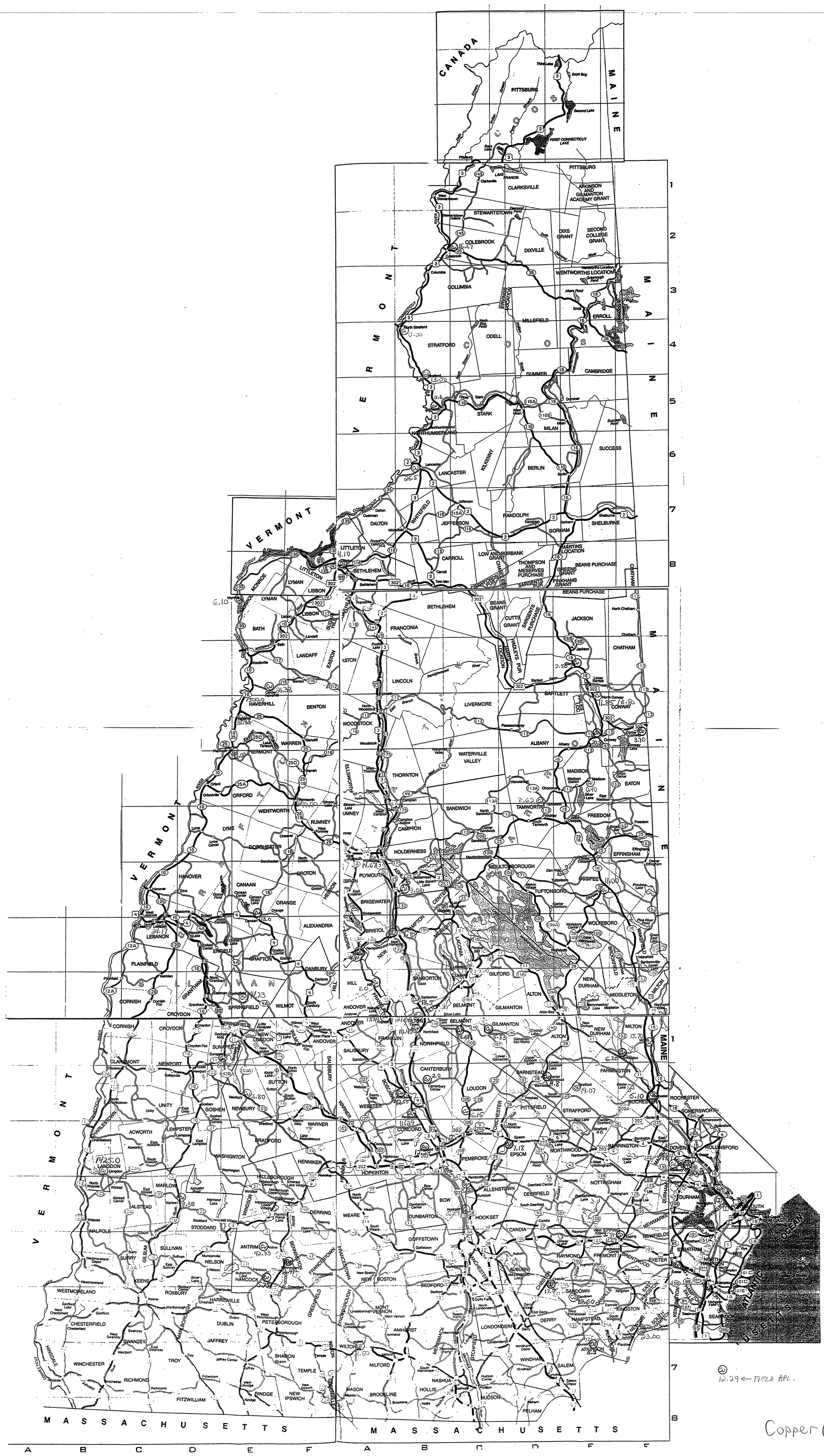
BROOKLINE
PELHAM
7.50 ← PLAYGROUND
7.33 ← FIELD APL.

Chromium (Cr)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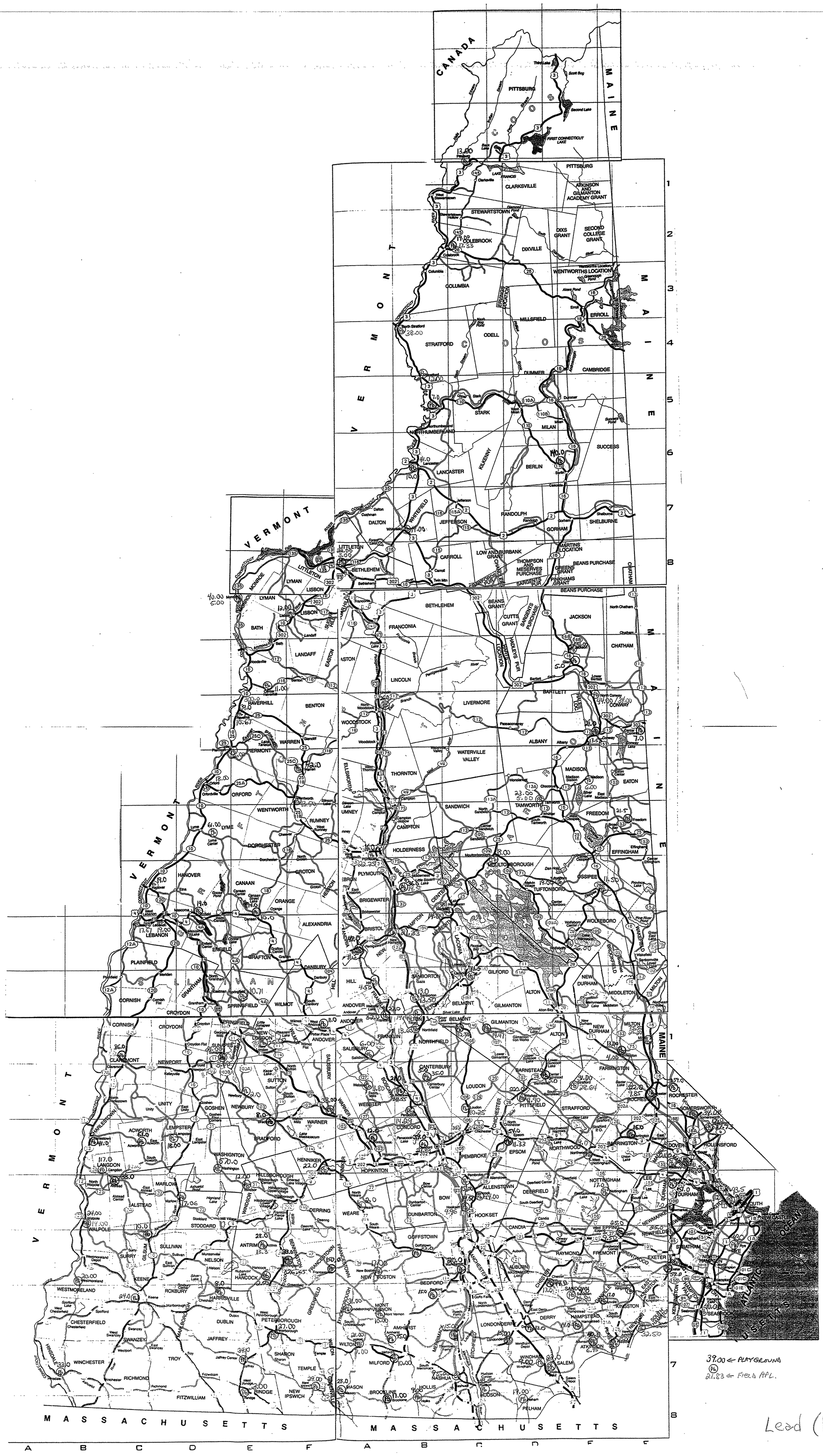
Copper (Cu)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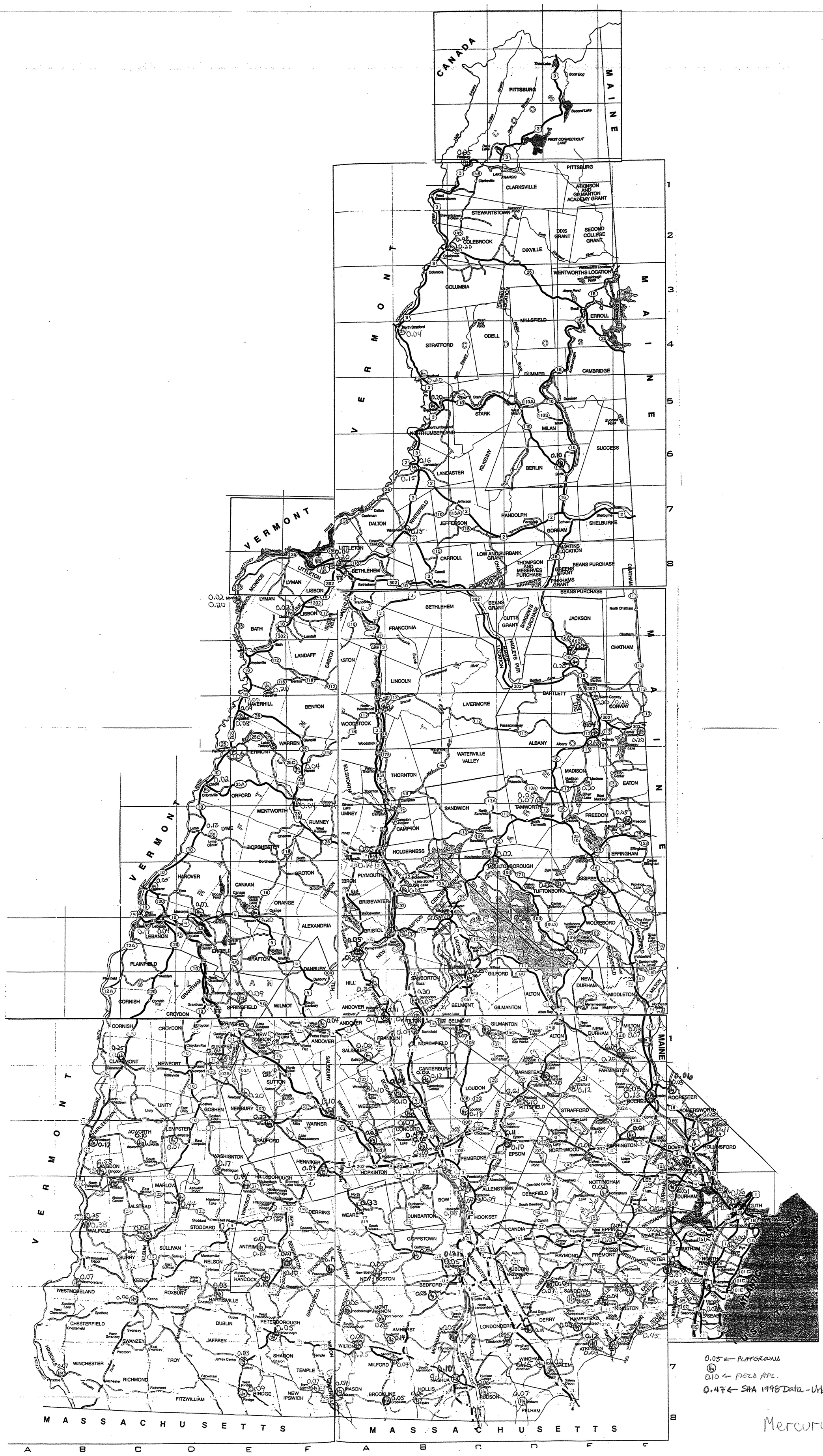
39.00 ← PLAYGROUND
21.83 ← FIELD AVE.

