SURVEY OF THE VICINITY PROPERTIES (GOLF DRIVING RANGE, CHILDREN PLAYGROUND AND THE PROPERTY AT 75 CANTIAGUE ROCK ROAD) AT THE GTE/SYLVANIA FACILITY HICKSVILLE, NEW YORK

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Background

The former Sylvania-Corning (Sylcor) facility on Cantiague Rock Rd. in Hicksville, N.Y. is presently undergoing a voluntary remediation by the successor company GTE, under an agreement with the New York State Department of Environmental Conservation (DEC). During the years of operation, approximately 1952 to 1966, various forms and types of nuclear fuel were fabricated at this facility. Since operations ceased the buildings utilized by Sylcor were deemed to be decontaminated by the New York State Department of Labor (DOL), which had issued a radiological materials license to Sylcor. The buildings were subsequently released and demolished.

Presently there are three buildings on the former site, occupied by three different companies: Air Techniques, Magazine Distributors, and Gilbert Displays. Gilbert Displays has since vacated the premises.

Buried drums were discovered during construction of an addition to the Air Techniques property which ultimately led to further investigation by DEC. Radiological contamination was also found in some areas and the conclusion was that a remedial investigation was warranted. As a result of the characterization efforts additional areas of contamination were discovered in sub-surface locations as well as some surface locations on-site and potentially off-site on adjacent property owned by Nassau County.

Following a report on a TV cable news program revealing that a "nuclear recycling plant" in Hicksville had potentially contaminated the environment, numerous requests for information were received by the New York State Department of Health (DOH) Bureaus of Environmental Radiation Protection (BERP) and Environmental Exposure Investigation (BEEI). Staff from the BERP and BEEI along with representatives from the DEC and Nassau County Health Department met with the Jericho Gardens Civic Association to inform them of the ongoing investigations for both chemical and radiological constituents and the potential for exposure. During this meeting, citizens and elected officials requested that DOH investigate the potential for contamination at the site of a former residence at 75 Cantiague Rock Rd. as well as the adjacent Cantiague Park golf driving range and the Park's children's playground.

Site Surveys

Staff from BERP, in cooperation with Messrs. Bruce Mackay and Robert Walderman from the Nassau County Health Department (NCHD) conducted the surveys of the requested areas on May 8 and May 9, 2001. Due to the inability of the county to close the driving range, it was determined that the best time to survey the suspect area would be at the time the range opened at 7:00 AM. Additionally, to avoid conducting a survey while the playground was in use, the survey was conducted from 5:30 AM to 7:00 AM, at which time the automatic sprinkler system is activated. This left the afternoon of May 8 to do the Cantiague Rock Rd. property.

Survey Procedure

The walk over survey was performed using a Ludlum Model 2221 single channel pulse rate meter with a 2" x 2" NaI (Tl) detector. This instrument was optimized for the gamma energies associated with uranium isotopes. A 100% scan of potentially affected areas was conducted by swinging the probe in a serpentine pattern about 6 inches above the ground while slowly walking along pre determined pathways. Readings were obtained by taking static one-minute counts at either biased high, random or at fixed locations. Soil samples of 0-6" were obtained at areas with the highest readings or at locations representative of counts observed. While conducting the walk over, exposure rate readings were also obtained using a Bicron microrem meter. This instrument is designed to have a relatively flat energy response, which makes it more accurate for radioisotopes with lower energy gamma emissions such as uranium and thorium.

Survey Results

75 Cantiague Rock Rd

This property, which is located directly across the street from Air Techniques, once was the site of a business and residence. At the request of the former tenant, this property was included in the study with the permission of the present owner.

Since the individual lived there, the building had been torn down and clean fill brought in to fill the excavation. The present owner indicated areas where the original soil was located and the approximate locations of former drip lines from the roof, where experience has shown that airborne particulates washed from a roof will deposit at higher concentrations.

Figure 1 denotes the survey lines, approximate location of the former building, range of readings obtained (1200 - 1500 counts per minute (cpm) and 5-7 microrem/hr) and the locations where samples were taken. As noted, the soil samples were obtained at bias locations in original soil where readings were highest (2,000 cpm).

Analysis results indicate that the uranium, thorium, radium, and americium isotopes are all within the range of what is normally seen in soil.

Cantiague Park Playground

At the request of neighborhood residents, the DOH conducted a walkover survey of the portions of the playground where children could come in contact with soil or sand.

This playground is a landscaped fenced area with footpaths and enclosed play areas. Each of the different sections is covered with 2-inch thick interlocking rubber pads, thereby negating any exposure directly to the soil, with exception being the sand play areas. As seen in Figure 2, soil areas of the playground ranged from around 1,800 to 2,100 cpm. While these readings are slightly higher than the values seen at 75 Cantiague Rock Rd., they are consistent with readings seen in other sections of the park. The value of 1,419 seen in the sandbox areas is lower, as was the 4-5

microrem/hr exposure rate reading but this can be explained because of different soil types. It is also important to note that when the playground was recently reconstructed new topsoil was brought in from a different location.

Analysis results of samples taken from the sandbox and representative areas of soil are consistent with background values for the isotopes investigated. Some areas, where readings exceeded 2,000 cpm were noted to have been recently fertilized, which results in an increase in the levels of naturally occurring radioisotopes such as potassium (K-40) and uranium in phosphates. These areas were therefore not sampled.

