



State of Ohio Environmental Protection Agency

Southwest District Office

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George V. Voinovich
Governor

OH, 07-2

Ref

August 13, 1998

RE: BOARD OF EDUCATION
MAINTENANCE FACILITY,
GRACE A. GREENE SCHOOL
AND ATHLETIC FIELD

Ms. Donna Gorby Winchester
City of Dayton Environmental Manager
Department of Water
320 West Monument Avenue
Dayton, Ohio 45402

Dear Mr. Duffy,

Enclosed are documents pertaining to the April 13, 1998 surface soil sampling event which took place at the Dayton Board of Education maintenance facility, Grace A. Greene School property and the adjacent athletic field. The "Surface Soils Investigation, PRS 322, Unit IIP" report contains a full account of the event, as well as presentation and interpretation of analytical results. We are also supplying you with the related citizens advisory and fact sheet which will be made available to the press and public on Friday, August 14. The full report will also be available to the public at that time.

BOE 32291

As we discussed, an Ohio EPA representative will be personally distributing the news release and fact sheet to residents in the immediate area. This will take place the morning of August 14.

If you have any questions or concerns, feel free to contact me at (937)285-6468 or Lisa Anderson at (937)285-6599.

Sincerely,

Brian Nickel
Project Manager
Office of Federal Facilities Oversight

Enclosures (3)

cc: Tom Winston, Ohio EPA
Graham Mitchell, Ohio EPA
James Karsten, U.S. Army Corps of Engineers
Jane Greenwalt, DOE

Art Kleinrath, DOE
Ruth Vandegrift, ODH
Karen Bryant, Ohio EPA
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STREET ADDRESS:

1800 WaterMark Drive
Columbus, OH 43215-1099

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P.O. Box 1049
Columbus, OH 43216-1049

August 14, 1998

Citizen Advisory

Ohio EPA Issues Soil Sample Report on West Dayton Site Previously Used to Process Polonium

Ohio EPA today issued a report on three sets of soil samplings and a radiological walk-over survey taken at the Dayton School Board maintenance facility at 1601 West First Street in Dayton and the adjacent Grace Green School and athletic field (John Ahlers Park). The Ohio Department of Health (ODH) has determined that there is no current adverse health or safety impacts from continued normal use of these properties.

The maintenance property is identified by the U.S. Department of Energy (DOE) as Potential Release Site (PRS) 322. A PRS is a location previously used by the federal government for work which involved radioactive materials and/or chemicals, and which may have been contaminated. During the 1940s, the federal government rented the maintenance facility, and processed radioactive materials for the Manhattan Project which produced the atomic weapons.

In August 1997, a radiological walk-over survey and the first soil sampling were conducted by Ohio EPA and ODH, with assistance from DOE and personnel from Wright-Patterson Air Force Base. The radiological walk over survey did not detect anything unusual. In addition, six soil samples were taken and tested for Polonium---four from PRS 322, one from Grace Greene School, and one from the athletic field (John Ahlers Park). Polonium-210 occurs naturally in the environment at low, background levels of 1 to 3 picocuries per gram (pCi/g) of soil. Four of these soil samples showed normal, background levels of Polonium, but one from the maintenance facility and one from the athletic field showed elevated readings of 14 and 43 pCi/g respectively. Further historical review, as well as additional soil sampling was determined to be necessary to resolve these unexpected findings.

In March 1998, investigation of possible sources of the elevated sample results lead to the collection of two samples from sediment in floor drains at the maintenance facility and two from inside manholes along Edison Street. While the drain samples indicated only background levels, the two manhole samples showed elevated readings of 5.1 and 37.0 pCi/g.

In April 1998, an extensive sampling of surface soils from the three sites and from easements of properties which face the maintenance facility was conducted. A total of 149 surface soil samples were collected. Lab results from 97 samples from the athletic field (John Ahlers Park) and the playground of the Grace Greene School range from 0.7 to 3.9 pCi/g with an average concentration of 2.0 pCi/g—within background levels. Lab results from the maintenance facility and easements of properties facing the facility range from 0.9 to 21.0 pCi/g with an average concentration of 3.1 pCi/g—within background levels. Of the 52 samples collected, three had concentrations above 8.0 pCi/g.

Several elevated readings were found from manholes on Edison Street, which runs between the maintenance facility and the school. These, along with uncertainties in historic drainage patterns and uncertainties in the exposures possible from future excavation, warrant further evaluation to determine potential future health risks.

Discussions between all the parties involved have resulted in a future course of action that may include additional historic research and additional core samples. The U.S. Army Corps of Engineers, Louisville District, will become the lead agency for further evaluation of this site. The Corps expects to develop an action plan within 90 days.

During the 1940s, a process to separate Polonium-210 from Lead-210 was conducted at PRS 322. Both materials are radioactive, and all radioactive materials are classified by the U.S. Environmental Protection Agency as Class A carcinogens which have been shown to cause cancer in humans. Polonium has been identified as a risk factor for lung cancer.

In 1948, all federal activity ceased at PRS 322. Historical records indicate that the site was decontaminated, and all radioactive materials were shipped to Oak Ridge Laboratories in Tennessee for burial. In 1950, the property was returned to the School Board which currently uses it as a maintenance facility.

Nearly 50 years later, in June 1997, in an effort to close out PRS 322 and other PRS sites, the historical records were made available to the public. In response to comments received, the radiological screening survey and first collection of soil samples took place. That initial work was the August, 1997 investigation described above.

Questions regarding health issues related to this site should be directed to Frank Talbot or Jim Webb at the Ohio Department of Health, at (614) 644-2727. Any general questions can be referred to Karen Bryant at Ohio EPA, at (614) 644-2160 or (937) 285-6357.

ODH

August 1998

Potential Release Site (PRS) 322 Dayton Unit III

Introduction

The Ohio Environmental Protection Agency (Ohio EPA) has prepared this fact sheet to summarize the investigation relating to the Dayton School Board maintenance facility located at 1601 W. First Street in Dayton, Ohio, the adjacent Grace A. Greene School and athletic field (John Ahler Park). The maintenance property is identified by the U.S. Department of Energy (DOE) as Potential Release Site (PRS) 322.

A PRS is a location previously used by the federal government at the Mound facility for work which involved radioactive or other hazardous materials, and which may have been contaminated.

As a result of public comments and as part of an ongoing investigation and the cleanup of the Mound facility associated with the U.S. Department of Energy (DOE) Miami-Burg Environmental Management Project (MEMP), a routine radiological survey was conducted and soil samples were taken at the site.

Site Background

During the 1940s, PRS 322 was used to process radioactive materials for potential use in

the Manhattan Project which produced atomic weapons. In 1943, the federal government rented the site from the Dayton School Board. Processing of materials began in the original building and several new buildings were erected.

