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SUBJECT: Illinois Beach State Park Asbestos Exposure Assessment  
 Zion, Lake County, IL  
 Work Assignment #0-279 – FINAL Trip Report

**EXECUTIVE SUMMARY**

Between September 4<sup>th</sup> and 12<sup>th</sup>, 2007, the Environmental Protection Agency’s (EPA) Environmental Response Team (ERT) and its Response, Engineering and Analytical Contract (REAC) collected 248 air samples, 23 microvac samples, and 61 soil samples. Of the 201 air samples analyzed in the laboratory, 13 were found to contain asbestos at or above the analytical sensitivity (see report for specific analytical sensitivities). Of the air samples containing quantifiable levels of asbestos, two were from the reference sampling locations. A total of 11 air samples associated with Activity Based Sampling (ABS), including personnel and fixed sampling locations, contained levels of asbestos at or above the analytical sensitivity. ABS events stretched a distance of approximately five miles of beach during the course of 26 events. Asbestos was not detected in any of the 23 microvac samples, nor was it quantified in any of the 61 soil samples at the respective analytical sensitivities.

**BACKGROUND**

Illinois Beach State Park (IBSP), a 4,160 acre multi-use recreational area including 6.5 miles of Lake Michigan shoreline, is located in the city of Zion, Lake County, Illinois (IL). Recreational activities available include camping, swimming, fishing, hiking, bicycling, and picnicking.

Asbestos Containing Material (ACM) washing onto the beaches at IBSP has been a concern since approximately 1997. ACM collected during beach sweeps appears to be primarily construction or housing related material. ACM is thought to have come from former homes that subsided into the lake in the area that is now occupied by the North Point Marina. As noted in the June 2006 University of Illinois at Chicago (UIC) report, *Illinois Beach State Park (IBSP): Determination of Asbestos Contamination in Beach Nourishment Sand, Final Report Findings*, one estimate is that 129 homes were ultimately destroyed by erosion in what is now the North Point Marina. The subsequent excavation for North Point Marina involved removal of 1.5 million cubic yards (yd<sup>3</sup>) of sand (including some housing infrastructure) that was placed on the northernmost point of IBSP to be used as nourishment sand to replace lost eroded sand. Other sources of nourishment sand may have been contaminated with asbestos, including sand obtained in 1995 from the

Waukegan Generating Station. The Johns-Manville Superfund Site, located to the south of IBSP, is also a potential source of ACM.

Several previous investigations have been conducted to evaluate the presence of asbestos fibers in beach sands, including the UIC study, but have generally found either non-detectable or very low levels (just above the detection limit). Most recently, the Agency for Toxic Substances and Disease Registry (ATSDR) and the Illinois Department of Environmental Resources conducted an investigation using ABS. That investigation used a sandcastle building scenario to reflect young children's exposure and a beach grading scenario to reflect more intrusive disturbance of the sand. This study was intended to include a broader range of activities and a more extensive characterization of background concentrations of asbestos in the air.

## **ACTIVITY-BASED SAMPLING METHODS**

Descriptions for the raking, ATV riding, jogging and child's play/sandcastle ABS are found in United States Environmental Protection Agency (USEPA) Environmental Response Team (ERT) Standard Operating Procedure (SOP) 2084, *Activity-Based Air Sampling for Asbestos*. Descriptions for the indoor sweeping and volleyball ABS are found in Response, Engineering and Analytical Contract (REAC) document 0279-DQAPP-090407, *Quality Assurance Project Plan for Illinois Beach State Park Asbestos Exposure Assessment*. A description for the soccer scenario is found in REAC document 0279-DWPA1-032108, *Work Plan for Work Assignment No. 0-279, Amendment 1, Illinois Beach State Park Exposure Asbestos Exposure Assessment*. The target duration for all ABS was two hours and all participants donned personal protective equipment (PPE) and were fitted with personal high and low volume sampling pumps within backpacks with the filter cassette secured to the shoulder straps near the participant's lapels in the breathing zone.

### **Raking**

Participants raked sand, weeds or grass using a metal leaf rake with a width of approximately 20 to 28 inches. Participants disturbed the top half-inch of sand or soil with an aggressive raking motion. Raking occurred in a prescribed area with an arched motion raking from the left to the right. Participants raked debris towards themselves facing one side of the prescribed area for 10 minutes, then turned 90 degrees clockwise and repeated the task on a new side. Two downwind and one upwind high-volume stationary samplers were deployed on the perimeter of the activity. A composite raking technique was employed for the IBSP investigation. Three ten foot by ten foot locations in the same general vicinity were selected for raking and each area was raked for 40 minutes of the 120 minute sampling period.

### **All-Terrain Vehicle Riding**

Eight stationary high-volume samplers were deployed on the beach while riders drove two all-terrain vehicles (ATVs) around the length of course delineated by the stationary samplers. The forward ATV was designated the "lead" and the rear ATV was designated the "tail". The ATVs maintained their relative positions (lead and tail) throughout the sampling event.

### **Jogging**

Five stationary high-volume samplers were deployed on the beach while participants jogged or walked briskly around the length of the course delineated by the stationary samplers. No more than one participant was taking part in the activity at any time.

### **Child's Play**

Participants sat on the ground and while playing with the first two to six inches of sand or soil by placing it in a small bucket, pail or toy and dumping it back on the ground. The act of filling and dumping the pail was repeated approximately every two to five minutes. Participants also actively rolled around and partially covered themselves in sand to ensure direct contact with the potentially contaminated material. During the child's play activity, the participant rotated 90 degrees clockwise every 15 minutes and repeated the task on the new side. Two downwind and one upwind high-volume stationary sampler were deployed on the perimeter of the activity.

