El Dorado Hills
Naturally Occurring Asbestos
Multimedia Exposure Assessment
El Dorado Hills, California

Activity-Based Outdoor Air Sampling of Community Park and Schools
Field Sampling Plan
WORKING DRAFT

Contract No.: 68-W-01-012
TDD No.: 09-04-01-0011
Job No.: 001275.0440.01CP

September 2004

Prepared for:
U.S. Environmental Protection Agency
Region IX

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Superfund Technical Assessment and Response Team

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1 Introduction

The United States Environmental Protection Agency (USEPA) has directed Ecology and Environment, Inc.'s (E & E's) Superfund Technical Assessment and Response Team (START) to conduct a multimedia assessment of community areas and schools in the City of El Dorado Hills in California to assess the potential for exposure from naturally occurring asbestos present in soils that have been disturbed. This Field Sampling Plan (FSP) addresses activity-based outdoor air sample collection at the following locations:

- The New York Creek Nature Trail;
- The New York Creek baseball playing field at the Community Park;
- The north baseball playing field at the Community Park;
- The south baseball playing field at the Community Park;
- The (lower) soccer playing field between the north and south baseball playing fields at the Community Park;
- The baseball playing field at Silva Valley Elementary School;
- The basketball court area at Rolling Hills Middle School;
- The soccer playing field at Rolling Hills Middle School;
- Playing fields and paved play areas at Jackson Elementary School;
- The garden and outdoor classroom at Jackson Elementary School; and
- Bare areas and pathways at Jackson Elementary School.

The task-specific field sampling information pertaining to activity-based outdoor air sample collection at these locations is addressed in this FSP, which is supplemental to information addressed in the *El Dorado Hills Naturally Occurring Asbestos, Multimedia Exposure Assessment, El Dorado Hills, California, Quality Assurance Project Plan* (QAPP). This FSP describes in detail the planned sample locations, sample location rationale, numbers of samples, and specific sample collection and handling techniques that will be used, including protocols and sample custody procedures that will be used to ensure that sample integrity is not compromised. This FSP is intended to reflect accurately the planned data-gathering activities for this investigation.

2 Background

Background information is described in the *El Dorado Hills Naturally Occurring Asbestos, Multimedia Exposure Assessment, El Dorado Hills, California, Quality Assurance Project Plan.*

3 Project Objectives

The activity-based outdoor air sampling is tentatively scheduled to take place in October 2004. The duration of this sampling collection activity is expected to last 6 days.

Project objectives are described in the *El Dorado Hills Naturally Occurring Asbestos, Multimedia Exposure Assessment, El Dorado Hills, California, Quality Assurance Project Plan.*

4 Sampling Design

Scenario rationale and design are described in detail in the *El Dorado Hills Naturally Occurring Asbestos, Multimedia Exposure Assessment, El Dorado Hills, California, Quality Assurance Project Plan.*

4.1 Scenario Design Overview

This FSP addresses the collection of outdoor air samples during 18 different activity-based sampling events or scenarios at multiple areas of concern within the El Dorado Hills community. The areas where the scenario sampling will be conducted are illustrated on Figure AB4-1: Scenario Location Map. The scenarios are designed so that activity will be conducted at each of the areas of concern for the duration of the event in attempt to suspend particles and fibers into the air. The scenarios will simulate activities ranging from minimal to aggressive dust generation.

Wind direction is known to be variable in the vicinity of the El Dorado Hills Community Park. A meteorological station will be set up at a secure location at the Community Park to monitor wind speed and direction for several days (or more) prior to and during activity-based collection of outdoor air samples. A portable meteorological station also will be used to supplement the data from the meteorological station at the Community Park when sampling is conducted in locations that are outside of the park. The actual location of upwind and downwind high-volume stationary air sample pumps will need be determined immediately prior to each scenario and will be based primarily on wind direction. In addition, selection of appropriate sample pump locations will require consideration of their placement away from physical structures that may impede the wind flow in their vicinity.

The sampling scenarios will be conducted with both personal (i.e., low-flow) and high-volume (i.e., high-flow) sample pumps. Each day three scenarios will be performed with associated outdoor air sampling. The first day of sampling will be conducted during three scenarios at areas of concern at Jackson Elementary School. For the remaining five days of activity-based sampling at Silva Valley Elementary School, Rolling Hills Middle School and the Community Park, the first scenario of each day will be a playing field or area scenario, followed by a New York Creek Nature Trail scenario, followed by another playing field or area scenario.

During playing field scenarios (i.e., baseball, soccer, and grass-covered playing fields at the Community Park, Silva Valley Elementary School, Rolling Hills Middle School, and Jackson Elementary School), five high-volume air sample pumps will be placed in stationary positions on, upwind, and downwind of the playing field. Five personal air sample pumps will be placed on five sampling team members who will participate in scenario activities within the playing field, and one personal air sample pump will be placed on a sampling team member who will observe the playing field activity from a spectator area.

Insert Figure AB4-1
Scenario Location Map

During the playing area scenario (i.e., basketball court area at Rolling Hills Middle School), five high-volume air sample pumps will be placed in stationary positions on, upwind, and downwind of the playing area. Five personal air sample pumps will be placed on five sampling team members who will participate in scenario activities within the playing area, and one personal air sample pump will be placed on a sampling team member who will observe the playing area activity from a spectator area.

During the garden and outdoor classroom area scenario at Jackson Elementary School, five high-volume air sample pumps will be placed in stationary positions within, upwind, and downwind of the area. Six personal air sample pumps will be placed on six sampling team members who will participate in scenario activities within the area. Five of the sampling team members wearing personal air sample pumps will simulate child or youth activities within the areas, and one sampling team member wearing a personal air sample pump will simulate adult activities within the areas.

During trail scenarios and a scenario at bare areas and pathways at Jackson Elementary School, five personal air sample pumps will be placed on five sampling team members who will participate in scenario activities on the trails, bare areas, and pathways, and one personal air sample pump will be placed on a non-active sampling team member who will either be at the periphery of the activities or (for the New York Creek Nature Trail scenarios) will be standing away from the trail at the Community Park children's playground. During trail scenarios, five to seven high-volume air sample pumps also will be placed in stationary positions along the trail.

Since the children's playground at the Community Park is directly adjacent to Community Park playing fields, the sample design includes placement of high-volume stationary air sample pumps at the children's playground during all Community Park playing field scenarios and some of the trail scenarios.

Each sampling scenario will run for 2 hours, during which the samples will be collected on air filters using air sample pumps. Some additional personal air sample pumps will be used to collect composite samples of all three daily scenarios for a maximum collection duration of about 6 to 8 hours. The 2-hour scenario duration was chosen to enable the sampling team to simulate representative activities and obtain sufficient outdoor air volume for the desired analytical sensitivity. Since the USEPA desires to impact the community as little as possible during the sampling, the total field sampling duration is designed to be as short as practical.

Except for the personal air sample pumps worn by sampling team members participating as adults, adult observers or who are non-active adult participants, the sample pump intakes will be at a height of 3 feet above the ground surface for the personal air sample pumps for all scenarios. Except for the high-volume stationary air sample pumps along the trail during the New York Creek Nature Trail scenarios, sample pump intakes will be at a height of 3 feet above ground surface for the other high-volume stationary air sample pumps. This height is based upon a typical breathing height for youths (ages 1 to 17 years) engaged in play or other activities in these locations. This height was selected taking into consideration the average height of youths between those ages as well as the myriad body positions (e.g., standing, sliding, crawling, sitting, squatting) they may assume during play and other activities.

The sample pump intakes for the personal air sample pumps worn by sampling team members participating as adults, adult observers or who are non-active adult participants, will be at a

height of 5 feet above the ground surface. The sample pump intakes for the high-volume stationary air sample pumps positioned along the trail during the New York Creek Nature Trail scenarios will be at a height of 5 feet above ground surface. This height is based upon a typical breathing height for an adult. Refer to Table AB4-1 for a summary of air sample collection heights.

Table AB4-1
Air Sample Collection Heights

Sample Type	Matrix	Sampling Height Above Ground Surface
Personal Air Samples (simulated youth exposure)	Air	3 feet
Personal Air Samples (simulated adult exposure)	Air	5 feet
Playing Field/Area, Outdoor Classroom/Garden, Bare Areas/Pathways High-volume Stationary Air Samples	Air	3 feet
New York Creek Nature Trail High-volume Stationary Air Samples	Air	5 feet
Upwind High-volume Stationary Air Samples	Air	3 feet
Downwind High-volume Stationary Air Samples	Air	3 feet
Children's Playground Area High-volume Stationary Air Samples Collected During Community Park Playing Field and Trail Scenarios	Air	3 feet
Dust Monitoring Data	Air	3 feet

4.2 Activity-Based Sampling Scenarios

Outdoor air samples will be collected during 18 different activity-based sampling events or scenarios at multiple areas of concern within the El Dorado Hills community. Activity will be conducted at each of the areas of concern for the duration of the event in an attempt to suspend particles and fibers into the air. The scenarios will simulate activities ranging from minimal to aggressive dust generation.

The activities that will be conducted during the scenarios were chosen as a means of suspending particles and fibers into the air. Most members of the sampling team will be wearing personal air sample pumps with their intakes at 3 feet above ground surface to simulate youth exposures. A few members of the sampling team will be wearing personal air sample pumps with their intakes at 5 feet above ground surface to simulate adult exposures. For the 3-foot samples, the majority of activities that will be conducted are intended to be typical of youth activity in the areas of concern, however, there are some activities that will be conducted by that may not be considered typical activities for a youth (e.g., infield maintenance with a grooming tractor).

Many of the techniques that will be used to agitate particles and cause them to become airborne were chosen because they are similar to those that were used successfully for sampling at Oak Ridge High School to simulate exposure scenarios. Previous studies conducted by USEPA in Libby, Montana, where tremolite asbestos is a concern, have shown that tremolite asbestos is present in the breathing zone of individuals who are involved in routine physical activities, but that it falls out of the air quickly and is difficult to measure unless kept aloft in the vicinity of the sample pump intake.

4.2.1 Baseball Playing Fields

Seven baseball playing field scenario sampling events will be conducted. (Refer to Section 4.3 for the sampling sequence.) Five scenarios will be at the baseball playing fields at the Community Park, and two at the baseball playing field at Silva Valley Elementary School. The purpose of the sampling during the baseball playing field scenarios is to establish the level of asbestos fibers that may be present in air at or near the baseball playing fields and at the children's playground while activities are conducted on and around the baseball playing fields. Prior to collecting samples for each of the baseball playing field scenarios, the wind direction will be checked using a meteorological station to determine the most appropriate location for a background or upwind sample for each baseball playing field.

The baseball diamonds at the Community Park are skinned, which means that the infield has no grass. Normal practice at the Community Park is to periodically import a mix of crushed lava rock and topsoil to place on the infields. The baseball diamond at Silva Valley Elementary School has a grass infield, and practices related to the baseline topsoil are not known at this time. During the baseball playing field scenarios, activity-based air sampling will be conducted to simulate typical activities and potential exposures. Activities that will be conducted at the baseball playing fields may include, but will not be limited to:

- Using the maintenance tractor to drag the infield (pulling net/chains);
- Performing other grooming or maintenance activities such as hand raking, mound repair, and using the chalker (without chalk);
- Sweeping the dugout and other areas around the field such as those used by spectators; and
- Simulating baseball play in the infield and outfield by sliding into bases; hitting, throwing and catching grounders; walking; running; and squatting.

Five personal air sample pumps with their intakes at 3 feet above ground surface will be placed on five sampling team members who will participate in scenario activities within the baseball playing field. One personal air sample pump with its intake at 5 feet above ground surface will be placed on a sampling team member who will be in a spectator area acting as an adult observer of the playing field activity. All samples will be collected during scenario activities.

For each baseball playing field scenario, five high-volume air sample pumps will be placed in stationary positions with their intakes at 3 feet above ground surface on, downwind, and upwind of the baseball playing field. The planned high-volume stationary air sample pump locations for the baseball playing field scenarios are illustrated on Figure AB4-2: High-Volume Sampler Location Map - Generalized Sampler Locations During Baseball Playing Field Scenarios. The five high-volume stationary air sample pumps (with intakes 3 feet above ground surface) will be placed in the following locations:

Insert Figure AB4-2: High-Volume Sampler Location Map - Generalized Sampler Locations During Baseball Playing Field Scenarios

- One at the pitcher's mound;
- Two near the edge of the infield between 50 feet and 100 feet downwind of the pitcher's mound sample pump;
- One at least 100 feet upwind of the baseball playing field infield area; and
- One approximately 300 feet downwind of the baseball playing field infield area.

During those baseball playing field scenarios conducted at the Community Park (i.e., not at Silva Valley Elementary School), five other high-volume sample pumps will be placed in stationary positions with their intakes at 3 feet above ground surface within the children's playground. The location of the children's playground sample pumps is indicated in Figure AB4-3: High-Volume Sampler Location Map - Playground Sampler Locations During Community Park Playing Field and Trail Scenarios. The five high-volume stationary air sample pumps (with intakes 3 feet above ground surface) will be in the following locations at the children's playground:

- One on the southeast side of the children's playground;
- One on the southwest side of the children's playground;
- One on the northeast side of the children's playground;
- One on the northwest side of the children's playground; and
- One at the center of the children's playground.