One location that exhibited higher than normal exposure rates was the large landscape boulders used in the vicinity of the pavilion. These rocks appeared to be granite and probably contained elevated levels of naturally occurring uranium and radium. Surface readings were about 20-25 microrem/hr on contact. Since these rocks are not located in play areas and not likely to be used for seating or play, nor likely to be removed or in any way be ingested, there is little means for long term exposure. To put these levels in perspective, the acceptable limit for exposure to any member of the public, including children, is 100 millirem per year above background. At a rate of 25 microrem per hour, or 0.025 millirem/hr someone sitting on a rock 8 hrs/day for 300 days would possibly receive about 60 millirem. The typical background exposure levels, with some variation, received by the public from natural sources including radon is about 300 millirem/yr.

Golf Driving Range

The golf driving range shares a common boundary to the east of the former Sylcor property. During the investigation by DEC and GTE's contractor an area of surface contamination was noted behind the Gilbert Displays building potentially extending onto Nassau county property.

Since the initial investigation, GTE has agreed to cover the affected area to prevent inadvertent exposure. Additionally, landscape soils and wood chips have been stockpiled along the western edge of the range near the fence possibly covering areas with surface contamination (Fig.3 & photos).

The survey was performed in the same manner as previously stated starting at the northern corner of the Gilbert display building and continuing due south along the fence line to the southern boundary of the range. A second traverse was also made about 30 feet east of the fence heading north. Any further survey east would have placed everyone too close to the active area where patrons were driving golf balls.

As shown in Figure 3 readings along the fence line ranged from around 2,000 cpm to about 3,000 cpm, with the exposure levels at 6-7 microrem/hr at one meter. As a comparison, readings obtained on grass north of the driving range were all about 2,000 cpm and 5-7 microrem/hr. Also shown in Figure 3 are the approximate locations of the five 0-6 inch soil samples.

Results of the analysis of the five samples are given in Table 1. The Table shows a range of $4.1_{\pm}$ 0.8 to $11.7_{\pm}$ 1.3 pCi/g for Uranium-238; $0.9_{\pm}$ 0.22 to $1.26_{\pm}$ 0.21 pCi/g for Thorium-232; and

<0.2 to 1.18± 0.35 pCi/g for Uranium 235 (all are expressed as dry weight). The Potassium-40, Radium-226 and Cesium-137 results are all within levels normally seen in soil. Americium levels are all below the detection limits for this analysis.

While the levels seen are all above background for Uranium-238 and Uranium-235, they are all below the clean up levels established by DEC for this site. External exposure levels resulting from the elevated uranium concentrations are only slightly above area background levels and well below acceptable standards.

Recommendations

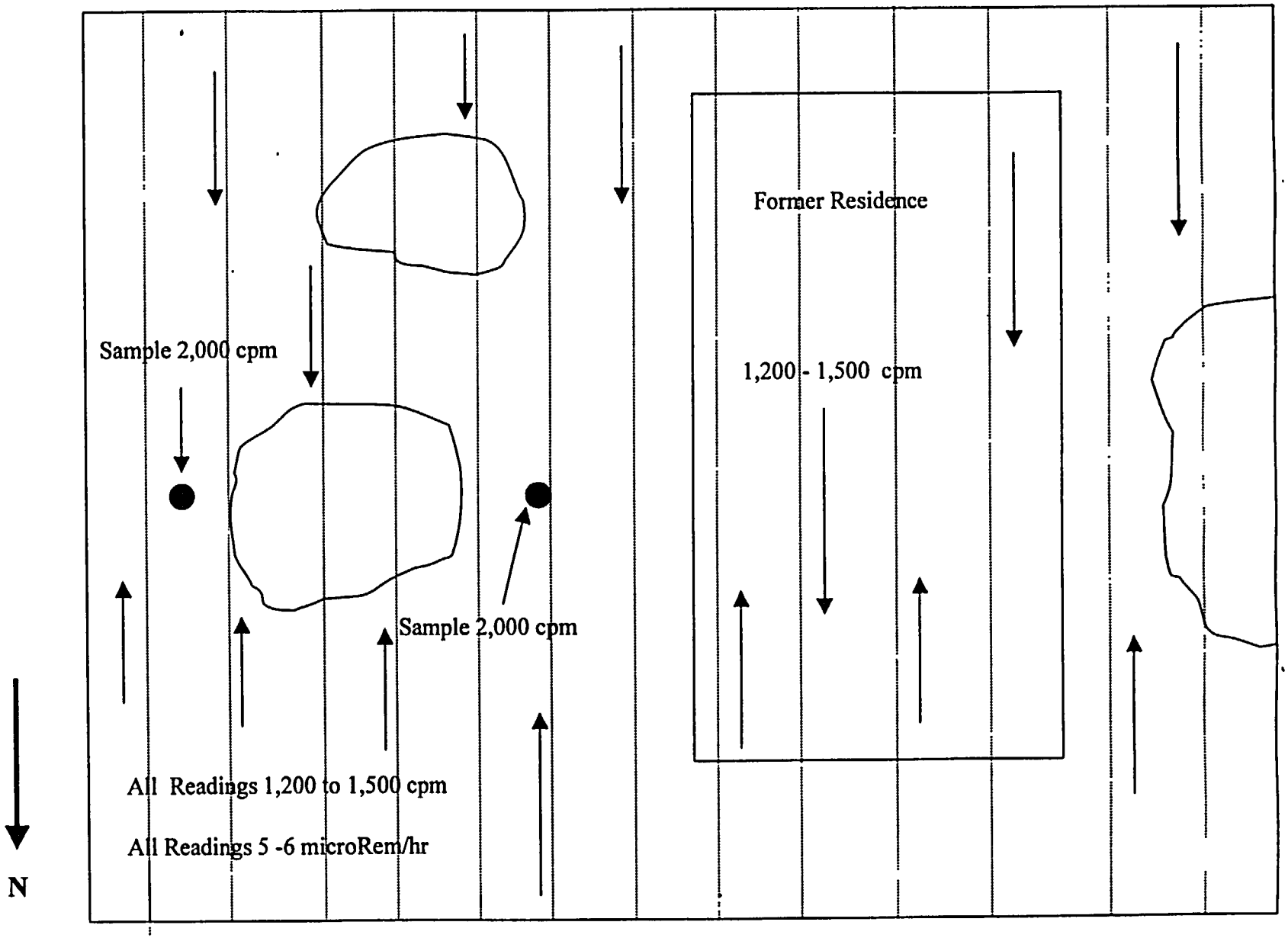
The elevated levels, seen both through instrumentation and sample analysis, along the western side of the golf driving range would indicate that previous activities, either by Sylcor during operations or by demolition and/or construction, have impacted soil on this property. While we have noted that the concentrations of uranium are below the clean up standards and do not pose an imminent health threat to employees of the range, this limited survey does not adequately characterize the surface soils on the range.