Lead (Pb)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0.10 ← FIELD APL.
0.47 ← SHA 1998 Data - Urban
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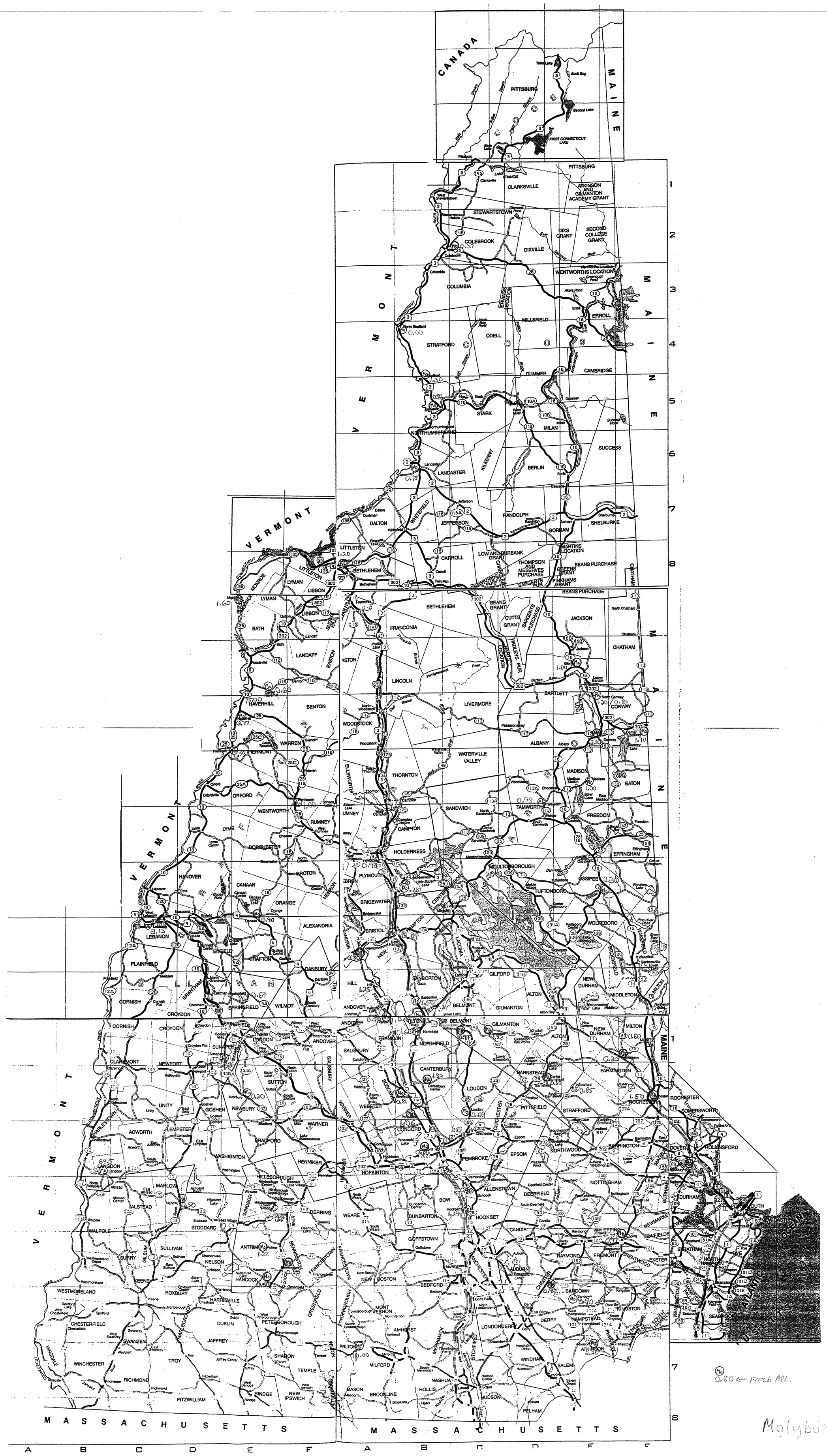
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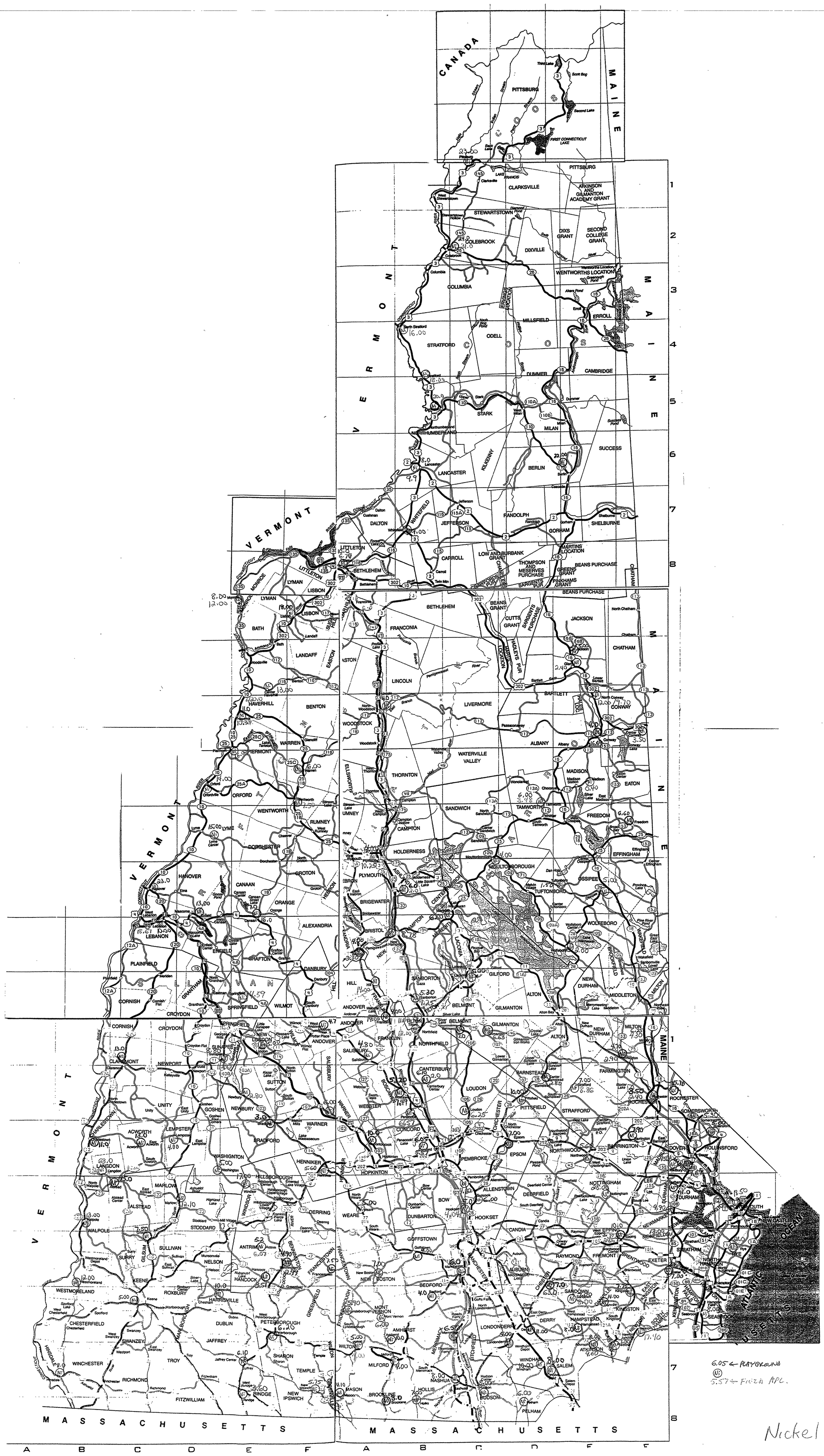
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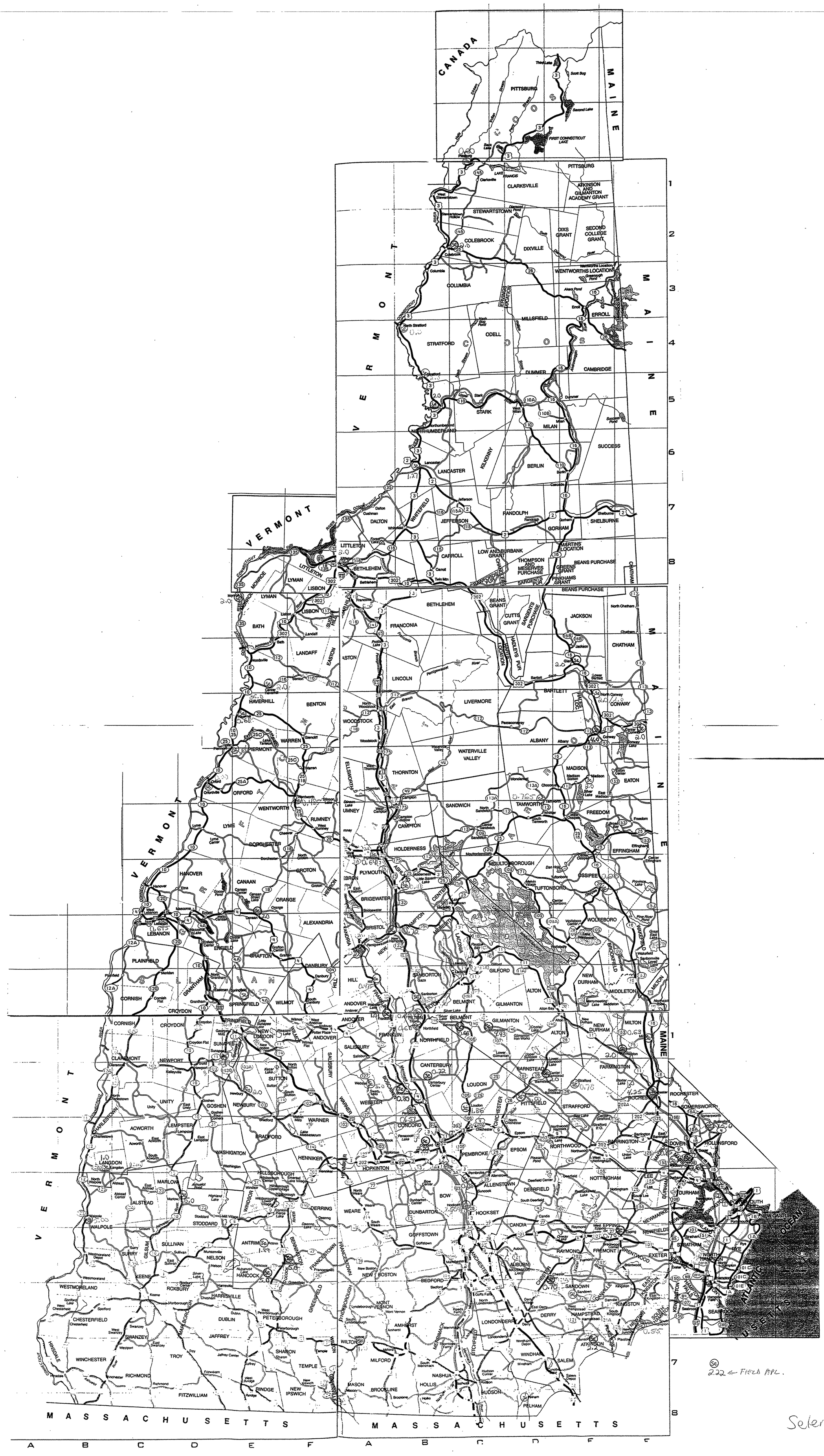
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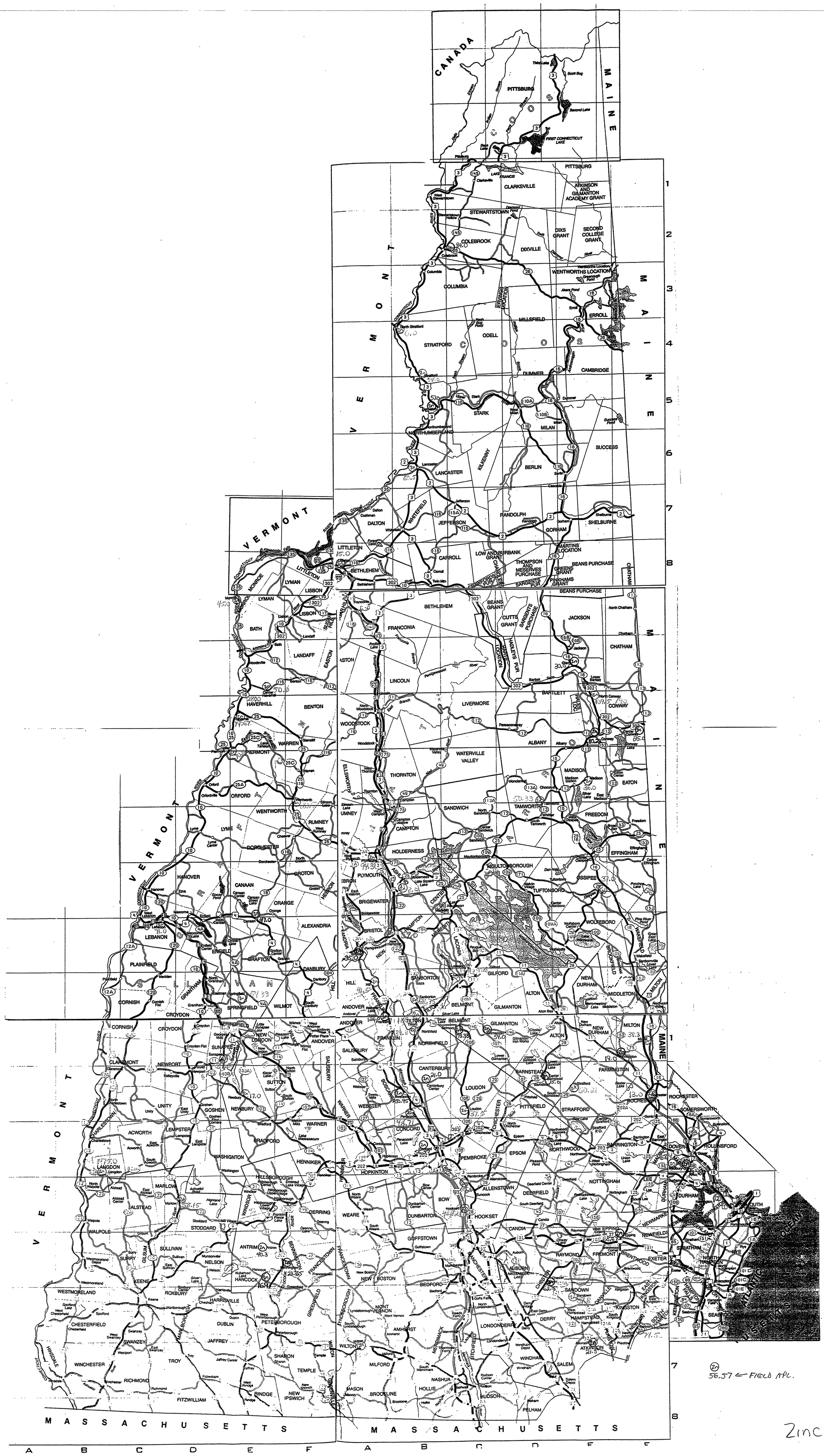
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APPENDIX C

SHA'S 1998 FIELD SAMPLING INFORMATION FORMS

APPENDIX C.1

SURFICIAL SOIL FIELD SAMPLING SUMMARY

Surficial Soil Field Sampling Summary

Sanborn, Head & Associates, Inc.		
Concord, New Hampshire / Canton, Ohio / Westford, Massachusetts / Portland, Maine	Project Number: 1571	Date: 10/5/98
	Project Name: NH Metals Database	
	Project Location: New Hampshire	
	Soil Sampling Phase: N/A	
Sampling Equipment: 1" O.D. PVC pipe and hammer.	Project Manager: CAC	
	Samplers: NAD	

Field Measurements

Sample Identification	S-1	S-2	S-3	S-4	S-5
Sampling Location	Concord High Location #1	Concord High Location #2	Concord High Location #3	Kimball School #1	Kimball School #2
General Geological Setting	transition to hill uplands	till uplands	(?)	probable fill	probable fill
Land Use Information					
Sampling Depth (feet)	0-6"	0-6"	0-6"	0-6"	0-6"
Sampler(s)	NAD/CAC	NAD	NAD	NAD	NAD
Sample Date	10/5/98	10/5/98	10/5/98	10/5/98	10/5/98
Sampling Time	1145-1210	1210-1230	1240-1250	1300-1320	1325-1335
Sample Color	Brown	Brown	Brown	Brown	Brown
Sample Odor	None	None	None	None	None
Sample Description (Burmeister)	Fine to coarse Sand, and silt, trace Gravel, tr organics	Very fine Sand and Silt, tr. f gravel, trace organics	Very fine Sand and Silt, tr. Gravel, trace organics	Vf Sand and Silt, trace organics	Vf Sand and Silt, trace organics
Comment Reference Number	1.	2.	3.	4.	5.

Comments

1. Located ~ 150' from Westbourne Rd & Warren St. intersection on Westbourne St. ~ 1/2 way up hillslope. Four samples in composite S-1.
2. Located along fenceline, parallel to Woodman Street & back of High School. 4 locations in composite.
3. Located on corner of Warren and North Fruit Street - trees behind Concord High sign; 4 locations in composite.
4. Located around flagpole area - Kimball school mostly paved.
5. Located west of school entrance.

Surficial Soil Field Sampling Summary

Sanborn, Head & Associates, Inc.

Concord, New Hampshire — Canton, Ohio
Westford, Massachusetts — Portland, Maine

Project Number:	1571	Date: 10/5/98
Project Name:	NH Metals Database	
Project Location:	New Hampshire	
Soil Sampling Phase:	N/A	
Project Manager:	CAC	
Samplers:	NAD	

Sampling Equipment: 1" O.D. PVC pipe and hammer

Field Measurements

Sample Identification	S-6	S-7	S-8	S-9	S-10
Sampling Location	Kimball Location #3	Rumford School Location #1	Rumford School Location #2	Rumford School Location #3	DuPont School Location #1
General Geological Setting	probable fill	probable fill	probable fill	probable fill	probable fill
Land Use Information		school est. 1902	1902	1902	
Sampling Depth (feet)	0-6"	0-6"	0-6"	0-6"	0-6"
Sampler(s)	NAD	NAD	NAD	NAD	NAD
Sample Date	10/5/98	10/5/98	10/5/98	10/5/98	10/5/98
Sampling Time	1340-1350	1415-1425	1425-1435	1435-1445	1530
Sample Color	Brown	Brown	Brown	Brown	Brown
Sample Odor	None	None	None	None	None
Sample Description (Burmeister)	vf sand and silt, trace organics, tr f. gravel	vf sand and silt, trace organics	vf sand and silt, trace organics	vf-f sand and silt, tr organics	Fine to vf sand and silt, trace organics
Comment Reference Number	2.	2.	1.	2.	2.

Comments

1. Samples collected around large oak tree - see field notes for sketch. 4 Samples = composite.
2. See field notes for sample locations and site sketch. Four samples = composite for all.

Surficial Soil Field Sampling Summary

Sanborn, Head & Associates, Inc.		
Concord, New Hampshire / Canton, Ohio / Westford, Massachusetts / Portland, Maine	Project Number: 1571	Date: 10/5/98
	Project Name: NH Metals Database	
	Project Location: New Hampshire	
Sampling Equipment: 1" O.D. PVC pipe and hammer	Soil Sampling Phase: N/A	
	Project Manager: CAC	
	Samplers: NAD	

Field Measurements

Sample Identification	S-11	S-12	EQ-1	S-13	S-14
Sampling Location	DuPont School Location #2	Dupont School Location #3	Dupont School, Equipment Blank	Bear Brook State Park #1	Bear Brook State Park #3
General Geological Setting	probable fill	prob. fill/ river sds	—	overbank seds	till upland (?)
Land Use Information					
Sampling Depth (feet)	0-6"	0-6"	—	0-6"	0-6"
Sampler(s)	NAD	NAD	NAD	NAD	NAD
Sample Date	10/5/98	10/5/98	10/5/98	10/5/98	10/5/98
Sampling Time	1545	1600	1605	1700	1715
Sample Color	Brown	Brown	—	Brown	Brown-Yellow Brn
Sample Odor	None	None	—	None	None
Sample Description (Burmeister)	Fine - vf Sand and Silt, tr organics	VF Sand, and Silt, tr. organics	—	vf Sand and Silt, trace organics	vf-med Sand, and Silt, trace Organics
Comment Reference Number	4.	1.		2.	3.

Comments

1. In playground, beneath oak trees.
2. Five-composite; taken from areas of large trees along shore of water's edge. - not from beach area, from wooded area surrounding beach sand: grass
3. Taken along 1st 500' of Catamount Trail, from Toll Booth, take One Mile Trail, ~1500' to Catamount. 4 Samples composited.
4. See field notes for sketch of the site and location of samples.

Surficial Soil Field Sampling Summary

Sanborn, Head & Associates, Inc.	Project Number: 1571	Date: 10/5-6/98
Concord, New Hampshire Canton, Ohio	Project Name: NH Metals Database	
Westford, Massachusetts Portland, Maine	Project Location: New Hampshire	
	Soil Sampling Phase: N/A	
Sampling Equipment: 1"O.D. PVC pipe and hammer, stainless steel scoop and mixing bowl.	Project Manager: CAC	
	Samplers: NAD	

Field Measurements

Sample Identification	S-15	S-16	S-17	S-18	S-19
Sampling Location	Bear Brook State Park #3	Duplicate of S-15	Holman Stadium location #1	Holman Stadium location #2	Holman Stadium location #3
General Geological Setting	lowland/wetland		probable fill	probable fill	probable fill
Land Use Information					
Sampling Depth (feet)	0-6"		0-6"	0-6"	0-6"
Sampler(s)	NAD		NAD	NAD	NAD
Sample Date	10/5/98	10/5/98	10/6/98	10/6/98	10/6/98
Sampling Time	1735	1735	0920	0930	0950
Sample Color	Dk brown		Yellow-brn	Yellow-brn	Yellow-brn, Brown
Sample Odor	None		None	None	None
Sample Description (Burmeister)	Silt and vf sand, little organics		vf to m Sand, some Silt, trace organics	vf to medium Sand, Some Silt, little organics	vf to f sand, some silt, trace organics
Comment Reference Number	1.	2.	3.	4.	5.

Comments

1. Composite samples from 7 locations along edge of wetland area collected and mixed in stainless steel mixing bowl.
2. Duplicate of S-15 - samples from each sub-location mixed in bowl and split.
3. Four samples = composite; collected beneath large trees surrounding concession stand inside fenced area.
4. Four samples = composite; collected along treed section behind SW advertisement wall in stadium area.
5. Five samples = composite; collected within treed area in back corner of stadium area, 3 samples from topo high ~3' above general grade.

Surficial Soil Field Sampling Summary

Sanborn, Head & Associates, Inc.