In 1948, all federal activity was stopped. Historical records indicate that the site was decontaminated and all radioactive materials were shipped to Oak Ridge Laboratories in Tennessee for burial. In 1950, the property was returned to the Dayton School Board which currently uses it as a maintenance facility.

Materials

Polonium-210, a radioactive material, was processed at PRS 322. All radioactive materials are classified by the U.S. Environmental Protection Agency (U.S. EPA) as Class A carcinogens which have been shown to cause cancer in humans. Polonium has been identified as a risk factor for lung cancer.

Polonium-210 occurs naturally in the environment at low (background) levels. One to three picocuries per gram of soil (pCi/g) is considered an **average low range** in this

part of the Ohio region. These ranges could vary in different areas. A picocurie is a unit of measure for radioactivity.

Soil Sample Results

On August 27, 1997, six soil samples were taken; four from PRS 322, one from the Grace A. Greene School, and one from the athletic field (John Ahlers Park). Four of the soil samples showed normal levels of polonium, but one from PRS 322 and one from the athletic field showed elevated readings (14 and 43 pCi/g).

Further sampling and analysis of the soil was necessary to resolve any questions about the site. Here are the results:

March 10, 1998

An investigation was conducted to find possible reasons for the elevated readings. The investigation revealed that the floor drains in the maintenance facility drained directly to the ground and not to a sanitary sewage system.

Also, the run-off from the roof of the Grace A. Greene school was routed to two manholes that discharged to Edison Street. Additional soil sampling was conducted, which included sampling two floor drains and two manholes.

Samples taken from the two floor drains on the site show normal levels. However, the samples taken from the manholes showed elevated readings (5.1 and 37.0 pCi/g).

April 13, 1998

Extensive surface soil sampling was taken from the three sites and from the easements of properties which face the maintenance facility. A total of 149 soil samples were collected. The objective was to determine the nature and extent of the elevated readings and provide additional information to further ensure that there was not an immediate health concern.

Grace A. Greene School - 97 soil samples were collected on and around the school athletic field as well as the playground located behind the school. It appears that the average reading is at or near expected low levels. (Result range = .72 - 3.9 pCi/g; average reading = 2.0 pCi/g)

PRS 322 - 53 samples were collected at the facility and from the City easements along the street bordering the facility. It appears that the average reading is slightly greater

than expected background levels. Results indicate polonium-210 is present in three isolated areas greater than background levels. (Results range = .9 - 21.0 pCi/g; average reading = 3.1 pCi/g)

Health Concerns

Based on these results, the Ohio Department of Health (ODH) has determined that concentrations of polonium in surface soils from PRS 322, the playground behind the Grace A. Greene School and athletic field (John Ahlers Park) present no current adverse health or safety impacts from continued normal use.

The Next Step

Elevated readings from manholes along Edison Street, plus uncertainties in historic drainage patterns and possible exposure from future excavation warrant further evaluation of the site.

Discussion between Ohio EPA, U.S. Army Corp of Engineers, ODH, and Dayton City officials have resulted in a future course of action that may include additional historic research and core samples which may help outline any potential future health risk.

The U. S. Army Corp, Louisville District, will become the lead agency for further evaluation of this

site. The Corps expects to develop an action plan within 90 days.

For More Information

Health Issues

ODH
Attn: Frank Talbot or
Jim Webb
P.O. Box 118
Columbus, Ohio
43266-0188
(614) 644-2727

Site Information & General Questions

Ohio EPA
Public Interest Center
Attn: Karen Bryant
P.O. Box 1049
Columbus, Ohio
43216-1049
(614) 644-2160 or
(937) 285-6357

Media Inquiries

Ohio EPA
Public Interest Center
Attn: Lynne Barst
P.O. Box 1049
Columbus, Ohio
43216-1049
(614) 644-2160 or
(937) 285-6357

If you would like a copy of the "Ohio EPA PRS 322 Dayton Unit III Soil Screening Results Report", please send your request in writing to the above Ohio EPA address.



Report on the Results from:

**Surface Soils Investigation
PRS 322, Dayton Unit III**

July 1998

**PRS 322, Dayton Unit III
Surface Soils Investigation, July 1998**

Executive Summary

The Ohio EPA in conjunction with the Ohio Department of Health, Bureau of Radiation Protection (ODH/BRP), and the Department of Energy Miamisburg Environmental Management Project (DOE MEMP), has received the results from its extensive sampling effort at 1601 West First Street; Grace A. Greene School, located at 601 Edison Street; and the adjacent John Ahlers Park in Dayton, Ohio. (See Figure 1 for a general area map depicting the site location.) The surface sampling results have provided ODH/BRP with information to conclude that there are no current adverse health or safety impacts resulting from the intended use of these areas.

The site, PRS (Potential Release Site) 322, is one of over 400 PRS's included in the DOE MEMP cleanup decision making strategy. PRS 322, Dayton Unit III, was a site operated by the Atomic Energy Commission in the 1940's to produce polonium-210 (^{210}Po) in support of the Manhattan Project. (For historical and process information on PRS 322, see PRS 322 Dayton Unit III Soil Screening Results Report, February 1998 (OEPA, 1998a).)

In August 1997, Ohio EPA, ODH/BRP, DOE MEMP, the City of Dayton, and the United States Environmental Protection Agency (USEPA), agreed that Ohio EPA would sample soils at PRS 322 to screen for potential contamination, in response to stakeholder concerns. Available records indicated that analytical soil sampling had not been conducted at this site. The results from this sampling effort revealed the presence of ^{210}Po and lead-210 (^{210}Pb) in surface soils at concentrations greater than expected.

Comprehensive sampling and analysis of surface soils at PRS 322 and the adjacent athletic field (John Ahlers Park) was necessary to better define the nature and extent of elevated concentrations and to further evaluate potential health risks at the site (OEPA, 1998a). On April 13, 1998, a sampling effort consisting of approximately 150 surface soil samples was conducted on and around PRS 322 and the adjacent athletic field. This further investigation was agreed to and performed by Ohio EPA, ODH/BRP, and DOE MEMP.

Results from the April 1998, sampling confirm that there are no current adverse health or safety impacts resulting from the intended use of these areas. All of the results from the adjacent Grace A. Greene School and athletic field were within expected values. Some of the results from samples collected from 1601 West First Street, PRS 322, indicate that further evaluation is necessary to determine if contamination exists at depth and how onsite and offsite drainage patterns may have affected the distribution of potential contamination. The Army Corps of Engineers, Louisville District, will conduct a further evaluation of the site.