In addition, the presence of numerous soil and wood chip piles along the border precluded a survey or sampling of these areas. The largest pile is located directly behind the Gilbert Display building where it is suspected that elevated levels could be found.

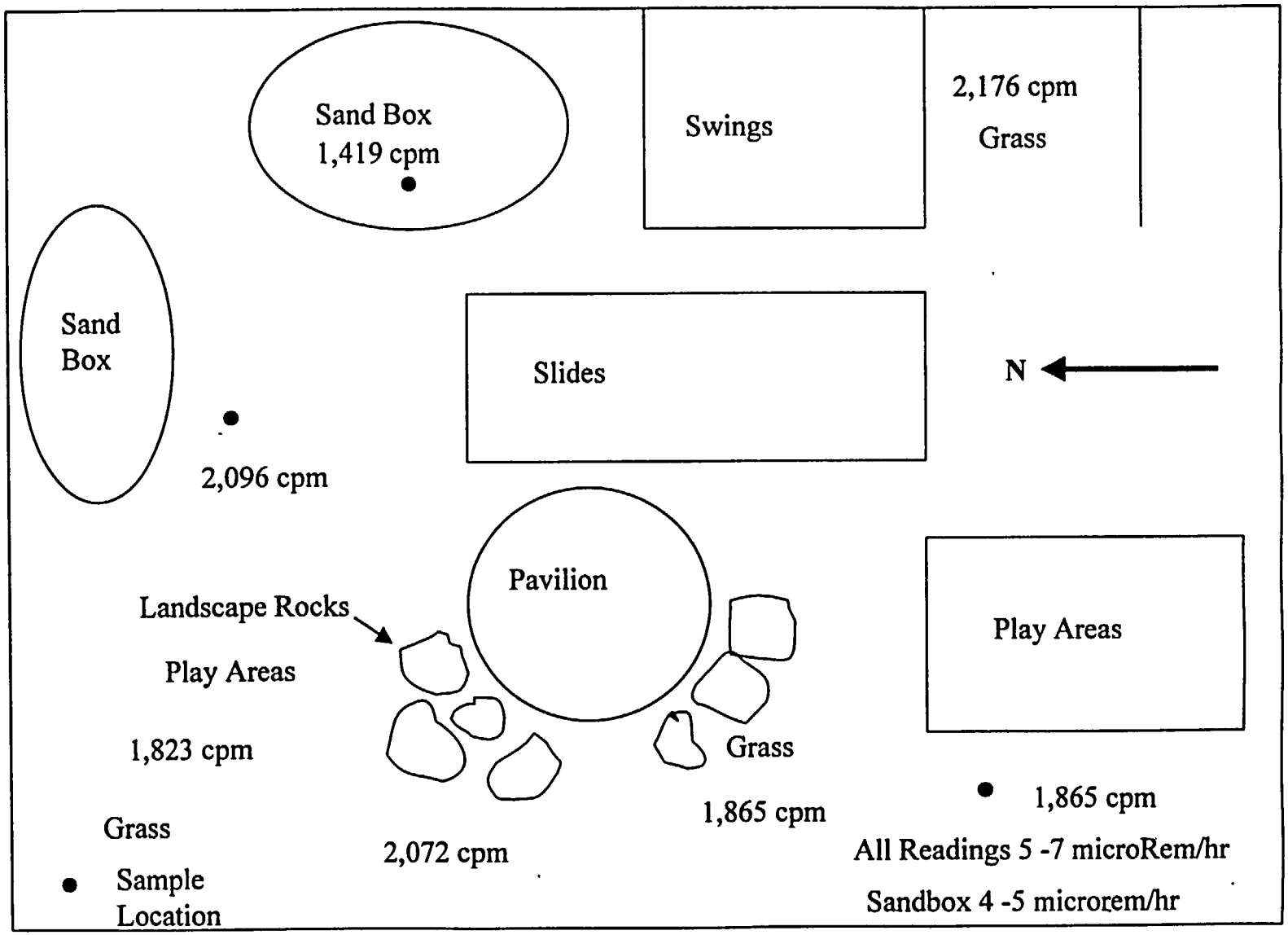
When the soil piles are removed or excavated care will need to be taken not to disturb the native soil under the pile to prevent the unintentional removal of contaminated soil to another location in the park or off site. Employees of the park should therefore be instructed not to excavate the soils without assistance from GTE's contractor or health physics personnel who would ensure that the soil is unaffected. Further stockpiling of landscape materials or storage of equipment in this area should be restricted until a more comprehensive survey is performed.