Concord, New Hampshire Canton, Ohio
Westford, Massachusetts Portland, Maine

Project Number:	1571	Date:	10/6/98
Project Name:	NH Metals Database		
Project Location:	New Hampshire		
Soil Sampling Phase:	N/A		
Project Manager:	CAC		
Samplers:	NAD		

Sampling Equipment: 1" O.D. PVC pipe and hammer.

Field Measurements

Sample Identification	S-20	S-21	S-22	S-23	S-24
Sampling Location	Nashua City Hall Location #1	Nashua City Hall Location #2	Nashua City Hall Location #3	Sullivan Park Location #1	Sullivan Park Location #2
General Geological Setting	probable fill	probable fill	probable fill	probable fill	probable fill
Land Use Information	est. 1938	1938	1938		
Sampling Depth (feet)	0-6"	0-6"	0-6"	0-6"	0-6"
Sampler(s)	NAD	NAD	NAD	NAD	NAD
Sample Date	10/6/98	10/6/98	10/6/98	10/6/98	10/6/98
Sampling Time	1025	1040	1055	1115	1135
Sample Color	Brown	Brown	Brown	Brown	Brown
Sample Odor	None	None	None	None	None
Sample Description (Burmeister)	Vf to f sand and Silt, tr organics	Vf to f Sand and Silt	vf to f sand and silt, trace organics	Vf to f Sand and Silt, trace organics	vf to f sand and silt, trace organics
Comment Reference Number	1.	2.	3.	4.	4.

Comments

1. Four=composite; from in front of flagpole area in front of City Hall.
2. Four samples = composite; from along south side of building beneath large trees.
3. Four samples = composite; from along SW corner of building.
4. Four samples = composite; see map for locations.

Surficial Soil Field Sampling Summary

Sanborn, Head & Associates, Inc.			
SHA	Concord, New Hampshire / Canton, Ohio / Westford, Massachusetts / Portland, Maine	Project Number: 1571	Date: 10/6/98
		Project Name: NH Metals Database	
		Project Location: New Hampshire	
		Soil Sampling Phase: N/A	
Sampling Equipment: 1" O.D. PVC pipe and hammer, stainless steel scoop and mixing bowl.		Project Manager: CAC	
		Samplers: NAD	

Field Measurements

Sample Identification	S-25	S-26	S-27	S-28	S-29
Sampling Location	Duplicate of S-24	Sullivan Park #3	Alvirne High School #1	Alvirne High School #2	Alvirne High School #3
General Geological Setting	probable fill	probable fill	probable fill	outwash plain(?)	lowland partial wetland(?
Land Use Information					
Sampling Depth (feet)	0-6"	0-6"	0-6"	0-6"	0-6"
Sampler(s)	NAD	NAD	NAD	NAD	NAD
Sample Date	10/6/98	10/6/98	10/6/98	10/6/98	10/6/98
Sampling Time	1135	1150	1225	1240	1250
Sample Color	Brown	Brown to Yellow-brn	Brown	Brown-Yellowbrn	Brown
Sample Odor	None	None	None	None	None
Sample Description (Burmeister)	vf to f sand and silt, tr organics	vf to f sand and silt, trace organics	vf sand and silt, tr. organics	vf to f sand and silt, tr. organics	vf sand and silt, tr. organics
Comment Reference Number	1.	2.	3.	4.	5.

Comments

1. Duplicate of S-24, mixed in stainless steel bowl, from 6 locations in central portion of Park.
2. Three locations = composite; N end of Park
3. Four locations = composite; from grassy area in front of school.
4. Four locations = composite; west corner of soccer/football field in wooded area just behind fence - primarily pine trees & small brush.
5. Four locations = composite; in back of school, between tennis courts & cow pens, probable wetland during wet times of year - low-lying area.

Surficial Soil Field Sampling Summary

Sanborn, Head & Associates, Inc.

Concord, New Hampshire — Canton, Ohio
Westford, Massachusetts — Portland, Maine

Project Number:	1571	Date:	10/6/98
Project Name:	NH Metals Database		
Project Location:	New Hampshire		
Soil Sampling Phase:	N/A		
Project Manager:	CAC		
Samplers:	NAD		

Sampling Equipment: 1" O.D. PVC pipe and hammer

Field Measurements

Sample Identification	S-30	S-31	S-32	S-33	S-34
Sampling Location	Memorial High, Manchester #1	Memorial High, Manchester #2	Memorial High, Manchester #3	Beech St. School, Manchester #1	Beech St. School, Manchester #2
General Geological Setting	probable fill	probable fill	till upland (?)	probable fill	probable fill
Land Use Information					
Sampling Depth (feet)	0-6"	0-6"	0-4"/0-6"	0-6"	0-6"
Sampler(s)	NAD	NAD	NAD	NAD	NAD
Sample Date	10/6/98	10/6/98	10/6/98	10/6/98	10/6/98
Sampling Time	1400	1420	1440	1520	1530
Sample Color	Brown	Brown	Brown	Brown	Brown
Sample Odor	None	None	None	None	None
Sample Description (Burmeister)	VF sand and silt, tr organics	VF sand and silt, trace organics	vf to med sand, some silt, little f gravel, tr orgs.	vf sand and silt, tr. organics	vf-f sand, and silt, trace organics
Comment Reference Number	1.	2.	3.	4.	

Comments

1. Four samples = composite; collected beneath 2 oak trees near entrance to school
2. Four samples = composite; collected along central portion of median in front of school. Memorial area in center dedicated in 1972 - median probably at least that old.
3. Four samples = composite; collected 0-6" when possible, 2 locations were very hard, so samples were from 0-4"; collected along top of slope leading to soccer/football fields - toe of till upland? Samples more poorly sorted than previous, m-c gravel observed at surface. Only small vegetation.
4. Collected 4 samples = composite; from large tree at school entrance.
5. Collected 4 samples = composite; from tree line at rear of school.

Surficial Soil Field Sampling Summary

Sanborn, Head & Associates, Inc.			
SHA	Concord, New Hampshire / Canton, Ohio / Westford, Massachusetts / Portland, Maine	Project Number: 1571	Date: 10/6/98
		Project Name: NH Metals Database	
		Project Location: New Hampshire	
Sampling Equipment: 1" O.D. PVC pipe and hammer		Soil Sampling Phase: N/A	
		Project Manager: CAC	
		Samplers: NAD	

Field Measurements

Sample Identification	S-35	S-36	S-37	S-38	S-39
Sampling Location	Beech St School, Man. #3	Central High, Manchester #1	Central High, Manchester #2	Central High Manchester #3	West High, Manchester #1
General Geological Setting	probable fill	probable fill	probable fill	probable fill	probable fill
Land Use Information					
Sampling Depth (feet)	0-6"	0-6"	0-6"	0-6"	0-6"
Sampler(s)	NAD	NAD	NAD	NAD	NAD
Sample Date	10/6/98	10/6/98	10/6/98	10/6/98	10/6/98
Sampling Time	1540	1620	1640	1650	1710
Sample Color	Brown	Brown	Brown	Brown - D. Brn	Brown
Sample Odor	None	None	None	None	None
Sample Description (Burmeister)	vf to m sand, trace organics and silt, tr f gravel	vf to f sand and silt, tr. organics	vf to f sand and silt, tr. organics	vf to c sand and silt, little f gravel, tr organics.	vf to f sand and silt, tr f gravel, tr orgs.
Comment Reference Number	1.	2.	3.	4.	5.

Comments

1. Four samples = composite; from young treed area along fenceline with football field; relatively new fill (<10 years)
2. Four samples = composite; from grassy area at corner of Beech St. and Lowell St.
3. Four samples = composite; from grassy area W of school's main entrance.
4. Four samples = composite; from grassy areas E of school's main entrance, near intersection of Lowell St and Maple St.
5. Four samples = composite; from grassy area along Notre Dame Ave.

Surficial Soil Field Sampling Summary

Sanborn, Head & Associates, Inc.		
Concord, New Hampshire / Canton, Ohio / Westford, Massachusetts / Portland, Maine	Project Number: 1571	Date: 10/6-7/98
	Project Name: NH Metals Database	
	Project Location: New Hampshire	
Sampling Equipment: 1" O.D. PVC pipe and hammer	Soil Sampling Phase: N/A	
	Project Manager: CAC	
	Samplers: NAD	

Field Measurements

Sample Identification	S-40	S-41	S-42	S-43	S-44
Sampling Location	West High, Manchester #2	West High, Manchester #3	Woodman Marsh, Northwood #1	Woodman Marsh Northwood #2	Woodman Marsh Northwood #3
General Geological Setting	probable fill	probable fill	wetland sods.	till uplands	till uplands
Land Use Information					
Sampling Depth (feet)	0-6"	0-6"	0-6"	0-6"	0-6"
Sampler(s)	NAD	NAD	NAD	NAD	NAD
Sample Date	10/10/98	10/6/98	10/7/98	10/7/98	10/7/98
Sampling Time	1720	1730	0935	0950	1010
Sample Color	Brown	Brown	Dk Brown	Brn, Gray, Yellow-Brn	Yellow-brn, Gray
Sample Odor	None	None	None	None	None
Sample Description (Burmeister)	vf to f sand and silt, tr organics	vf to f Sand and silt, tr f gravel, tr orgs.	Peat to f to m sand and silt, trace f gravel, lit. orgs.	vf to m Sand and Clayey silt tr f gravel, lt orgs.	vf to f sand and silt, trace organics
Comment Reference Number	1.	2.	3.	4.	5.

Comments

1. Four samples collected = composite; grassy areas ~ corner of Main St and Hecker; several relatively large, mature oak trees.
2. Four samples = composite; grassy area beneath oak trees along Hecker St.
3. Five samples = composite; marsh/wetland off Lower Deerfield Rd., just past Woodman Marsh sign. Samples varied from marsh peat to coarser sods.
4. Drive up road ~ 1/4 mile, Five samples = composite; collected from beneath oak & pine tree canopy, rock walls present, several large boulders.
5. Five = Composite; from among tall pines along ridge between two wet areas.

Surficial Soil Field Sampling Summary

Sanborn, Head & Associates, Inc.			
SHA	Concord, New Hampshire	Canton, Ohio	
	Westford, Massachusetts	Portland, Maine	

Project Number:	1571	Date:	10/7/98
Project Name:	NH Metals Database		
Project Location:	New Hampshire		
Soil Sampling Phase:	N/A		
Project Manager:	CAC		
Samplers:	NAD		

Sampling Equipment: 1" O.D. PVC pipe and hammer.

Field Measurements

Sample Identification	S-45	S-46	S-47	S-48	S-49
Sampling Location	Adams Point, Durham #1	Adams Point, Durham #2	Adams Point, Durham #3	Sparkling High, Rochester #1	Sparkling High, Rochester #2
General Geological Setting	Marsh Seds.	uplands, hill(?)	Bay Seds.	probable fill	probable fill
Land Use Information					
Sampling Depth (feet)	0-6"	0-6"	0-6"	0-6"	0-6"
Sampler(s)	NAD	NAD	NAD	NAD	NAD
Sample Date	10/7/98	10/7/98	10/7/98	10/7/98	10/7/98
Sampling Time	1115	1130	1145	1400	1420
Sample Color	DK. brown	Orange-brn	Dk brown	Brown	Brown
Sample Odor	Decay	None	None-decay	None	None
Sample Description (Burmeister)	Peat to silt and clay, some organic matter	vf to f sand, and silt, trace f gravel, tr. orgs.	Silty-clay, trace f. gravel, little organics.	vf to f sand and silt, trace organics	vf to f sand and silt, trace organics
Comment Reference Number	1.	2.	3.	4.	5.

Comments

1. 4 samples = composite; from marsh edges near boat ramp parking area.
2. 5 samples = composite; from upland area above parking/boat ramp area
3. 4 samples = composite; from Bay sediments along edge of Bay near Jackson Laboratory
4. 4 samples = composite; from central median grassy area along Wakefield Road, beneath large oak trees.
5. 4 samples = composite; from central median grassy area along Chestnut Hill Road, beneath red maple trees.

Surficial Soil Field Sampling Summary

Sanborn, Head & Associates, Inc.

Concord, New Hampshire — Canton, Ohio
Westford, Massachusetts — Portland, Maine

Project Number:	1571	Date: 10/7-8/98	
Project Name:	NH Metals Database		
Project Location:	New Hampshire		
Soil Sampling Phase:	N/A		
Project Manager:	CAC		
Samplers:	NAD		

Sampling Equipment: 1"O.D. PVC pipe and hammer, stainless steel scoop and mixing bowl.

Field Measurements

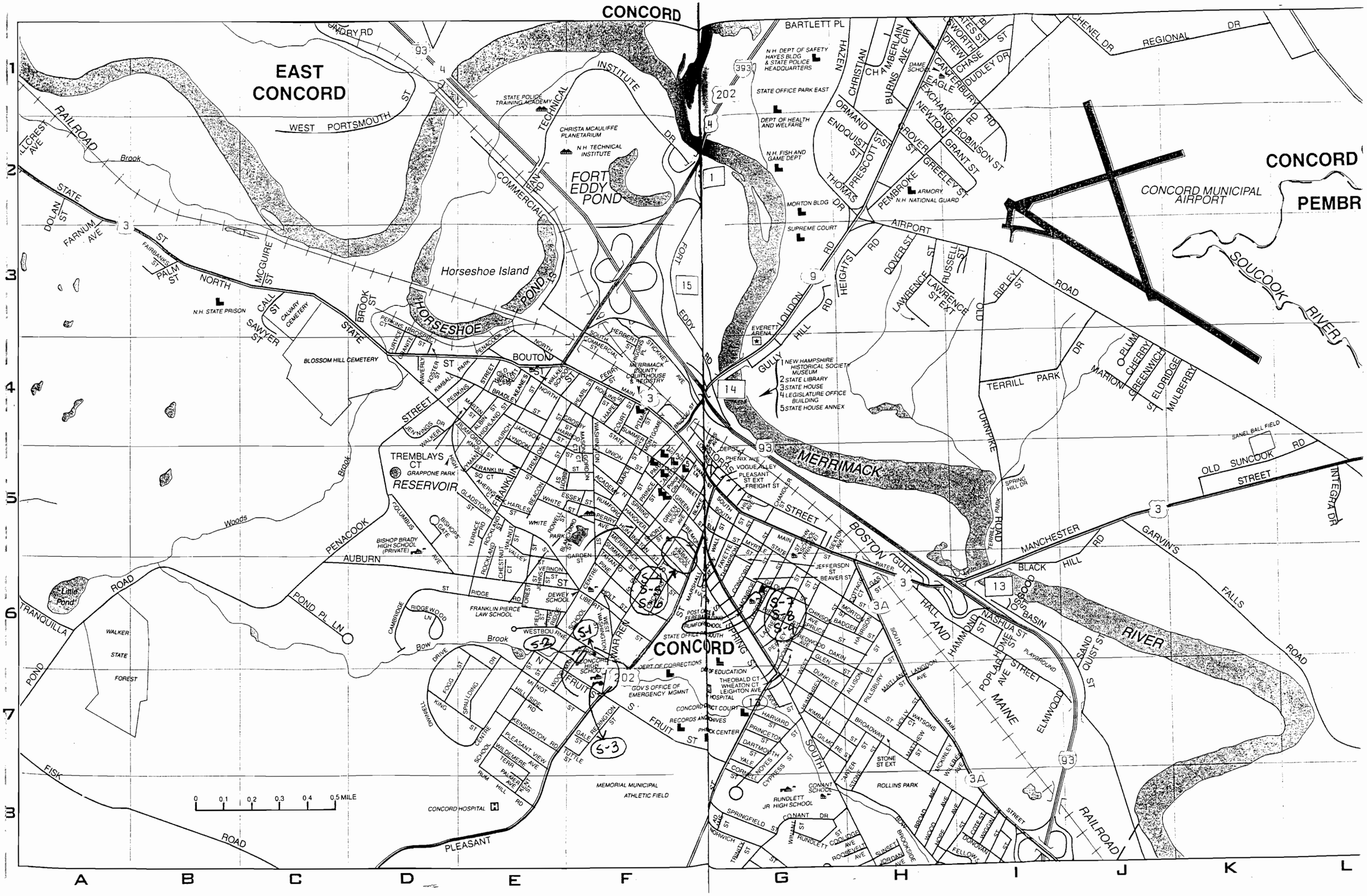
Sample Identification	S-55	S-56	S-57	S-58	S-59
Sampling Location	School St. School Rochester #1	School St. School Rochester #2	School St School Rochester #3	Carroll State Forest, Warner #1	Carroll State Forest, Warner #2
General Geological Setting	probable fill	probable fill	probable fill	hill uplands	base of hill upland
Land Use Information					
Sampling Depth (feet)	0-4"	0-6"	0-6"	0-6"	0-6"
Sampler(s)	NAD	NAD	NAD	NAD	NAD
Sample Date	10/7/98	10/7/98	10/7/98	10/8/98	10/8/98
Sampling Time	1555	1605	1615	0850	0900
Sample Color	Brown	Brown	Brn-Orang-brn	Orange-Brown	Gray-brown
Sample Odor	None	None	None	None	None
Sample Description (Burmeister)	vf to c sand, little f gravel, little silt.	vf to m sand, trace organics, little f gravel	vf to m sand, trace organics, little f gravel	vf to m sand, some silt, tr f gravel, tr organics	vf to c sand, some silt, tr f gravel, tr organic
Comment Reference Number	1.	2.	3.	4.	5.

Comments

1. 4 samples = composite; collected w/ stainless steel shovel; from playground behind school.
2. 4 samples = composite; collected from area beneath oak tree in front of school.
3. 4 samples = composite; collected from area around flagpole in front of school.
4. 4 samples = composite; From uplands along Old Denny Road.
5. 5 samples = composite; collected from forested area near intersection of Old Denny Rd and Pumpkin Hill Roads, which is the base of the upland.