### **Indoor Sweeping**

Personnel swept dusty areas and removed debris creating several dirt piles using a large push broom approximately 30 inches in width. The entire floor area of a single shop or room was swept. Once several small piles of dirt were made, the participant spread them back across the floor. At the completion of the sampling event, the participant swept the dust piles into a dustpan and disposed of the dirt in a trash can. No stationary high-volume perimeter samplers were associated with this activity.

### **Volleyball**

Four participants (two on each side) played volleyball on the beach. Typical volleyball rules were followed and a five minute break was provided to the participants at the halfway sampling point. Two downwind and one upwind high-volume stationary sampler was deployed on the perimeter of the activity. A standard volleyball court-sized area of approximately 30 feet wide by 60 feet long was used for this activity. Participants routinely strayed from the court area to retrieve the ball.

### **Soccer Simulation**

There were areas where the volleyball activity was not appropriate due to the narrowness of the beach. In these cases, two participants simulated a soccer game on the beach by running and kicking a soccer ball to each other. A ball was kicked between the participants for the duration of the event. Two downwind and one upwind high-volume stationary sampler was deployed on the perimeter of the activity. A standard volleyball court-sized area of approximately 30 feet wide by 60 feet long was used for this activity. Participants routinely strayed from the court area to retrieve the ball.

## **AIR SAMPLING ACTIVITIES & RESULTS**

REAC personnel mobilized to the IBSP site for the sampling effort on Monday September 3, 2007. Sampling activities for asbestos events spanned the period from Tuesday September 4, 2007 through Wednesday September 12, 2007. REAC personnel demobilized from the IBSP area on Thursday September 13, 2007 and all samples were transported via trailer back to the REAC facility in Edison, New Jersey (NJ) by REAC personnel.

Asbestos in air samples were subsequently delivered to Material Analytical Services (MAS) in Atlanta, Georgia (GA) for Transmission Electron Microscopy (TEM) analysis based on the *International Organization for Standardization (ISO), International Standard, ISO 10312 (1995(E)), Ambient Air - Determination of Asbestos Fibers - direct transfer TEM Methodology.*

A direct sample preparation technique is preferred for analyzing asbestos samples because there is less disruption to the structures, fibers, matrices and bundles than the indirect preparation method. The direct method essentially leaves the particles in the same position on the filter as when they were deposited during sample collection. A high and low volume sample was collected for ABS activities in order to increase the likelihood that at least one sample could be analyzed by the direct preparation method (ISO 10312). The high and low volume samples were co-located and collected over the same sampling period in order to estimate the same exposure. When the high volume sample was overloaded with extraneous particulate, the corresponding low volume sample was analyzed and the high volume sample was archived. This approach facilitated comparability between samples.

For all air sampling locations, an asbestos sampling train consisting of a 0.8-micron ( $\mu\text{m}$ ), 25-millimeter (mm) mixed cellulose ester (MCE) filter connected to a sampling pump was used. The top cover from the cowl extension on the sampling cassette was removed (“open-face”) and the cassette oriented face down at an angle of at least 45 degrees. The perimeter and reference air samples were collected using AirCon II samplers, calibrated to 10-liters (L)/minute (min). For ABS activities, QuickTake 30 sampling pumps calibrated to 10-L/min and SKC personal sampling pumps calibrated to a flow rate of 3.5 L/min were used to collect high and low volume personal air samples over a two-hour period.

Daily activity reference samples were also collected each day of ABS from the Nature Center and North Area of the IBSP near 17<sup>th</sup> Street off a gravel road by the park buildings. However, reference samples were not collected during the indoor sweeping events on Day 4.

Appendix A, Figures 1 and 2, depict air sampling locations for the North Beach and South Beach areas of IBSP. Tables in the body of the report reflect Total Asbestos results as Phase Contrast Microscopy Equivalent (PCME) and Total Transmission Electron Microscopy – EPA Superfund Method (TEM-EPASM) air concentrations in structures per cubic centimeter (s/cc) for those samples equal to or above the analytical sensitivity and the non-detect results associated with the particular activity. PCME fibers are equivalent in dimension to fibers that can be detected under low magnification with a Phase Contrast Microscope (PCM). PCME structures are defined as asbestos structures with the following dimensions: length greater than 5.0 microns ( $\mu\text{m}$ ), a width greater than or equal to 0.25  $\mu\text{m}$  and an aspect ratio (length/width) greater than 3 to 1. The PCME results are a subset of the TEM-EPASM results and generally include the longer fibers. As a rule of thumb, if only TEM-EPASM structures are reported, then the majority of the structures are short (less than 5.0  $\mu\text{m}$  in length). Tables in Appendix B of the report show results for PCME and Total TEM-EPASM methods for a cross-section of all analytes that were detected above the analytical sensitivity for any air sample and the corresponding non-detect samples associated with the particular activity. This cross-section of analytes includes actinolite, amosite, Libby amphibole, solid solution: tremolite-actinolite, total amphibole, total asbestos, and total chrysotile.

#### **Day 1 – Tuesday, September 4, 2007**

REAC personnel completed pre-activity reference air sampling at 20 locations along the beach and sampling at the two reference areas. Sampling times ranged from 140 minutes to 540 minutes, based on battery life, and 23 of the 24 air samples were successfully acquired. Sample #42194 at location Area 1-2 Ref was not collected or sent to the laboratory due to an air sampling pump fault that resulted in collection of an insufficient sample volume.

Positive (above the analytical sensitivity) asbestos results were detected in sample #42190, Area 13 Ref and sample #42197, Area 3 Ref #2. Total asbestos air concentration results are shown below in Table 1 for all samples associated with this event. Results for all analytes for all samples associated with this event are presented in Appendix B, Table 10 and a graphical depiction for this event is shown in Appendix A, Figures 3 and 4. It should be noted that these were pre-activity reference samples and although ERT/REAC was not actively disturbing the soil, IBSP remained open.

Weather conditions for the sampling period were sunny and hot with temperatures ranging from the lower 70s to the lower 90s. Winds were mainly from the south at less than 5 miles per hour (mph) with evidence of a light onshore lake breeze during the late afternoon and evening hours.