We also note that, to the best of our knowledge, no investigation has been conducted on the northern border of Gilbert Displays on Nassau county property nor on property to the south of Air Techniques. While at low concentrations in the most southern section of the range, there would appear to be the possibility that some immediately adjacent properties may have been affected.

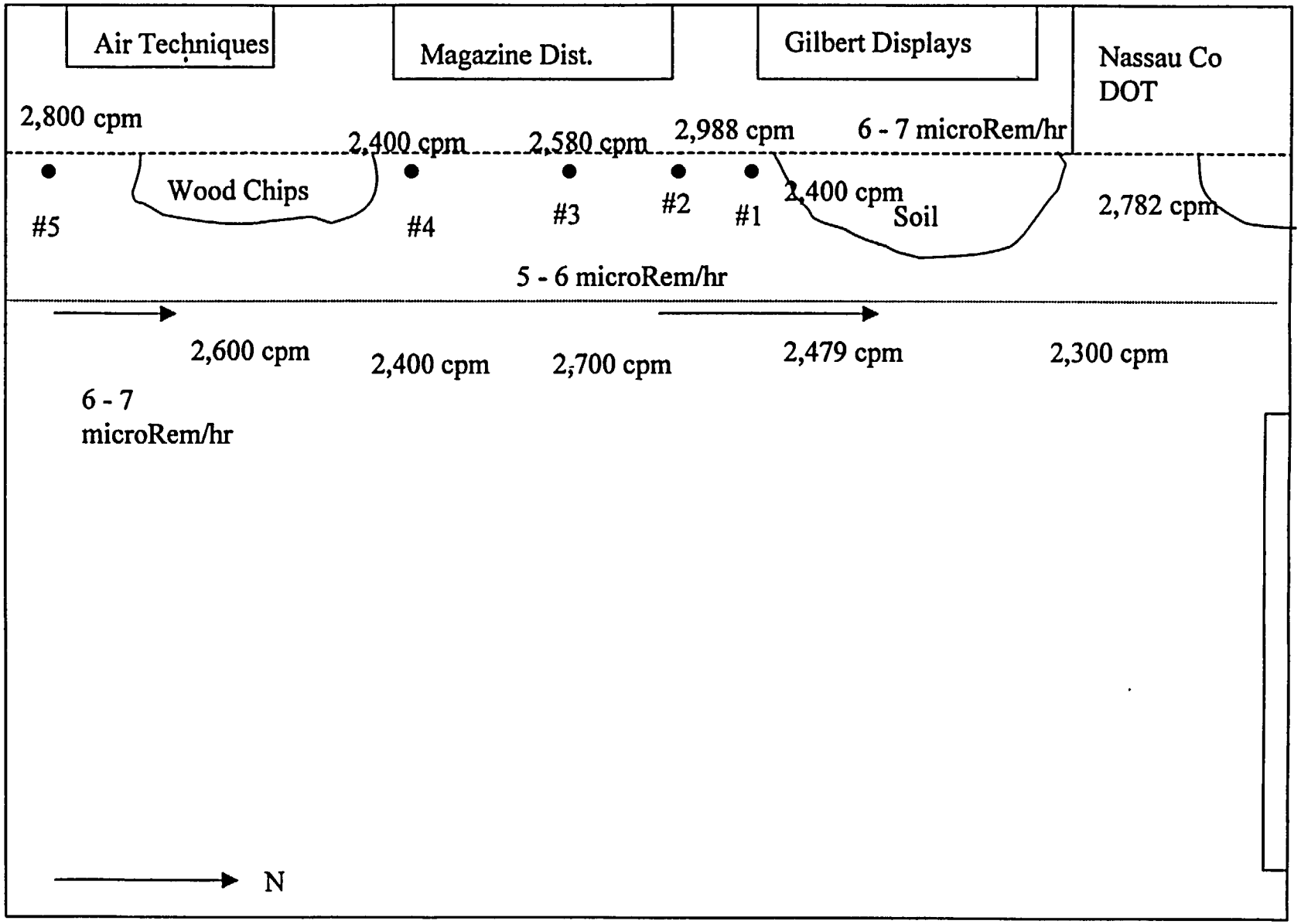
Based on our survey, we are recommend that a characterization survey be performed over the driving range and immediately adjacent properties.



75 Cantiague Rock Rd. - Figure 1



Cantiague Park Playground - Figure 2



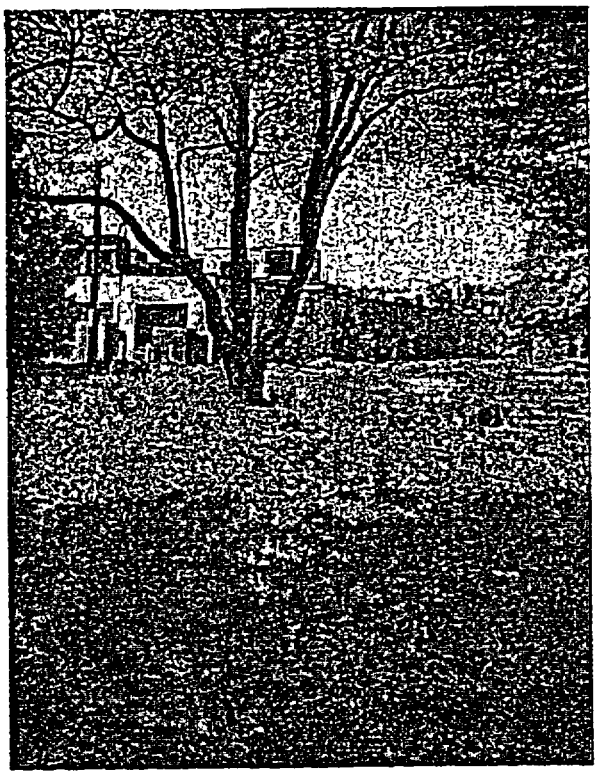
Golf Driving Range - Figure 3

GTE/Sylvania Site Vicinity, Hicksville, Nassau County, NY
(Analysis performed by NYSDOH Wadsworth Center)