Prior to conducting the activity-based air sampling scenarios, the baseball playing fields will not be wetted down. The sample pumps will be turned on to collect air samples for 2 hours, while sampling team members employ activity-based sampling techniques. The personal air sample pumps will remain on the sampling team members for the entire 2-hour sampling event. If any of the sampling team members need to leave the work zone, other field personnel will replace them so that the activity level remains relatively constant and personal air sample pumps continue to collect air from the baseball playing field during the entire 2 hours.

One member of the sampling team wearing a personal air monitor will begin by using the maintenance tractor to drag the infield. Although dragging the infield is an activity that would typically be conducted by an adult, a member of the sampling team wearing an air sample pump with its intake at 3 feet above ground surface will be performing this activity during the scenario. The dragging is being conducted as a means of causing particles and fibers to be suspended in the air in an area where it is typical for youths to play. The entire area of the infield will be dragged one time a the rate of speed determined to be normal practice. The dragging activity should take between 10 and 20 minutes. During the dragging activity the other sampling team members will be conducting scenario activities in the outfield or the dugout and spectator areas. Once the infield is dragged, sampling team members will conduct scenario activities in the infield, dugout, and spectator areas for the remainder of the sampling period. All scenario activity will be conducted following prepared scenario scripts, with project management direction (Addendum AB-1).

4.2.2 New York Creek Nature Trail

Five scenario sampling events will be conducted on and along the New York Creek Nature Trail to simulate typical activities and potential exposures for both youths and adults. The purpose of the sampling during the New York Creek Nature Trail scenarios is to establish the level of asbestos fibers that may be present in air along the trail while activities are being conducted. Two types of activities will be conducted at the New York Creek Nature Trail during the five

Figure AB4-3: High-Volume Sampler Location Map - Playground Sampler Locations During Community Park Playing Field and Trail Scenarios

scenarios. A biking scenario will be used to simulate primarily youth activities, and a jogging/walking scenario will be used to simulate adult activities.

Bicycles are not allowed on the New York Creek Nature Trail at its northern end, so the biking scenarios will only be conducted on the portion of the trail within the Community Park. Jogging/walking scenarios will be conducted along the entire length of the trail. Some portions of the trail are too rocky/hilly to jog on safely or comfortably, so participants of the scenario activities may walk instead of jog in those areas.

Prior to conducting the sampling scenarios, the trail and the upper soccer fields (i.e., adjacent to the New York Creek baseball playing field) will not be wetted down.

4.2.2.1 Personal Air Sample Pumps During Biking Activities on New York Creek Nature Trail

For the biking scenarios the following activities will be conducted:

- Biking in a group along the trail within the El Dorado Hills Community Park;
- Solitary biking along the trail around El Dorado Hills Community Park, or following another group of bikes; and
- Standing in an area off-trail, such as at the Community Park children's playground.

Five personal air sample pumps with their intakes at 3 feet above ground surface will be placed on five sampling team members who will participate in scenario activities at the trail. One personal air sample pump with its intake at 5 feet above ground surface will be placed on a sampling team member participating as a non-active adult/adult observer, who will either be on the periphery of the trail during activities or standing in the children's playground at the Community Park. All samples will be collected during scenario activities.

The personal air sample pumps will be turned on to collect air samples for 2 hours, while the sampling team members perform scenario activities. The personal air sample pumps will remain on sampling team members for the entire 2-hour sampling event. If any of the sampling team members need to leave the work zone, other field personnel will replace them so that the activity level remains relatively constant and the personal air sample pumps continue to collect air from the trail area or playground area during the entire 2 hours. All scenario activity will be conducted following prepared scenario scripts, with project management direction (Addendum AB-1).

4.2.2.2 Personal Air Sample Pumps During Jogging/Walking Activities on New York Creek Nature Trail-Active Adult Exposure

For the jogging/walking scenarios the following activities will be conducted:

- Jogging or walking along the entire length of trail in a group;
- Solitary jogging or walking along the entire length of trail, or following another group of runners/joggers; and
- Walking on the trail and being passed by walkers/joggers.

Five personal air sample pumps with their intakes at 5 feet above ground surface will be placed on five sampling team members who will participate in scenario activities at the trail as active adults. One personal air sample pump with its intake at 5 feet above ground surface will be placed on a sampling team member participating as a non-active adult/adult observer, who will

either be on the periphery of the trail during activities or will be standing in the children's playground at the Community Park. All samples will be collected during scenario activities.

The personal air sample pumps will be turned on to collect air samples for 2 hours, while the sampling team members perform scenario activities. The personal air sample pumps will remain on sampling team members for the entire 2-hour sampling event. If any of the sampling team members need to leave the work zone, other field personnel will replace them so that the activity level remains relatively constant and the personal air sample pumps continue to collect air from the trail area or playground area during the entire 2 hours. All scenario activity will be conducted following prepared scenario scripts, with project management direction (Addendum AB-1).

4.2.2.3 High-Volume Air Sample Pumps Along New York Creek Nature Trail During Activities on New York Creek Nature Trail

During the scenario activities at the trail, five to seven high-volume air sample pumps will be placed in stationary positions with their intakes at 3 feet above ground surface at locations along the New York Creek Nature Trail. The locations will be distributed away from the trail on public property near private property fence lines.

There will be seven air sample pumps during biking scenarios, with five air sample pumps located around the trail within the El Dorado Hills Community Park, and two air sample pumps located along the trail outside and north of the park. During the jogging/walking scenarios, however, there will be five air sample pumps positioned at locations along the entire length of trail. The general locations of these high-volume stationary air sample pumps are illustrated on Figure AB4-4: High-Volume Sampling Area Map - Generalized Sampler Locations Along New York Creek Nature Trail.

Samples from these stationary air sample pumps will be collected over either a 2-hour or an 8-hour time interval. For samples collected over a 2-hour interval, the time interval will run concurrently with the activity-based sampling time period for the trail scenario. For samples collected over an 8-hour time interval, the sample will run for the entire sampling day, including the activity-based sampling time period for the trail scenario. The sampling schedule is indicated in Table AB4-2.

4.2.2.4 High-Volume Air Sample Pumps at the Children's Playground During Activities on New York Creek Nature Trail

During one biking scenario at the trail and two jogging/walking scenarios, five high-volume sample pumps will be placed in stationary positions with their intakes at 3 feet above ground surface within the children's playground. The location of the children's playground sample pumps is indicated in Figure AB4-3: High-Volume Sampler Location Map - Playground Sampler Locations During Community Park Playing Field and Trail Scenarios. The five high-volume stationary air sample pumps (with intakes 3 feet above ground surface) will be in the following locations at the children's playground:

- One on the southeast side of the children's playground;
- One on the southwest side of the children's playground;
- One on the northeast site of the children's playground;
- One on the northwest side of the children's playground; and
- One at the center of the children's playground.

Figure AB4-4: High-Volume Sampling Area Map - Generalized Sampler Locations Along New York Creek Nature Trail

Table AB4-2 Sampling Schedule for High-Volume Sampling Along New York Creek Nature Trail	
Scenario Activity	Sampling Duration
New York Creek Nature Trail at the Park: Biking	2 hours (only during trail scenario)
New York Creek Nature Trail at the Park: Biking	8 hours (sampling day, including trail scenario)
New York Creek Nature Trail along the entire trail: Jogging and Walking	8 hours (sampling day, including trail scenario)
New York Creek Nature Trail along the entire trail: Jogging and Waking	8 hours (sampling day, including trail scenario)
New York Creek Nature Trail along the entire trail: Jogging and Walking	2 hours (only during trail scenario)

The high-volume stationary air sample pumps will be turned on to collect air samples for 2 hours while the sampling team members perform scenario activities at other locations within the Community Park.

4.2.3 Jackson Elementary School Bare Areas, Pathways and Asphalted Play Areas

One scenario sampling event will be conducted on and along bare areas, pathways, and asphalted play areas at Jackson Elementary School. The purpose of the sampling during this scenario is to establish the level of asbestos structures that may be present in air in these areas while activities are being conducted.

Pathways that may be included during the scenario generally are those that do not have a cement or landscaped covering. The asphalted play areas have some amount of dust at the surface. During the scenario, activity-based sampling will be conducted to simulate typical activities and potential exposures. Two types of activities will be conducted at these areas during the scenario. The following activities will be conducted at bare soil and pathway areas:

- Walking or running over bare areas and along the pathways in a group;
- Solitary walking or running or following a group of walkers or runners over bare areas and along the pathways; and
- Standing in or near a bare area or pathway being passed by other walkers.

Other following activities will be conducted at asphalted play areas:

- Simulating basketball court activity including dribbling, running; passing, shooting;
- Simulating hopscotch, foursquare, kick ball and jump rope; and
- Dry sweeping of the areas (with brooms).

Five personal air sample pumps with their intakes at 3 feet above ground surface will be placed on five sampling team members who will participate in scenario activities at bare areas,

pathways, or asphalted play areas. One personal air sample pump with its intake at 5 feet above ground surface will be placed on a sampling team member who will be in a spectator area acting as a non-active adult/adult observer of the activity. All samples will be collected during scenario activities.

Prior to conducting the sampling scenario, the bare areas, pathways, and asphalted play areas will not be wetted down. The personal air sample pumps will be turned on to collect air samples for 2 hours while the sampling team members perform scenario activities. The personal air sample pumps will remain on sampling team members for the entire 2-hour sampling event. If any of the sampling team members need to leave the work zone, other field personnel will replace them so that the activity level remains relatively constant and personal air sample pumps continue to collect air from the activity areas during the entire 2 hours. All scenario activity will be conducted following prepared scenario scripts, with project management direction (Addendum AB-1).

4.2.4 Soccer and Grass-Covered Playing Fields

Three scenario sampling events will be conducted on soccer or grass-covered playing fields. One will be at the Rolling Hills Middle School soccer field, one at the Jackson Elementary School playing field, and one at the lower soccer field at the Community Park (i.e., between the north and south baseball playing fields). The purpose of the sampling during the soccer and grass-covered playing field scenarios is to establish the level of asbestos fibers that may be present in air at or near the soccer fields while activities are conducted on and around the fields. Prior to collecting samples for each of the playing field scenarios, the wind direction will be checked using a meteorological station to determine the most appropriate location for a background or upwind sample for each playing field.

The playing fields are generally grass covered, however heavy traffic areas around goal areas and central field areas may tend to be exposed soil areas. During soccer/grass-covered playing field scenarios, activity-based sampling will be conducted to simulate typical activities and potential exposures. Activities that will be conducted at the soccer/grass-covered playing fields may include, but will not be limited to:

- Simulating soccer play and drills in the areas were exposed soil are found;
- Kicking from areas of exposed soil; and
- Goal-keeping activities at goal areas where exposed soil is found.

Five personal air sample pumps with their intakes at 3 feet above ground surface will be placed on five sampling team members who will participate in scenario activities within the playing field. One personal air sample pump with its intake at 5 feet above ground surface will be placed on a sampling team member who will be in a spectator area acting as a non-active adult/adult observer of the playing field activity. All samples will be collected during scenario activities.

For each playing field scenario, five high-volume air sample pumps will be placed in stationary positions with their intakes at 3 feet above ground surface on, upwind, and downwind of the playing field. The planned high-volume stationary air sample pump locations for the soccer and grass-covered playing field scenarios are illustrated on Figure AB4-5: High-Volume Sampler Location Map - Generalized Sampler Locations During Soccer and Grass-Covered Playing Field Scenarios. The five high-volume stationary air sample pumps (with intakes 3 feet above ground surface) will be placed in the following locations:

Insert Figure AB4-5: High-Volume Sampler Location Map - Generalized Sampler Locations During Soccer and Grass-Covered Playing Field Scenarios

- Three between 5 feet and10 feet downwind of exposed soil areas on the playing field;
- One at least 100 feet upwind of the playing field; and
- One approximately 300 feet downwind of the playing field.

During the soccer playing field scenario conducted at the Community Park, five other high-volume sample pumps will be placed in stationary positions with their intakes at 3 feet above ground surface within the children's playground. The location of the children's playground sample pumps is previously indicated in Figure AB4-3: High-Volume Sampler Location Map - Playground Sampler Locations During Community Park Playing Field and Trail Scenarios. The five high-volume stationary air sample pumps (with intakes 3 feet above ground surface) will be in the following locations at the children's playground:

- One on the southeast side of the children's playground;
- One on the southwest side of the children's playground;
- One on the northeast site of the children's playground;
- One on the northwest side of the children's playground; and
- One at the center of the children's playground.

Prior to conducting the activity-based air sampling scenarios, the playing fields will not be wetted down. The personal and high-volume stationary air sample pumps will be turned on to collect air samples for 2 hours while the sampling team members perform scenario activities. The personal air sample pumps will remain on sampling team members for the entire 2-hour sampling event. If any of the sampling team members need to leave the work zone, other field personnel will replace them so that the activity level remains relatively constant and personal air sample pumps continue to collect air from the soccer/grass-covered playing field during the entire 2 hours. All scenario activity will be conducted following prepared scenario scripts, with project management direction (Addendum AB-1).