APPENDIX C.2

MAPS OF SAMPLING LOCATIONS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WEST PORTSMOUTH ST
RAILROAD
Brook
STATE
DOLAN ST
FARNUM AVE
FAIRBANKS ST
PALM ST
NORTH
MCGUIRE ST
CALL ST
SAWYER ST
N.H. STATE PRISON
CALVARY CEMETERY
BLOSSOM HILL CEMETERY
BROOK ST
STATE
PERKINS CT
BROSPECT
CURTICE
SANTIE ST
PENACOOK ST
HORSESHOE POND
Horseshoe Island
FORT EDDY POND
STATE POLICE TRAINING ACADEMY
TECHNICAL INSTITUTE
CHRISTA MCAULIFFE PLANETARIUM
N.H. TECHNICAL INSTITUTE
COMMERCIAL ST
BOUTON ST
NORTH
SOUTH COMMERCIAL ST
HERBERT ST
STICKNEY AVE
MERRIMACK COUNTY COURTHOUSE & REGISTRY
MAIN ST
FOSTER ST
KIMBALL
PARK
STREET
PERKINS
MARTIN ST
ALBIN ST
HIGHLAND ST
BRADLEY
KEANE ST
WALKER SCHOOL
PEARL ST
ROBINS ST
HAPE
COURT ST
PITMAN
SUMMER ST
MONTGOMERY
BRUCE ST
WASHINGTON
ACADEMY
MAPLE
PRINCE
SPRING
HANOVER
HUNTINGTON
MERRIMACK
SUMMIT
TAHANTO
PINE
CENTRE
LIBERTY
HOLT
WEST WASHINGTON
WARREN
FRANKLIN
TREMBLAYS CT
GRAPPONE PARK
RESERVOIR
PENACOOK
AUBURN
ROAD
POND PL LN
TRANQUILLA
POND
Little Pond
WALKER
STATE
FOREST
FISK
ROAD
PLEASANT
CONCORD HOSPITAL
MEMORIAL MUNICIPAL ATHLETIC FIELD
0 0.1 0.2 0.3 0.4 0.5 MILE
BISHOP BRADY HIGH SCHOOL (PRIVATE)
BISHOPS GATE
COLUMBUS AVE
Woods
Bow
Brook
DRIVE
FOGG ST
SPAULDING DR
KING ST
DUNWELL
CENTRE SCHOOL
MINOT
HILL SIDE RD
KENSINGTON RD
PLEASANT VIEW
WILDEMERE AVE
TERR
PALMER AVE
KENT ST
RUM HILL RD
WOODMAN
FRUIT ST
GALE REDINGTON ST
TUTTLE ST
FRANKLIN PIERCE LAW SCHOOL
WESTBOU ANE
RIDGE
RIDGEWOOD LN
CAMBRIDGE
FIELD ST
VERNON ST
DEWEY SCHOOL
GARDEN ST
VALLEY
CHESTNUT CT
WALNUT ST
ROCKLAND
TERRACE RD
GLADSTONE
WHITE
ROWELL ST
ESSEX ST
CHARLES BEACON
FRANKLIN
SO CT
AHERNE CT
HYMAN CT
KING
HIGH
LYNDON
CHURCH
JACKSON
TREMONT
LIBBY
GORDON
MASON
CROSBY
HARPER
WHITE
UNION
ACADEMY
RUMFORD
PERRY AVE
BLANCHARD PARK
GREEN WOOD AVE
GREEN
BLACK
FREMONT
CAMPBELL SCHOOL
SOUTH
WALL
FAYETTE
LAFAYETTE
CONCORD
MARSHALL
FUTCHER
MONROE
POST OFFICE
FEDERAL BUILDING
RUMFORD SCHOOL
STATE OFFICE PARK SOUTH
CONCORD
DEPT OF CORRECTIONS
CONCORD HIGH SCHOOL
GOV'S OFFICE OF EMERGENCY MGMNT
DEPT OF EDUCATION
THEOBALD CT
WHEATON CT
LEIGHTON AVE
HOSPITAL
CONCORD DIST COURT
RECORDS AND ARCHIVES
PHENIX CENTER
HARVARD
PRINCETON
DARTMOUTH
YALE
CORNELL
NOYES
CYPRESS
CONANT SCHOOL
RUNDLETT JR HIGH SCHOOL
CONANT DR
SPRINGFIELD
NORWICH
TRUMAN ST
RUNDLETT
COOLIDGE AVE
ROOSEVELT AVE
SUNSET
JORDAN AVE
BROOKSIDE
S-1
S-2
S-3
S-4
S-5
S-6
S-7
S-8
S-9
S-10
BARTLETT PL
N.H. DEPT OF SAFETY HAYES BLDG & STATE POLICE HEADQUARTERS
STATE OFFICE PARK EAST
DEPT OF HEALTH AND WELFARE
N.H. FISH AND GAME DEPT
MORTON BLDG
SUPREME COURT
EVERETT ARENA
HAZEN
CHRISTIAN
ORMAND
ENDQUIST ST
THOMAS
PRESCOTT ST
CHAMBERLAIN AVE CIR
BURNS
DAME SCHOOL
EAGLE
EXCHANGE
NEWTON
ROVER ST
PEMBROKE
ARMORY
N.H. NATIONAL GUARD
CANTERBURY
DREW
CHASE ST
DUDLEY DR
ROBINSON ST
GRANT ST
GREELEY ST
AIRPORT
HEIGHTS RD
DOVER ST
LAWRENCE ST
RUSSELL ST
LAWRENCE ST EXT
OLD
RIPLEY ST
ROAD
LOUDON RD
HILL
GULLY
1 NEW HAMPSHIRE HISTORICAL SOCIETY MUSEUM
2 STATE LIBRARY
3 STATE HOUSE
4 LEGISLATURE OFFICE BUILDING
5 STATE HOUSE ANNEX
TERRILL PARK
TURNPIKE
MARION
OPLUM
CHERRY
GREENWICH
ELDRIDGE
MULBERRY
CHENEL DR
REGIONAL DR
CONCORD MUNICIPAL AIRPORT
CONCORD
PEMBR
SOUCOOK RIVER
SANEL BALL FIELD
OLD SUNCOOK RD
STREET
INTEGRA DR
MERRIMACK
RIVER
BOSTON
GULF
DEPOT
PHENIX AVE
VOGUE ALLEY
PLEASANT ST EXT
FREIGHT ST
CHANDLER
SOUTH
MAIN
STATE
WATER
JEFFERSON ST
BEAVER ST
MANCHESTER
BLACK
HILL RD
GARVIN'S
FALLS
ROAD
HALL AND HAMMOND
NASHUA ST
POPLAR
HOME
AVE
STREET
MAINE
ELMWOOD
SAND
QUIST ST
PLAYGROUND
ROLLINS PARK
STONE ST EXT
MATTHEW
KICKINLEY
WILDER AVE
BROADWAY
HOLLY
WATSONS
LANGDON AVE
PILLSBURY
ALLISON
DUNKLEE
GLEN
DAKIN
HARRISON
BADGER
MORTON
CHINSON AVE
SPRUCE
REDWOOD AVE
WEST
HILLSBORO
KIMBALL
GILMORE
LOTE ST
WILSON
DONOVAN
FELLOWS
ROOT
WOOD AVE
HODE
BROAD AVE
RAILROAD
STREET
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202
393
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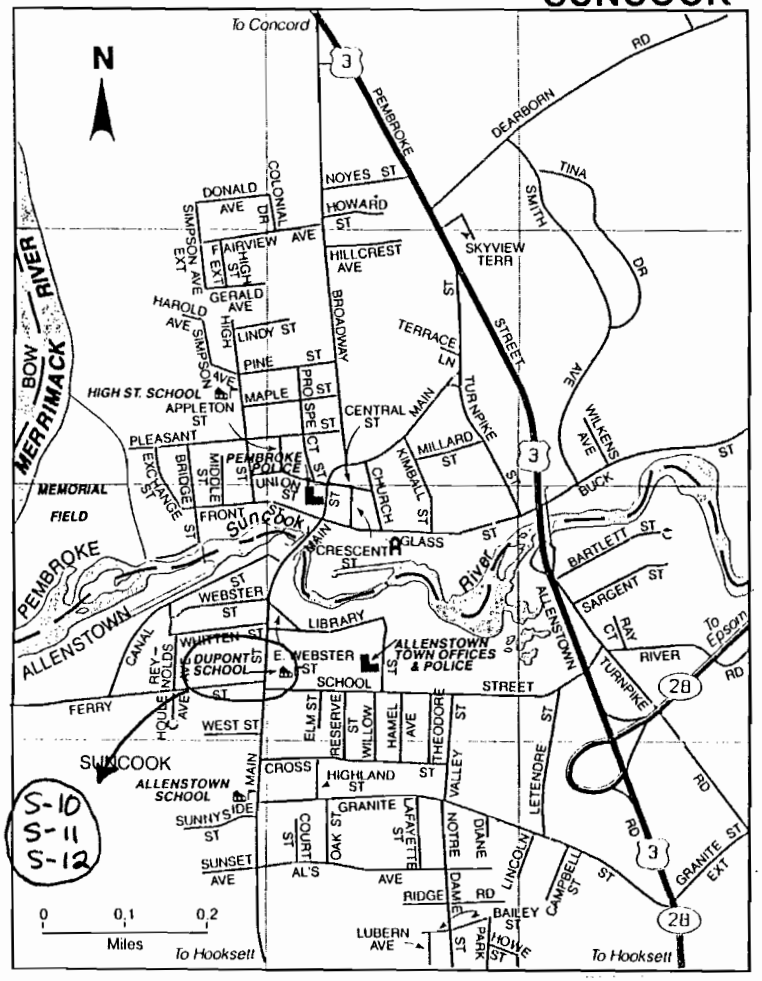
SUNCOOK



To Concord
N
PEMBROKE
DEARBORN
RD
TINA
SMITH
DR
NOYES ST
HOWARD
ST
DONALD
AVE
COLONIAL
DR
SIMPSON AVE
EXT
AIRVIEW
AVE
HIGH
ST
EXT
HILLCREST
AVE
SKYVIEW
TERR
GERALD
AVE
HAROLD
AVE
SIMPSON
HIGH
LINDY ST
BROADWAY
TERRACE
LN
STREET
AVE
PINE
ST
MAPLE
PROSPECT ST
CENTRAL
ST
MAIN
TURNPIKE
ST
WILKENS
AVE
HIGH ST. SCHOOL
APPLETON
ST
PLEASANT
MILLARD
ST
BUCK
ST
MERRIMACK
RIVER
BOW
MEMORIAL
FIELD
EXCHANGE
ST
BRIDGE
ST
MIDDLE
ST
PEMBROKE
POLICE
UNION
ST
CHURCH
KIMBALL ST
FRONT
ST
Suncook
MAIN
CRESCENT
ST
GLASS
ST
River
BARTLETT ST
SARGENT ST
PEMBROKE
ALLENSTOWN
WEBSTER
ST
LIBRARY
ALLENSTOWN
RAY
CT
To Epsom
RIVER
RD
CANAL
WHITTEN ST
DUPONT
SCHOOL
E. WEBSTER
ST
ALLENSTOWN
TOWN OFFICES
& POLICE
SCHOOL
STREET
TURNPIKE
28
FERRY
REY-
NOLDS
HOUSE
AVE
WEST ST
ELM ST
RESERVE
ST
WILLOW
HAMEL
AVE
THEODORE
ST
VALLEY
ST
LETENDRE
ST
SUNCOOK
ALLENSTOWN
SCHOOL
MAIN
CROSS
HIGHLAND
ST
GRANITE
RD
SUNNYSIDE
ST
COURT
ST
OAK ST
LAFAYETTE
ST
NOTRE
DIANE
LINCOLN
CAMPBELL
ST
GRANITE ST
EXT
SUNSET
AVE
AL'S
AVE
RIDGE
RD
DAME
BAILEY
ST
LUBERN
AVE
PARK
ST
HOWE
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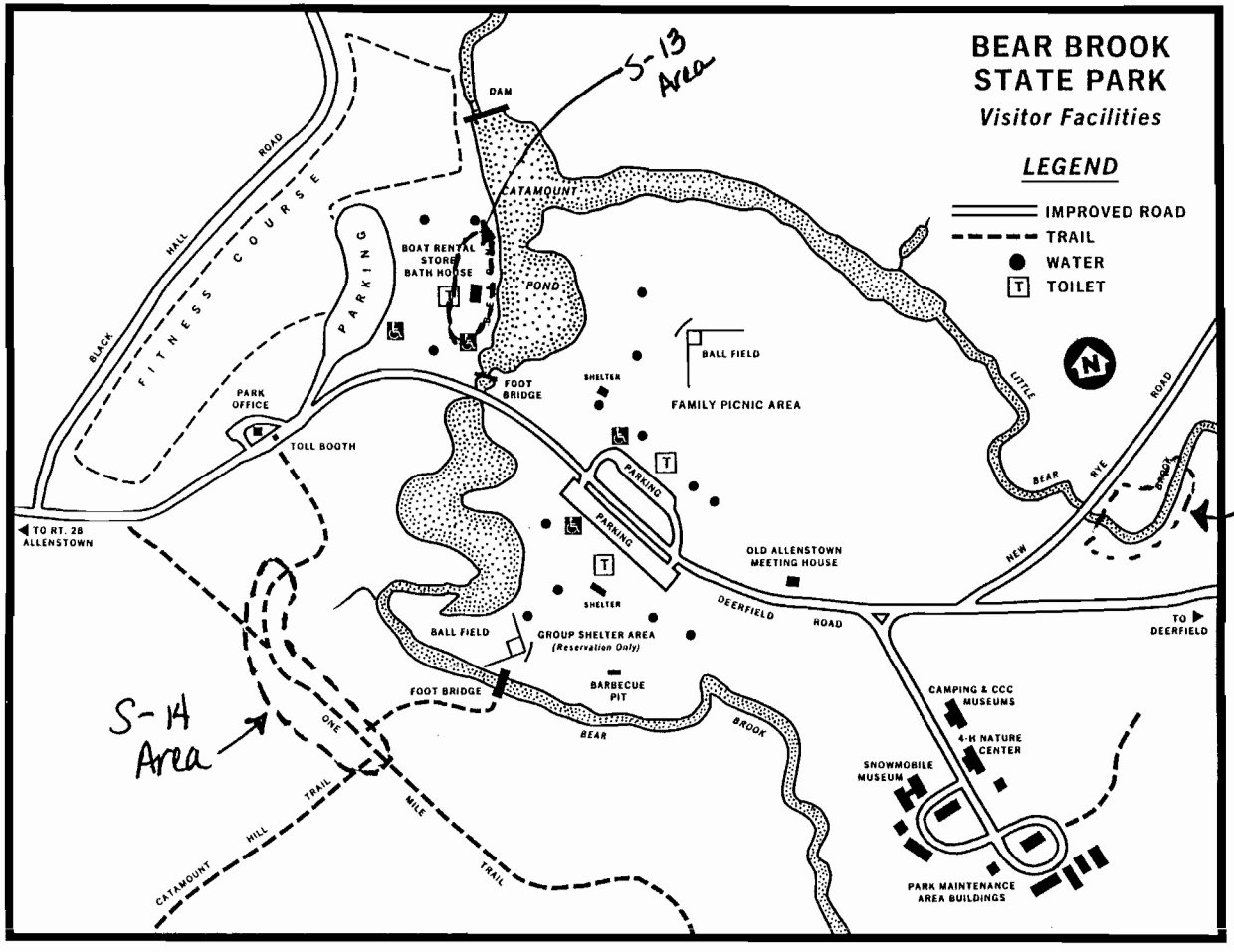
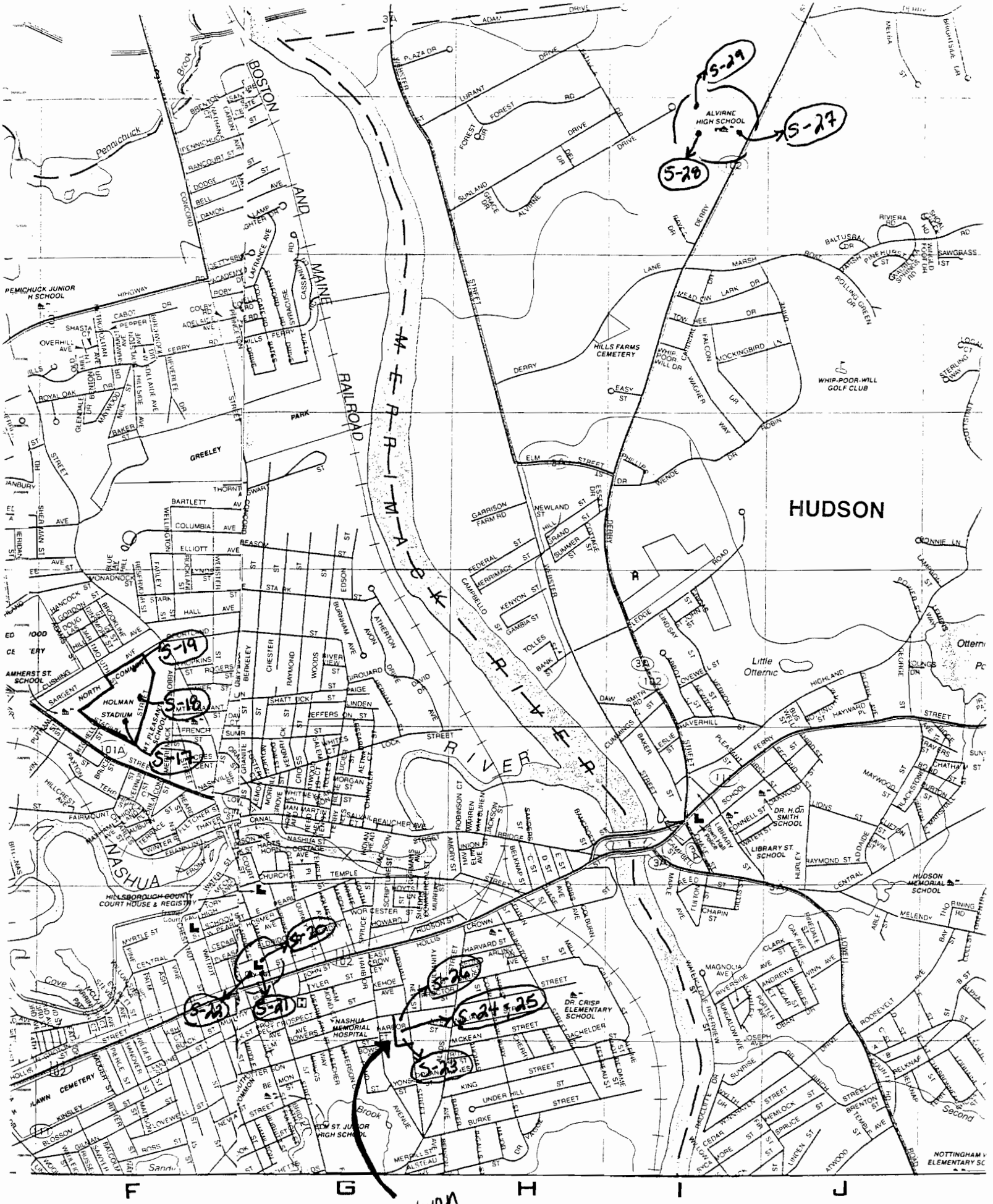
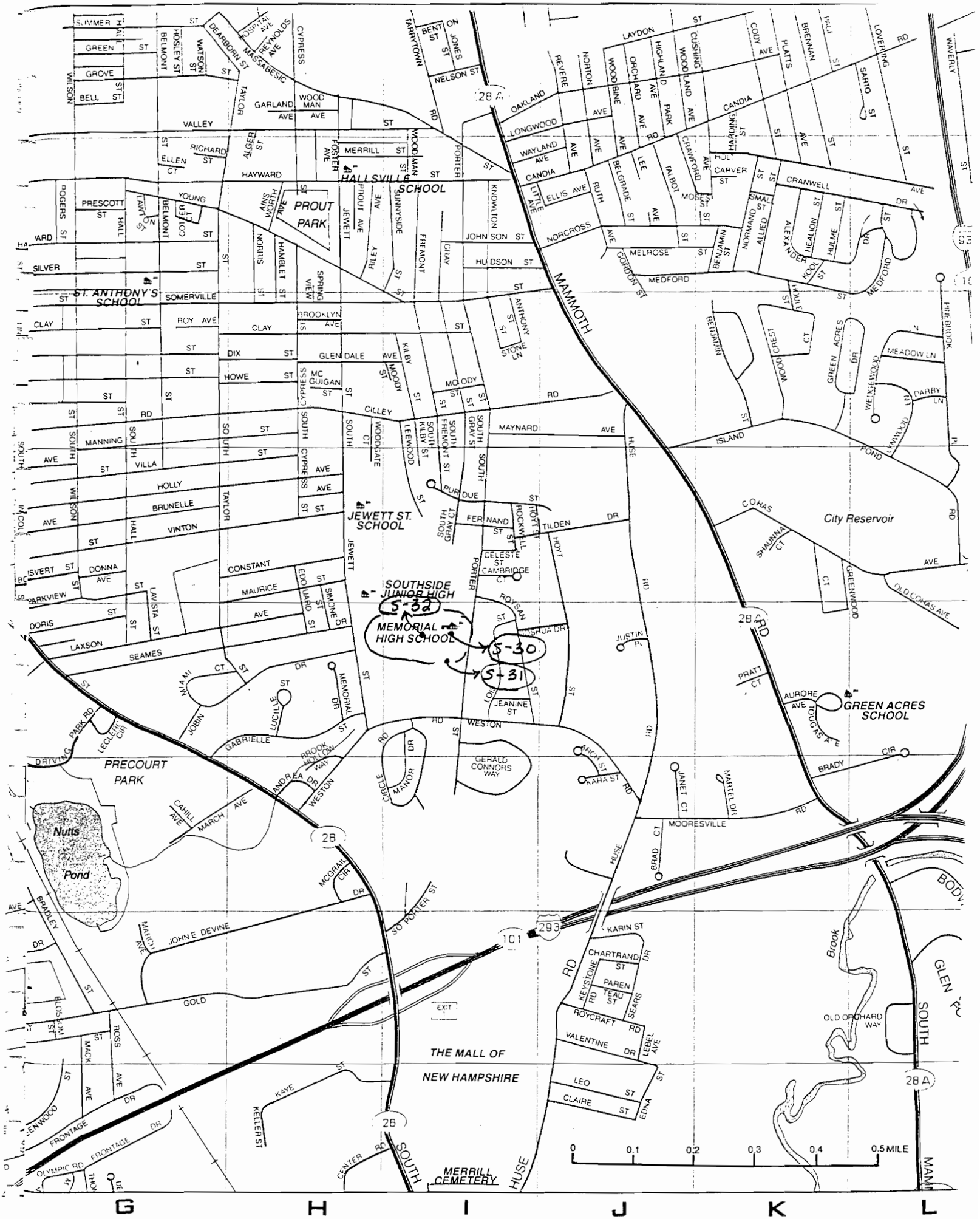
0
0.1
0.2
Miles
To Hooksett
To Hooksett
S-10
S-11
S-12