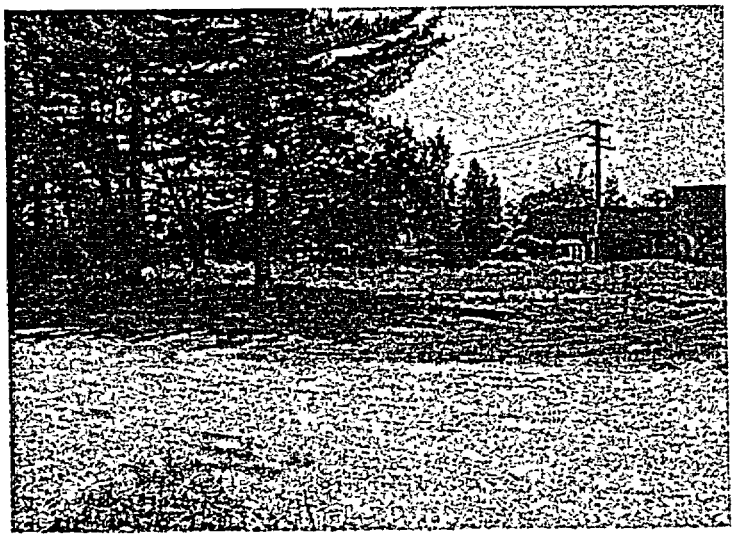
HPGE Gamma Spectroscopy, pCi/gram Based on Dry Weight

Sample #	Sample site	K-40	Cs-137	Ra-226	U-235	U-238	Th-232	Am-241
201020815014	75 Cantiague Rd. East side	8.6 ± 0.9	0.15 ± 0.04	0.75 ± 0.10	< 0.2	< 0.6	0.89 ± 0.16	< 0.1
201020815015	75 Cantiague Rd. West side	8.9 ± 0.9	0.09 ± 0.03	0.75 ± 0.11	< 0.2	1.86 ± 0.59	0.95 ± 0.17	< 0.1
201020815016	Cantiague Park Sandbox, #1	2.8 ± 0.4	<0.01	0.17 ± 0.05	< 0.1	< 0.3	0.30 ± 0.08	< 0.07
201020815017	Cantiague Park Playground, #2	6.5 ± 0.8	0.13 ± 0.04	0.45 ± 0.09	< 0.2	0.83 ± 0.44	0.55 ± 0.13	< 0.1
201020815018	Cantiague Park Playground, #3	7.0 ± 0.8	0.09 ± 0.03	0.47 ± 0.08	< 0.1	< 0.4	0.50 ± 0.12	< 0.1
201020815019	Golf Range #1	7.7 ± 1.0	0.26 ± 0.06	0.74± 0.11	0.82 ± 0.28	11.7 ± 1.3	1.26 ± 0.21	< 0.1
201020815020	Golf Range #2	6.7 ± 0.9	0.18 ± 0.05	0.54 ± 0.10	0.59 ± 0.23	7.3 ± 1.0	1.02 ± 0.18	< 0.1
201020815021	Golf Range #3	7.4 ± 1.2	0.25 ± 0.07	0.63 ± 0.14	1.18 ± 0.35	11.0 ± 1.4	0.90 ± 0.22	< 0.08
201020815022	Golf Range #4	7.5 ± 1.0	0.25 ± 0.05	0.75 ± 0.12	0.58 ± 0.25	8.4 ± 1.0	1.04 ± 0.18	< 0.1
201020815023	Golf Range #5	7.6 ± 1.0	0.26 ± 0.06	0.78 ± 0.12	< 0.2	4.1 ± 0.8	1.05 ± 0.19	< 0.1