4.2.5 Basketball Court Area

One scenario sampling event will be conducted on the basketball court area at Rolling Hills Middle School. The purpose of the sampling during the basketball court area scenario is to establish the level of asbestos fibers that may be present in air at or near the basketball court area while activities are conducted on and around the basketball court. Prior to collecting samples, the wind direction will be checked using a meteorological station to determine the most appropriate location for a background or upwind sample for the basketball court area.

The basketball court area is generally asphalt-covered. During the basketball court area scenario, activity-based sampling will be conducted to simulate typical activities and potential exposures. Activities that will be conducted at the basketball court area may include, but will not be limited to:

- Simulating basketball court activity including dribbling, running; passing, shooting; and
- Dry sweeping of the courts (with brooms).

Five personal air sample pumps with their intakes at 3 feet above ground surface will be placed on five sampling team members who will participate in scenario activities within the basketball court area. One personal air sample pump with its intake at 5 feet above ground surface will be placed on a sampling team member who will be in a spectator area acting as a non-active

adult/adult observer of the basketball court area activity. All samples will be collected during scenario activities.

For each basketball court area scenario, five high-volume air sample pumps will be placed in stationary positions with their intakes at 3 feet above ground surface on, upwind, and downwind of the basketball court area. The planned high-volume stationary air sample pump locations for the basketball court area scenario are illustrated on Figure AB4-6: High-Volume Sampler Location Map - Generalized Sampler Locations During Basketball Court Area Scenario. The five high-volume stationary air sample pumps (with intakes 3 feet above ground surface) will be placed in the following locations:

- One at the center of the basketball court area;
- Two at the areas downwind of the perimeter of the basketball court area;
- One at least 100 feet upwind of the perimeter of the basketball court area; and
- One approximately 300 feet downwind of the perimeter of the basketball court area.

Prior to conducting the scenario, the basketball court area will not be wetted or washed down. The personal and high-volume stationary air sample pumps will be turned on to collect air samples for 2
hours, while the sampling team members perform scenario activities. The personal air sample pumps will remain on sampling team members for the entire 2-hour sampling event. If any of the sampling team members need to leave the work zone, other field personnel will replace them so that the activity level remains relatively constant and the personal air sample pumps continue to collect air from the basketball court area during the entire 2 hours. All scenario activity will be conducted following prepared scenario scripts, with project management direction (Addendum AB-1).

4.2.6 Jackson Elementary School Garden and Outdoor Classroom

One scenario sampling event will be conducted at the garden and outdoor classroom at Jackson Elementary School. The purpose of the sampling during this scenario is to establish the level of asbestos structures that may be present in air in this area while activities are conducted in the garden and outdoor classroom.

During the scenario, activity-based sampling will be conducted to simulate typical activities and potential exposures. Two types of activities will be conducted at these areas during the scenario. The following activities will be conducted at the garden area:

- Digging with a shovel while standing;
- Digging with a hand trowel while kneeling;
- Walking; and
- Standing.

Other following activities will be conducted at the outdoor classroom area:

- Walking;
- Standing, and
- Sitting.

INSERT Figure AB4-6: High-Volume Sampler Location Map - Generalized Sampler Locations During Basketball Court Area Scenario

Five personal air sample pumps with their intakes at 3 feet above ground surface will be placed on five sampling team members who will simulate child or youth scenario activities at the garden and outdoor classroom. One personal air sample pump with its intake at 5 feet above ground surface will be placed on a sampling team member who will participate as an active adult at the garden and outdoor classroom area. All samples will be collected during scenario activities.

For this scenario, five high-volume air sample pumps will be placed in stationary positions with their intakes at 3 feet above ground surface within, upwind, and downwind of the area. The planned high-volume stationary air sample pump locations for the Jackson Elementary School garden and outdoor classroom scenario are illustrated on Figure AB4-7: High-Volume Sampler Location Map - Generalized Sampler Locations During Jackson Elementary School Garden and Outdoor Classroom Scenario. The five high-volume stationary air sample pumps (with intakes 3 feet above ground surface) will be placed in the following locations:

- One at the center of the garden and outdoor classroom area;
- Two at the areas downwind of the perimeter of the garden and outdoor classroom area;
- One at least 100 feet upwind of the perimeter of the area; and
- One approximately 300 feet downwind of the perimeter of the area.

4.2.7 Six-Hour Composite Sampling

In addition to the air samples to be collected for each of the 2-hour playing field scenarios individually, there also will be daily 6-hour composite air samples collected that will represent the cumulative concentration of asbestos fibers generated during the three scenarios conducted each day. Each 6-hour composite air sample will be collected for the combined duration of all three scenarios conducted in a day (i.e., three scenarios at 2 hours per scenario for a total of 6 hours).

- On the three days that activity-based sampling scenarios are conducted at the baseball playing fields at the Community Park, two 6-hour composite samples will be collected each day using high-volume stationary air sample pumps located at the children's playground. Their intakes will be positioned at 3 feet above the ground surface. No high-volume composite samples will be collected on the other three days.

- On all six days of activity-based sampling, one 6-hour composite sample will be collected each day using a personal air sample pump with its intake at 5 feet above ground surface to simulate non-active adult/adult observer exposure.

- On the day that an activity-based sampling scenario is conducted at Jackson Elementary School and on the two days that the biking scenarios are conducted at the New York Creek Nature Trail, two 6-hour composite samples will be collected each day using personal air sample pumps with their intakes at 3 feet above ground surface to simulate youth exposure.

- On the three days that the jogging/walking scenarios are conducted at the New York Creek Nature Trail, two 6-hour composite samples will be collected each day using personal air sample pumps with their intakes at varying heights above ground surface, depending upon the scenario. During the jogging/walking scenarios, the intakes will be at 5 feet above ground surface. For all the rest of the scenarios, the intakes will be at 3 feet above ground surface.

Insert Figure AB4-7: High-Volume Sampler Location Map - Generalized Sampler Locations During Jackson Elementary School Garden and Outdoor Classroom Scenario

Analytical data from the composite samples, which will represent the cumulative concentration of asbestos fibers generated during the three consecutive scenarios, will be used to assist in prioritizing the analysis of other samples from the scenarios.

4.3 Scenario and Sampling Sequence

The 18 different activity-based sampling scenarios and associated outdoor air sampling addressed in this FSP were designed originally to take place sequentially over six days. Because of activities and other events pre-scheduled at the schools and other community areas, however, the actual sampling days may be neither sequential nor consecutive. The planned scenario sequence is shown in Table AB4-3: Scenario and Sampling Sequence.

4.4 Video Exposure and Dust Monitoring During Scenarios

Video exposure monitoring (VEM) is an exposure assessment technique developed by the National Institute for Occupational Safety and Health, Engineering Control Technology Branch. The VEM technique generally is used to determine how a worker's activities affect his or her exposure to hazardous compounds or conditions. A standard operating procedure (SOP) for the technique developed by USEPA Region 8 for sampling activities associated with asbestos in air at Libby, Montana, is included in Appendix D of the QAPP. The collection and analysis of exposure data using the VEM technique requires three major components:

1. A suitable direct-reading instrument for measuring and recording dust exposure concentrations.
2. A video recording system (camcorder) for documenting work activities.
3. A computer system with video overlay capabilities for analyzing and combining the two different types of data.

For asbestos fibers or other airborne dusts, direct-reading measurement of exposure is made with a light-scattering aerosol (dust) photometer, commonly known as a dust meter or dust monitor. This type of instrument measures the dust concentration based upon the amount of light scattered by the dust in the sensing chamber of the device.

The VEM technique that has been used by USEPA Region 8 will be used with modifications to produce a video recording that shows a graphical representation of potential exposure concentrations during the activity-based outdoor air sampling activities. VEM will take place concurrent with all scenario sampling activities. The video and dust monitoring records will be used to document visually the fugitive dust concentration in the air during each scenario.

For all scenarios, one dust monitor will be positioned with the primary personal air sample pump at the same height as the air collection cassette (i.e., a dust monitor will be worn by the primary sample team member who also is wearing a personal air sample pump). The video recorder will be used to record primarily the activities of the sampling team member who is wearing the dust meter for that scenario, but also to record general activities that are conducted for the scenario.

During the playing field and area scenarios, two to three additional dust monitors also will be positioned at the location and height of some of the high-volume stationary air sample pumps. There will be one dust monitor at an upwind sampling location and one dust monitor at a downwind sampling location. One dust monitor also will be at a children's playground location for Community Park playing field scenarios and for the three New York Creek Nature Trail scenarios during which there will also be concurrent high-volume air sample pumps at the

Table AB4-3: Scenario and Sampling Sequence

Day	Scenario 1	Scenario 2	Scenario 3
One	Jackson Elementary School: Playing Field	Jackson Elementary School: Bare Areas, Pathways, and Asphalted Play Areas	Jackson Elementary School: Garden and Outdoor Classroom
Two	Community Park: North Field Baseball Playing Field	New York Creek Nature Trail at the Park: Biking	Community Park: South Field Baseball Playing Field
Three	Rolling Hills Middle School: Basketball Court Area	New York Creek Nature Trail at the Park: Biking	Silva Valley Elementary School: Baseball Playing Field
Four	Community Park: New York Creek Field Baseball Playing Field	New York Creek Nature Trail: Jogging and Walking	Community Park: South Field Baseball Playing Field
Five	Silva Valley Elementary School: Baseball Playing Field	New York Creek Nature Trail: Jogging and Walking	Rolling Hills Middle School: Soccer Playing Field
Six	Community Park: South Field Baseball Playing Field	New York Creek Nature Trail: Jogging and Walking	Community Park: Lower Soccer Field

children's playground. The dust monitors will continuously monitor and log the real-time dust concentrations at their stationary locations.

4.5 Rationale For Sampler and Monitor Locations

Table AB4-4 summarizes the rationale for the inclusion and placement of each sampler and monitor.

4.6 Reference Locations and Sampling

Reference sampling is described in the *El Dorado Hills Naturally Occurring Asbestos, Multimedia Exposure Assessment, El Dorado Hills, California, Fixed Ambient Outdoor Reference Air Sampling Field Sampling Plan.*

4.7 Analytical Rationale

Analytical rationale is described in the *El Dorado Hills Naturally Occurring Asbestos, Multimedia Exposure Assessment, El Dorado Hills, California, Quality Assurance Project Plan.*

Table AB4-4
Summary of Sampler and Monitor Location Rationale

Sampler Location	Rationale
Five personal air sample pumps worn by five sampling team members conducting activities during individual scenarios. One personal air sample pump worn by one sampling team member conducting adult observer/spectator/participant activities during individual scenarios. Dust monitors worn by sampling team members conducting activities during individual scenarios. There will be nine co-located personal air sample pumps during the individual scenarios.	Personal air sample pumps will sample for asbestos in air during scenarios. These should represent the higher level of personal exposure and sampling height. Dust monitor will monitor dust concentrations and should document the highest level of personal exposure. At least five sampling locations are needed to meet the project's AHERA-derived objective.
Two personal air sample pumps worn by two sampling team members conducting scenario activities areas–during all scenario activities for a given sample day. These sample pumps will run continuously through all scenarios on a given sample day.	Personal air sample pumps will collect a composite sample to test for asbestos during all scenarios for a given sample day. Analysis of asbestos concentrations in these composite dust samples will be conducted first, before analysis of individual scenario samples. Because of the larger air volume and the sampling duration, this sample will help direct later analysis.
One high-volume stationary air sample pump and one dust monitor within the baseball playing field (at pitcher's mound) during baseball playing field scenarios. There will be one co-located high-volume stationary air sample pump during one of the baseball playing field scenarios.	High-volume stationary air sample pumps will sample for asbestos in air from the center of baseball playing field and represent the level of dust in the infield area during scenarios.

Table AB4-4 Summary of Sampler and Monitor Location Rationale	
Sampler Location	**Rationale**
One (first) high-volume stationary air sample pump and one dust monitor immediately downwind at or near edge of baseball playing field during playing field scenarios. There will be one co-located high-volume stationary air sample pump during one of the baseball playing field scenarios.	High-volume stationary air sample pumps will sample for asbestos in air directly downwind of baseball playing fields at distances where players or spectators would typically be. The samples should represent the level of dust immediately downwind of the playing field during scenarios.
One (second) high-volume stationary air sample pump immediately downwind at or near edge of baseball playing field during playing field scenarios. Location will be 30 to 45 degrees from the (first) direct downwind sample pump location. There will be one co-located high-volume stationary air sample pump during one of the baseball playing field scenarios.	Should represent downwind dust concentrations if wind shifts during scenario.
Three high-volume stationary air sample pumps and one dust monitor within and directly downwind of soccer/grass-covered playing fields activity area during scenarios. There will be two co-located high-volume stationary air sample pump during one of the soccer/grass-covered playing field scenarios.	High-volume stationary air sample pumps will sample for airborne asbestos in air directly downwind of activity. Dust monitoring will monitor the concentration of dust directly downwind of activity.
One high-volume stationary air sample pump in the center and downwind of the basketball court area during basketball court area scenario.	High-volume stationary air sample pump will sample for airborne asbestos in air from the center of the basketball court area.
Two high-volume stationary air sample pumps and one dust monitor at the downwind perimeter of the basketball court area during basketball court area scenario.	High-volume stationary air sample pumps will sample for airborne asbestos in air from directly downwind of the basketball court area. Dust monitoring will monitor the concentration of dust directly downwind of activity.
Five high-volume stationary air sample pumps and one dust monitor within the children's playground during individual playing field scenarios and some trail scenarios at the Community Park.	Will sample and monitor air at children's playground during individual playing field scenarios and some scenarios on the trail at the Community Park. At least five sampling locations are needed to meet the project's AHERA-derived objective.