TABLE 1  
Asbestos in Air Sampling  
Total Asbestos Results  
Pre-Activity Reference  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	PCME	Total TEM EPASM	Analytical Sensitivity
42181	Area 22 Ref			ND	ND	0.000164
42182	Area 21 Ref			ND	ND	0.000166
42183	Area 20 Ref			ND	ND	0.000165
42184	Area 19 Ref			ND	ND	0.000166
42185	Area 17 Ref			ND	ND	0.000166
42186	Raking Ref			ND	ND	0.000165
42187	Area 13/14 Ref			ND	ND	0.000165
42188	Volleyball Ref			ND	ND	0.000165
42189	Area 14 Ref			ND	ND	0.000165
42190	Area 13 Ref			ND	<b>0.000167</b>	0.000167
42191	Area 12 Ref			ND	ND	0.000165
42192	Area 1 Ref	9/4/2007	Day 1	ND	ND	0.000166
42193	Area 1 Ref #2			ND	ND	0.000165
42195	Area 2 ref			ND	ND	0.000166
42196	Area 3 ref			ND	ND	0.000167
42197	Area 3 ref #2			ND	<b>0.000165</b>	0.000165
42198	North Area - Ref #1			ND	ND	0.000168
42199	North Area - Ref #2			ND	ND	0.000164
42200	Area 5 Ref			ND	ND	0.000165
42201	Area 5 Ref #2			ND	ND	0.000166
42202	Area 6 Ref			ND	ND	0.000166
42203	Nature Center - Ref #1			ND	ND	0.000164
42204	Nature Center - Ref #2			ND	ND	0.000168

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method

**Day 2 – Wednesday, September 5, 2007**

REAC personnel completed daily activity reference sampling and ABS for raking, volleyball, and all-terrain vehicle (ATV) riding on the South Beach. Additionally, two co-located samples were collected downwind of the volleyball activity to simulate exposure to sunbathing beachgoers. The sunbathing simulation samples were collected approximately six inches above ground level, over a towel, to simulate the breathing zone of a sunbather. Three perimeter and two personal samples were collected during the raking activity, three perimeter samples and seven personal samples were collected during the volleyball activity, and eight perimeter and four personal samples were collected during the ATV riding activity. Sample #42222 was not collected or sent to the laboratory for analysis due to an air sampling pump fault resulting in collection of an insufficient sample volume for analysis.

Positive (above the analytical sensitivity) results were detected in daily activity reference sample #42209 collected at the Nature Center and in ABS sample #42232 collected at ATV South Area 21 pump location #4. Total asbestos air concentration results are shown below in Table 2 and on the following page in Table 3 for the samples associated with both events. Results for the cross-section of analytes for all samples associated with both events are shown in Appendix B, Tables 11 and 12, and a graphical depiction for both activities is shown in Appendix A, Figures 5 and 6.

Weather conditions for the sampling period were sunny and hot with temperatures ranging from the upper 70s to the lower 90s. Winds were mainly from the south and southwest at 5 – 10 mph during the morning hours increasing to 8 – 12 mph during the afternoon.

TABLE 2  
Asbestos in Air Sampling  
Total Asbestos Results  
Daily Activity Reference  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	PCME	Total TEM EPASM	Analytical Sensitivity
42207	North Area - Ref #1			ND	ND	0.000168
42208	North Area - Ref #2	9/5/2007	Day 2	ND	ND	0.000166
42209	Nature Center - Ref #1			ND	<b>0.000166</b>	0.000166
42210	Nature Center - Ref #2			ND	ND	0.000169

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method

**Day 3 – Thursday, September 6, 2007**

REAC personnel completed daily activity reference sampling and ABS for child’s play on the North Beach, two child’s play scenarios on the South Beach, and raking scenarios near the North Point Marina. Three perimeter and three personal samples were collected during the child’s play activity on the North Beach, a total of six perimeter and four personal samples were collected during the two child’s play activities on the South Beach, and three perimeter and two personal samples were collected during the raking activity. Sample #42262, Child North High co, was

sent to the laboratory, but was not analyzed because the filter was overloaded with extraneous particulate matter and this was a co-located sample. Additionally, Sample #42247, Child North High, was successfully analyzed and Sample #42248, Child North Low was also available to be analyzed. Therefore, there was no need to analyze Sample #42262 via indirect analysis.

Positive (above the analytical sensitivity) results were detected in sample #42245, Nature Center, sample #42247, Child North High, sample #42249, Child Perim North DW #1, and sample #42259, Child Perim South DW #1. Sample #42264, Child South High had a positive result for a Solid Solution: Tremolite-Actinolite, which is not included as part of the total asbestos total sum. The use of the term “solid-solution series” recognizes that asbestos can vary in its elemental composition. For example, the mineral series tremolite-ferroactinolite contains the asbestos mineral actinolite. These mineral series are considered solid-solutions in which cations (i.e., sodium, calcium, magnesium, iron, etc.) are replaced by other cations that can affect the elemental composition of the mineral without significantly altering the structure. As another example, the Libby, Montana (MT) vermiculite ore body contains amphibole asbestos fibers of the tremolite-actinolite-richierite-winchite solid solution series. The minerals in the solution series have only minor differences in chemical content. The solid solution series tremolite-actinolite, although not included in Table 6, should be considered when evaluating risk associated with the site.