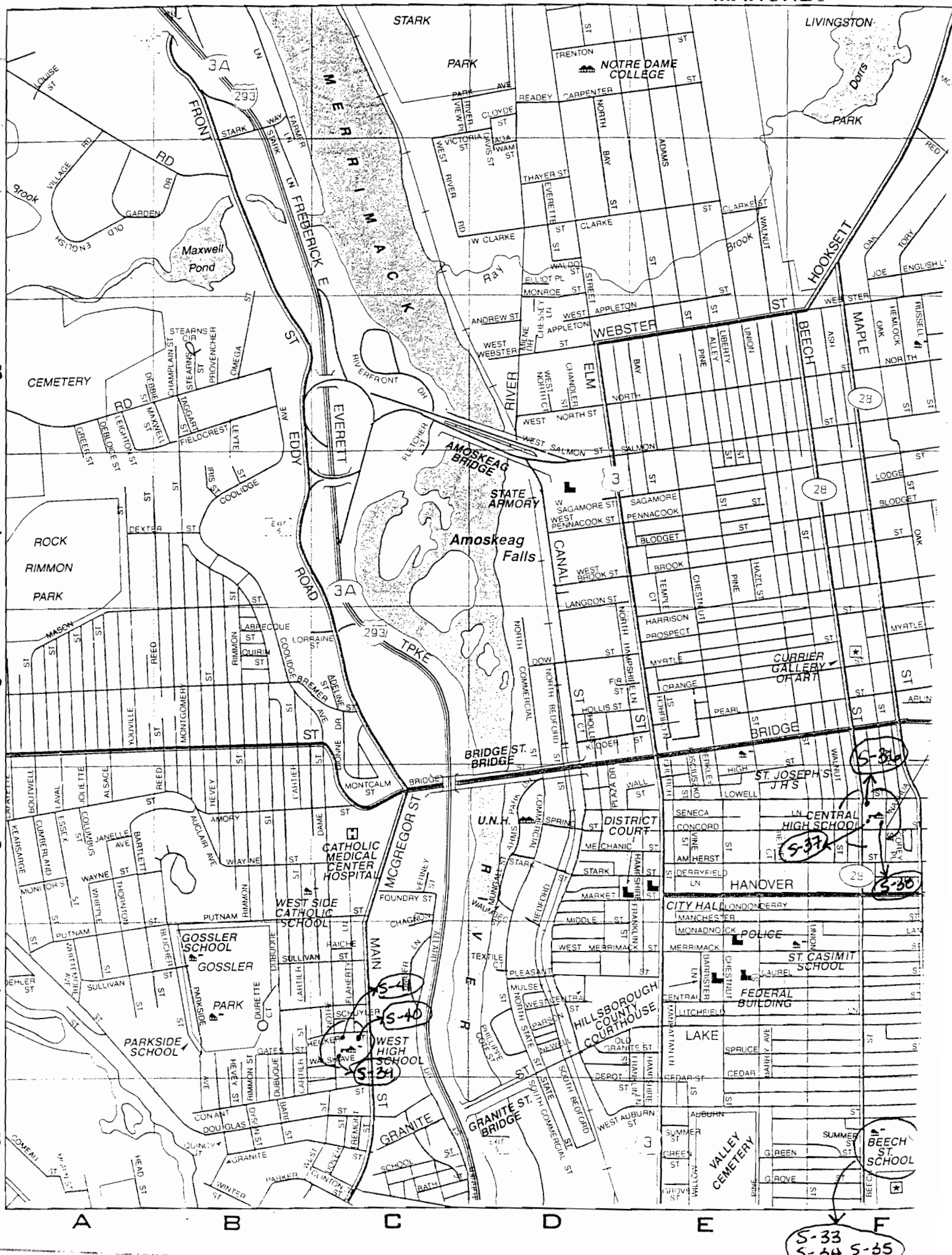

BEAR BROOK STATE PARK
Visitor Facilities
LEGEND
IMPROVED ROAD
TRAIL
WATER
TOILET
N
S-13 Area
DAM
CATAMOUNT
POND
BOAT RENTAL STORE BATH HOUSE
PARKING
FITNESS COURSE
BLACK HALL ROAD
PARK OFFICE
TOLL BOOTH
FOOT BRIDGE
SHELTER
BALL FIELD
FAMILY PICNIC AREA
PARKING
PARKING
SHELTER
BALL FIELD
GROUP SHELTER AREA
(Reservation Only)
BARBECUE PIT
FOOT BRIDGE
BEAR BROOK
TO RT. 28 ALLENSTOWN
OLD ALLENSTOWN MEETING HOUSE
DEERFIELD ROAD
LITTLE BEAR NEW ROAD
TO DEERFIELD
CAMPING & CCC MUSEUMS
4-H NATURE CENTER
SNOWMOBILE MUSEUM
PARK MAINTENANCE AREA BUILDINGS
S-14 Area
CATAMOUNT HILL TRAIL
ONE MILE TRAIL
S-15 Area
(S-16 = Dup.)



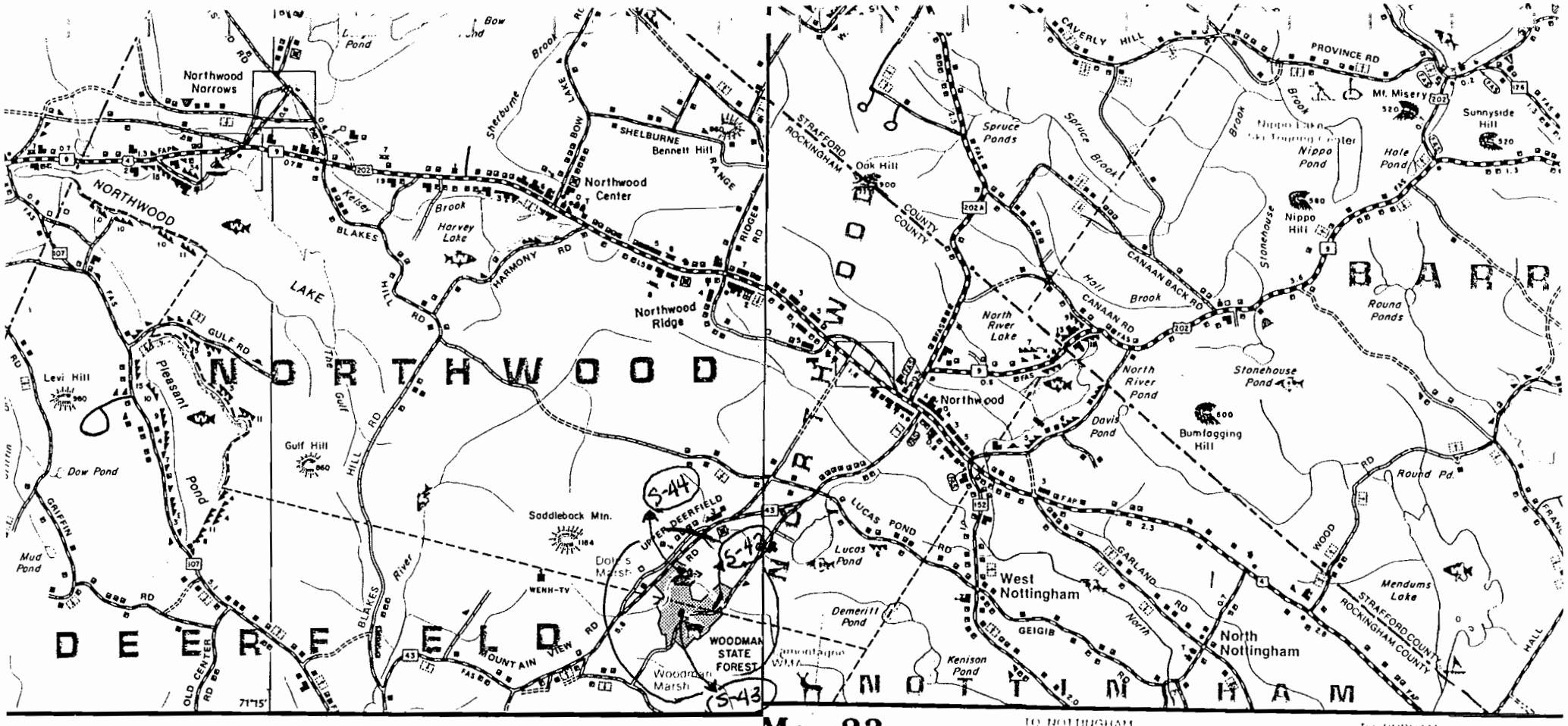
S-29
S-27
S-28
ALVIRNE HIGH SCHOOL
HILLS FARMS CEMETERY
WHIP-POOR-WILL GOLF CLUB
HUDSON
MERRIMACK RIVER
BOSTON AND MAINE RAILROAD
PEMICHUCK JUNIOR H SCHOOL
GREELEY PARK
HOLMAN STADIUM
S-19
S-18
S-17
NASHUA
HILLSBOROUGH COUNTY COURT HOUSE & REGISTRY
S-20
S-22
S-21
S-26
S-24 & 25
S-23
NASHUA MEMORIAL HOSPITAL
DR. CRISP ELEMENTARY SCHOOL
ELM ST. JUNIOR HIGH SCHOOL
DR. H. O. SMITH SCHOOL
LIBRARY ST. SCHOOL
HUDSON MEMORIAL SCHOOL
Little Otternic
NOTTINGHAM ELEMENTARY SC
F
G
H
I
J
Sullivan Park



HALLSVILLE SCHOOL
PROUT PARK
ST. ANTHONY'S SCHOOL
JEWETT ST. SCHOOL
SOUTHSIDE JUNIOR HIGH
MEMORIAL HIGH SCHOOL
S-32
S-30
S-31
City Reservoir
GREEN ACRES SCHOOL
PRECOURT PARK
Nutts Pond
GERALD CONNORS WAY
THE MALL OF NEW HAMPSHIRE
MERRILL CEMETERY
MAMMOTH
HUSE
SOUTH
28
28A
101
293
0
0.1
0.2
0.3
0.4
0.5 MILE
G
H
I
J
K
L