Table AB4-4 Summary of Sampler and Monitor Location Rationale	
Sampler Location	**Rationale**
One high-volume stationary air sample pump located in the children's playground area–during all Community Park playing field scenarios conducted on a given sample day. This sample pump will run continuously through all playing field scenarios and some scenarios on the trail at the Community Park conducted on a given sample day.	High-volume stationary air sample pumps will collect a composite sample to test for asbestos in air during all playing field scenarios and some scenarios on the trail at the Community Park conducted on a given sample day. Analysis of asbestos concentrations in these composite dust samples will be conducted first, before analysis of individual scenario samples. Because of the larger air volume and the sampling duration, this sample will help direct later analysis.
One high-volume stationary air sample pump and one dust monitor at least 100 feet upwind of all the playing fields and areas during playing field or area scenarios.	High-volume stationary air sample pump will sample and monitor ambient air that is upwind of playing fields and areas to establish ambient background influence.
One high-volume stationary air sample pump 300 feet downwind of all playing fields and areas during playing field or area scenarios.	High-volume stationary air sample pump will sample air that is 300 feet downwind of playing field.
Five to seven high-volume stationary air sample pumps and dust monitors along New York Creek Nature Trail collecting 2-hour samples during a trail scenario activity.	High-volume stationary air sample pumps will collect samples to determine airborne asbestos concentration at residential fence lines.
Five to seven high-volume stationary air sample pumps and dust monitors along New York Creek Nature Trail collecting 8-hour samples during an entire sampling day.	High-volume stationary air sample pumps will collect samples for determination of airborne asbestos concentration at residential fence lines. Asbestos concentrations in these composite samples will include ambient airborne asbestos related to public use of trail. Because of the larger air volume and the sampling duration, this sample will help direct later analysis.

5 Analytical Laboratory Methods

Analytical laboratory methods are described in the *El Dorado Hills Naturally Occurring Asbestos, Multimedia Exposure Assessment, El Dorado Hills, California, Quality Assurance Project Plan.*

Table AB5-1 summarizes analytical methods and requirements for activity-based outdoor air sampling at schools and the Community Park. Table AB5-2 contains the detailed sample collection information.

Table AB5-1 Summary of Analytical Methods and Requirements Activity-Based Sampling at Schools and Community Park	
Method:	ISO 10312, *Ambient air-Determination of asbestos fibres–Direct-transfer transmission electron microscopy method*
Sample Container:	Open-faced cassette with a 25 millimeter diameter, mixed cellulose ester filter with pore size less than or equal to 0.80 micrometers (µm). (Modified by the USEPA from the specified ISO 10312 requirement of 0.45 µm.)
Sample Types	**Number of Samples**
Total samples	315
Personal air sample pump samples (individual scenario samples)	108
Personal air sample pump samples (6-hour scenario composite samples)	18
High-volume stationary air sample pump samples (individual scenario samples)	117
High-volume stationary air sample pump samples (6-hour scenario composite samples or 8-hour samples at New York Creek Nature Trail)	23
Co-located	30
Field trip blanks	12
Filter blanks	6
Performance Evaluation	1

Table AB5-2
Request for Analytical Services: Air Samples
Laboratory Analytical Methods and Requirements

ANALYSES REQUESTED		
ANALYSIS TYPE	**ASBESTOS**	
SPECIFIC ANALYSES REQUESTED	*ISO 10312-Ambient air–Determination of asbestos fibres–Direct-transfer transmission electron microscopy method*	*If Needed* *ISO 13794-Ambient air–Determination of asbestos fibres–Indirect-transfer transmission electron microscopy method*
SENSITIVITY	0.001 structures/cubic centimeter	0.001 structures/cubic centimeter
LEVEL OF DETECTION (for zero structures)	0.003 structures/cubic centimeter	0.003 structures/cubic centimeter
PRESERVATIVES	none	none
ANALYTICAL HOLDING TIME(S)	none	none
NUMBER OF FILTER CASSETTES PER ANALYSIS	One 0.8 Fm filter in asbestos sampling cassette with cowl	One 0.8 Fm filter in asbestos sampling cassette with cowl

Jackson Elementary School Playing Field Scenario (DAY 1-1)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
JEP-L2-1CH-(Date)	300 liters	Critical Sample	Jackson Playing Field personal sample pump #1	1
JEP-L2-2CH-(Date)	300 liters	Critical Sample	Jackson Playing Field personal sample pump #2	1
JEP-L2-12CH-(Date)	300 liters	Co-located with JEP-L2-2CH-(Date)	Jackson Playing Field co-located personal sample pump #2	1
JEP-L2-3CH-(Date)	300 liters	Critical Sample	Jackson Playing Field personal sample pump #3	1
JEP-L2-4CH-(Date)	300 liters	Critical Sample	Jackson Playing Field personal sample pump #4	1
JEP-L2-5CH-(Date)	300 liters	Critical Sample	Jackson Playing Field personal sample pump #5	1
JEP-L2-1NA-(Date)	300 liters	Critical Sample	Jackson Playing Field non-active (adult) personal sample pump #1	1
JEP-H2-1FD-(Date)	1,200 liters	Time Critical Sample	Jackson Playing Field pitcher's mound sample pump	1
JEP-H2-2FD-(Date)	1,200 liters	Time Critical Sample	Jackson Playing Field downwind sample pump-direct	1
JEP-H2-3FD-(Date)	1,200 liters	Time Critical Sample	Jackson Playing Field downwind sample pump-offset	1
JEP-H2-4FD-(Date)	1,200 liters	Sample	Jackson Playing Field upwind sample pump	1
JEP-H2-5FD-(Date)	1,200 liters	Sample	Jackson Playing Field far downwind sample pump	1
JEP-H2-15FD-(Date)	1,200 liters	Co-located with JEP-H2-5FD-(Date)	Jackson Playing Field co-located far downwind sample pump	1
JEP-L2-1ZB-(Date)	300 liters will be indicated	Trip Blank	Jackson Playing Field field trip blank	1

Jackson Elementary School Bare Areas, Pathways, and Asphalted Play Areas Scenario (DAY 1-2)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
JEB-L2-1CH-(Date)	300 liters	Critical Sample	Jackson Bare Areas personal sample pump #1	1
JEB-L2-2CH-(Date)	300 liters	Critical Sample	Jackson Bare Areas personal sample pump #2	1
JEB-L2-3CH-(Date)	300 liters	Critical Sample	Jackson Bare Areas personal sample pump #3	1
JEB-L2-4CH-(Date)	300 liters	Critical Sample	Jackson Bare Areas personal sample pump #4	1
JEB-L2-5CH-(Date)	300 liters	Critical Sample	Jackson Bare Areas personal sample pump #5	1
JEB-L2-1NA-(Date)	300 liters	Critical Sample	Jackson Bare Areas non-active (adult) personal sample pump #1	1

Jackson Elementary School Garden and Outdoor Classroom Scenario (DAY 1-3)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
JEG-L2-1CH-(Date)	300 liters	Critical Sample	Jackson Garden personal sample pump #1	1
JEG-L2-2CH-(Date)	300 liters	Critical Sample	Jackson Garden personal sample pump #2	1
JEG-L2-3CH-(Date)	300 liters	Critical Sample	Jackson Garden personal sample pump #3	1
JEG-L2-4CH-(Date)	300 liters	Critical Sample	Jackson Garden personal sample pump #4	1
JEG-L2-5CH-(Date)	300 liters	Critical Sample	Jackson Garden personal sample pump #5	1
JEG-L2-15CH-(Date)	300 liters	Co-located with Sample JEG-L2-5CH-(Date)	Jackson Garden co-located personal sample pump #5	1
JEG-L2-1AD-(Date)	300 liters	Critical Sample	Jackson Garden adult participant personal sample pump #1	1
JEG-H2-1FD-(Date)	1,200 liters	Time Critical Sample	Jackson Garden in-area sample pump #1	1
JEG-H2-2FD-(Date)	1,200 liters	Time Critical Sample	Jackson Garden in-area sample pump #2	1
JEG-H2-3FD-(Date)	1,200 liters	Time Critical Sample	Jackson Garden in-area sample pump #3	1
JEG-H2-4FD-(Date)	1,200 liters	Sample	Jackson Garden upwind sample pump	1
JEG-H2-5FD-(Date)	1,200 liters	Sample	Jackson Garden far downwind sample pump	1
JEG-L2-1ZB-(Date)	300 liters will be indicated	Trip Blank	Jackson Garden field trip blank	1
JEG-L2-FB-(Date)	NA	Filter Blank	filter blank	1

Composite Sampling (Day 1)

Sample Number	Estimated Collection Volume	Special Designation	Location	Samples
CC1-L6-1CC-(Date)	900 liters	Time Critical Sample	personal sample pump #1	1
CC1-L6-2CC-(Date)	900 liters	Time Critical Sample	personal sample pump #2	1
CC1-L6-1CA-(Date)	900 liters	Time Critical Sample	non-active/adult participant personal sample pump #1	1
CC1-L6-11CA-(Date)	900 liters	Co-located with CC1-L6-1CA-(Date)	non-active/adult participant co-located personal sample pump #1	1

Day 1 Sampling Summary

Sample Types	Totals
Personal sample pump samples	18
Co-located personal sample pump samples	2
High-volume stationary sample pump samples	10
Co-located high-volume stationary sample pump samples	1
Composite personal sample pump samples	3
Co-located composite personal sample pump samples	1
Composite high-volume stationary sample pump samples	0
Co-located composite high-volume stationary sample pump samples	0
Trip blanks	2
Filter Blanks	1
PE samples	0
TOTAL NUMBER OF SAMPLES excluding QA samples (blanks, co-located, and performance evaluation)	**31**
TOTAL NUMBER OF SAMPLES including all QA samples	**38**

Community Park North Field Baseball Playing Field Scenario (DAY 2-1)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
NFB-L2-1CH-(Date)	300 liters	Critical Sample	North Field personal sample pump #1	1
NFB-L2-2CH-(Date)	300 liters	Critical Sample	North Field personal sample pump #2	1
NFB-L2-3CH-(Date)	300 liters	Critical Sample	North Field personal sample pump #3	1
NFB-L2-4CH-(Date)	300 liters	Critical Sample	North Field personal sample pump #4	1
NFB-L2-5CH-(Date)	300 liters	Critical Sample	North Field personal sample pump #5	1
NFB-L2-15CH-(Date)	300 liters	Co-locate with Sample NFB-L2-5CH-(Date)	North Field co-located personal sample pump #5	1
NFB-L2-1NA-(Date)	300 liters	Critical Sample	North Field non-active (adult) personal sample pump #1	1
NFB-H2-1FD-(Date)	1,200 liters	Time Critical Sample	North Field pitcher's mound sample pump	1
NFB-H2-2FD-(Date)	1,200 liters	Time Critical Sample	North Field downwind sample pump-direct	1
NFB-H2-3FD-(Date)	1,200 liters	Time Critical Sample	North Field downwind sample pump-offset	1
NFB-H2-4FD-(Date)	1,200 liters	Sample	North Field upwind sample pump	1
NFB-H2-5FD-(Date)	1,200 liters	Sample	North Field far downwind sample pump	1
NFB-H2-1PG-(Date)	1,200 liters	Sample	southeastern playground stationary pump #1	1
NFB-H2-2PG-(Date)	1,200 liters	Sample	southwestern playground stationary pump #2	1
NFB-H2-3PG-(Date)	1,200 liters	Sample	northeastern playground stationary pump #3	1
NFB-H2-4PG-(Date)	1,200 liters	Sample	northwestern playground stationary pump #4	1
NFB-H2-5PG-(Date)	1,200 liters	Sample	central playground stationary pump #5	1
NFB-H2-15PG-(Date)	1,200 liters	Co-located with Sample NFB-L2-5PG-(Date)	central playground co-located stationary pump #5	1
NFB-L2-1ZB-(Date)	300 liters will be indicated	Trip Blank	North Field field trip blank	1