TABLE 3  
Asbestos in Air Sampling  
Total Asbestos Results  
Activity Based Sampling - ATV Riding South Area  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	PCME	Total TEM EPASM	Analytical Sensitivity
42229	ATV South Area 21			ND	ND	0.000982
42230	ATV South Area 21 #2			ND	ND	0.000982
42232	ATV South Area 21 #4			ND	<b>0.00198</b>	0.000990
42233	ATV South Area 20			ND	ND	0.000982
42234	ATV South Area 20 #2	9/5/2007	Day 2	ND	ND	0.001020
42235	ATV South Area 20 #3			ND	ND	0.000999
42236	ATV South Area 19			ND	ND	0.000982
42238	ATV South High Lead			ND	ND	0.000982
42240	ATV South High Tail			ND	ND	0.000982

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method  
ATV = All-Terrain Vehicle

Total Asbestos results are shown below in Tables 4 on the following page and Tables 5 and 6 on page 9 for all samples associated with these events. Results for all analytes for the above four samples associated with these events are shown in Appendix B, Tables 13, 14, 15 and 16 and a graphical depiction for these events are shown in Appendix A, Figures 7, 8, 9 and 10.

Weather conditions for the sampling period were variably cloudy, warm and humid with temperatures ranging from the lower 70s to the middle 80s. Winds during the morning were from the south to southwest at 8 - 15 mph with higher gusts, veering to the southeast at less than 5 mph during the afternoon. All sampling activities were completed by 1510 as rainfall started at 1555 and a total of 0.43 inches was recorded by sunrise the next day.

**Day 4 – Friday, September 7, 2007**

Due to inclement weather, REAC personnel completed the indoor sweeping ABS event in the IBSP Main Office, IBSP Maintenance facility, North Beach men’s bathroom, and South Beach men’s bathroom. During the sweeping ABS scenario, a total of five high volume and four low volume personal samples were collected. Perimeter high volume samples were not collected with this activity. Samples #42269 and #42276 were sent to the laboratory, but were not analyzed due to filter overloading with particulate matter; instead, the corresponding low volume samples were analyzed. Sample #42275 was not sent to the laboratory due to a dead battery on the low volume sampler.

TABLE 4  
Asbestos in Air Sampling  
Total Asbestos Results  
Daily Activity Reference  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	PCME	Total TEM EPASM	Analytical Sensitivity
42243	North Area - Ref #1			ND	ND	0.000167
42244	North Area - Ref #2	9/6/2007	Day 3	ND	ND	0.000165
42245	Nature Center - Ref #1			ND	<b>0.000167</b>	0.000167
42246	Nature Center - Ref #2			ND	ND	0.000167

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method

A positive (above the analytical sensitivity) result was detected in sample #42271, Sweep Park Office High. The positive result was for a Solid Solution: Tremolite-Actinolite only; therefore, no table is shown in this section. Results for all analytes for the above sample and associated microvac samples for the IBSP Office are shown in Appendix B, Table 17. There is no georeferenced depiction for indoor events, however, a generic graphic illustrating indoor ABS and microvac sampling locations is provided in Appendix C, Figures 14, 15, 16 and 17.

The day was mainly cloudy with rainfall nearby to the north throughout the day, but only 0.01 inches falling at the site.

**Day 5 – Saturday, September 8, 2007**

REAC personnel completed daily activity reference sampling and ABS for raking and ATV riding on the North Beach, and volleyball and jogging on the South Beach. Three perimeter and two personal samples were collected during the raking activity on the North Beach, eight

TABLE 5  
Asbestos in Air Sampling  
Total Asbestos Results  
Activity Based Sampling - Child's Play - North Point  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	Total		Analytical Sensitivity
				PCME	TEM EPASM	
42247	Child North High			<b>0.000997</b>	<b>0.000997</b>	0.000997
42249	Child Perim North DW #1	9/6/2007	Day 3	<b>0.000982</b>	<b>0.000982</b>	0.000982
42250	Child Perim North DW #2			ND	ND	0.000982
42251	Child Perim North UW			ND	ND	0.000997

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method

TABLE 6  
Asbestos in Air Sampling  
Total Asbestos Results  
Child's Play  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	Total		Analytical Sensitivity
				PCME	TEM EPASM	
42257	Child South High			ND	ND	0.00101
42259	Child Perim South DW #1	9/6/2007	Day 3	ND	<b>0.0157</b>	0.000982
42260	Child Perim South DW #2			ND	ND	0.000997
42261	Child Perim South UW			ND	ND	0.000997

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method

perimeter and four personal samples were collected during ATV riding on the North Beach, three perimeter and eight personal samples were collected during the volleyball activity on the South Beach, and five perimeter and two personal samples were collected during the jogging activity on the South Beach. A high volume perimeter sample simulating sunbathing exposure was collected in association with the volleyball activity. Sample #42308 was sent to the laboratory, but was not analyzed due because the 0.8 µm filter was missing from the cassette. It is postulated that the missing filter was present during the sampling event and pre- and post-calibration, but was lost due to improper handling subsequent to the completion of sampling. All samples for all ABS

activities and at the reference areas were non-detect (below the analytical sensitivity limit) for asbestos.

Weather conditions for the sampling period were sunny, dry and comfortable with temperatures holding steady near 70 degrees for the entire day. Winds were from the northwest at less than 5 mph. Prior to commencing outdoor ABS, soil moisture was estimated using the United States Department of Agriculture (USDA) Natural Resources Conservation Services, Program Aid Number 1619, *Estimating Soil Moisture by Feel and Appearance*, April 1998.

#### **Day 6 – Sunday, September 9, 2007**

REAC personnel completed daily activity reference sampling and ABS for two child's play activities, jogging and raking on the North Beach, and raking and child's play on the South Beach. A total of six perimeter and four personal samples were collected during the two child's play activities on the North Beach, five perimeter and two personal samples were collected during jogging on the North Beach, four perimeter and two personal samples were collected during the volleyball activity on the North Beach, three perimeter and two personal samples were collected during raking on the South Beach, and three perimeter and two personal samples were collected during child's play on the South Beach. Sample #42352 was sent to the laboratory, but could not be analyzed via the direct preparation method due to an overloaded filter; therefore, the corresponding low volume sample was analyzed. All samples for all activities were non-detect (below the analytical sensitivity limit) for asbestos.