Table 1

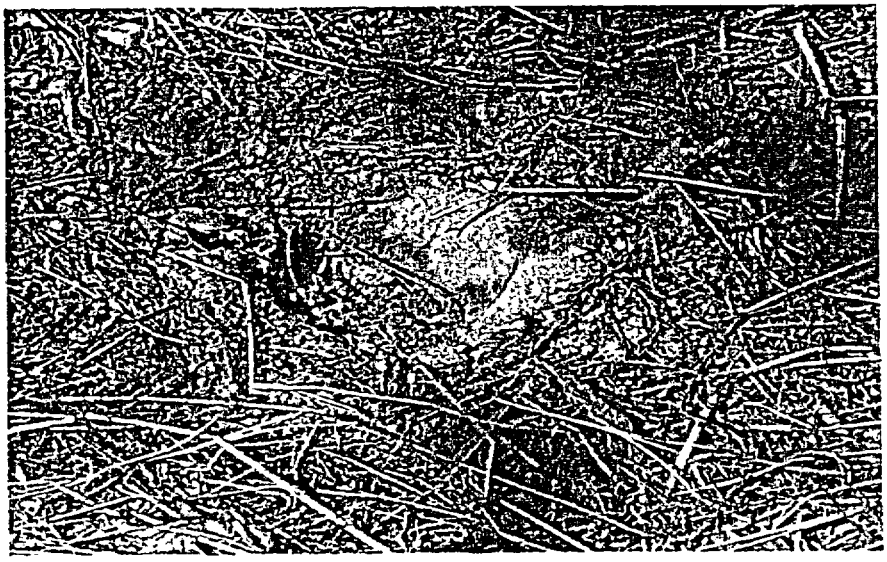


75 Cantiague Road
View toward S/W from N/E tree w/rope

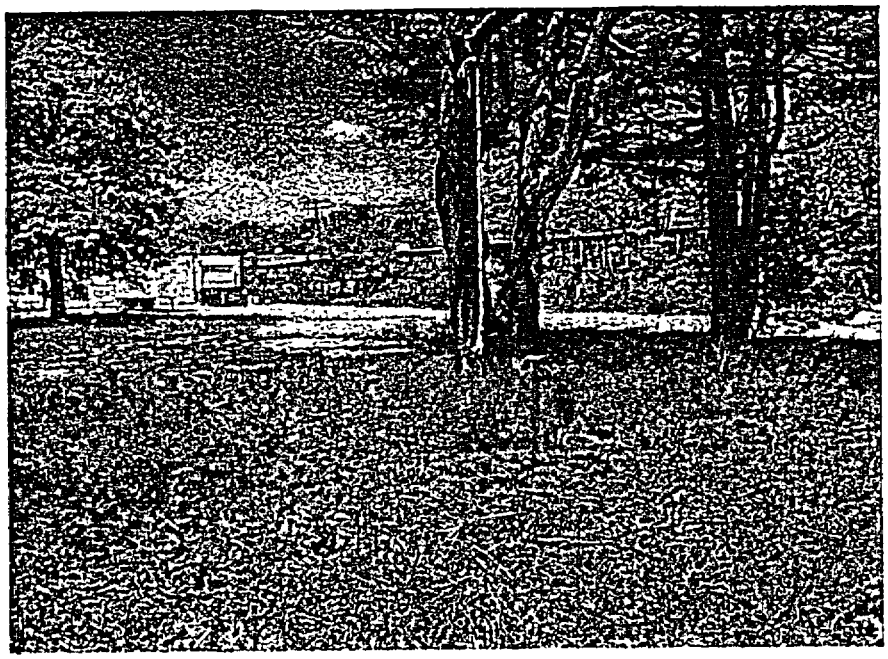


75 Cantiague Road
View toward S/SE - area of old house foundation

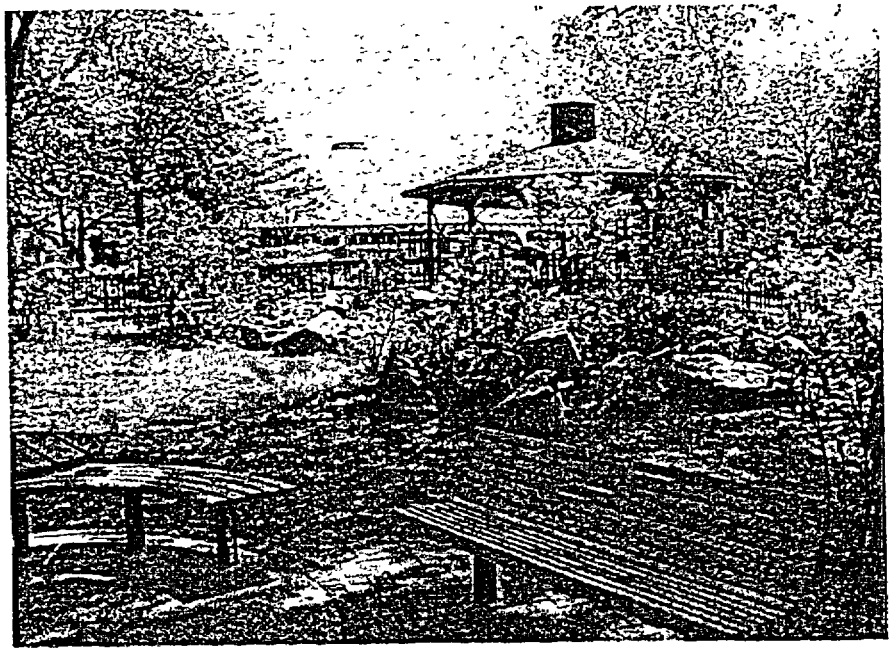
75 Cantiague Road
View S/W from driveway



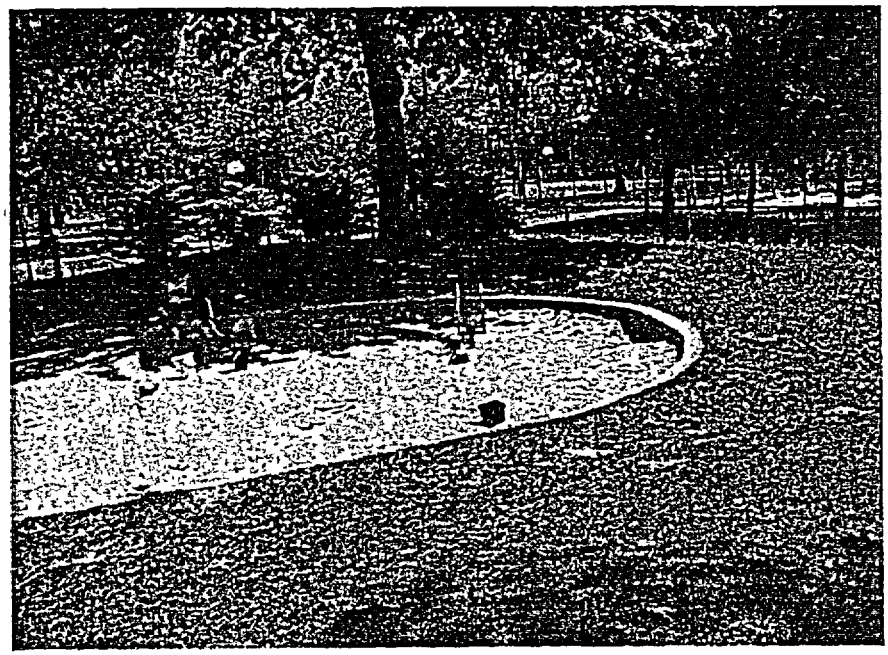
75 Cantiague Road
Sample collected at tree w/rope