New York Creek Nature Trail Biking Scenario (DAY 2-2)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
BIK-L2-1CH-(Date)	300 liters	Sample	New York Creek Nature Trail Bike Leader personal sample pump #1	1
BIK-L2-2CH-(Date)	300 liters	Sample	New York Creek Nature Trail Bike Follower personal sample pump #2	1
BIK-L2-3CH-(Date)	300 liters	Sample	New York Creek Nature Trail Bike personal sample pump #3	1
BIK-L2-13CH-(Date)	300 liters	Co-located with Sample BIK-L2-3CH-(Date)	New York Creek Nature Trail co-located Bike personal sample pump #3	1
BIK-L2-4CH-(Date)	300 liters	Sample	New York Creek Nature Trail Bike personal sample pump #4	1
BIK-L2-5CH-(Date)	300 liters	Sample	New York Creek Nature Trail Bike personal sample pump #5	1
BIK-L2-1NA-(Date)	300 liters	Critical Sample	playground/trail observer non-active (adult) personal sample pump #1	1
BIK-H2-1PG-(Date)	1,200 liters	Sample	southeastern playground stationary pump #1	1
BIK-H2-2PG-(Date)	1,200 liters	Sample	southwestern playground stationary pump #2	1
BIK-H2-3PG-(Date)	1,200 liters	Sample	northeastern playground stationary pump #3	1
BIK-H2-4PG-(Date)	1,200 liters	Sample	northwestern playground stationary pump #4	1
BIK-H2-5PG-(Date)	1,200 liters	Sample	central playground stationary pump #5	1
BIK-H2-1TR-(Date)	1,200 liters	Sample	New York Creek Nature Trail Park Area Fence Line pump #1	1
BIK-H2-11TR-(Date)	1,200 liters	Co-located with BIK-H2-1TR-(Date)	New York Creek Nature Trail co-located Park Area Fence Line pump #1	1
BIK-H2-2TR-(Date)	1,200 liters	Sample	New York Creek Nature Trail Park Area Fence Line pump #2	1
BIK-H2-3TR-(Date)	1,200 liters	Sample	New York Creek Nature Trail Park Area Fence Line pump #3	1
BIK-H2-4TR-(Date)	1,200 liters	Sample	New York Creek Nature Trail Park Area Fence Line pump #4	1
BIK-H2-5TR-(Date)	1,200 liters	Sample	New York Creek Nature Trail Park Area Fence Line pump #5	1
BIK-H2-6TR-(Date)	1,200 liters	Sample	New York Creek Nature Trail Fence Line pump #6	1
BIK-H2-7TR-(Date)	1,200 liters	Sample	New York Creek Nature Trail Fence Line pump #7	1

Community Park South Field Baseball Playing Field Scenario (DAY 2-3)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
SFB-L2-1CH-(Date)	300 liters	Sample	South Field personal sample pump #1	1
SFB-L2-2CH-(Date)	300 liters	Sample	South Field personal sample pump #2	1
SFB-L2-3CH-(Date)	300 liters	Sample	South Field personal sample pump #3	1
SFB-L2-4CH-(Date)	300 liters	Sample	South Field personal sample pump #4	1
SFB-L2-5CH-(Date)	300 liters	Sample	South Field personal sample pump #5	1
SFB-L2-1NA-(Date)	300 liters	Sample	South Field non-active (adult) personal sample pump #1	1
SFB-L2-11NA-(Date)	300 liters	Co-located with SFB-L2-1NA-(Date)	South Field co-located non-active (adult) personal sample pump #1	1
SFB-H2-1FD-(Date)	1,200 liters	Time Critical Sample	South Field pitcher's mound sample pump	1
SFB-H2-2FD-(Date)	1,200 liters	Time Critical Sample	South Field downwind sample pump-direct	1
SFB-H2-3FD-(Date)	1,200 liters	Time Critical Sample	South Field downwind sample pump-offset	1
SFB-H2-4FD-(Date)	1,200 liters	Sample	South Field upwind sample pump	1
SFB-H2-5FD-(Date)	1,200 liters	Sample	South Field far downwind sample pump	1
SFB-H2-1PG-(Date)	1,200 liters	Sample	southeastern playground stationary pump #1	1
SFB-H2-11PG-(Date)	1,200 liters	Co-located Sample with SFB-H2-1PG-(Date)	southeastern playground co-located stationary pump #1	1
SFB-H2-2PG-(Date)	1,200 liters	Sample	southwestern playground stationary pump #2	1
SFB-H2-3PG-(Date)	1,200 liters	Sample	northeastern playground stationary pump #3	1
SFB-H2-4PG-(Date)	1,200 liters	Sample	northwestern playground stationary pump #4	1
SFB-H2-5PG-(Date)	1,200 liters	Sample	central playground stationary pump #5	1
SFB-L2-1ZB-(Date)	300 liters will be indicated	Trip Blank	South Field field trip blank	1
SFB-L2-FB-(Date)	NA	Filter Blank	filter blank	1

Composite Sampling (Day 2)

Sample Number	Estimated Collection Volume	Special Designation	Location	Samples
CC2-L6-1CC-(Date)	900 liters	Time Critical Sample	personal sample pump #1	1
CC2-L6-11CC-(Date)	900 liters	Co-located with CC2-L6-1CC-(Date)	co-located personal sample pump #1	1
CC2-L6-2CC-(Date)	900 liters	Time Critical Sample	personal sample pump #2	1
CC2-L6-1CA-(Date)	900 liters	Time Critical Sample	non-active (adult) personal sample pump	1
CC2-H6-1CP-(Date)	3,600 liters	Time Critical Sample	playground sample pump #1	1
CC2-H6-2CP-(Date)	3,600 liters	Time Critical Sample	playground sample pump #2	1

Day 2 Sampling Summary

Sample Types	Totals
Personal sample pump samples	18
Co-located personal sample pump samples	3
High-volume stationary sample pump samples	32
Co-located high-volume stationary sample pump samples	3
Composite personal sample pump samples	3
Co-located composite personal sample pump samples	1
Composite high-volume stationary sample pump samples	2
Co-located composite high-volume stationary sample pump samples	0
Trip blanks	2
Filter blanks	1
PE samples	0
TOTAL NUMBER OF SAMPLES excluding QA samples (blanks, co-located, and performance evaluation)	**55**
TOTAL NUMBER OF SAMPLES including all QA samples	**65**

Rolling Hills Middle School Basketball Court Area Scenario (DAY 3-1)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
RHB-L2-1CH-(Date)	300 liters	Critical Sample	Rolling Hills Basketball personal sample pump #1	1
RHB-L2-2CH-(Date)	300 liters	Critical Sample	Rolling Hills Basketball personal sample pump #2	1
RHB-L2-3CH-(Date)	300 liters	Critical Sample	Rolling Hills Basketball personal sample pump #3	1
RHB-L2-4CH-(Date)	300 liters	Critical Sample	Rolling Hills Basketball personal sample pump #4	1
RHB-L2-14CH-(Date)	300 liters	Co-located with Sample RHB-L2-4CH-(Date)	Rolling Hills Basketball co-located personal sample pump #4	1
RHB-L2-5CH-(Date)	300 liters	Critical Sample	Rolling Hills Basketball personal sample pump #5	1
RHB-L2-1NA-(Date)	300 liters	Critical Sample	Rolling Hills Basketball non-active (adult) personal sample pump #1	1
RHB-H2-1FD-(Date)	1,200 liters	Time Critical Sample	Rolling Hills Basketball central court/downwind sample pump #1	1
RHB-H2-2FD-(Date)	1,200 liters	Time Critical Sample	Rolling Hills Basketball on-court/downwind sample pump #2	1
RHB-H2-3FD-(Date)	1,200 liters	Time Critical Sample	Rolling Hills Basketball on-court/downwind sample pump #3	1
RHB-H2-4FD-(Date)	1,200 liters	Sample	Rolling Hills Basketball upwind sample pump	1
RHB-H2-14FD-(Date)	1,200 liters	Co-located with RHB-L2-4FD-(Date)	Rolling Hills Basketball co-located upwind sample pump	1
RHB-H2-5FD-(Date)	1,200 liters	Sample	Rolling Hills Basketball far downwind sample pump	1
RHB-L2-1ZB-(Date)	300 liters will be indicated	Trip Blank	Rolling Hills Basketball field trip blank	1
RHB-L2-FB-(Date)	NA	Filter Blank	filter blank	1

New York Creek Nature Trail Biking Scenario (DAY 3-2)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
BIK-L2-1CH-(Date)	300 liters	Sample	New York Creek Nature Trail Bike Leader personal sample pump #1	1
BIK-L2-2CH-(Date)	300 liters	Sample	New York Creek Nature Trail Bike Follower personal sample pump #2	1
BIK-L2-3CH-(Date)	300 liters	Sample	New York Creek Nature Trail Bike personal sample pump #3	1
BIK-L2-4CH-(Date)	300 liters	Sample	New York Creek Nature Trail Bike personal sample pump #4	1
BIK-L2-5CH-(Date)	300 liters	Sample	New York Creek Nature Trail Bike personal sample pump #5	1
BIK-L2-1NA-(Date)	300 liters	Critical Sample	playground/trail observer non-active (adult) personal Park Area sample pump #1	1

Silva Valley Elementary School Baseball Playing Field Scenario (DAY 3-3)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
SVB-L2-1CH-(Date)	300 liters	Sample	Silva Valley Baseball personal sample pump #1	1
SVB-L2-11CH-(Date)	300 liters	Co-located with SVB-L2-1CH-(Date)	Silva Valley Baseball co-located personal sample pump #1	1
SVB-L2-2CH-(Date)	300 liters	Sample	Silva Valley Baseball personal sample pump #2	1
SVB-L2-3CH-(Date)	300 liters	Sample	Silva Valley Baseball personal sample pump #3	1
SVB-L2-4CH-(Date)	300 liters	Sample	Silva Valley Baseball personal sample pump #4	1
SVB-L2-5CH-(Date)	300 liters	Sample	Silva Valley Baseball personal sample pump #5	1
SVB-L2-1NA-(Date)	300 liters	Critical Sample	Silva Valley Baseball non-active (adult) personal sample pump #1	1
SVB-H2-1FD-(Date)	1,200 liters	Time Critical Sample	Silva Valley Baseball pitcher's mound stationary pump	1
SVB-H2-2FD-(Date)	1,200 liters	Time Critical Sample	Silva Valley Baseball downwind stationary pump-direct	1
SVB-H2-3FD-(Date)	1,200 liters	Time Critical Sample	Silva Valley Baseball downwind stationary pump-offset	1
SVB-H2-4FD-(Date)	1,200 liters	Sample	Silva Valley Baseball upwind stationary pump	1
SVB-H2-5FD-(Date)	1,200 liters	Sample	Silva Valley Baseball far downwind stationary pump	1
SVB-L2-1ZB-(Date)	300 liters will be indicated	Trip Blank	Silva Valley Baseball field trip blank	1

Composite Sampling (Day 3)

Sample Number	Estimated Collection Volume	Special Designation	Location	Samples
CC3-L6-1CC-(Date)	900 liters	Time Critical Sample	personal sample pump #1	1
CC3-L6-2CC-(Date)	900 liters	Time Critical Sample	personal sample pump #2	1
CC3-L6-1CA-(Date)	900 liters	Time Critical Sample	non-active (adult) personal sample pump #1	1
CC3-H8-1CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Park Area Fence Line pump #1	1
CC3-H8-2CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Park Area Fence Line pump #2	1
CC3-H8-3CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Park Area Fence Line pump #3	1
CC3-H8-4CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Park Area Fence Line pump #4	1
CC3-H8-5CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Park Area Fence Line pump #5	1
CC3-H8-6CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Fence Line pump #6	1
CC3-H8-7CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Fence Line pump #7	1

Day 3 Sampling Summary

Sample Types	Totals
Personal sample pump samples	18
Co-located personal sample pump samples	2
High-volume stationary sample pump samples	10
Co-located high-volume stationary sample pump samples	1
Composite personal sample pump samples	3
Co-located composite personal sample pump samples	0
Composite high-volume stationary sample pump samples	7
Co-located composite high-volume stationary sample pump samples	0
Trip blanks	2
Filter blanks	1
PE samples	0
TOTAL NUMBER OF SAMPLES excluding QA samples (blanks, co-located, and performance evaluation)	**38**
TOTAL NUMBER OF SAMPLES including all QA samples	**44**

Community Park New York Creek Baseball Playing Field Scenario (DAY 4-1)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
NYB-L2-1CH-(Date)	300 liters	Critical Sample	NYC Field personal sample pump #1	1
NYB-L2-11CH-(Date)	300 liters	Co-located with Sample NYB-L2-1CH-(Date)	NYC Field co-located personal sample pump #1	1
NYB-L2-2CH-(Date)	300 liters	Critical Sample	NYC Field personal sample pump #2	1
NYB-L2-3CH-(Date)	300 liters	Critical Sample	NYC Field personal sample pump #3	1
NYB-L2-4CH-(Date)	300 liters	Critical Sample	NYC Field personal sample pump #4	1
NYB-L2-5CH-(Date)	300 liters	Critical Sample	NYC Field personal sample pump #5	1
NYB-L2-1NA-(Date)	300 liters	Critical Sample	NYC Field non-active (adult) personal sample pump #1	1
NYB-H2-1FD-(Date)	1,200 liters	Time Critical Sample	NYC Field pitcher's mound stationary pump	1
NYB-H2-2FD-(Date)	1,200 liters	Time Critical Sample	NYC Field downwind stationary pump-direct	1
NYB-H2-3FD-(Date)	1,200 liters	Time Critical Sample	NYC Field downwind stationary pump-offset	1
NYB-H2-4FD-(Date)	1,200 liters	Sample	NYC Field upwind stationary pump	1
NYB-H2-5FD-(Date)	1,200 liters	Sample	NYC Field far downwind stationary pump	1
NYB-H2-1PG-(Date)	1,200 liters	Critical Sample	southeastern playground stationary pump #1	1
NYB-H2-2PG-(Date)	1,200 liters	Critical Sample	southwestern playground stationary pump #2	1
NYB-H2-3PG-(Date)	1,200 liters	Critical Sample	northeastern playground stationary pump #3	1
NYB-H2-13PG-(Date)	1,200 liters	Co-located with Sample NYB-H2-3PG-(Date)	northeastern playground co-located stationary pump #3	1
NYB-H2-4PG-(Date)	1,200 liters	Critical Sample	northwestern playground stationary pump #4	1
NYB-H2-5PG-(Date)	1,200 liters	Critical Sample	central playground stationary pump #5	1
NYB-L2-1ZB-(Date)	300 liters will be indicated	Trip Blank	NYC Field field trip blank	1