Weather conditions for the sampling period were mainly sunny and comfortable with temperatures ranging from middle 60s to the middle 70s. Winds were from the northwest at 4 – 8 mph for the entire day.

#### **Day 7 – Monday, September 10, 2007**

No samples were collected due to inclement weather.

There was a threat of rain in the area throughout the morning and rainfall began shortly after 3 PM, continuing until after 9 PM and a total of just under 0.50 inches of rain was recorded.

#### **Day 8 – Tuesday, September 11, 2007**

REAC personnel completed daily activity reference sampling at the standard sampling locations, ATV riding and soccer on the North Beach, and ATV riding and jogging on the South Beach. Eight perimeter and five personal samples were collected during ATV riding on the North Beach, three perimeter and four personal samples were collected during soccer on the North Beach, eight perimeter and four personal samples were collected during ATV riding on the South Beach, and five perimeter and two personal samples were collected during jogging on the South Beach. A high volume perimeter sample simulating sunbathing exposure was collected in association with the soccer activity. Sample #42395 was not sent to the laboratory due to a damaged filter.

Positive (above the analytical sensitivity) results were detected in sample #42381, ATV South #5, sample #42391, Soccer Perim North DW #2, and sample #42406, Jog South High. Total Asbestos air concentration results are shown in Tables 7 through 9 on the following two pages. Results for all analytes for the above samples associated with these events are shown in Appendix B, Tables 18, 19, and 20 and a graphical depiction for these events is shown in Appendix A, Figures 11, 12, and 13.

Weather conditions for the sampling period were sunny, breezy and cool with temperatures ranging from the upper 40s to near 70. Winds during the morning were from the west to southwest around 5 mph with higher gusts. Sampling activities were started later in the day due wet soil from the previous day's rainfall. Prior to commencing outdoor ABS, soil moisture was estimated using the USDA Natural Resources Conservation Services, Program Aid Number 1619, *Estimating Soil Moisture by Feel and Appearance*, April 1998.

TABLE 7  
Asbestos in Air Sampling  
Total Asbestos Results  
ATV Riding  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	PCME	Total TEM EPASM	Analytical Sensitivity
42377	ATV South #1			ND	ND	0.000982
42378	ATV South #2			ND	ND	0.000982
42379	ATV South #3			ND	ND	0.000982
42380	ATV South #4			ND	ND	0.000982
42381	ATV South #5	9/11/2007	Day 8	<b>0.000884</b>	<b>0.000884</b>	0.000884
42382	ATV South #6			ND	ND	0.000982
42383	ATV South #7			ND	ND	0.000955
42384	ATV South #8			ND	ND	0.000955
42385	ATV South Tail High			ND	ND	0.000955
42387	ATV South Lead High			ND	ND	0.000955

NOTE: All results and MDL in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method  
ATV = All-Terrain Vehicle

### Day 9 – Wednesday, September 12, 2007

REAC personnel completed daily activity reference sampling and ABS for jogging and soccer on the North Beach, and raking and soccer on the South Beach. Five perimeter and two personal samples were collected during jogging on the North Beach, three perimeter and four personal samples were collected during soccer on the North Beach, three perimeter and four personal samples were collected during soccer activity on the South Beach, and three perimeter and two personal samples were collected during raking on the South Beach. A high volume perimeter sample simulating sunbathing exposure was collected during the soccer activity on the North Beach. All samples for all activities were non-detect (below the analytical sensitivity limit) for asbestos.

Weather conditions for the sampling period were sunny and breezy with temperatures ranging from the middle 40s to the middle 70s. Winds were from the north to northwest at 4 – 8 mph.

A final data validation report for asbestos in air for all positive samples and a randomly chosen subset of non-detect samples for 10% of the total samples collected can be found in Appendix D.

A copy of all National Asbestos Data Entry Spreadsheets (NADES) for all asbestos in air sampling results can be found in the attached electronic deliverable. A copy of the air sampling data sheets can be found in Appendix E.

All air sampling field blanks, lot blanks, and laboratory quality control blanks were non-detect (below the analytical sensitivity) for asbestos.

**TABLE 8**  
**Asbestos in Air Sampling**  
**Total Asbestos Results**  
**Soccer**  
**Illinois Beach State Park Exposure Assessment**  
**Zion, IL**  
**March 2008**

Sample #	Location	Sample Date	Event ID	PCME	Total TEM EPASM	Analytical Sensitivity
42389	Soccer Perim North UW			ND	ND	0.000941
42390	Soccer Perim North DW #1			ND	ND	0.000997
42391	Soccer Perim North DW #2	9/11/2007	Day 8	ND	<b>0.000955</b>	0.000955
42393	Soccer North High #1			ND	ND	0.000955
42394	Soccer North High #2			ND	ND	0.000922

NOTE: All results and MDL in structures per cubic centimeter (s/cc)  
 All data imported directly from electronic data deliverable to preclude transcription errors  
 Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
 All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
 PCME = Phase Contrast Microscopy Equivalent  
 TEM = Transmission Electron Microscopy  
 EPASM = Environmental Protection Agency Superfund Method

**TABLE 9**  
**Asbestos in Air Sampling**  
**Total Asbestos Results**  
**Jogging**  
**Illinois Beach State Park Exposure Assessment**  
**Zion, IL**  
**March 2008**

Sample #	Location	Sample Date	Event ID	PCME	Total TEM EPASM	Analytical Sensitivity
42401	Jog South #1			ND	ND	0.000955
42402	Jog South #2			ND	ND	0.000945
42403	Jog South #3	9/11/2007	Day 8	ND	ND	0.000955
42404	Jog South #4			ND	ND	0.000955
42405	Jog South #5			ND	ND	0.000955
42406	Jog South High			ND	<b>0.000955</b>	0.000955