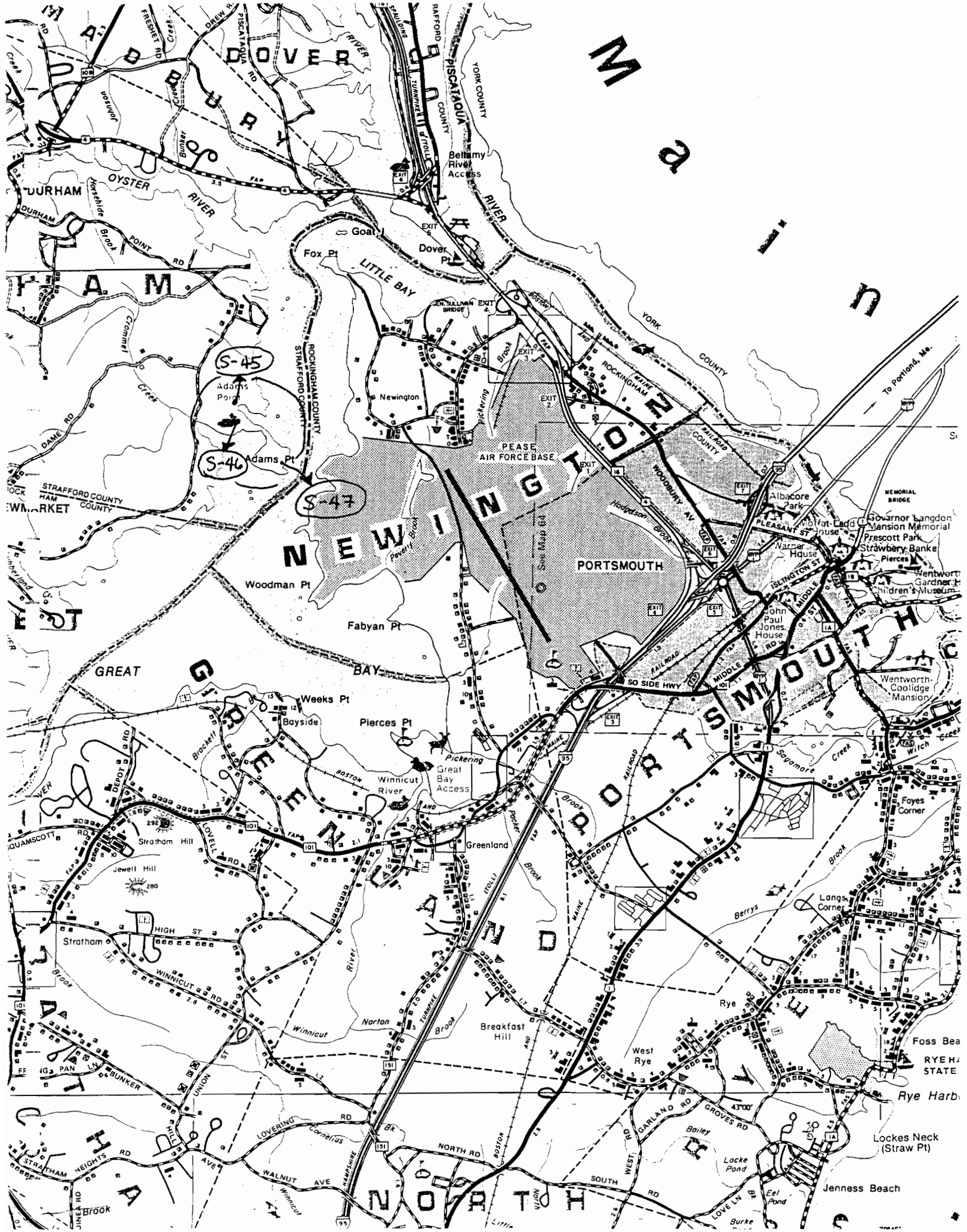
STARK PARK
LIVINGSTON PARK
NOTRE DAME COLLEGE
MERRIMACK
FRONT RD
FREDERICK E
EDDY ROAD
EVERETT TPKE
Maxwell Pond
CEMETERY
ROCK RIMMON PARK
AMOSKEAG BRIDGE
STATE ARMORY
Amoskeag Falls
CANAL
WEBSTER ST
ELM
BEECH
MAPLE
HOOKSETT
BRIDGE ST. BRIDGE
CURRIER GALLERY OF ART
ST. JOSEPH'S J H S
CENTRAL HIGH SCHOOL
HANOVER
CITY HALL
POLICE
ST. CASIMIT SCHOOL
FEDERAL BUILDING
LAKE
HILLSBOROUGH COUNTY COURTHOUSE
DISTRICT COURT
U.N.H.
CATHOLIC MEDICAL CENTER HOSPITAL
WEST SIDE CATHOLIC SCHOOL
GOSSLER SCHOOL
GOSSLER PARK
PARKSIDE SCHOOL
WEST HIGH SCHOOL
MAIN ST
MCGREGOR ST
GRANITE ST
GRANITE ST. BRIDGE
VALLEY CEMETERY
BEECH ST. SCHOOL
S-36
S-37
S-38
S-41
S-40
S-39
S-33
S-34 S-35
A
B
C
D
E
F
3
4
5
6
7
8



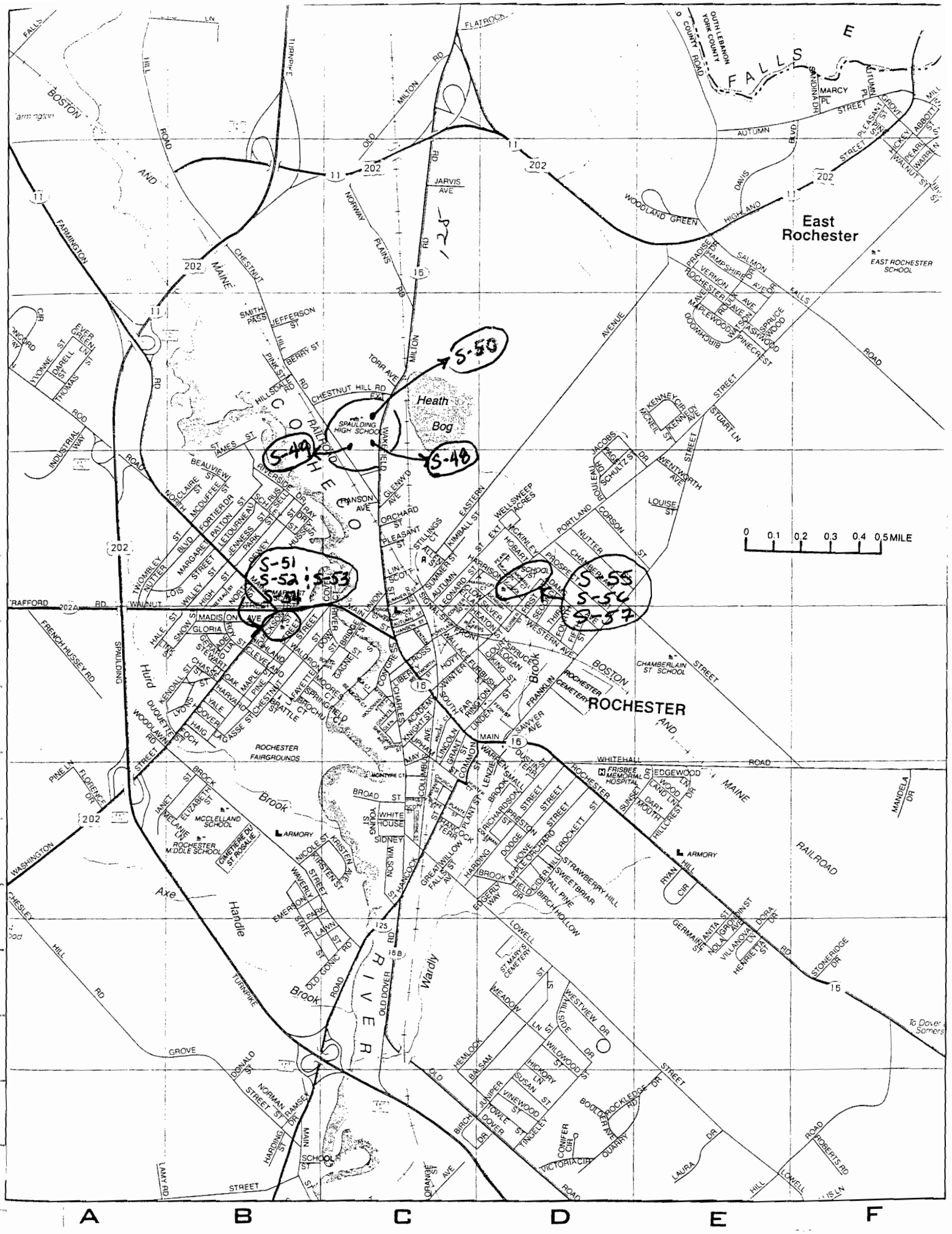
ackcloth. Avail-
.....$14.95

Freeport, Maine 04032

Or call toll-free: 1-800-227-1656, ext. 5100

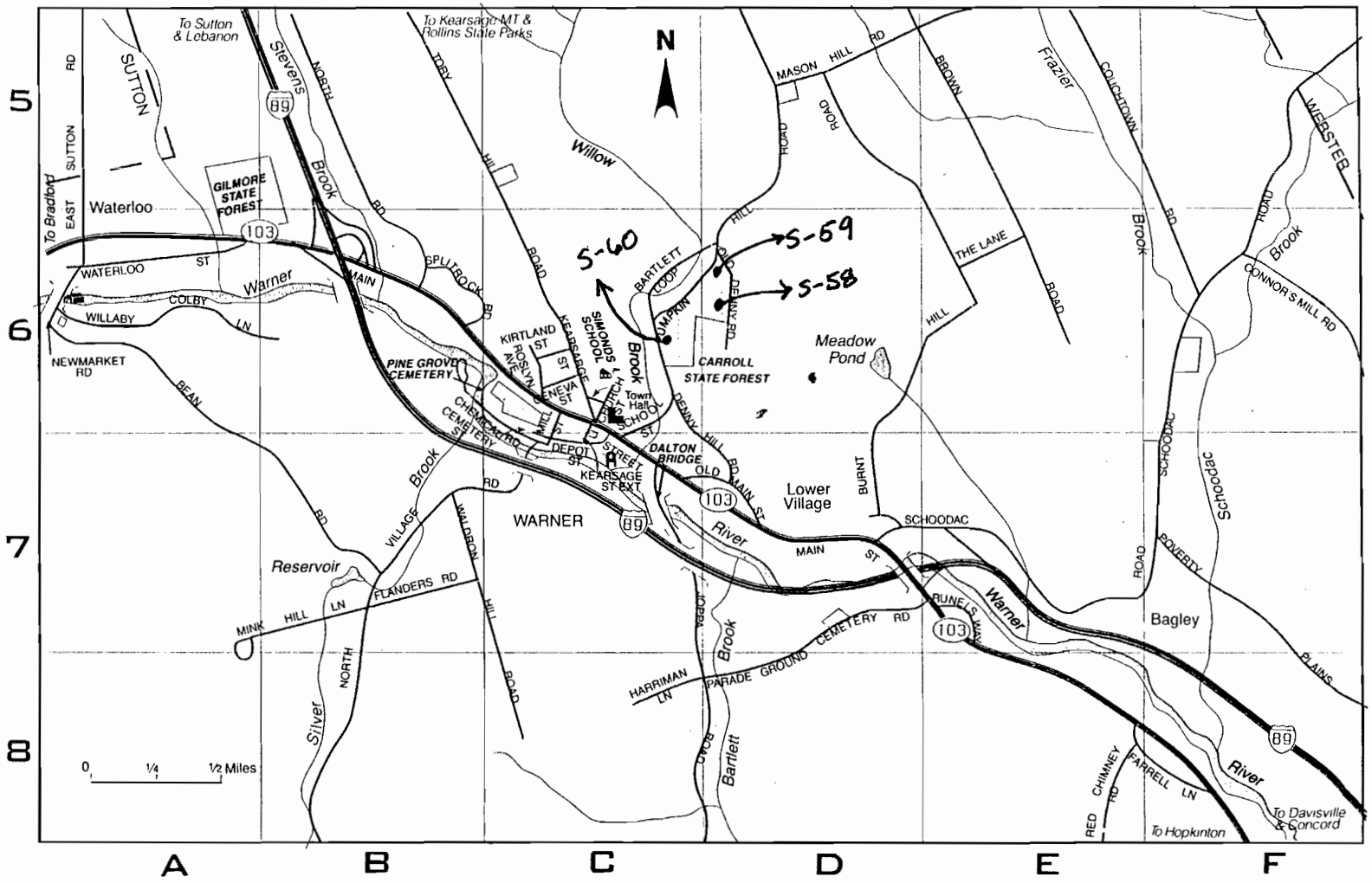


Main
DOVER
DURHAM
OYSTER RIVER
Beltamy River Access
Goat I
Fox Pt
Dover Pt
LITTLE BAY
Newington
PEASE AIR FORCE BASE
S-45
Adams Point
S-46
Adams Pt
S-47
NEWINGTON
PORTSMOUTH
See Map 64
Woodman Pt
Fabyan Pt
GREAT BAY
Weeks Pt
Bayside
Pierces Pt
Great Bay Access
Winnicut River
Greenland
Stratham Hill
Jewell Hill
Stratham
Breakfast Hill
West Rye
Rye
Foss Bea
RYE HA STATE
Rye Harb
Lockes Neck (Straw Pt)
Jenness Beach
Albacore Park
Moffat-Ladd House
Governor Langdon Mansion Memorial
Prescott Park
Strawbery Banke
Warner House
John Paul Jones House
Wentworth-Coolidge Mansion
Foyes Corner
Langs Corner
To Portland, Me.
MEMORIAL BRIDGE
YORK COUNTY
ROCKINGHAM COUNTY
STRAFFORD COUNTY
PISCATAQUA COUNTY
SO SIDE HWY

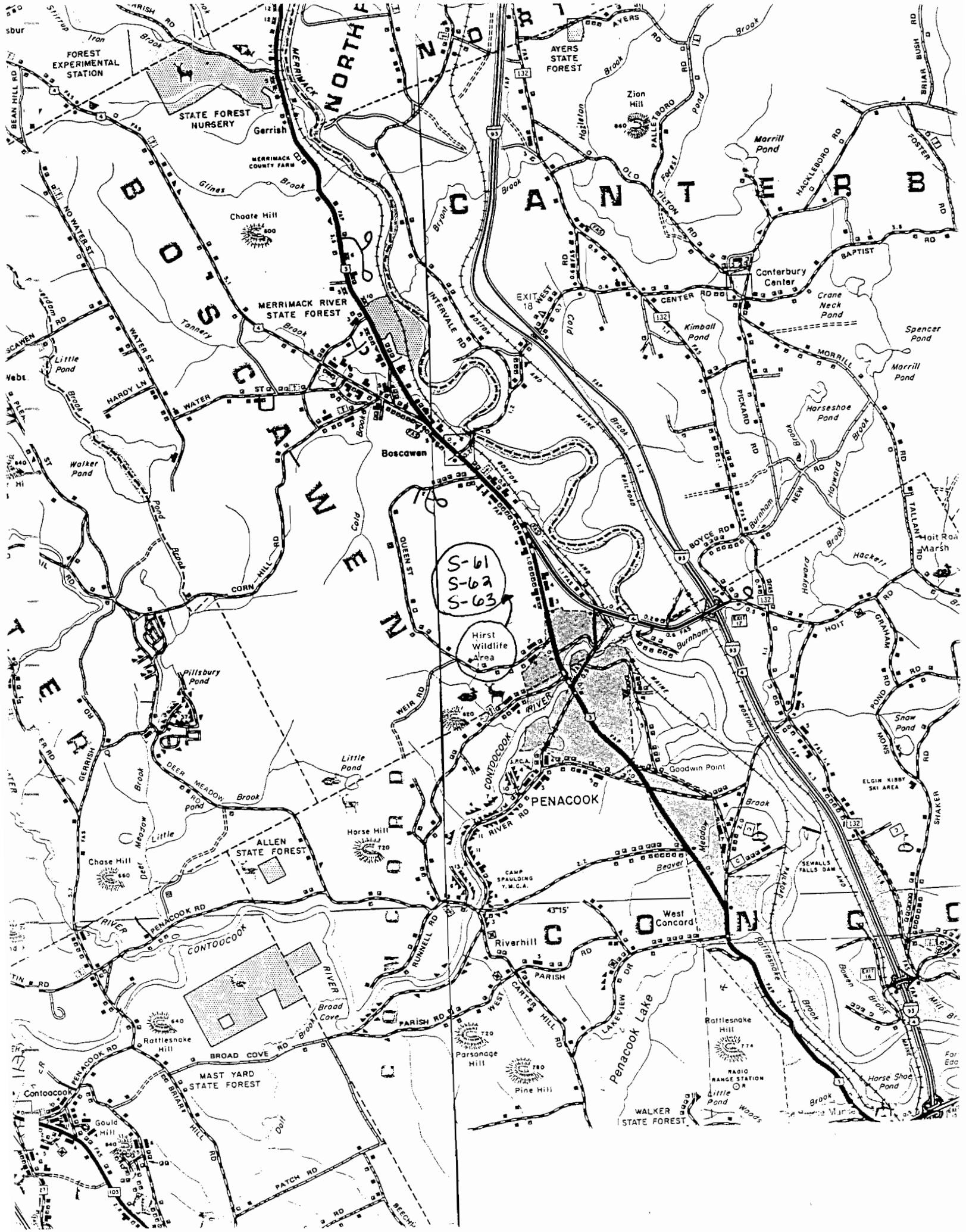


East Rochester
ROCHESTER
Heath Bog
SPAULDING HIGH SCHOOL
EAST ROCHESTER SCHOOL
CHAMBERLAIN ST SCHOOL
ROCHESTER FAIRGROUNDS
MCCLELLAND SCHOOL
ROCHESTER MIDDLE SCHOOL
FRISBEE MEMORIAL HOSPITAL
ST MARY'S CEMETERY
S-50
S-49
S-48
S-51
S-52
S-53
S-54
S-55
S-56
S-57
0 0.1 0.2 0.3 0.4 0.5 MILE
A
B
C
D
E
F

WARNER



N
To Sutton & Lebanon
To Kearsage MT & Rollins State Parks
To Bradford
To Davisville & Concord
To Hopkinton
Waterloo
Lower Village
Bagley
Meadow Pond
Reservoir
GILMORE STATE FOREST
CARROLL STATE FOREST
PINE GROVE CEMETERY
DALTON BRIDGE
SIMONDS SCHOOL
Town Hall
Stevens Brook
Willow Brook
Warner River
Silver Brook
Bartlett Brook
Schoodac Brook
Frazier Brook
WARNER
SUTTON
WEBSTER
S-60
S-59
S-58
0 1/4 1/2 Miles
A B C D E F
5 6 7 8