New York Creek Nature Trail Jogging and Walking Scenario (DAY 4-2)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
JOG-L2-1AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking Leader (adult) personal sample pump #1	1
JOG-L2-2AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking Follower (adult) personal sample pump #2	1
JOG-L2-12AD-(Date)	300 liters	Co-located with JOG-L2-2AD-(Date)	New York Creek Nature Trail Jogging/Walking Follower (adult) personal sample pump #2	1
JOG-L2-3AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking (adult) personal sample pump #3	1
JOG-L2-4AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking (adult) personal sample pump #4	1
JOG-L2-5AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking (adult) personal sample pump #5	1
JOG-L2-1NA-(Date)	300 liters	Sample	playground/trail observer non-active (adult) personal sample pump #1	1
JOG-H2-1PG-(Date)	1,200 liters	Sample	southeastern playground stationary pump #1	1
JOG-H2-2PG-(Date)	1,200 liters	Sample	southwestern playground stationary pump #2	1
JOG-H2-3PG-(Date)	1,200 liters	Sample	northeastern playground stationary pump #3	1
JOG-H2-4PG-(Date)	1,200 liters	Sample	northwestern playground stationary pump #4	1
JOG-H2-5PG-(Date)	1,200 liters	Sample	central playground stationary pump #5	1
JOG-H2-15PG-(Date)	1,200 liters	Co-located with Sample JOG-H2-5PG-(Date)	central playground co-located stationary pump #5	1

Community Park South Field Baseball Playing Field Scenario (DAY 4-3)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
SFB-L2-1CH-(Date)	300 liters	Sample	South Field personal sample pump #1	1
SFB-L2-2CH-(Date)	300 liters	Sample	South Field personal sample pump #2	1
SFB-L2-3CH-(Date)	300 liters	Sample	South Field personal sample pump #3	1
SFB-L2-4CH-(Date)	300 liters	Sample	South Field personal sample pump #4	1
SFB-L2-5CH-(Date)	300 liters	Sample	South Field personal sample pump #5	1
SFB-L2-1NA-(Date)	300 liters	Critical Sample	South Field non-active (adult) personal sample pump #1	1
SFB-H2-1FD-(Date)	1,200 liters	Time Critical Sample	South Field pitcher's mound sample pump	1
SFB-H2-11FD-(Date)	1,200 liters	Co-located with SFB-H2-1FD-(Date)	South Field co-located pitcher's mound sample pump	1
SFB-H2-2FD-(Date)	1,200 liters	Time Critical Sample	South Field downwind sample pump-direct	1
SFB-H2-3FD-(Date)	1,200 liters	Time Critical Sample	South Field downwind sample pump-offset	1
SFB-H2-4FD-(Date)	1,200 liters	Sample	South Field upwind sample pump	1
SFB-H2-5FD-(Date)	1,200 liters	Sample	South Field far downwind sample pump	1
SFB-H2-1PG-(Date)	1,200 liters	Critical Sample	southeastern playground stationary pump #1	1
SFB-H2-2PG-(Date)	1,200 liters	Critical Sample	southwestern playground stationary pump #2	1
SFB-H2-3PG-(Date)	1,200 liters	Critical Sample	northeastern playground stationary pump #3	1
SFB-H2-4PG-(Date)	1,200 liters	Critical Sample	northwestern playground stationary pump #4	1
SFB-H2-5PG-(Date)	1,200 liters	Critical Sample	central playground stationary pump #5	1
SFB-L2-1ZB-(Date)	300 liters will be indicated	Trip Blank	South Field field trip blank	1
SFB-L2-FB-(Date)	NA	Filter Blank	filter blank	1

Composite Sampling (Day 4)				
Sample Number	Estimated Collection Volume	Special Designation	Location	Samples
CC4-L6-1CB-(Date)	900 liters	Time Critical Sample	personal sample pump #1	1
CC4-L6-11CB-(Date)	900 liters	Co-located with CC4-L6-1CB-(Date)	co-located personal sample pump #1	1
CC4-L6-2CB-(Date)	900 liters	Time Critical Sample	personal sample pump #2	1
CC4-L6-1CA-(Date)	900 liters	Time Critical Sample	non-active (adult) personal sample pump #1	1
CC4-H6-1CP-(Date)	3,600 liters	Time Critical Sample	playground sample pump #1	1
CC4-H6-11CP-(Date)	3,600 liters	Co-located with CC4-H6-1CP-(Date)	co-located playground sample pump #1	1
CC4-H6-2CP-(Date)	3,600 liters	Time Critical Sample	playground sample pump #2	1
CC4-H8-1CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #1	1
CC4-H8-2CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #2	1
CC4-H8-3CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #3	1
CC4-H8-4CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #4	1
CC4-H8-5CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #5	1

Day 4 Sampling Summary	
Sample Types	**Totals**
Personal sample pump samples	18
Co-located personal sample pump samples	2
High-volume stationary sample pump samples	25
Co-located high-volume stationary sample pump samples	3
Composite personal sample pump samples	3
Co-located composite personal sample pump samples	1
Composite high-volume stationary sample pump samples	7
Co-located composite high-volume stationary sample pump samples	1
Trip blanks	2
Filter blanks	1
PE samples	0
TOTAL NUMBER OF SAMPLES excluding QA samples (blanks, co-located, and performance evaluation)	**53**
TOTAL NUMBER OF SAMPLES including all QA samples	**63**

Silva Valley Elementary School Baseball Playing Field Scenario (DAY 5-1)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
SVB-L2-1CH-(Date)	300 liters	Sample	Silva Valley Baseball personal sample pump #1	1
SVB-L2-11CH-(Date)	300 liters	Co-located with SVB-L2-1CH-(Date)	Silva Valley Baseball co-located personal sample pump #1	1
SVB-L2-2CH-(Date)	300 liters	Sample	Silva Valley Baseball personal sample pump #2	1
SVB-L2-3CH-(Date)	300 liters	Sample	Silva Valley Baseball personal sample pump #3	1
SVB-L2-4CH-(Date)	300 liters	Sample	Silva Valley Baseball personal sample pump #4	1
SVB-L2-5CH-(Date)	300 liters	Sample	Silva Valley Baseball personal sample pump #5	1
SVB-L2-1NA-(Date)	300 liters	Critical Sample	Silva Valley Baseball non-active (adult) personal sample pump #1	1
SVB-H2-1FD-(Date)	1,200 liters	Time Critical Sample	Silva Valley Baseball pitcher's mound sample pump	1
SVB-H2-2FD-(Date)	1,200 liters	Time Critical Sample	Silva Valley Baseball downwind sample pump-direct	1
SVB-H2-12FD-(Date)	1,200 liters	Co-located with SVB-H2-2FD-(Date)	Silva Valley Baseball co-located downwind sample pump-direct	1
SVB-H2-3FD-(Date)	1,200 liters	Time Critical Sample	Silva Valley Baseball downwind sample pump-offset	1
SVB-H2-4FD-(Date)	1,200 liters	Sample	Silva Valley Baseball upwind sample pump	1
SVB-H2-5FD-(Date)	1,200 liters	Sample	Silva Valley Baseball far downwind sample pump	1
SVB-L2-1ZB-(Date)	300 liters will be indicated	Trip Blank	Silva Valley Baseball field trip blank	1

New York Creek Nature Trail Jogging and Walking Scenario (DAY 5-2)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
JOG-L2-1AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking Leader (adult) personal sample pump #1	1
JOG-L2-2AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking Follower (adult) personal sample pump #2	1
JOG-L2-3AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking (adult) personal sample pump #3	1
JOG-L2-4AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking (adult) personal sample pump #4	1
JOG-L2-5AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking (adult) personal sample pump #5	1
JOG-L2-1NA-(Date)	300 liters	Critical Sample	playground/trail observer non-active (adult) personal sample pump #1	1

Rolling Hills Middle School Soccer Playing Field Scenario (DAY 5-3)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
RHS-L2-1CH-(Date)	300 liters	Critical Sample	Rolling Hills Soccer personal sample pump #1	1
RHS-L2-2CH-(Date)	300 liters	Critical Sample	Rolling Hills Soccer personal sample pump #2	1
RHS-L2-3CH-(Date)	300 liters	Critical Sample	Rolling Hills Soccer personal sample pump #3	1
RHS-L2-4CH-(Date)	300 liters	Critical Sample	Rolling Hills Soccer personal sample pump #4	1
RHS-L2-14CH-(Date)	300 liters	Co-located with RHS-L2-4CH-(Date)	Rolling Hills Soccer co-located personal sample pump #4	1
RHS-L2-5CH-(Date)	300 liters	Critical Sample	Rolling Hills Soccer personal sample pump #5	1
RHS-L2-1NA-(Date)	300 liters	Critical Sample	Rolling Hills Soccer non-active (adult) personal sample pump #1	1
RHS-H2-1FD-(Date)	1,200 liters	Time Critical Sample	Rolling Hills Soccer on-field/downwind sample pump #1	1
RHS-H2-2FD-(Date)	1,200 liters	Time Critical Sample	Rolling Hills Soccer on-field/downwind sample pump #2	1
RHS-H2-3FD-(Date)	1,200 liters	Time Critical Sample	Rolling Hills Soccer on-field/downwind sample pump #3	1
RHS-H2-4FD-(Date)	1,200 liters	Sample	Rolling Hills Soccer upwind sample pump	1
RHS-H2-5FD-(Date)	1,200 liters	Sample	Rolling Hills Soccer far downwind sample pump	1
RHS-L2-200-(Date)	300 liters will be indicated	Trip Blank	Rolling Hills Soccer field trip blank	1
RHS-L2-FB-(Date)	NA	Filter Blank	filter blank	1
RHS-L2-1ZP-(Date)	300 liters will be indicated	Performance Evaluation Sample	Obtained from Region 9 QA Office	1

Composite Sampling (Day 5)

Sample Number	Estimated Collection Volume	Special Designation	Location	Samples
CC5-L6-1CB-(Date)	900 liters	Time Critical Sample	personal sample pump #1	1
CC5-L6-2CB-(Date)	900 liters	Time Critical Sample	personal sample pump #2	1
CC5-L6-1CA-(Date)	900 liters	Time Critical Sample	non-active (adult) personal sample pump #1	1
CC5-H8-1CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #1	1
CC5-H8-2CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #2	1
CC5-H8-3CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #3	1
CC5-H8-4CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #4	1
CC5-H8-14CT-(Date)	4,800 liters	Co-located with CC5-H8-4CT-(Date)	New York Creek Nature Trail co-located Entire Fence Line pump #4	1
CC5-H8-5CT-(Date)	4,800 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #5	1

Day 5 Sampling Summary

Sample Types	Totals
Personal sample pump samples	18
Co-located personal sample pump samples	2
High-volume stationary sample pump samples	10
Co-located high-volume stationary sample pump samples	1
Composite personal sample pump samples	3
Co-located composite personal sample pump samples	0
Composite high-volume stationary sample pump samples	5
Co-located composite high-volume stationary sample pump samples	1
Trip blanks	2
Filter blanks	1
PE samples	1
TOTAL NUMBER OF SAMPLES excluding QA samples (blanks, co-located, and performance evaluation)	**36**
TOTAL NUMBER OF SAMPLES including all QA samples	**44**

Community Park South Field Baseball Playing Field Scenario (DAY 6-1)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
SFB-L2-1CH-(Date)	300 liters	Sample	South Field personal sample pump #1	1
SFB-L2-2CH-(Date)	300 liters	Sample	South Field personal sample pump #2	1
SFB-L2-3CH-(Date)	300 liters	Sample	South Field personal sample pump #3	1
SFB-L2-13CH-(Date)	300 liters	Co-located with Sample SFB-L2-3CH-(Date)	South Field co-located personal sample pump #3	1
SFB-L2-4CH-(Date)	300 liters	Sample	South Field personal sample pump #4	1
SFB-L2-5CH-(Date)	300 liters	Sample	South Field personal sample pump #5	1
SFB-L2-1NA-(Date)	300 liters	Critical Sample	South Field non-active (adult) personal sample pump #1	1
SFB-H2-1FD-(Date)	1,200 liters	Sample	South Field pitcher's mound sample pump	1
SFB-H2-11FD-(Date)	1,200 liters	Co-located with SFB-H2-1FD-(Date)	South Field co-located pitcher's mound sample pump	1
SFB-H2-2FD-(Date)	1,200 liters	Sample	South Field downwind sample pump-direct	1
SFB-H2-3FD-(Date)	1,200 liters	Sample	South Field downwind sample pump-offset	1
SFB-H2-4FD-(Date)	1,200 liters	Sample	South Field upwind sample pump	1
SFB-H2-5FD-(Date)	1,200 liters	Sample	South Field far downwind sample pump	1
SFB-H2-1PG-(Date)	1,200 liters	Sample	southeastern playground stationary pump #1	1
SFB-H2-11PG-(Date)	1,200 liters	Co-located with SFB-H2-1PG-(Date)	southeastern playground co-located stationary pump #1	1
SFB-H2-2PG-(Date)	1,200 liters	Sample	southwestern playground stationary pump #2	1
SFB-H2-3PG-(Date)	1,200 liters	Sample	northeastern playground stationary pump #3	1