NOTE: All results and MDL in structures per cubic centimeter (s/cc)  
 All data imported directly from electronic data deliverable to preclude transcription errors  
 Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
 All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
 PCME = Phase Contrast Microscopy Equivalent  
 TEM = Transmission Electron Microscopy  
 EPASM = Environmental Protection Agency Superfund Method

## **SOIL SAMPLING ACTIVITIES & RESULTS**

A five-point composite sample was collected from ABS locations and analyzed for asbestos in soil, particle size and soil moisture. Soil samples were collected from an area measuring approximately 5 x 5 inches to a depth of two inches below ground surface. Sufficient soil was collected and homogenized on site using the quartering method outlined in the Superfund Representative Sampling Guide. Soil samples were subsequently shipped to Environmental Monitoring Systems Laboratory (EMSL) in Westmont, NJ for California Air Resources Board (CARB) Method 435 analysis by Polarized Light Microscopy (PLM) for determination of asbestos in soil, American Society for Testing Materials Method (ASTM) D422-63 (2007), *Standard Test Method for Particle Size Analysis of Soils*, and ASTM D2216-05, *Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass*.

Soil was collected from 61 locations with an 8-ounce glass jar filled with soil for asbestos analysis and a 16-ounce jar for moisture and particle size analysis. A total of 122 soil samples were delivered to EMSL for analysis. Sample #42814, sample #42816, and sample #42822 were lost due to broken jars and the contents were not recovered so they could not be analyzed. Sample #42868 arrived in a broken jar and contents were recovered for analysis.

All samples were non-detect for asbestos in soil at the analytical sensitivity of 0.25%. A final validation report for a chosen subset of non-detect samples can be found in Appendix F. A copy of the final laboratory report for all soil analyses can be found in Appendix G.

## **DUST SAMPLING ACTIVITIES & RESULTS**

One of the pillars of asbestos work and removal is to minimize or prevent the spread of contamination. Since the degree and extent of potential asbestos contamination was not fully characterized at the time the ERT/REAC study was conducted, it was unknown whether asbestos contamination was being transported off-site. There are numerous incidents recorded where asbestos contamination has been transported from one location to another on clothes and materials, supporting the likelihood of an ongoing low-level asbestos fiber exposure to the impacted population. In order to determine the likelihood or degree of asbestos “take home”, if any, microvacuum samples of clothing and materials exposed to potentially contaminated IBSP beach sand were collected.

Additionally, the Illinois Dunesland Preservation Society (IDPS) and its representatives expressed a specific concern regarding the potential for off-site transportation of asbestos contamination. At the request of the IDPS, ERT/REAC expanded the initial off-site transport study to include additional clothing items and locations.

Microvac dust samples were collected from buildings where the indoor sweeping scenarios were conducted, as well as the women’s bathroom on the North Beach prior to the ABS sweeping events. Microvac samples were also collected from ATVs, beach towels, shorts and sandals used during ABS.

The microvac samples collected from beach towels, shorts and sandals used during ABS were collected subsequent to the use of those items in an activity. Samples were collected using a SKC personal sampling pump calibrated to a flow rate of 2.0 L/min for a period of two minutes over a 100 square centimeter (cm<sup>2</sup>) template. A total of 23 dust samples were subsequently shipped to EMSL for analysis via ASTM D5755-03, *Standard Test Method for Microvacuum Sampling and*

*Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Surface Loading.*

All samples were non-detect for asbestos in dust at the analytical sensitivity. A final validation report for all samples can be found in Appendix H. A copy of all NADES spreadsheets for all asbestos in dust analyses can be found in the attached electronic deliverable. A copy of the final laboratory report for all dust analyses can be found in Appendix I.

The wearers were instructed to aggressively dirty the beach articles by grinding them into the sand and tossing sand on the articles. The aggressive use of the items was conducted in order to simulate extended use of the materials at the beach and to ensure full contact with potentially contaminated sand.

**ELECTRONIC DELIVERABLES**

A copy of the SCRIBE database containing general sample information, analytical results for all samples, an Excel spreadsheet with a specific subset set of air sampling results from the SCRIBE database, and meteorological data, plus a single Portable Document Format (.PDF) file containing report figures can be found in the attached electronic deliverable.

cc: Central File WA #0-279  
Electronic File I:/Archive/REAC4/0279/D/TR/079-DTR-033108

APPENDIX A  
Geographical Information Systems Figures  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

APPENDIX B  
Asbestos in Air Sampling Results  
All Analytes  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

TABLE 10  
Asbestos in Air Sampling Results  
Pre-Activity Reference  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42181	Area 22 Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000164
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42182	Area 21 Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000166
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42183	Area 20 Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000165
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42184	Area 19 Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000166
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42185	Area 17 Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000166
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42186	Raking Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000165
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method

TABLE 10 (cont.)  
 Asbestos in Air Sampling Results  
 Pre-Activity Reference  
 Illinois Beach State Park Exposure Assessment  
 Zion, IL  
 March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42187	Area 13/14 Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000165
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42188	Volleyball Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000165
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42189	Area 14 Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000165
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42190	Area 13 Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000167
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	<b>0.000167</b>	
				Total Chrysotile (CH)	ND	<b>0.000167</b>	
42191	Area 12 Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000165
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42192	Area 1 Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000166
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
 All data imported directly from electronic data deliverable to preclude transcription errors  
 Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
 PCME = Phase Contrast Microscopy Equivalent  
 TEM = Transmission Electron Microscopy  
 EPASM = Environmental Protection Agency Superfund Method

TABLE 10 (cont.)  
 Asbestos in Air Sampling Results  
 Pre-Activity Reference  
 Illinois Beach State Park Exposure Assessment  
 Zion, IL  
 March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42193	Area 1 Ref #2	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000165
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42195	Area 2 ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000166
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42196	Area 3 ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000167
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42197	Area 3 ref #2	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000165
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	<b>0.000165</b>	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	<b>0.000165</b>	
				Total Asbestos	ND	<b>0.000165</b>	
				Total Chrysotile (CH)	ND	ND	
42198	North Area - Ref #1	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000168
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42199	North Area - Ref #2	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000164
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
 All data imported directly from electronic data deliverable to preclude transcription errors  
 Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
 PCME = Phase Contrast Microscopy Equivalent  
 TEM = Transmission Electron Microscopy  
 EPASM = Environmental Protection Agency Superfund Method