PRS 322, Dayton Unit III
Surface Soils Investigation, July 1998

1.0 Introduction

PRS (Potential Release Site) 322 is located at 1601 West First Street in Dayton, Ohio, and is also referred to as Dayton Unit III. The property is owned by the City of Dayton and occupied by the Dayton School Board, which uses the property as a maintenance facility. The site encompasses the city block bounded by Edison Street to the north, West First Street to the south, Euclid Avenue to the East, and Como Lane to the west. Grace A. Greene School is located north of PRS 322, while John Ahlers Park lies northeast of the site. The remainder of the site is surrounded by local residents and vacant lots. (See Figure 2.) Grace A. Greene School and John Ahlers Park collectively consist of an athletic field and track, basketball courts, and a playground for small children.

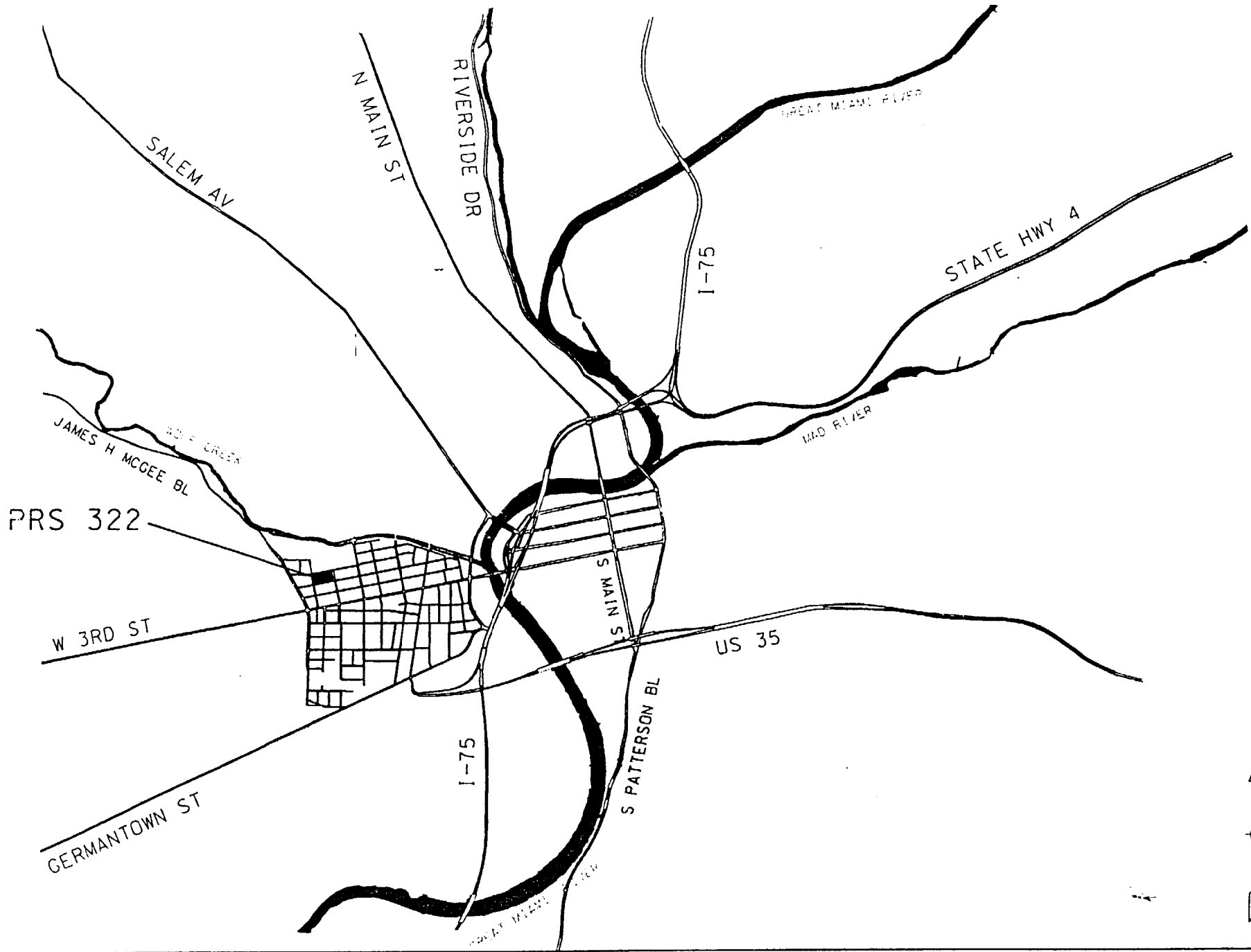
PRS 322 is one of over 400 PRS's included in the DOE MEMP cleanup decision making strategy known as Mound 2000. DOE MEMP manages the cleanup and remediation of the DOE Mound Plant located in Miamisburg, Ohio. PRS 322 was a facility used in the 1940's by the Atomic Energy Commission, prior to the construction of the Mound Plant, for the processing of ^{210}Po . Polonium-210 was a vital component for the first atomic weapons manufactured by the Manhattan Project.

In June 1997, DOE MEMP released the Potential Release Site Package PRS# 320-325 to stakeholders for public comment. The site had been selected for "No Further Assessment" (NFA) based on the information contained in or referenced by this package. The City of Dayton received input from stakeholders requesting that some soil sampling be conducted to ensure that the area representing PRS 322, 1601 West First Street, did not represent a health risk.

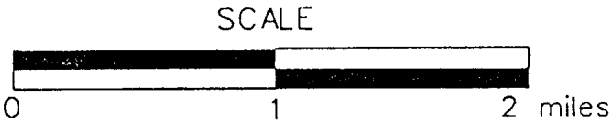
1.1 Soil Screening, August 1997

Ohio EPA, DOE MEMP, the United States Environmental Protection Agency (USEPA), and the City of Dayton agreed that Ohio EPA would sample soils at PRS 322 to screen for potential contamination. In late August 1997, a routine radiological survey was conducted in and around the buildings presently located at 1601 West First Street. Additionally, six surface soil samples were collected, four from the PRS 322 site, one from the adjacent Grace A. Greene School, and one near the athletic track at John Ahlers Park. The radiological survey was conducted by Wright Patterson Air Force Base Radiation Safety Branch (WPAFB), while the sampling was conducted by Ohio EPA.

The results from the radiological survey performed by WPAFB did not indicate any unusual readings at the maintenance facility nor were any unusual readings detected from the soil samples.



PRS 322 is located on the Northwest corner of Euclid and West First Street.