FOREST EXPERIMENTAL STATION
STATE FOREST NURSERY
Gerrish
MERRIMACK COUNTY FARM
Choate Hill
MERRIMACK RIVER STATE FOREST
Boscawen
AYERS STATE FOREST
Zion Hill
Marrill Pond
Canterbury Center
Crane Neck Pond
Spencer Pond
Kimball Pond
Horseshoe Pond
Hoit Road Marsh
Walker Pond
Little Pond
Pillsbury Pond
Hirst Wildlife Area
S-61
S-62
S-63
PENACOOK
Goodwin Point
ELGIN KIBBY SKI AREA
Snow Pond
ALLEN STATE FOREST
Horse Hill
Chase Hill
CAMP SPAULDING Y.M.C.A.
West Concord
Riverhill
Penacook Lake
Rattlesnake Hill
Parsonage Hill
Pine Hill
RADIO RANGE STATION
WALKER STATE FOREST
MAST YARD STATE FOREST
Contoocook
Gould Hill
Horse Shoe Pond
CONTOOCOOK RIVER
BOSCAWEN
CANTERB
CONCORD

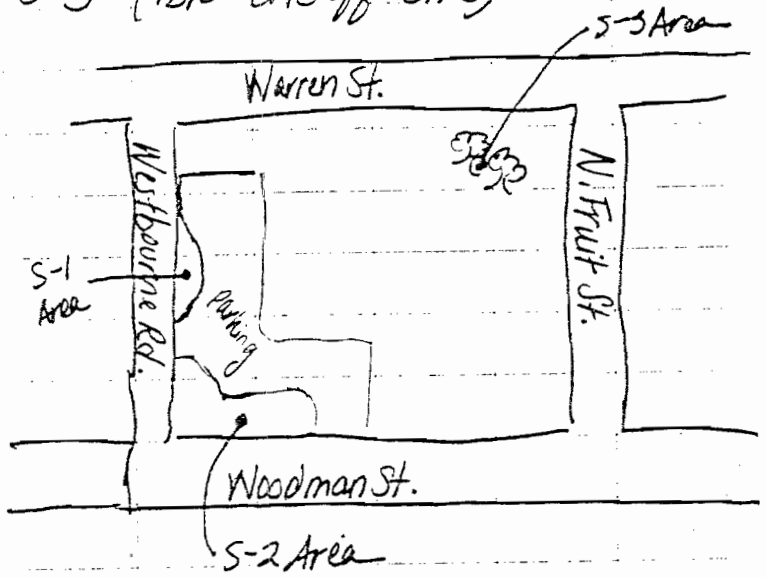
APPENDIX C.3

FIELD NOTES AND SITE SKETCHES

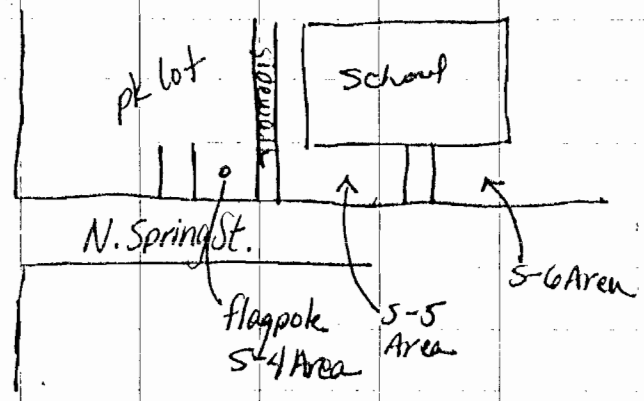
10/5/98

1571 – NH Metals Database Sampling

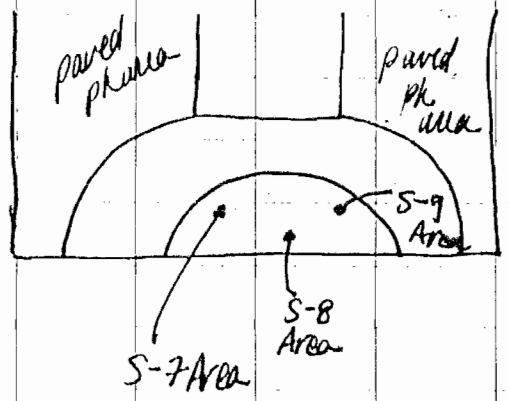
1120 - NAD and CAC arrive at Concord High, checkin w/ principal of school, pick locations, collect S-1, S-2 and S-3 (1210 - CAC off-site)



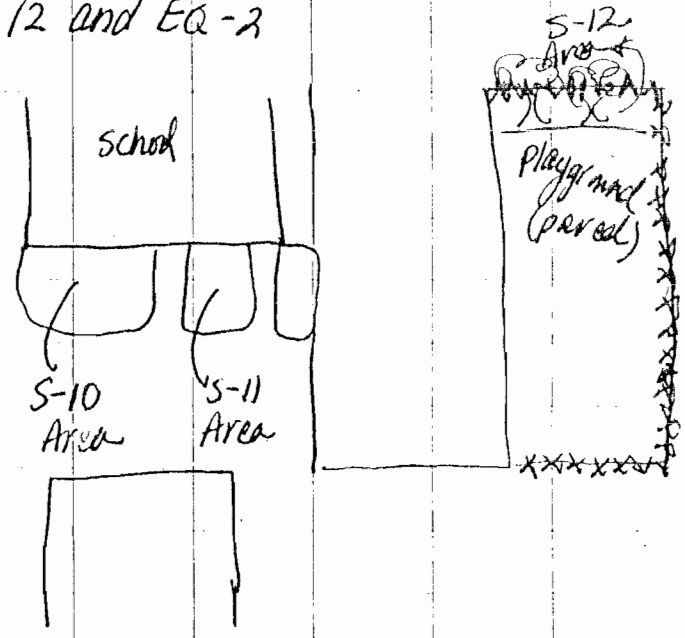
1250 - Arrive Kimball School, Concord, check-in w/ principal. Collect S-4, 5, 6



1400 - Arrive at Rumford School, Concord.
Collect S-7, 8 and 9



1520 Arrive DuPont School, Suncook,
Check-in w/ principal, collect S-10,
11, 12 and EQ-2



1640 - Arrive Bear Brook State Park.
Collect S-13, 14, 15 and S-16 (dup of
S-15). (see map for locations)
1750 - off - 29 miles total

10/6/98 1571 - NH Metals Database

0750 - 0810 office, field prep.

0900 - arrive Holman Stadium, Nashua, checked-in with groundskeeper.

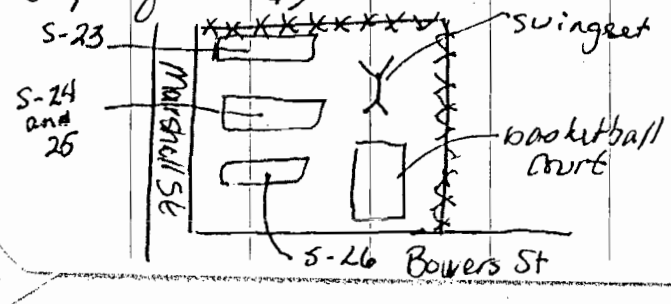
0910 - Begin sampling S-17 from wooded area around concession stand (beneath pines)

0930 - S-18

0950 - S-19

1015 - Arrive Nashua City Hall. Check-in w/ City Clerk and Engineering Depts., Collect S-20, 21 and 22

1105 - arrive Sullivan Park, Nashua Collect S-23, S-24, S-25 and S-26 (dup. of S-24)



1215 - Arrive Alvirne High School, check-in w/ principal. School area is very large. S-27 collected from front of school among trees. S-28 and S-29 also collected here.

1305 - off Alvirne, head to Manchester, call CAC

1340 - Arrive Memorial High School, Manchester, check-in w/ principal; collect S-30, 31, 32 and EQ-2.

1510 - Arrive Beech St. School, checkin w/ principal, collect S-33, 34 and 35.

1550 - Arrive Central High, Manchester, doors locked, no checkin. Collect S-36, S-37 and S-38

1700 - Arrive West High, Manchester, doors locked, no check-in. Collect S-39, S-40, and S-41

1735 - Drive to SHA, pickup jars for tomorrow.

1830 - off.

104 miles total

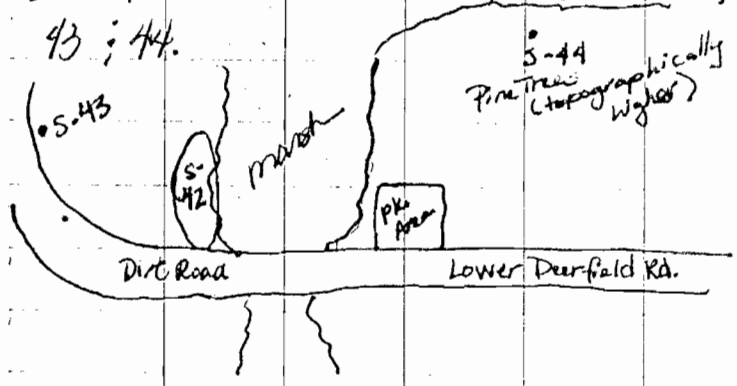
10.6 hrs total

10/7/98

1571 - Continue sampling, NH Metals Database.

0830 - Drive to Northwood

0910 - Arrive Woodman Marsh, collect S-42, 43 & 44.



1100 - Arrive Adams Point, Durham, collect S-45, 46 & 47.

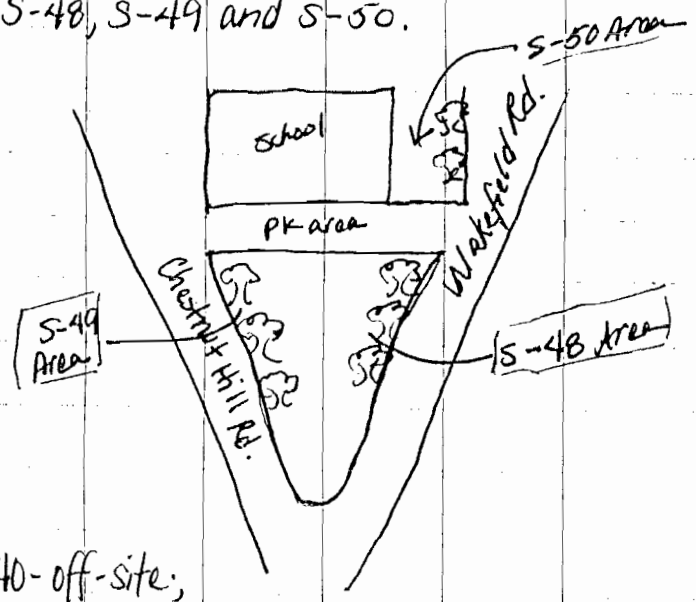
S-45 - marsh sids near boat ramp pk area

S-46 - hill uplands above boat ramp area

S-47 - Bay sediments along edge of Bay near Jackson lab bldg.

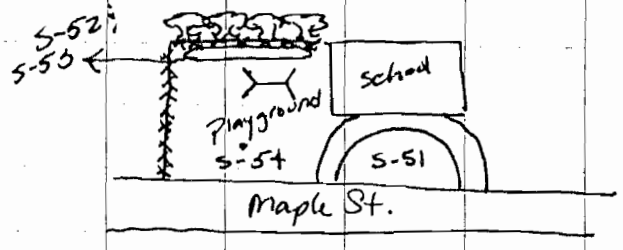
(1200-1300 Lunch)

1340 - Arrive Spaulding High, Rochester; check-in w/ principal's office, Collect EQ-3, S-48, S-49 and S-50.



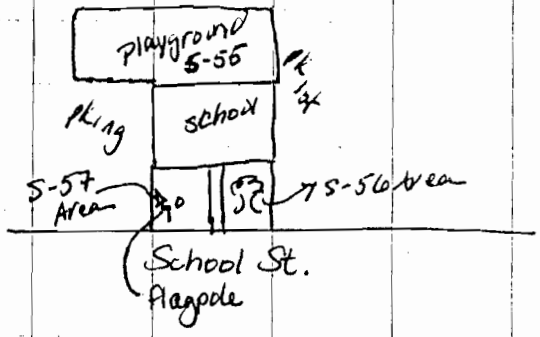
1440 - off-site;

1450 - Arrive Maple St. School, Rochester, check-in w/principal, collect S-51, S-52, S-53 & 54.



Maple St. School built in 1875; residential neighborhood.

1540 - Arrive, School St. School, check in w/ principal, collect S-55, S-56, S-57.



1620 - off-site, drive to Concord to 1645
105 miles total,
7.7 hrs. total (includes 0.5 hrs labeling jars at night).

1. 10/8/98

1571 - NH Sampling (cont).

0800 - NAD on

0805 - Arrive Carroll State Forest (no signs, but "State Property" sign son some trees)

S-58 - Collected from along Old Denny Road

S-59 - Forested area near intersection of Old Denny Road and Pumpkin Hill Road which is the base of a hill (continues up Old Denney)

S-60 - Collected from forested area along Pumpkin Hill Rd, just north of intersection w/ Loop Rd. along slope (slopes to Pumpkin Hill Rd).

0935 - off Carroll State Forest, drive to Hirst Wildlife Area, off Queen St in Boscawen.

1040 - Arrive Hirst Wildlife Area, collect S-61, 62 and 63.

S-61 - Located just inside entrance gate

S-62 - 1/2-way down road to marsh area, hill upland

S-63 - Collected from marsh sediments along edge of marsh.

1120 - off Hirst Wildlife area,

1200 - Arrive SHA

68 miles

4.0 hrs.

AMRO Environmental Laboratories Corporation

RECEIVED OCT 2 3 1998

111 Herrick Street, Merrimack, NH 03054
TEL: (603) 424-2022 · FAX: (603) 429-8496

October 21, 1998

Ms. Nikki Delude
Sanborn, Head & Associates, Inc.
6 Garvins Fall Road
Concord, NH 03301

RE Your project: 1571 NH Metals Database Sampling

Dear Nikki:

Enclosed please find the revised results for the above-referenced project, received on October 09, 1998. AMRO operates a Quality Control Program which meets or exceeds EPA and state requirements. This project was assigned AMRO Project Number 20547. If you have any questions regarding this project in the future, please refer to this number.

Please note that per your request the reporting limits for Antimony and Beryllium have been revised below the normal AMRO reporting limits of 3.1 mg/Kg for Antimony and 0.78 mg/Kg for Beryllium to 1.0 mg/Kg for Antimony and 0.10 mg/Kg for Beryllium. This revision is supported by the AMRO 3051/6010B Method Detection Limit Study dated 08/03/98 which shows an MDL for Antimony of 0.31 mg/Kg and Beryllium of 0.0076 mg/Kg. A copy of this study is enclosed.

Also be advised that any unused sample volume and sample extracts will be stored at AMRO until holding time will expire (EPA recommended holding time is 6 months).

This letter is an integral part of your data report.

Please do not hesitate to call if you have any questions.

Sincerely,

Richard Ravenelle

Richard Ravenelle
Organics Laboratory Manager

Encl.

AMRO

AMRO Environmental Laboratory Report
Revised Report 10/20/98

lient:
Sanborn, Head & Associates, Inc.
6 Garvins Falls Road
Concord, NH 03301

Client Designation:
1571 NH Metals Database Sampling

Attn: Nikki Delude

amples Qty/Type: 3/Aqueous
63/Solid

AMRO Designation: 20547
Date Sampled: 10/05-08/98
Date Rec'vd: 10/09/98
Date Complete: 10/14/98
COC #: 23218, 23219, 23220, 23221, 23222

Sample Identity	AMRO Identity	Test Parameter	Results	Units	Date of Analysis	Run by	EPA Method
S-4	20547-01	Total Solids	90.4	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	21.	mg/Kg	10/14/98	APL	7060
		Beryllium, Total	0.52	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.49	mg/Kg	10/09/98	RK	7471
S-5	20547-02	Total Solids	90.5	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	5.4	mg/Kg	10/12/98	APL	7060
		Beryllium, Total	0.40	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/13/98	GS	7471
		Mercury, Total	1.5	mg/Kg	10/14/98	GS	7471
S-6	20547-03	Total Solids	91.5	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	7.3	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.61	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.22	mg/Kg	10/09/98	RK	7471
S-7	20547-04	Total Solids	93.7	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	10.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.66	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.11	mg/Kg	10/09/98	RK	7471

Continued next page . . .