TABLE 10 (cont.)  
 Asbestos in Air Sampling Results  
 Pre-Activity Reference  
 Illinois Beach State Park Exposure Assessment  
 Zion, IL  
 March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42200	Area 5 Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000165
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42201	Area 5 Ref #2	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000166
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42202	Area 6 Ref	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000166
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42203	Nature Center - Ref #1	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000164
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42204	Nature Center - Ref #2	9/4/2007	Day 1	actinolite (AC)	ND	ND	0.000168
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
 All data imported directly from electronic data deliverable to preclude transcription errors  
 Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
 PCME = Phase Contrast Microscopy Equivalent  
 TEM = Transmission Electron Microscopy  
 EPASM = Environmental Protection Agency Superfund Method

TABLE 11  
Asbestos in Air Sampling Results  
Daily Activity Reference  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42207	North Area - Ref #1	9/5/2007	Day 2	actinolite (AC)	ND	ND	0.000168
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42208	North Area - Ref #2	9/5/2007	Day 2	actinolite (AC)	ND	ND	0.000166
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42209	Nature Center - Ref #1	9/5/2007	Day 2	actinolite (AC)	ND	ND	0.000166
				amosite (AM)	ND	<b>0.000166</b>	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	<b>0.000166</b>	
				Total Asbestos	ND	<b>0.000166</b>	
				Total Chrysotile (CH)	ND	ND	
42210	Nature Center - Ref #2	9/5/2007	Day 2	actinolite (AC)	ND	ND	0.000169
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method

TABLE 12  
Asbestos in Air Sampling Results  
ATV Riding  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42229	ATV South Area 21	9/5/2007	Day 2	actinolite (AC)	ND	ND	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42230	ATV South Area 21 #2	9/5/2007	Day 2	actinolite (AC)	ND	ND	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42232	ATV South Area 21 #4	9/5/2007	Day 2	actinolite (AC)	ND	ND	0.000990
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	<b>0.00198</b>	
				Total Chrysotile (CH)	ND	<b>0.00198</b>	
42233	ATV South Area 20	9/5/2007	Day 2	actinolite (AC)	ND	ND	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42234	ATV South Area 20 #2	9/5/2007	Day 2	actinolite (AC)	ND	ND	0.00102
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42235	ATV South Area 20 #3	9/5/2007	Day 2	actinolite (AC)	ND	ND	0.000999
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method  
ATV = All-Terrain Vehicle

TABLE 12 (cont.)  
 Asbestos in Air Sampling Results  
 ATV Riding  
 Illinois Beach State Park Exposure Assessment  
 Zion, IL  
 March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42236	ATV South Area 19	9/5/2007	Day 2	actinolite (AC)	ND	ND	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42238	ATV South High Lead	9/5/2007	Day 2	actinolite (AC)	ND	ND	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42240	ATV South High Tail	9/5/2007	Day 2	actinolite (AC)	ND	ND	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
 All data imported directly from electronic data deliverable to preclude transcription errors  
 Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
 All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
 PCME = Phase Contrast Microscopy Equivalent  
 TEM = Transmission Electron Microscopy  
 EPASM = Environmental Protection Agency Superfund Method  
 ATV = All-Terrain Vehicle

TABLE 13  
 Asbestos in Air Sampling Results  
 Daily Activity Reference  
 Illinois Beach State Park Exposure Assessment  
 Zion, IL  
 March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42243	North Area - Ref #1	9/6/2007	Day 3	actinolite (AC)	ND	ND	0.000167
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42244	North Area - Ref #2	9/6/2007	Day 3	actinolite (AC)	ND	ND	0.000165
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42245	Nature Center - Ref #1	9/6/2007	Day 3	actinolite (AC)	ND	<b>0.000167</b>	0.000167
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	<b>0.000167</b>	
				Total Asbestos	ND	<b>0.000167</b>	
				Total Chrysotile (CH)	ND	ND	
42246	Nature Center - Ref #2	9/6/2007	Day 3	actinolite (AC)	ND	ND	0.000167
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
 All data imported directly from electronic data deliverable to preclude transcription errors  
 Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
 PCME = Phase Contrast Microscopy Equivalent  
 TEM = Transmission Electron Microscopy  
 EPASM = Environmental Protection Agency Superfund Method

TABLE 14  
 Asbestos in Air Sampling Results  
 Child's Play – North Point  
 Illinois Beach State Park Exposure Assessment  
 Zion, IL  
 March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42247	Child North High	9/6/2007	Day 3	actinolite (AC)	<b>0.000997</b>	<b>0.000997</b>	0.000997
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	<b>0.000997</b>	<b>0.000997</b>	
				Total Asbestos	<b>0.000997</b>	<b>0.000997</b>	
				Total Chrysotile (CH)	ND	ND	
42249	Child Perim North DW #1	9/6/2007	Day 3	actinolite (AC)	<b>0.000982</b>	<b>0.000982</b>	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	<b>0.000982</b>	<b>0.000982</b>	
				Total Asbestos	<b>0.000982</b>	<b>0.000982</b>	
				Total Chrysotile (CH)	ND	ND	
42250	Child Perim North DW #2	9/6/2007	Day 3	actinolite (AC)	ND	ND	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42251	Child Perim North UW	9/6/2007	Day 3	actinolite (AC)	ND	ND	0.000997
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
 All data imported directly from electronic data deliverable to preclude transcription errors  
 Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
 All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
 PCME = Phase Contrast Microscopy Equivalent  
 TEM = Transmission Electron Microscopy  
 EPASM = Environmental Protection Agency Superfund Method