OhioEPA

**PRS 322, Dayton Unit III
Surface Soils Investigation, July 1998**

The results of the six soil samples are illustrated in Figure 3 and are listed in Table 1. Four of the results indicate expected concentrations of ^{210}Po and ^{210}Pb . Three of these samples came from PRS 322 and one came from Grace A. Greene School property. The results from these samples were expected to be within regional background values published for the parent radionuclide, uranium-238, which are 1.0 to 3.0 picocuries per gram (pCi/g). Any individual result may be expected to vary slightly from this range due natural heterogeneity in the soils and inherent uncertainties in laboratory results.

The remaining two soil samples indicated elevated concentrations of ^{210}Po and ^{210}Pb . One of these samples was from within PRS 322, while the other sample was collected near the athletic track in John Ahlers Park. The sample within PRS 322 had concentrations of 14 pCi/g ^{210}Po and 8.9 pCi/g ^{210}Pb . The sample collected near the athletic track had concentrations of 43 pCi/g, ^{210}Po and 36 pCi/g, ^{210}Pb .

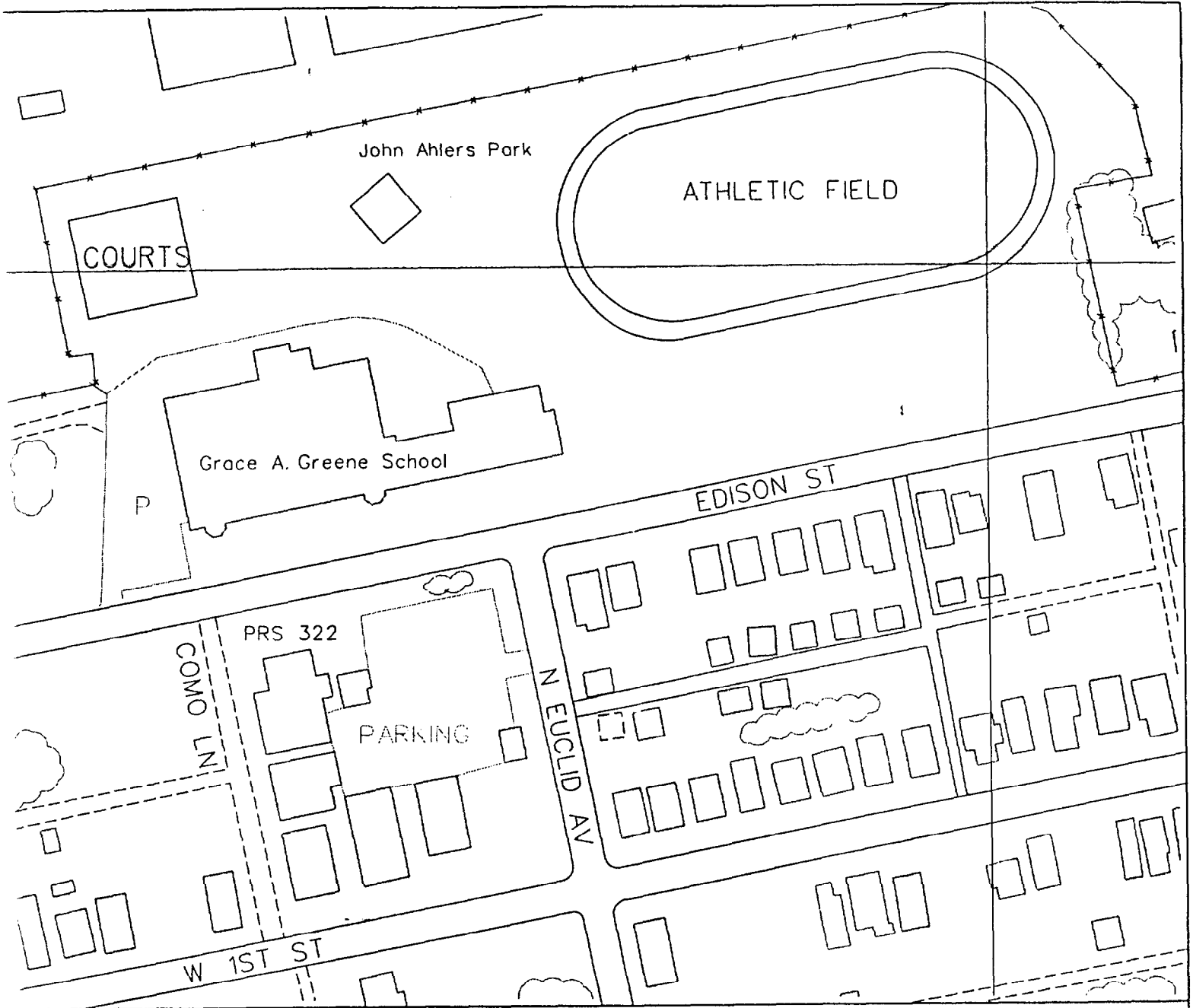
According to ODH/BRP, the results from the soil sampling performed in August 1997 do not indicate an immediate health or safety impact. The results, however, prompted Ohio EPA and DOE MEMP to perform an intensive investigation to determine the source for the elevated concentrations of ^{210}Po and ^{210}Pb . A full report of the soil screening results can be found in the Ohio Environmental Protection Agency PRS 322 Dayton Unit III Soil Screening Report, February 1998 (OEPA, 1998a).

Table 1. Polonium-210 and Lead-210 Results from Soil Screening.

Sample Number	Polonium-210 (pCi/g)	Lead-210 (pCi/g)
32201	2.6	2.2
32202	3.3	2.8
32203	14	8.9
32204	2.6	3.5
32205	43	36
32206	3.1	2.0

1.2 Drains and Manholes, March 1998

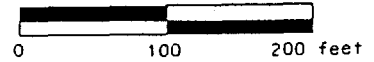
The elevated ^{210}Po and ^{210}Pb concentrations found at PRS 322 and John Ahlers Park, in conjunction with new information on the process conducted at the former AEC facility, prompted Ohio EPA and DOE MEMP into collecting another set of screening samples on and around PRS 322. Information gathered during intense document reviews revealed that some of the floor drains in buildings located at 1601 West First Street drain directly to the ground, not to sanitary sewage or storm water run-off. The information also revealed that run-off from the roof of Grace A. Greene School is routed to two manholes which discharge to Edison Street. This information prompted the sampling of sediments from select floor drains and the above mentioned manholes.



PRS322 and adjacent Grace A. Greene School

OhioEPA

SCALE



P:\FEMP015\BILL\MOUND\PRS322PLUS.DGN



FIGURE 2

**PRS 322, Dayton Unit III
Surface Soils Investigation, July 1998**

On March 10, 1998, Ohio EPA, ODH/BRP, and DOE MEMP, obtained sediment samples from two floor drains in Building 3 at the maintenance facility. It appears that these drains flow directly into the ground below. Two sediment samples were also collected from two different manholes on the south side of the Grace A. Greene School property (see Figure 3). The samples were analyzed for ^{210}Po using alpha spectroscopy methods.