Community Park South Field Baseball Playing Field Scenario (DAY 6-1)				
Sample Number	**Estimated Collection Volume**	**Special Designation**	**Location**	**Samples**
SFB-H2-4PG-(Date)	1,200 liters	Sample	northwestern playground stationary pump #4	1
SFB-H2-5PG-(Date)	1,200 liters	Sample	central playground stationary pump #5	1
SFB-L2-1ZB-(Date)	300 liters will be indicated	Trip Blank	South Field field trip blank	1
SFB-L2-FB-(Date)	NA	Filter Blank	filter blank	1

New York Creek Nature Trail Jogging and Walking Scenario (DAY 6-2)				
Sample Number	Estimated Collection Volume	Special Designation	Location	Samples
JOG-L2-1AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking Leader (adult) personal sample pump #1	1
JOG-L2-2AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking Follower (adult) personal sample pump #2	1
JOG-L2-3AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking (adult) personal sample pump #3	1
JOG-L2-4AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking (adult) personal sample pump #4	1
JOG-L2-5AD-(Date)	300 liters	Sample	New York Creek Nature Trail Jogging/Walking (adult) personal sample pump #5	1
JOG-L2-1NA-(Date)	300 liters	Critical Sample	playground/trail observer non-active (adult) personal sample pump #1	1
JOG-H2-1PG-(Date)	1,200 liters	Sample	southeastern playground stationary pump #1	1
JOG-H2-2PG-(Date)	1,200 liters	Sample	southwestern playground stationary pump #2	1
JOG-H2-3PG-(Date)	1,200 liters	Sample	northeastern playground stationary pump #3	1
JOG-H2-4PG-(Date)	1,200 liters	Sample	northwestern playground stationary pump #4	1
JOG-H2-5PG-(Date)	1,200 liters	Sample	central playground stationary pump #5	1
JOG-H2-1TR-(Date)	1,200 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #1	1
JOG-H2-2TR-(Date)	1,200 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #2	1
JOG-H2-3TR-(Date)	1,200 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #3	1
JOG-H2-4TR-(Date)	1,200 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #4	1
JOG-H2-5TR-(Date)	1,200 liters	Sample	New York Creek Nature Trail Entire Fence Line pump #5	1

Community Park Lower Soccer Field Scenario (DAY 6-3)				
Sample Number	Estimated Collection Volume	Special Designation	Location	Samples
CPS-L2-1CH-(Date)	300 liter	Critical Sample	Community Park Soccer personal sample pump #1	1
CPS-L2-2CH-(Date)	300 liter	Critical Sample	Community Park Soccer personal sample pump #2	1
CPS-L2-3CH-(Date)	300 liter	Critical Sample	Community Park Soccer personal sample pump #3	1
CPS-L2-4CH-(Date)	300 liter	Critical Sample	Community Park Soccer personal sample pump #4	1
CPS-L2-5CH-(Date)	300 liter	Critical Sample	Community Park Soccer personal sample pump #5	1
CPS-L2-15CH-(Date)	300 liter	Co-located with Sample CPS-L2-5CH-(Date)	Community Park Soccer co-located personal sample pump #5	1
CPS-L2-1NA-(Date)	300 liters	Critical Sample	Community Park Soccer non-active (adult) personal sample pump #1	1
CPS-H2-1FD-(Date)	1,200 liters	Time Critical Sample	Community Park Soccer on-field/downwind sample pump #1	1
CPS-H2-2FD-(Date)	1,200 liters	Time Critical Sample	Community Park Soccer on-field/downwind sample pump #2	1
CPS-H2-3FD-(Date)	1,200 liters	Time Critical Sample	Community Park Soccer on-field/downwind sample pump #3	1
CPS-H2-4FD-(Date)	1,200 liters	Sample	Community Park Soccer upwind sample pump	1
CPS-H2-14FD-(Date)	1,200 liters	Co-located with Sample CPS-H2-4FD-(Date)	Community Park Soccer co-located upwind sample pump	1
CPS-H2-5FD-(Date)	1,200 liters	Sample	Community Park Soccer far downwind sample pump	1
CPS-H2-1PG-(Date)	1,200 liters	Critical Sample	southeastern playground stationary pump #1	1
CPS-H2-2PG-(Date)	1,200 liters	Critical Sample	southwestern playground stationary pump #2	1
CPS-H2-3PG-(Date)	1,200 liters	Critical Sample	northeastern playground stationary pump #3	1
CPS-H2-4PG-(Date)	1,200 liters	Critical Sample	northwestern playground stationary pump #4	1
CPS-H2-5PG-(Date)	1,200 liters	Critical Sample	central playground stationary pump #5	1
CPS-L2-1ZB-(Date)	300 liters will be indicated	Trip Blank	Community Park Soccer field trip blank	1

Composite Sampling (Day 6)

Sample Number	Estimated Collection Volume	Special Designation	Location	Samples
CC6-L6-1CB-(Date)	900 liters	Time Critical Sample	personal sample pump #1	1
CC6-L6-2CB-(Date)	900 liters	Time Critical Sample	personal sample pump #2	1
CC6-L6-1CA-(Date)	900 liters	Time Critical Sample	non-active (adult) personal sample pump #1	1
CC6-H6-1CP-(Date)	3,600 liters	Time Critical Sample	playground sample pump #1	1
CC6-H6-2CP-(Date)	3,600 liters	Time Critical Sample	playground sample pump #2	1

Day 6 Sampling Summary

Sample Types	Totals
Personal sample pump samples	18
Co-located personal sample pump samples	2
High-volume stationary sample pump samples	30
Co-located high-volume stationary sample pump samples	3
Composite personal sample pump samples	3
Co-located composite personal sample pump samples	0
Composite high-volume stationary sample pump samples	2
Co-located composite high-volume stationary sample pump samples	0
Trip blanks	2
Filter blanks	1
PE samples	0
TOTAL NUMBER OF SAMPLES excluding QA samples (blanks, co-located, and performance evaluation)	**53**
TOTAL NUMBER OF SAMPLES including all QA samples	**61**

Sample = The data from this sample location are necessary to meet project objectives.
Critical Sample = The data from this sample location are critical to meet project objectives. Re-sampling and/or re-analysis may be required if data are not generated.
Time Critical Sample = The sample will be analyzed prior to the analysis of other non-time critical samples.

6 Field Methods and Procedures

6.1 Equipment Procedures

6.1.1 Equipment

The following primary sampling and monitoring equipment will be utilized to obtain environmental data:

Parameter:	Video Exposure Monitoring Camera	
Matrix:	Air	
Equipment	Fabrication	Dedicated
Video Camera	Various	No

Parameter:	Dust Monitoring	
Matrix:	Air	
Equipment	Fabrication	Dedicated
MIE Personal DataRam™ (PDR)	Various	No

Parameter:	Meteorological Conditions	
Matrix:	Air	
Equipment	Fabrication	Dedicated
Portable weather station(s)	Various	No

Parameter:	Sampling of Air for Dust and Determination of Asbestos Fibers	
Matrix:	Air	
Equipment	Fabrication	Dedicated
Low-flow personal sampling pumps	Various	No
High-flow stationary sampling pumps	Various	No
Sample tubing	Tygon	No
Sampling cassette with mixed cellulose ester filter	polypropylene	Yes

Parameter:	Field Data Collection and Sample Management	
Matrix:	Air	
Equipment	Fabrication	Dedicated
Field Computer and Printer(s)	Various	No

A comprehensive list of additional field equipment required to support the data collection activities is located in Addendum AB-2.

The planned equipment is in accordance with the USEPA Environmental Response Team (ERT) SOP 2015 *Asbestos Sampling* and sampling guidelines in ISO 10312. The ERT SOP is included in Appendix D of the QAPP.

Video documentation and dust monitoring will be performed with a video camera and MIE Personal DataRam (PDR) real-time dust monitors. PDRs and the video unit will be operated in accordance with manufacturer's guidelines. Video documentation will follow *USEPA Standard Operating Procedure (SOP) for Video Exposure Monitoring of Activities Potentially Associated with Exposure to Asbestos in Air, Region 8*, included in Appendix D of the QAPP.

6.1.2 Equipment Maintenance

Field equipment will be operated and maintained by the START according to the manufacturers' instructions. The background dust level measured by the PDR in a clean environment will be evaluated daily by the START, and the PDR will be re-zeroed as necessary. Sample pumps will be calibrated before and after use each sampling day. Any pump that does not maintain calibration over the course of a day will be removed from service for evaluation. All equipment maintenance will be recorded in the START field logbook.

The air sampling pumps will be checked frequently (every 20 to 30 minutes) during use to insure that the pumps are in operation and did not stop or reduce their flow rate due to low power supply or air intake blockage. During operation the dust monitors will be checked periodically to insure that the instruments are collecting information.

6.1.3 Inspection/Acceptance Requirements for Supplies and Consumables

There are no project-specific inspection/acceptance criteria for supplies and consumables. It is standard operating procedure that: personnel will not use broken or defective materials; items will not be used past their expiration date; supplies and consumables will be checked against order and packing slips to verify that the correct items were received; and the supplier will be notified of any missing or damaged items.

6.2 Field Notes

6.2.1 Logbooks

A logbook will be maintained for field work. Field logbooks will document where, when, how, and from whom any vital project information was obtained. Logbook entries will be complete and accurate enough to permit reconstruction of field activities. Logbooks will be kept in accordance with E & E SOP *Standard Operating Procedures for Field Activity Logbooks* (included in Appendix D of the QAPP). Use of subsidiary logbooks and field data sheets to record field and sampling information is allowed as long as a record of these documents is made in the site logbook and information is recorded in the subsidiary documents in accordance with the E & E SOP. The use of data acquisition and data management software, such as Scribe, does not constitute a substitute for a field logbook, and information entered into the computer program must be documented in a field logbook or data sheet.

The following information will be recorded, if applicable, during the collection of each sample:

- Sample location and description;
- Site sketch showing sample location(s) and measured distances;
- Sampler's name(s);
- Date and time of sample collection;
- Sample matrix;
- Sample equipment used;
- Field observations and details important to analysis or integrity of samples (rain, odors, etc.);
- Instrument reading (OVM, TVA, etc.);
- Sample description;
- Shipping arrangements (airbill numbers); and
- Receiving laboratory(ies).

In addition to sampling information, the following specifics may also be recorded in the field logbook for each day of sampling:

- Names of personnel on site and their responsibilities;
- Time of arrival/entry on site and time of departure;
- A summary of meetings or discussions with any potentially responsible party representatives, or representatives of any federal, state, or other regulatory agency;
- Descriptions of deviations from project scope, work plans, sampling plans, site safety plans, or QA procedures;
- Levels of safety protection;
- Equipment calibration and equipment models and serial numbers;
- Record of photographs;
- Field screening measurements; and
- A list of subsidiary logbooks or field data sheets.

6.2.2 Photographs

Photographs will be taken at representative sampling locations and at other areas of interest on site. They will serve to verify information entered in the field logbook. When a photograph is taken, the following information will be written in the logbook or will be recorded in a separate field photography log:

- Time, date, location, and, if appropriate, weather conditions;
- Description of the subject photographed;
- Name of person taking the photograph; and
- Photograph number.

6.3 Field Measurements

6.3.1 Global Positioning System Procedures

Sample points and site features will be documented with a global positioning system (GPS) unit. The GPS will be used to assign precise latitude and longitude coordinates to sample locations on the site. GPS mapping will be done by personnel trained in the use of the equipment and will be completed in accordance with the manufacturer's instructions. Expected output from the use of the GPS mapping will be a site map with sample locations.

6.3.2 Video and Dust Monitoring Procedures

All air monitoring and sampling will be conducted in accordance with the previously cited methods and SOPs. Any deviations will be noted in the field logbook. Monitoring and sampling locations will be selected as outlined in Section 4. Air samples will be placed at heights outlined in Section 4. Sample locations will be recorded in the field logbook with a sketch or description of the sample location and physical reference points. If possible, distances to reference points will be labeled or noted. Sample locations will also be documented using GPS.

Air monitoring for dust will be conducted with PDR real-time dust monitors in conjunction with video monitoring of sampling activities. Each day prior to the start of sampling activities a background level of dust will be established for the work zone. The START will deploy PDRs as described in Section 4 and operate them concurrent with sampling activities. The START will record periodic readings (approximately 30 minutes) from the PDRs in a field logbook or data sheets, noting the dust reading and site activities. If a PDR is moved during the work day from one scenario to another, the time of the move and the dust reading will be recorded in the logbook or data sheets. PDRs and air sample pumps deployed together should be kept together throughout the entire scenario. At the end of each work day, the START will download data files from the PDRs.