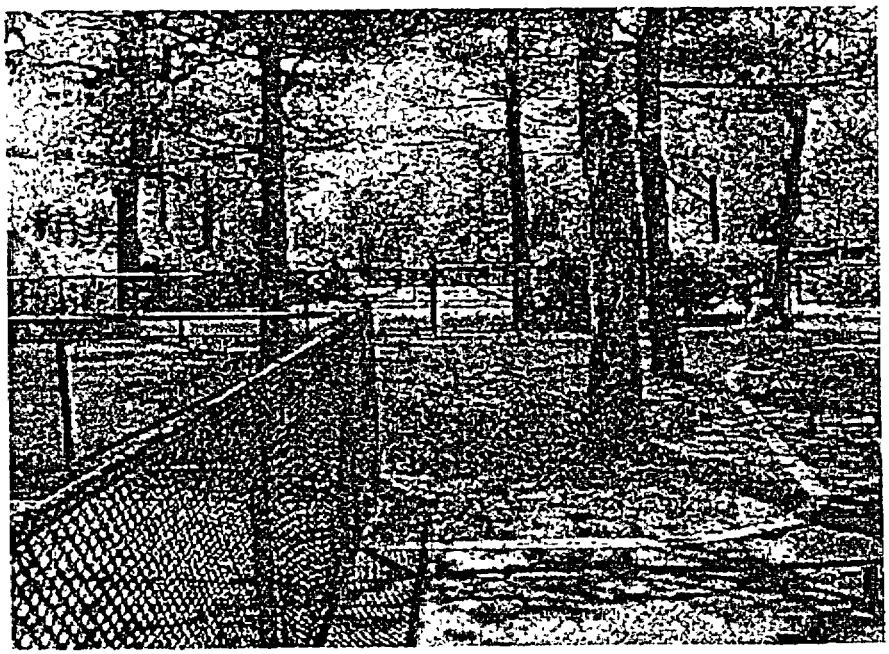
75 Cantiague Road
Sampling point at tree w/rope
view toward N/W from S/E corner



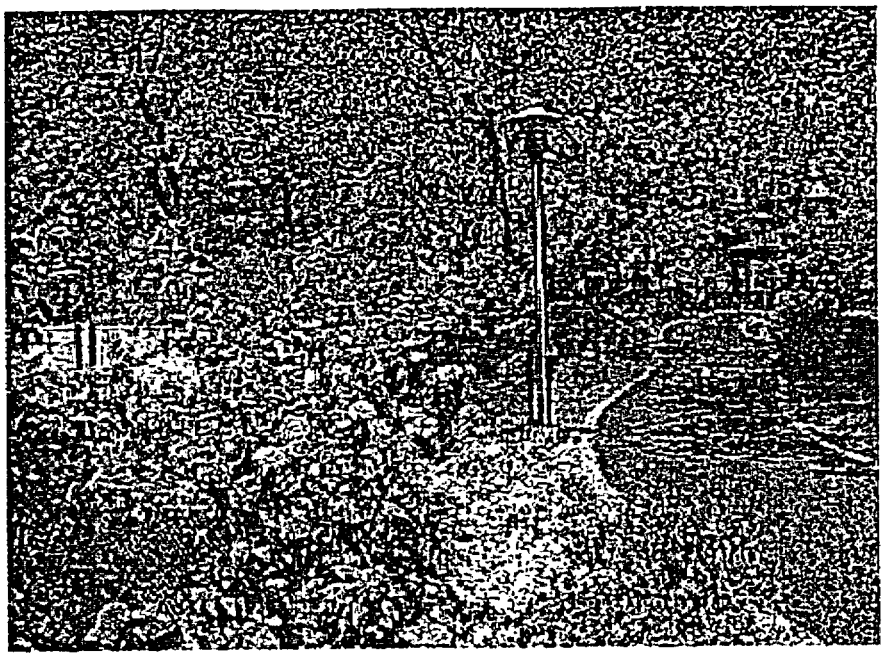
Cantiague Park Playground
Landscape rocks at center