Concentrations for the sediments taken from the two floor drains inside Building 3 indicated levels within the expected range of 1.0 to 3.5 pCi/g ^{210}Po (see Table 2). However, the sediments from the manholes at sample locations MH32203 and MH32204 indicated concentrations of 5.1 and 37 pCi/g ^{210}Po , respectively.

Table 2. Polonium-210 Results from Drain and Manhole Sediment Sampling

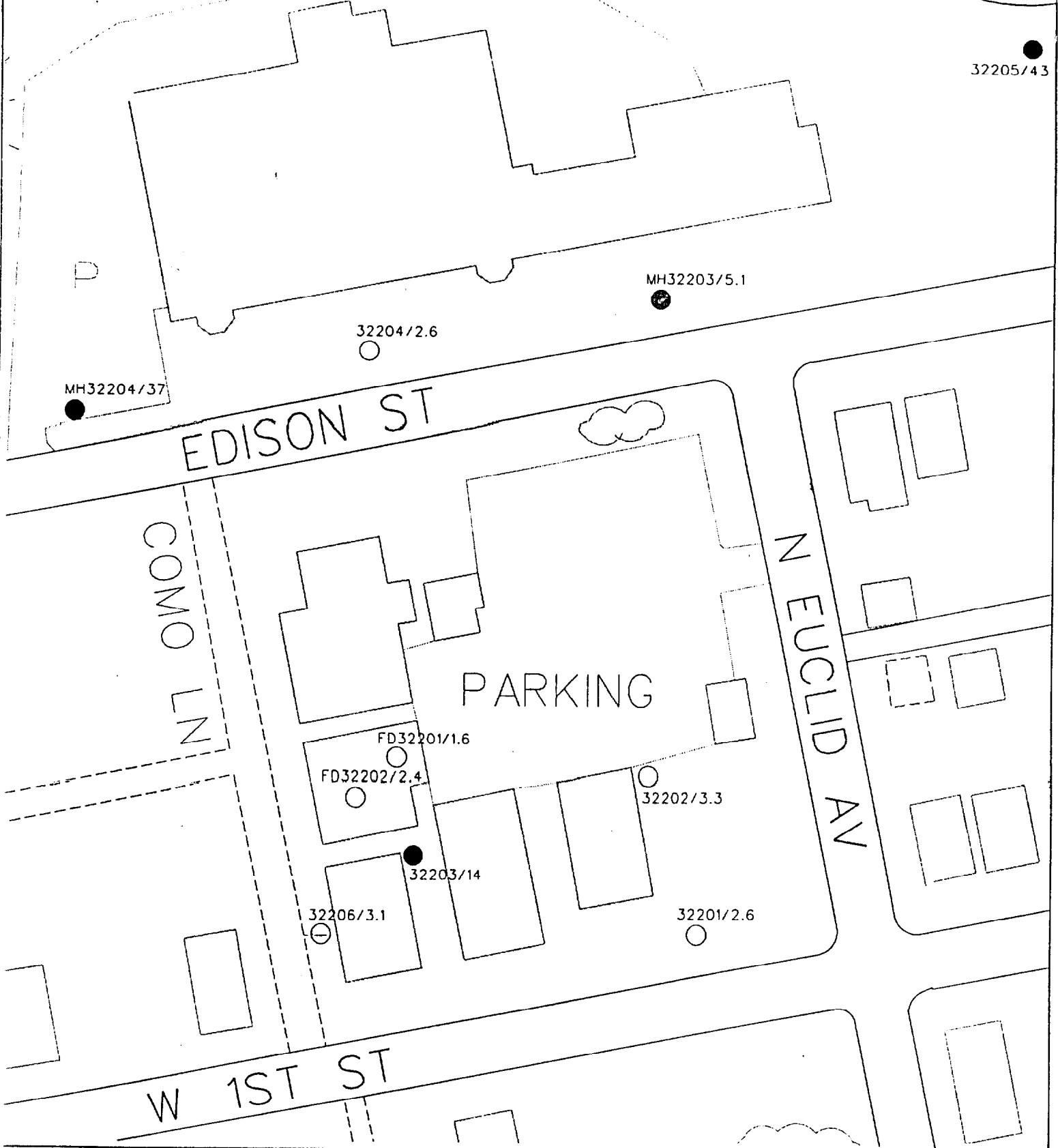
Sample Number	Description	Polonium-210 (pCi/g)
FD32201	East Drain, Bldg. 3, PRS 322	1.6
FD32202	West Drain, Bldg. 3, PRS 322	2.4
MH32203	East Manhole, Grace A. Greene School	5.1
MH32204	West Manhole, Grace A. Greene School	37

2.0 Surface Sampling Investigation, April 1998

2.1 Introduction

Previous screening samples of surface soils and sediments have indicated elevated concentrations of ^{210}Po and ^{210}Pb at PRS 322 and the adjacent properties of Grace A. Greene School and John Ahlers Park. Records review indicate that these radionuclides, ^{210}Po and ^{210}Pb , are consistent with the former operations by the AEC at PRS 322.

Ohio EPA, ODH/BRP, and DOE MEMP decided that previous sampling results, process history, and stakeholder concern warranted further investigation of PRS 322. Ohio EPA, ODH/BRP, and DOE MEMP also decided to solicit the Army Corps of Engineers to commit to investigating the site under the Formerly Utilized Sites Remedial Action Program (FUSRAP). While programmatic issues related to mobilizing the Army Corps of Engineers were under way, DOE MEMP agreed to fund a surface soils investigation at PRS 322 and adjacent areas as a part of their "Good Neighbor Policy".



Po-210 in pCi/g

- - 1.00-3.50
- (with horizontal lines) - 3.50-8.00
- (solid black) - 8.00 and above

NOTE: FD=Floor Drain and MH=Manhole

OhioEPA

SCALE

0 50 100 feet

P:\FEMPGIS\BILL\MOUND\PRS3220RIG18W.DGN

FIGURE 3

**PRS 322, Dayton Unit III
Surface Soils Investigation, July 1998**

2.2 Sampling Objectives

The objectives of the surface sampling investigation at PRS 322, Grace A. Greene School, and John Ahlers Park were:

- Determine the nature and extent of elevated concentrations of ^{210}Po and ^{210}Pb in surface soils at PRS 322, Grace A. Greene School, and John Ahlers Park.
- Provide additional information to ensure stakeholders that there is no current health or safety impact from the normal use of these properties.