TABLE 15  
Asbestos in Air Sampling Results  
Child's Play  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42257	Child South High	9/6/2007	Day 3	actinolite (AC)	ND	ND	0.00101
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42259	Child Perim South DW #1	9/6/2007	Day 3	actinolite (AC)	ND	ND	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	<b>0.0157</b>	
				Total Chrysotile (CH)	ND	<b>0.0157</b>	
42260	Child Perim South DW #2	9/6/2007	Day 3	actinolite (AC)	ND	ND	0.000997
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42261	Child Perim South UW	9/6/2007	Day 3	actinolite (AC)	ND	ND	0.000997
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method

TABLE 16  
 Asbestos in Air Sampling Results  
 Child's Play  
 Illinois Beach State Park Exposure Assessment  
 Zion, IL  
 March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42264	Child South High	9/6/2007	Day 3	actinolite (AC)	ND	ND	0.00990
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	<b>0.00990</b>	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42265	Child Perim South DW #1	9/6/2007	Day 3	actinolite (AC)	ND	ND	0.000990
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and analytical sensitivity in structures per cubic centimeter (s/cc)  
 All data imported directly from electronic data deliverable to preclude transcription errors  
 Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
 All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
 PCME = Phase Contrast Microscopy Equivalent  
 TEM = Transmission Electron Microscopy  
 EPASM = Environmental Protection Agency Superfund Method

TABLE 17  
 Asbestos in Air and Dust Sampling Results  
 Illinois Beach State Park Main Office  
 Illinois Beach State Park Exposure Assessment  
 Zion, IL  
 March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42271	Sweep Park Office High	9/7/2007	Day 4	actinolite (AC)	ND	ND	0.000922
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	<b>0.000922</b>	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42833	Entrance Rug Park Office (Microvac)	9/7/2007	Day 4	actinolite (AC)	ND	ND	480
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42834	Tile Floor Entrance Main Lobby (Microvac)	9/7/2007	Day 4	actinolite (AC)	ND	ND	480
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42835	Tile Floor Main Desk (Microvac)	9/7/2007	Day 4	actinolite (AC)	ND	ND	480
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: Results and analytical sensitivity for Air Sample #42271 in structures per cubic centimeter (s/cc)  
 Results and analytical sensitivity for Dust Sample #42833, #42834, and #42835 in structures per square centimeter (s/cm<sup>2</sup>)  
 All data imported directly from electronic data deliverable to preclude transcription errors  
 Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
 PCME = Phase Contrast Microscopy Equivalent  
 TEM = Transmission Electron Microscopy  
 EPASM = Environmental Protection Agency Superfund Method

TABLE 18  
Asbestos in Air Sampling Results  
ATV Riding  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42377	ATV South #1	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42378	ATV South #2	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42379	ATV South #3	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42380	ATV South #4	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42381	ATV South #5	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000884
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	<b>0.000884</b>	<b>0.000884</b>	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	<b>0.000884</b>	<b>0.000884</b>	
				Total Asbestos	<b>0.000884</b>	<b>0.000884</b>	
				Total Chrysotile (CH)	ND	ND	
42382	ATV South #6	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000982
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and MDL in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method  
ATV = All-Terrain Vehicle

TABLE 18 (cont.)  
 Asbestos in Air Sampling Results  
 ATV Riding  
 Illinois Beach State Park Exposure Assessment  
 Zion, IL  
 March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42383	ATV South #7	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000955
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42384	ATV South #8	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000955
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42385	ATV South Tail High	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000955
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42387	ATV South Lead High	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000955
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and MDL in structures per cubic centimeter (s/cc)  
 All data imported directly from electronic data deliverable to preclude transcription errors  
 Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
 All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
 PCME = Phase Contrast Microscopy Equivalent  
 TEM = Transmission Electron Microscopy  
 EPASM = Environmental Protection Agency Superfund Method  
 ATV = All-Terrain Vehicle

TABLE 19  
Asbestos in Air Sampling Results  
Soccer  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42389	Soccer Perim North UW	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000941
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42390	Soccer Perim North DW #1	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000997
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42391	Soccer Perim North DW #2	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000955
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	<b>0.000955</b>	
				Total Chrysotile (CH)	ND	<b>0.000955</b>	
42393	Soccer North High #1	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000955
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42394	Soccer North High #2	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000922
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	

NOTE: All results and MDL in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method

TABLE 20  
Asbestos in Air Sampling Results  
Jogging  
Illinois Beach State Park Exposure Assessment  
Zion, IL  
March 2008

Sample #	Location	Sample Date	Event ID	Analyte	PCME	Total TEM EPASM	Analytical Sensitivity
42401	Jog South #1	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000955
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42402	Jog South #2	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000945
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42403	Jog South #3	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000955
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42404	Jog South #4	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000955
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42405	Jog South #5	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000955
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	ND	
				Total Chrysotile (CH)	ND	ND	
42406	Jog South High	9/11/2007	Day 8	actinolite (AC)	ND	ND	0.000955
				amosite (AM)	ND	ND	
				Libby amphibole (LA)	ND	ND	
				Solid Soln: Trem-Act	ND	ND	
				Total Amphibole	ND	ND	
				Total Asbestos	ND	<b>0.000955</b>	
				Total Chrysotile (CH)	ND	<b>0.000955</b>	

NOTE: All results and MDL in structures per cubic centimeter (s/cc)  
All data imported directly from electronic data deliverable to preclude transcription errors  
Results of ND indicate the analyte was not detected at or below the analytical sensitivity as specified in the analytical sensitivity column  
All soil samples associated with this activity were ND for asbestos at the analytical sensitivity of 0.25% via Polarized Light Microscopy (PLM)  
PCME = Phase Contrast Microscopy Equivalent  
TEM = Transmission Electron Microscopy  
EPASM = Environmental Protection Agency Superfund Method