AMRO

Sample Identity	AMRO Identity	Test Parameter	Results	Units	Date of Analysis	Run by	EPA Method
S-8	20547-05	Total Solids	93.7	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	11.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.67	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.090	mg/Kg	10/09/98	RK	7471
S-9	20547-06	Total Solids	85.4	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	6.0	mg/Kg	10/12/98	APL	7060
		Beryllium, Total	0.47	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.40	mg/Kg	10/09/98	RK	7471
S-17	20547-07	Total Solids	76.8	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	8.5	mg/Kg	10/14/98	APL	7060
		Beryllium, Total	0.50	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.082	mg/Kg	10/09/98	RK	7471
S-18	20547-08	Total Solids	81.9	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	15.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.75	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.10	mg/Kg	10/09/98	RK	7471
S-19	20547-09	Total Solids	84.1	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	10.	mg/Kg	10/14/98	APL	7060
		Beryllium, Total	0.61	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.084	mg/Kg	10/09/98	RK	7471

Continued next page . . .

ample Identity	AMRO Identity	Test Parameter	Results	Units	Date of Analysis	Run by	EPA Method
S-20	20547-10	Total Solids	88.5	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	9.0	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.52	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.054	mg/Kg	10/09/98	RK	7471
S-21	20547-11	Total Solids	91.0	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	11.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.61	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.081	mg/Kg	10/09/98	RK	7471
S-22	20547-12	Total Solids	95.1	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	9.6	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.50	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.10	mg/Kg	10/09/98	RK	7471
S-23	20547-13	Total Solids	90.8	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	38.	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	14.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.49	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.082	mg/Kg	10/09/98	RK	7471
S-24	20547-14	Total Solids	95.4	%	10/12/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	12.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.50	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.22	mg/Kg	10/09/98	RK	7471

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AMRO

Sample Identity	AMRO Identity	Test Parameter	Results	Units	Date of Analysis	Run by	EPA Method
J-25	20547-15	Total Solids	96.4	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	11.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.55	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.071	mg/Kg	10/09/98	RK	7471
S-26	20547-16	Total Solids	91.8	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	11.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.46	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.10	mg/Kg	10/09/98	RK	7471
S-33	20547-17	Total Solids	96.9	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	10.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.39	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.21	mg/Kg	10/09/98	RK	7471
S-34	20547-18	Total Solids	96.9	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	9.5	mg/Kg	10/14/98	APL	7060
		Beryllium, Total	0.39	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.31	mg/Kg	10/09/98	RK	7471
S-35	20547-19	Total Solids	80.7	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	7.8 *	mg/Kg	10/14/98	APL	7060
		Beryllium, Total	0.36	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.40	mg/Kg	10/09/98	RK	7471

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Sample Identity	AMRO Identity	Test Parameter	Results	Units	Date of Analysis	Run by	EPA Method
S-36	20547-20	Total Solids	91.7	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	19.	mg/Kg	10/14/98	APL	7060
		Beryllium, Total	0.50	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.69	mg/Kg	10/09/98	RK	7471
S-37	20547-21	Total Solids	78.8	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	9.9	mg/Kg	10/14/98	APL	7060
		Beryllium, Total	0.41	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.083	mg/Kg	10/09/98	RK	7471
S-38	20547-22	Total Solids	93.8	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	7.5	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.41	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.070	mg/Kg	10/09/98	RK	7471
S-39	20547-23	Total Solids	92.6	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	7.8	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.38	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.052	mg/Kg	10/09/98	RK	7471
S-40	20547-24	Total Solids	95.8	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	10.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.39	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.044	mg/Kg	10/09/98	RK	7471

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Sample Identity	AMRO Identity	Test Parameter	Results	Units	Date of Analysis	Run by	EPA Method
S-41	20547-25	Total Solids	97.4	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	6.9	mg/Kg	10/14/98	APL	7060
		Beryllium, Total	0.35	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.054	mg/Kg	10/09/98	RK	7471
S-51	20547-26	Total Solids	91.0	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	21.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.51	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.098	mg/Kg	10/09/98	RK	7471
S-52	20547-27	Total Solids	96.4	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	9.1	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.29	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.039	mg/Kg	10/09/98	RK	7471
S-53	20547-28	Total Solids	94.0	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	8.4	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.44	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.021	mg/Kg	10/09/98	RK	7471
S-54	20547-29	Total Solids	96.6	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	9.1	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.34	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.038	mg/Kg	10/09/98	RK	7471

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Sample Identity	AMRO Identity	Test Parameter	Results	Units	Date of Analysis	Run by	EPA Method
S-55	20547-30	Total Solids	91.4	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	13.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.70	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.051	mg/Kg	10/09/98	RK	7471
S-56	20547-31	Total Solids	94.1	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	18.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.41	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.10	mg/Kg	10/09/98	RK	7471
S-57	20547-32	Total Solids	91.5	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Arsenic, Total	10.	mg/Kg	10/13/98	APL	7060
		Beryllium, Total	0.48	mg/Kg	10/12/98	RK	6010
		Digestion-Mercury			10/09/98	RK	7471
		Mercury, Total	0.077	mg/Kg	10/09/98	RK	7471
S-1	20547-33	Total Solids	97.2	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Beryllium, Total	0.52	mg/Kg	10/12/98	RK	6010
S-2	20547-34	Total Solids	93.8	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Beryllium, Total	0.49	mg/Kg	10/12/98	RK	6010
S-3	20547-35	Total Solids	92.0	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Beryllium, Total	0.53	mg/Kg	10/12/98	RK	6010
S-10	20547-36	Total Solids	95.4	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Beryllium, Total	0.38	mg/Kg	10/12/98	RK	6010

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Sample Identity	AMRO Identity	Test Parameter	Results	Units	Date of Analysis	Run by	EPA Method
S-11	20547-37	Total Solids	84.3	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Beryllium, Total	0.30	mg/Kg	10/12/98	RK	6010
S-12	20547-38	Total Solids	90.5	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Beryllium, Total	0.47	mg/Kg	10/12/98	RK	6010
S-13	20547-39	Total Solids	87.8	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Beryllium, Total	0.49	mg/Kg	10/12/98	RK	6010
S-14	20547-40	Total Solids	81.9	%	10/09/98	KP	2540G
		Digestion			10/09/98	JB	3051
		Antimony, Total	<1.0	mg/Kg	10/12/98	RK	6010
		Beryllium, Total	0.20	mg/Kg	10/12/98	RK	6010
S-15	20547-41	Total Solids	64.0	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.25	mg/Kg	10/13/98	RK	6010
S-16	20547-42	Total Solids	78.1	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.17	mg/Kg	10/13/98	RK	6010
S-27	20547-43	Total Solids	92.2	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.44	mg/Kg	10/13/98	RK	6010
S-28	20547-44	Total Solids	95.3	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.27	mg/Kg	10/13/98	RK	6010
S-29	20547-45	Total Solids	74.1	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.51	mg/Kg	10/13/98	RK	6010

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ample dentity	AMRO Identity	Test Parameter	Results	Units	Date of Analysis	Run by	EPA Method
-30	20547-46	Total Solids	67.4	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.36	mg/Kg	10/13/98	RK	6010
S-31	20547-47	Total Solids	94.0	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.37	mg/Kg	10/13/98	RK	6010
-32	20547-48	Total Solids	94.2	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.37	mg/Kg	10/13/98	RK	6010
S-42	20547-49	Total Solids	45.1	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	1.4	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.43	mg/Kg	10/13/98	RK	6010
-43	20547-50	Total Solids	85.5	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.58	mg/Kg	10/13/98	RK	6010
S-44	20547-51	Total Solids	83.4	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	1.5	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.62	mg/Kg	10/13/98	RK	6010
S-45	20547-52	Total Solids	17.2	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.9	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.60	mg/Kg	10/13/98	RK	6010
S-46	20547-53	Total Solids	84.0	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	1.7	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	1.1	mg/Kg	10/13/98	RK	6010
S-47	20547-54	Total Solids	56.5	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.93	mg/Kg	10/13/98	RK	6010
S-48	20547-55	Total Solids	88.9	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	1.3	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	1.3	mg/Kg	10/13/98	RK	6010

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Sample Identity	AMRO Identity	Test Parameter	Results	Units	Date of Analysis	Run by	EPA Method
J-49	20547-56	Total Solids	93.2	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.69	mg/Kg	10/13/98	RK	6010
S-50	20547-57	Total Solids	85.1	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	1.0	mg/Kg	10/13/98	RK	6010
S-58	20547-58	Total Solids	80.0	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.41	mg/Kg	10/13/98	RK	6010
S-59	20547-59	Total Solids	94.7	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.16	mg/Kg	10/13/98	RK	6010
S-60	20547-60	Total Solids	94.5	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	<1.0	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.33	mg/Kg	10/13/98	RK	6010
S-61	20547-61	Total Solids	81.4	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	2.8	mg/Kg	10/20/98	RK	6010
		Beryllium, Total	0.45	mg/Kg	10/20/98	RK	6010
S-62	20547-62	Total Solids	73.7	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	1.1	mg/Kg	10/20/98	RK	6010
		Beryllium, Total	0.47	mg/Kg	10/20/98	RK	6010
S-63	20547-63	Total Solids	35.4	%	10/09/98	KP	2540G
		Digestion			10/12/98	KS	3051
		Antimony, Total	1.6	mg/Kg	10/13/98	RK	6010
		Beryllium, Total	0.53	mg/Kg	10/13/98	RK	6010
EQ-1	20547-64	Digestion			10/13/98	KS	200
		Antimony, Total	<0.0050	mg/L	10/14/98	APL	204.2Mod
		Arsenic, Total	<0.0050	mg/L	10/13/98	APL	206.2Mod
		Beryllium, Total	<0.0050	mg/L	10/14/98	RK	200.7
		Digestion-Mercury			10/12/98	GS	245.1
		Mercury, Total	<0.00020	mg/L	10/12/98	GS	245.1

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Sample Identity	AMRO Identity	Test Parameter	Results	Units	Date of Analysis	Run by	EPA Method
EQ-2	20547-65	Digestion			10/13/98	KS	200
		Antimony, Total	<0.0050	mg/L	10/14/98	APL	204.2Mod
		Arsenic, Total	<0.0050	mg/L	10/13/98	APL	206.2Mod
		Beryllium, Total	<0.0050	mg/L	10/14/98	RK	200.7
		Digestion-Mercury			10/12/98	GS	245.1
		Mercury, Total	<0.00020	mg/L	10/12/98	GS	245.1
EQ-3	20547-66	Digestion			10/13/98	KS	200
		Antimony, Total	<0.0050	mg/L	10/14/98	APL	204.2Mod
		Arsenic, Total	<0.0050	mg/L	10/13/98	APL	206.2Mod
		Beryllium, Total	<0.0050	mg/L	10/14/98	RK	200.7
		Digestion-Mercury			10/12/98	GS	245.1
		Mercury, Total	<0.00020	mg/L	10/12/98	GS	245.1

Results are in dry weight.
All analyses performed in accordance with:
USEPA Methods of Chemical Analysis for Water & Waste.
Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992. and USEPA SW846 Manual, 3rd. ed.
The following standard abbreviations and conventions apply throughout all sections:
< = 'Less than' followed by the detection limit.
> = 'Greater than'

AMRO

Soil Method Detection Limit, PE-3300 DV Optima ICP, AMRO, Merrimack, NH
EPA Methods 3051/6010B
0.45g to 50 mL using spiked glass beads
Values in mg/kg, Solution ID = "MDL072398"
Robert E. Bosshart, ICP Analyst
Keira Wonkka, Prep Analyst

Revised 02/10/98 - REB

Prep Date = 07/24/98
Analysis date = 08/03/98

t.99 = 3.143

	ELEMENT	TRUE CONC	AVG CONC	% REC	STD	MDL	AMRO RL
1	Ag_338	0.311	0.280	90%	0.0409	0.129	1.1
2	Al_308R	8.89	9.314	105%	1.1553	3.63	31
4	As_188	1.11	0.871	78%	0.1314	0.413	3.9
5	Au_242	4.44	4.471	101%	0.1380	0.434	16
6	B_182	2.22	2.971	134%	0.8538	2.68	7.8
7	Ba_233R	8.89	9.071	102%	0.0951	0.299	31
8	Be_313	0.222	0.220	99%	0.0024	0.00758	0.78
9	Ca_315R	111	138.729	125%	21.3440	67.1	391
10	Cd_226	0.222	0.239	108%	0.0149	0.0470	0.78
11	Co_228	2.22	2.486	112%	0.0378	0.119	7.8
12	Cr_267R	0.450	0.614	137%	0.1805	0.567	1.6
14	Cu_324R	1.10	1.171	106%	0.0756	0.238	3.9
16	Fe_259R	4.44	8.386	189%	1.2941	4.07	16
18	Hg_194	0.222	0.937	422%	0.1310	0.412	0.78
19	K_766R	111	145.786	131%	12.0952	38.0	391
20	Mg_279	111	116.629	105%	0.8480	2.67	391
22	Mn_257R	0.667	0.786	118%	0.0862	0.271	2.3
24	Mo_202	1.11	1.114	100%	0.0378	0.119	3.9
26	Na_589R	111	160.871	145%	5.8320	18.3	391
27	Ni_231R	1.78	1.986	112%	0.1345	0.423	6.3
29	P_178	2.22	0.714	32%	0.6283	1.97	3.9
30	Pb_220	1.11	1.094	98%	0.0943	0.296	3.9
31	Sb_206	0.931	0.779	84%	0.0986	0.310	3.1
32	Se_196	1.79	2.271	127%	0.1462	0.460	6.3
33	Si_251R	11.1	23.257	209%	1.3024	4.09	39
35	Sn_189	2.22	2.471	111%	0.0756	0.238	16
36	Sr_421R	0.444	0.467	105%	0.0907	0.285	1.6
37	Ti_334R	4.44	4.900	110%	0.1915	0.602	3.9
39	Tl_190	1.11	1.586	143%	0.2545	0.800	16
40	V_292	2.22	2.202	99%	0.0217	0.0681	7.8
41	Zn_206R	0.887	1.800	203%	0.2944	0.925	3.1

RAW DATA	#1	#2	#3	#4	#5	#6	#7	AVG	STD
Ag_338	0.209	0.238	0.306	0.318	0.308	0.299	0.280	0.280	0.041
Al_308R	8.80	7.40	9.60	9.30	11.20	9.90	9.00	9.314	1.155
As_188	1.100	0.860	0.894	0.870	0.836	0.890	0.650	0.871	0.131
Au_242	4.70	4.40	4.50	4.30	4.40	4.40	4.60	4.471	0.138
B_182	4.40	3.70	3.00	2.80	1.90	2.20	2.80	2.971	0.854
Ba_233R	9.10	9.20	9.00	9.00	9.00	9.00	9.20	9.071	0.095
Be_313	0.220	0.221	0.219	0.218	0.218	0.220	0.225	0.220	0.002
Ca_315R	160.70	172.60	146.90	121.00	122.50	121.80	125.60	138.7	21.344
Cd_226	0.265	0.240	0.248	0.220	0.233	0.226	0.243	0.239	0.015
Co_228	2.50	2.50	2.50	2.50	2.50	2.40	2.50	2.486	0.038
Cr_267R	1.000	0.600	0.622	0.500	0.567	0.567	0.444	0.614	0.181
Cu_324R	1.30	1.20	1.10	1.20	1.10	1.10	1.20	1.171	0.076
Fe_259R	9.80	10.00	9.40	7.60	7.40	6.90	7.60	8.386	1.294
Hg_194	1.17	0.87	0.79	0.91	1.01	0.99	0.82	0.937	0.131
K_766R	169.10	152.20	140.30	141.70	147.60	135.70	133.90	145.79	12.095
Mg_279	117.80	117.70	116.00	115.50	116.30	116.60	116.50	116.6	0.848
Mn_257R	0.889	0.900	0.833	0.711	0.722	0.700	0.744	0.786	0.086
Mo_202	1.10	1.10	1.10	1.10	1.10	1.10	1.20	1.114	0.038
Na_589R	168.90	151.30	158.20	161.40	167.00	159.80	159.50	160.9	5.832
Ni_231R	2.20	1.80	1.90	2.00	1.90	2.00	2.10	1.986	0.135
P_178	1.70	0.30	0.10	0.90	1.40	0.30	0.30	0.714	0.628
Pb_220	1.13	1.23	1.06	0.96	1.18	1.01	1.09	1.094	0.094
Sb_206	0.589	0.800	0.778	0.900	0.856	0.789	0.744	0.779	0.099
Se_196	2.44	2.23	2.26	2.45	2.11	2.33	2.08	2.271	0.146
Si_251R	22.50	22.60	22.30	22.40	25.00	22.70	25.30	23.257	1.302
Sn_189	2.50	2.40	2.40	2.50	2.50	2.40	2.60	2.471	0.076
Sr_421R	0.567	0.600	0.511	0.411	0.389	0.400	0.389	0.467	0.091
Ti_334R	4.80	4.90	4.80	4.90	4.90	4.70	5.30	4.900	0.191
Tl_190	1.90	1.90	1.60	1.60	1.20	1.40	1.50	1.586	0.254
V_292	2.18	2.18	2.19	2.20	2.22	2.21	2.23	2.202	0.022
Zn_206R	2.30	1.60	2.10	1.50	1.80	1.70	1.60	1.800	0.294

AMRO

Mercury Cold Vapor Analysis AMRO Environmental Laboratories, Inc.

Mercury Precision and Accuracy Study all values in mg/kg

Georgia Smith Prepped on 03/31/98 - 04/06/98

Georgia Smith Analyzed on 04/01/98- 04/07/98 Method 7471

	Mercury, mg/kg
1	1.050
2	1.126
3	1.010
4	1.126

Average	1.078
True Value ERA LCS	1.160
% Rec	92.9%
STDS	0.0575
RSD	5.3%
n	4

AMRO

Method Detection Limit, Leeman Hg Analyzer, AMRO
EPA Methods 7471
Soil Matrix, Preparation Date = 02/26/98
Spiked sand used - 0.20g - - - > 0.020 L.
Spike = 4.0 uL of 1,000 ug/L added to each sand sample.
Analysis Hg = 02/27/98
Prep Analyst = Georgia Smith
Mercury Analyst = Darren McCaughey
File = HGS98MDL
Concentration Values are mg/kg.

Solution ID's = " RL-022698"

ELEMENT	TRUE CONC	AVG CONC	% REC	STD	MDL	t .99 = 3.143
Hg - mg/kg	0.0200	0.0153	77%	0.0030	0.0094	

RAW DATA	# 1	# 2	# 3	# 4	# 5	# 6	# 7	AVG	STD
Hg - ug/L	0.089	0.163	0.162	0.150	0.165	0.160	0.182	0.153	0.0298