An 8.0 pCi/g average concentration of ^{210}Po and ^{210}Pb in surface soils was adopted by Ohio EPA, ODH/BRP, and DOE MEMP as a guideline value to be used as a tool to evaluate analytical results. The concentration calculated by Ohio EPA is an average concentration for ^{210}Po and ^{210}Pb in surface soils that may result in an increased cancer risk of 1×10^{-5} (1/100,000) under a residential use scenario.

2.3 Sampling Methods

Ohio EPA in conjunction with ODH/BRP and DOE MEMP drafted and used a Sampling and Analysis Plan (SAP) (OEPA, 1998b) to coordinate the sampling event. The SAP incorporated comments from the City of Dayton, the City of Dayton Environmental Advisory Board, and WPAFB.

The SAP defined two separate sampling grids, one for the athletic field (John Ahlers Park) and one for PRS 322. The sampling grid used for the athletic field consisted of a 20 meter X 20 meter offset grid consisting of 90 sample locations. A close-packed grid of 5 meters X 5 meters was used immediately surrounding the "hot-spot" identified during the Soil Screening, August 1997.

The sampling grid used for PRS 322 consisted of a simple 10 meter X 10 meter grid. Proposed sampling locations that fell within buildings or on paved areas were either offset or omitted. This grid provided 40 sample locations within the fenced area surrounding PRS 322. An additional 15 sample locations were identified surrounding the facility either on City easements or in cracks and crevices present along curbs of the surrounding streets. (Figures 4 and 5 illustrate the sampling locations.)

The samples were collected utilizing Ohio EPA surface sampling procedures, following appropriate health and safety practices. A health and safety plan was completed and provided to all sampling personnel. Representatives from Ohio EPA, ODH/BRP, and DOE MEMP conducted the sampling while personnel from ODH/BRP and WPAFB provided health physics coverage.

PRS 322, Dayton Unit III Surface Soils Investigation, July 1998

Deviations from the Sampling and Analysis Plan include:

- A sample was not collected at location 110 on PRS 322 due to the presence of gravel with no soil.
- No samples were collected at locations 150 and 152 due to lack of soils present at these locations. The sample locations were identified as a crevice between the curb and pavement of West First Street.
- Seven additional surface soil samples were collected in the playground behind Grace A. Greene School, in response to comments from the City of Dayton Environmental Advisory Board.
- Samples were collected using new disposable plastic scoops and aluminum mixing trays at each location. Equipment was disposed of after sampling at each location. (Scoops and trays were surveyed using standard techniques for potential contamination prior to disposal. No contamination was detected.) Therefore, Standard Operating Procedure 1.6 for General Equipment Decontamination was not applicable for this sampling event.

A total of 149 surface soil samples were collected; 90 in John Ahlers Park, 7 from the playground behind Grace A. Greene School, and 52 on and around PRS 322.

2.4 Analytical Methods

All samples were analyzed for ^{210}Po using alpha spectroscopy. ^{210}Pb concentrations were assumed to be in secular equilibrium with ^{210}Po . This assumption is consistent with results from the previous sampling events at this site. Samples whose location fell on the athletic track were also analyzed by gamma spectroscopy, primarily focusing on gamma emitting radionuclides present in the uranium-238 decay chain, namely, uranium-238, radium-226, and lead-214.

3.0 Results

To facilitate the presentation of the results from the PRS 322 and adjacent areas surface sampling investigation, the results will be presented as two separate data sets. The two sets will be referred to as the athletic field results, which include sample results from John Ahlers Park and the playground behind Grace A. Greene School, and, second, PRS 322. The PRS 322 results include the results from the Dayton School Board maintenance facility and immediately adjacent sampling locations. Tables 3 and 4 show the results for this sampling effort.

3.1 Athletic Field Results (John Ahlers Park)

Ninety surface soil samples were collected on and around the athletic field as well as 7 additional samples collected from the playground located behind Grace A. Greene School building. (See Figure 4). All of the samples were analyzed for ^{210}Po . The results ranged from 0.72 pCi/g to 3.9 pCi/g, with an average concentration of 2.0 pCi/g (2.1 pCi/g 95% UCL).

Of the 97 total samples, 17 were collected from the athletic track, which is apparently paved with

PRS 322, Dayton Unit III
Surface Soils Investigation, July 1998

cinders. Due to concerns about the potential for elevated naturally occurring radioactive materials being present within the cinders, gamma spectrometry analysis was performed in addition to the ^{210}Po analysis. This analysis was performed to distinguish naturally occurring radioactive material in the cinders from potential residual contamination from Dayton Unit III. The results from the track samples were consistent with expected values (i.e. the ^{210}Po results were apparently in equilibrium with the parent radionuclides). The track samples had an average concentration approximately 0.5 pCi/g greater than the other soil samples, as anticipated.

The results from this sampling effort indicate that the average concentration is within expected values. Three samples 25, 28, and 84 appear to be slightly elevated compared to the rest of the sample population with concentrations of 3.7, 3.7 and 3.9 pCi/g respectively. Two of these three samples, 25 and 28, were collected from the track and had associated gamma spectroscopy results. The data indicates that these samples appear to be in equilibrium with their parent radionuclides and may be considered naturally occurring radioactive material present in the cinders of the track. Sample 84, located northwest of the track (see Figure 4), does not have associated gamma spectroscopy results. The slightly elevated concentration is of unknown origin, but may be attributed to natural variation, or as a statistical anomaly.

The 43 pCi/g result obtained during the Soil Screening in August 1997, compared to the results of the surrounding samples indicate that residual contamination due to areal deposition and/or surface deposition do not appear to be present in the surface soils at the athletic field. Although two samples are elevated above the sample population, these concentrations are not of concern due to the small incremental increase and low occurrence.

Seven field duplicates were collected and analyzed. The results of these samples appear to be in qualitatively, good agreement.