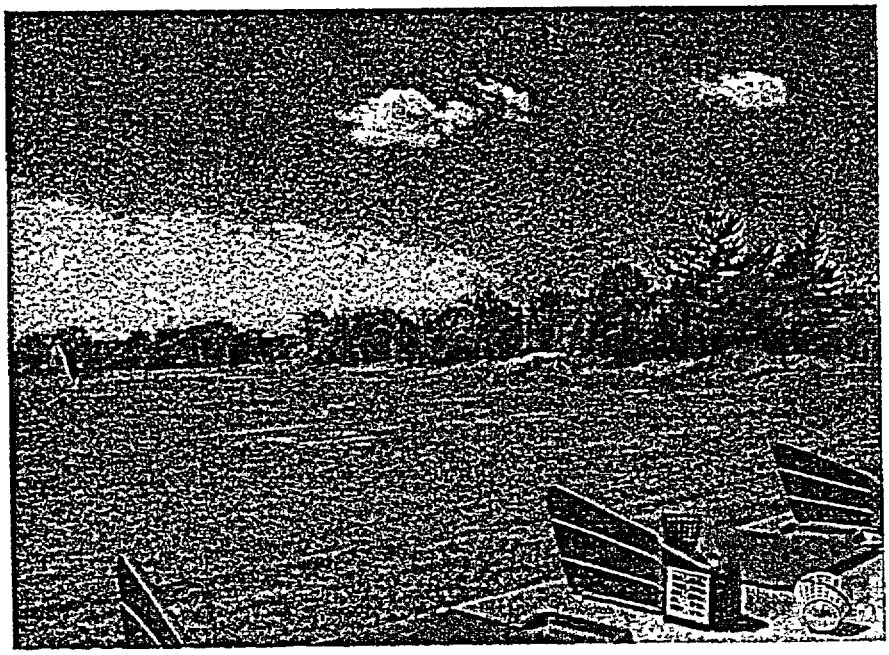
Cantiague Park Playground
Sand Box



Cantiague Park Playground
"Soft areas"

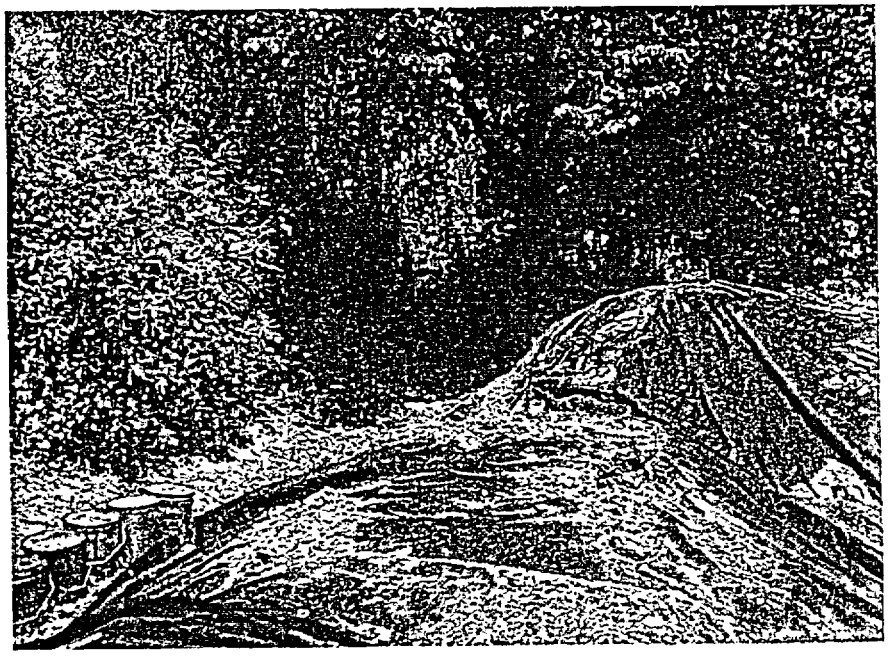


Cantiague Park Playground
View N/E from S/W corner



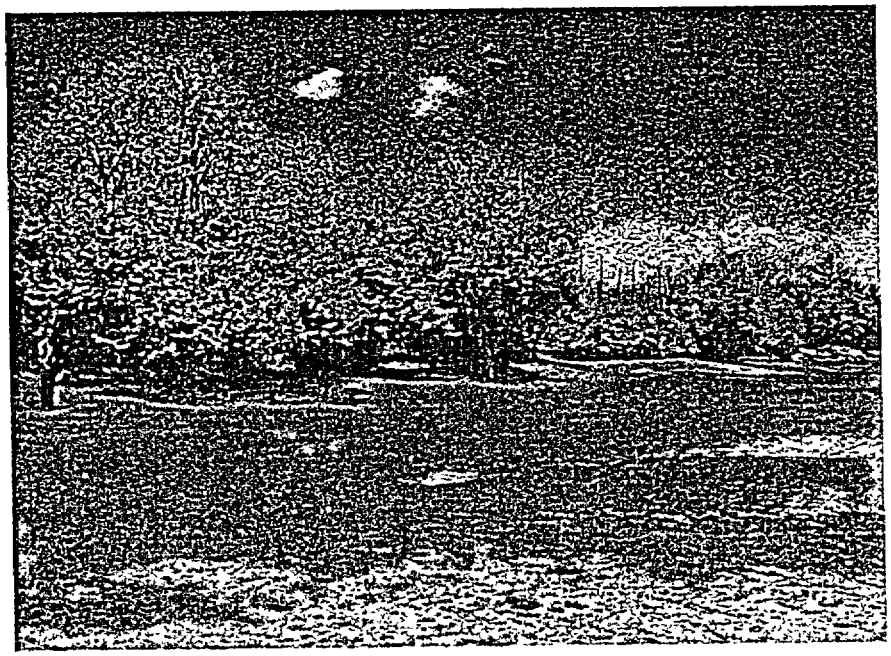
Cantiague Park Golf Driving Range
View toward S/W fence line

Cantiague Park Golf Driving Range
Fence line "flagged area" at Gilbert Displays



Cantiague Park Golf Driving Range
Soil piles at fence line toward sampling point

Cantiague Park Golf Driving Range
View west toward fence - Sout end of property



Cantiague Park Golf Driving Range
View toward N/W (fence line)