PRS 322, Dayton Unit III
 Surface Soils Investigation, July 1998

Table 3. Athletic Field (John Ahlers Park) and Grace A. Greene School, Polonium-210 Results

Sample Number	Po-210 (pCi/g)	Sample Number	Po-210 (pCi/g)	Sample Number	Po-210 (pCi/g)
1	1.7	32	1.7	64	2
2	2	33	1.9	65	2.2
3	1.7	34	2.3	66	1.9
4	2.6	35	2	67	1.5
4A	1.7	36	1.8	68	1.1
5	1.7	37	1.5	69	<1.3
6	2.1	37A	1.5	70	<1.9
7	2.5	38	2.1	71	1.9
8	3.2	39	1.7	72	1.5
9	1.6	40	1.7	73	1.8
10	2.9	41	1.2	74	1.8
11	1.8	42	1.3	75	1.8
11A	1.8	43	1.8	76	1.4
12	2.5	44	2.6	77	1.6
13	1.8	45	1.9	78	1.4
14	2.2	46	1.3	79	3.3
15	1.5	47	1.9	80	2.5
16	<0.74	48	2	81	2.7
17	1.5	48A	<0.72	82	2.6
17A	2.1	49	<1.7	83	2.1
18	2.2	50	<1.8	84	3.9
19	<2.2	51	2	85	1.9
20	<1.6	52	1.9	86	2
21	2.2	53	2.7	87	1.7
22	2.3	54	1.6	88	<2.3
23	2.6	55	1.3	89	<2.1
24	2.1	55A	1.6	90	3.1
25	3.7	56	1.7	91	2.2
26	2.5	57	1.4	92	2.6
27	2.4	58	1.5	93	2.5
28	3.7	59	2	94	3
28A	3.7	60	1.7	95	<2.2
29	2	61	2.1	96	1.1
30	2.6	62	2.3	97	0.88
31	1.6	63	2.2		

**PRS 322, Dayton Unit III
Surface Soils Investigation, July 1998**

3.2 PRS 322 (Dayton Unit III) Results

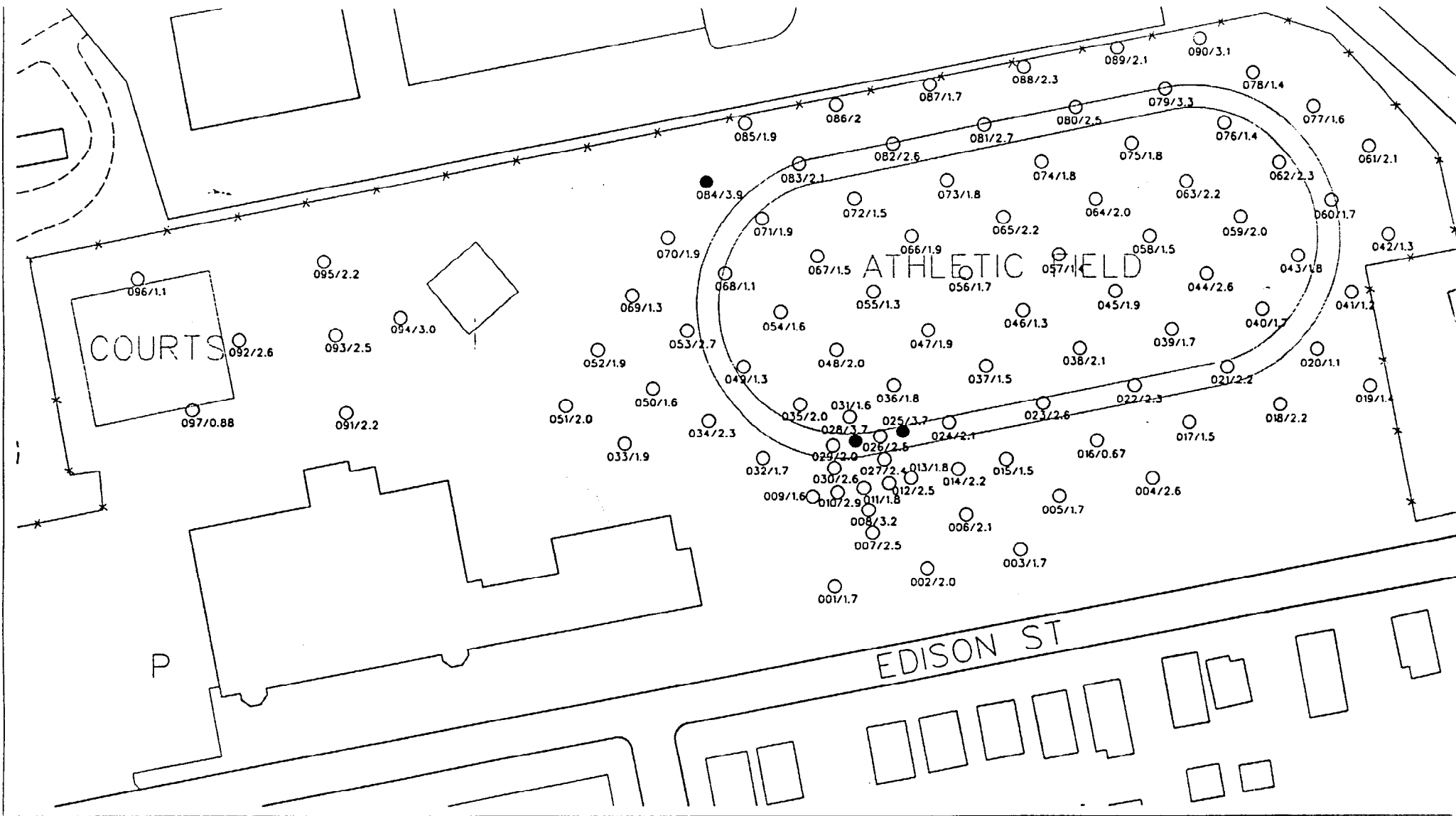
Fifty-two surface soil samples were collected from the Dayton School Board maintenance facility (PRS 322) and from the City easements along the streets bordering the facility. See Figure 5. All of the samples were analyzed for ^{210}Po . The results ranged from 0.85 to 21 pCi/g, with an average concentration of 3.1 pCi/g (3.9 pCi/g 95% UCL).

The surface sampling conducted on PRS 322 and the adjacent easements indicate an average concentration and UCL slightly greater than expected. Three of the samples have concentrations greater than 8 pCi/g. Samples 111, 112, and 138 had concentrations of 20, 21, and 13 pCi/g respectively. Three other samples had concentrations greater than 4 pCi/g. Samples 107, 115, and 145 had concentrations of 4.6, 4.1, and 4.3 pCi/g respectively. All of these concentrations are considered greater than background. Sample 145 was collected from the easement south of the facility, offsite.

The results from the Surface Soils Investigation at PRS 322 indicate the presence of ^{210}Po in surface soils, in isolated areas, with concentrations considerably greater than background.

Table 4. PRS 322 Polonium-210 Results.

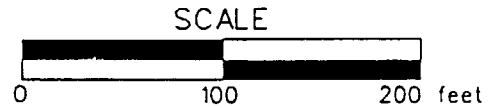
Sample Number	Po-210 (pCi/g)	Sample Number	Po-210 (pCi/g)	Sample Number	Po-210 (pCi/g)
98	2.2	117	<2.7	135	1.9
99	<2.0	118	2.8	136	2.5
100	3.1	119	<1.6	137	2
101	2	120	1.8	138	13
102	2.3	121	1.3	139	1.4
103	2.4	122	2.1	140	2.9
104	1.7	123	1.9	141	1.5
105	2.2	124	2.2	142	2.7
106	1.3	125	1.9	143	1.4
107	4.6	126	1.3	144	1
108	2.9	127	2.3	145	4.3
109	2.7	128	1.6	146	2
111	20	129	1.1	147	1.5
112	21	130	1.9	148	2.8
113	1.9	131	2.7	149	2
114	1.9	132	0.85	151	3
115	4.1	133	0.98	153	2.9
116	1.9	134	1.7		



Po-210 in pCi/g

- - 1.00-3.50
- - 3.50-8.00

OhioEPA



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FIGURE 4

PRS 322, Dayton Unit III
Surface Soils Investigation, July 1998

3.3 Data Validation

Data validation was performed by ODH/BRP. The data was validated without qualification.

4.0 Conclusions

4.1 Athletic Field (John Ahlers Park) and Grace A. Greene School

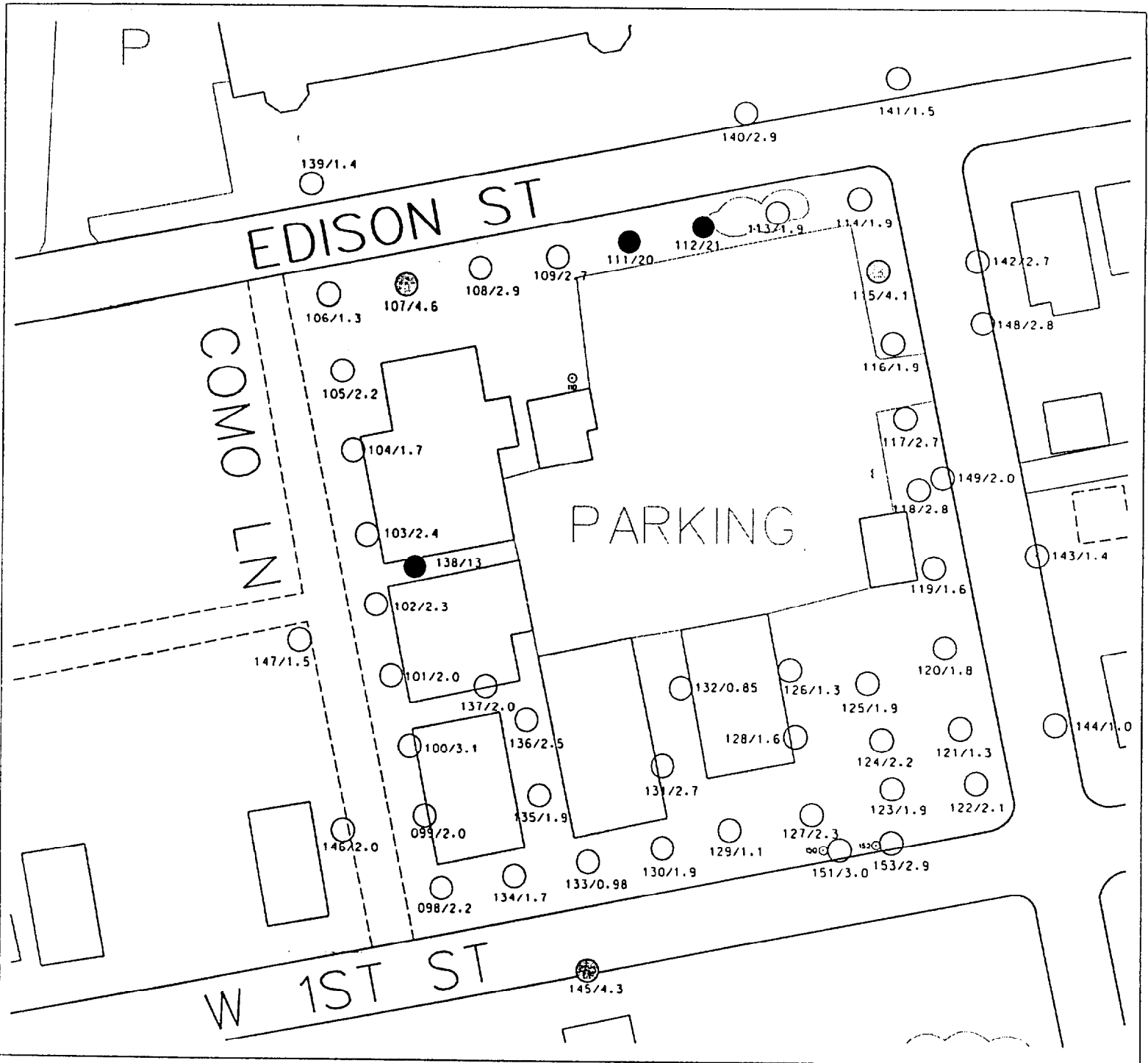
- ODH/BRP has determined that there are no current adverse health or safety impacts from continued use of these areas.
- The surface soil samples collected from the athletic field and Grace A. Greene School indicate that the average concentration of ^{210}Po in surface soils is at or near background concentrations. It does not appear that residual contamination is present in surface soils in either area.
- The elevated concentrations present at PRS 322, coupled with the elevated concentrations found in the sediments of the manholes, and previous sampling results indicate that the athletic field and Grace A. Greene School should continue to be considered potentially affected areas from the activities that were conducted at Dayton Unit III. Elevated concentrations of ^{210}Po may be present in subsurface soils.

4.2 PRS 322, 1601 West First Street (Dayton Unit III)

- ODH/BRP has determined that there are no current adverse health or safety impacts from continued use of this area.
- The results from this sampling effort suggest that isolated areas within PRS 322 exhibit elevated concentrations of ^{210}Po in surface soils, which may indicate the presence of residual contamination from previous activities at Dayton Unit III.
- Drainage patterns, the demolition of buildings, and elevated sample results indicate that residual contamination may be present in subsurface soils.

5.0 Recommendations

- Ohio EPA and ODH/BRP recommend further investigation which may include subsurface sampling at PRS 322 and John Ahlers Park.
- The U.S. Army Corps of Engineers, Louisville District will become the lead agency for further evaluation of this site.



Po-210 in pCi/g

- - 1.00-3.50
- ⊗ - 3.50-8.00
- - 8.00 and above

OhioEPA

SCALE

0 50 100 feet

P:\NFEMPGIS\PROJECTS\BELL\MOUND\PRS322\FMLRPT.DGN



FIGURE 5

REFERENCES

1. OEPA, 1998a. PRS 322 Dayton Unit III Soil Screening Results Report. Ohio Environmental Protection Agency (February, 1998).
2. OEPA, 1998b. Sampling and Analysis Plan; PRS 322 Dayton Unit III. Ohio Environmental Protection Agency (April 1998).