6.4 Sampling Procedures

Air samples will be collected with personal and high-volume sample pumps equipped with open-faced cassettes that contain a 25 millimeter (mm) diameter mixed cellulose ester (MCE) filter with a pore size less than or equal to 0.80 micrometers (Fm). Each personal sample pump will be operated at approximately 2.5 liters per minute (lpm). Each high-volume sample pump will be operated at approximately 10 lpm. Sample pumps will be calibrated using an electronic calibrator prior to and after use each day using a cassette reserved for calibration (from the same lot of the sample cassettes to be used in the field). Pre-sampling calibration will be considered complete when ± 5 percent of the desired flow rate is attained, as determined by three measurements with the calibrator. For post-sampling, three separate constant flow calibration readings will be obtained, and those flow readings will be averaged. If the averaged post-sampling flow rate has changed by more than 5 percent during the sampling period, the average of the pre- and post-sampling rates will be used to calculate the total sample volume. Flow rates that have more than a 10 percent difference for a sample pump will be noted with sampling documentation. Samples for which there is more than a 25 percent difference from initial calibration to end calibration will be considered as potentially invalid and noted with sampling documentation. The START will record the pump serial number, sample number, initial flow rate, sample start/end times, sample locations, and final flow rate either in the field logbook or on a field data sheet (Addendum AB-3). Calibration SOPs are included in Appendix D of the QAPP.

6.5 Scenario Procedures

Refer to Addendum AB-1 for scenario procedures and scenario script assignments.

6.6 Decontamination Procedures

Non-dedicated sampling equipment (e.g., sample pumps, dust monitors and scenario equipment) will be wiped down with decontamination wipes or other wetted disposable media (baby wipes) after every sampling scenario. Commercial decontamination wipes are routinely used by TEM analysis laboratories to decontaminate equipment. Decontamination wipes will be pre-certified to be asbestos-free to prior to field use. Dedicated equipment and decontamination materials will be disposed of as specified in Section 7.

6.7 Field Health and Safety Procedures

Field activities will be conducted according to the Health and Safety Plan included as Attachment C of the QAPP. In general, sampling will be conducted in the specified scenario area in Level C. All other activities will be in Level D.

6.8 Field Data Management Procedures

Field data generated for this project include but are not limited to: sample collection dates and times, sample numbers, field monitoring data for dust, meteorological data, and field mapping data. These data will be included in the permanent project file maintained in the START office as directed in USEPA Contract #68-W01-012. Information for all air sampling conducted also will be recorded using the Scribe program.

Electronic Sample Logging

The field team will utilize the Scribe software to prepare sample labels and chain-of-custody forms. Certain sample information, such as sample numbers, heights, estimated sampling dates, and analyses, may be entered into Scribe prior to mobilization to the field. This information may be changed or supplemented once samples are collected.

At a minimum, the following information must be entered for each sample after collection:

1. Sample name;
2. Sample date and time;
3. Sampling media;
5. Analysis priority or data turnaround time;
6. Analysis to be performed;
7. Sampler name; and
8. Air volume.

The field team will generate chain-of-custody forms (i.e., tracking reports) for each cooler of samples packaged and sent to a laboratory. Each chain-of-custody form will refer to the shipping method and tracking number.

The use of the Scribe software will require that the field team have access to a computer, a printer, computer paper, and labels while in the field. Field team members will have received specific training in use of the software.

7 Disposal of Investigation-Derived Waste

In the process of collecting environmental samples at this site, several different types of potentially contaminated investigation-derived wastes (IDW) may be generated, including the following:

- Used personal protective equipment (PPE);
- Disposable sampling equipment; and
- Solid decontamination material.

The USEPA's National Contingency Plan requires that management of IDW generated during site investigations comply with all relevant or appropriate requirements to the extent practicable. This sampling plan will follow the *Office of Emergency and Remedial Response (OERR) Directive* 9345.3-02 (May 1991), which provides the guidance for management of IDW during site investigations. Listed below are the procedures that will be followed for handling IDW. The procedures are flexible enough to allow the site investigation team to use its professional judgement on the proper method for the disposal of each type of IDW generated at each sampling location.

Used PPE and disposable sampling equipment will be double-bagged in plastic trash bags and taken to an appropriate local refuse disposal facility. Any PPE or dedicated equipment that is to be disposed of that could otherwise be reused will be rendered inoperable before disposal.

8 Sample Identification, Documentation and Shipment

8.1 Sample Nomenclature

Unique sample numbers will be assigned to each sample as it is collected. Each sample will have a prefix, a second term, a third term, and a final suffix, each separated by hyphens. The final suffix will be the date in six digits (e.g., May 19, 2004, is "051904").

The sample prefix will be based upon the scenario from which it was generated. The prefixes are shown in Table AB8-1. The second term of the sample name will consist of an alphanumeric code identifying if the sample is from a low-volume or high-volume sample pump, and it will indicate the sample duration, as shown in Table AB8-2. The third term of the sample name will consist of an alphanumeric code identifying the sample pump location within the scenario, as shown in Table AB8-3. Co-located samples will have the number "1" before the number or alphanumeric code in the third term. For example, the co-located sample of sample NYB-H2-1CH-061704 would be NYB-H2-11CH-061704. Blank samples will have a third term of "1ZB" for field trip blanks and "FB" for filter blanks. Performance evaluation samples will have a third term of "1ZP."

Table AB8-1: Sample Name Prefixes	
Prefix	**Scenario Location/Activity**
SVB	Silva Valley Elementary School baseball playing field
JOG	New York Creek Nature Trail–Jogging and Walking
BIK	New York Creek Nature Trail–Biking
SFB	Community Park south field baseball playing field
NYB	Community Park New York Creek field baseball playing field
NFB	Community Park north field baseball playing field
CPS	Community Park lower soccer playing field scenario
RHS	Rolling Hills Middle School soccer playing field
RHB	Rolling Hills Middle School basketball court area
JEP	Jackson Elementary School playing field
JEB	Jackson Elementary School bare areas, pathways, and asphalted areas
JEG	Jackson Elementary School garden and outdoor classroom
CC1	Composite samples collected during all three of the day one scenarios
CC2	Composite samples collected during all three of the day two scenarios
CC3	Composite samples collected during all three of the day three scenarios
CC4	Composite samples collected during all three of the day four scenarios
CC5	Composite samples collected during all three of the day five scenarios
CC6	Composite samples collected during all three of the day six scenarios

Table AB8-2: Sample Name Second Terms	
Second Term	**Meaning**
L2	Low-volume sample pump with 2-hour sample duration.
L6	Low-volume sample pump with 6-hour sample duration.
H2	High-volume sample pump with 2-hour sample duration.
H6	High-volume sample pump with 6-hour sample duration.
H8	High-volume sample pump with 8-hour sample duration.

Table AB8-3: Sample Name Third Terms

Third Term	Sample Pump Location Within Scenario/Sample Type
1CH	Personal sample pump worn by the primary sampler involved in all scenario activities simulating child exposure.
2CH	Personal sample pump worn by the secondary sampler involved in scenario activities simulating child exposure.
3CH	Personal sample pump worn by the third sampler involved in scenario activities simulating child exposure.
4CH	Personal sample pump worn by the fourth sampler involved in scenario activities simulating child exposure.
5CH	Personal sample pump worn by the fifth sampler involved in scenario activities simulating child exposure.
1AD	Personal sample pump worn by the primary sampler involved in all scenario activities simulating active adult exposure.
2AD	Personal sample pump worn by the secondary sampler involved in scenario activities simulating active adult exposure.
3AD	Personal sample pump worn by the third sampler involved in scenario activities simulating active adult exposure.
4AD	Personal sample pump worn by the fourth sampler involved in scenario activities simulating active adult exposure.
5AD	Personal sample pump worn by the fifth sampler involved in scenario activities simulating active adult exposure.
1NA	Personal sample pump worn by the sampler involved in scenario activities simulating non-active adult/adult observer exposure.

Table AB8-3: Sample Name Third Terms

Third Term	Sample Pump Location Within Scenario/Sample Type
1FD	High-volume stationary sample pump at the center of the playing field (e.g., pitcher's mound area) or basketball court/paved area during the scenario activities. High-volume stationary on-field/downwind sample pump #1 for soccer/grass-covered playing field scenario activities. High-volume stationary in-area sample pump #1 for garden/outdoor classroom.
2FD	High-volume stationary sample pump directly downwind for each baseball playing field scenario activity. High-volume stationary on-field/on-court/downwind sample pump #2 for soccer/grass-covered playing field and basketball scenario activities. High-volume stationary in-area sample pump #2 for garden/outdoor classroom.
3FD	High-volume stationary downwind sample pump in a direction 30-45 degrees offset from the (directly) downwind sample (i.e., placed offset in the direction that the wind may shift for baseball playing field scenarios). High-volume stationary on-field/on-court/downwind sample pump #3 for soccer/grass-covered playing field and basketball scenario activities. High-volume stationary in-area sample pump #3 for garden/outdoor classroom.
4FD	High-volume stationary upwind sample pump during the playing field scenario activities. High-volume stationary upwind sample pump during the garden/outdoor classroom scenario activities.
5FD	High-volume stationary sample pump positioned approximately 100 yards downwind of scenario activities. High-volume stationary downwind sample pump during the garden/outdoor classroom scenario activities.
1PG	High-volume stationary sample pump in southeastern side of children's playground during playing field and trail scenario activities at the Community Park.
2PG	High-volume stationary sample pump in southwestern side of children's playground during playing field and trail scenario activities at the Community Park.
3PG	High-volume stationary sample pump in northeastern side of children's playground during playing field and trail scenario activities at the Community Park.
4PG	High-volume stationary sample pump in northwestern side of children's playground during playing field and trail scenario activities at the Community Park.
5PG	High-volume stationary sample pump in center of children's playground during playing field and trail scenario activities at the Community Park.

Table AB8-3: Sample Name Third Terms

Third Term	Sample Pump Location Within Scenario/Sample Type
1TR	High-volume stationary sample pump #1 at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is within the park area only. During jogging/walking scenarios, this sample may be anywhere along the trail.
2TR	High-volume stationary sample pump #2 at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is within the park area only. During jogging/walking scenarios, this sample may be anywhere along the trail.
3TR	High-volume stationary sample pump #3 at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is within the park area only. During jogging/walking scenarios, this sample may be anywhere along the trail.
4TR	High-volume stationary sample pump #4 at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is within the park area only. During jogging/walking scenarios, this sample may be anywhere along the trail.
5TR	High-volume stationary sample pump #5 at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is within the park area only. During jogging/walking scenarios, this sample may be anywhere along the trail.
6TR	High-volume stationary sample pump #6 at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is along the trail, outside the park area. (Not used for jogging/walking scenarios.)
7TR	High-volume stationary sample pump #7 at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is along the trail, outside the park area. (Not used for jogging/walking scenarios.)

Table AB8-3: Sample Name Third Terms

Third Term	Sample Pump Location Within Scenario/Sample Type
1CC	Personal sample pump collecting 6-hour composite sample worn by the primary sampler involved in all scenario activities simulating child exposure.
2CC	Personal sample pump collecting 6-hour composite sample worn by the secondary sampler involved in all scenario activities simulating child exposure.
1CB	Personal sample pump collecting 6-hour composite sample worn by the primary sampler involved in all scenario activities simulating both child and adult exposure.
2CB	Personal sample pump collecting 6-hour composite sample worn by the secondary sampler involved in all scenario activities simulating both child and adult exposure.
1CA	Personal sample pump collecting 6-hour composite sample worn by the sampler involved in all scenario activities simulating child and active or non-active adult exposure.
1CP	First high-volume stationary sample pump collecting 6-hour composite sample in children's playground during the playing field and trail biking scenario activities at the Community Park.
2CP	Second high-volume stationary sample pump collecting 6-hour composite sample in children's playground during the playing field and trail biking scenario activities at the Community Park.

Table AB8-3: Sample Name Third Terms

Third Term	Sample Pump Location Within Scenario/Sample Type
1CT	High-volume stationary sample pump #1 collecting 8-hour composite sample at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is within the park area only. During jogging/walking scenarios, this sample may be anywhere along the trail.
2CT	High-volume stationary sample pump #2 collecting 8-hour composite sample at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is within the park area only. During jogging/walking scenarios, this sample may be anywhere along the trail.
3CT	High-volume stationary sample pump #3 collecting 8-hour composite sample at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is within the park area only. During jogging/walking scenarios, this sample may be anywhere along the trail.
4CT	High-volume stationary sample pump #4 collecting 8-hour composite sample at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is within the park area only. During jogging/walking scenarios, this sample may be anywhere along the trail.
5CT	High-volume stationary sample pump #5 collecting 8-hour composite sample at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is within the park area only. During jogging/walking scenarios, this sample may be anywhere along the trail.
6CT	High-volume stationary sample pump #6 collecting 8-hour composite sample at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is within the park area only. During jogging/walking scenarios, this sample may be anywhere along the trail.
7CT	High-volume stationary sample pump #7 collecting 8-hour composite sample at New York Creek Nature Trail Fence Line. During biking scenarios, this sample is within the park area only. During jogging/walking scenarios, this sample may be anywhere along the trail.
1ZB	Field trip blank sample.
FB	Filter blank sample.
1ZP	Performance evaluation sample.

8.2 Container, Preservation and Holding Time Requirements

All filter cassettes used for the project will have been pre-tested for asbestos fibers prior to delivery to the START. Air samples will be collected with the filter cassette open-faced. There are no preservation or holding time requirements for asbestos fiber analysis.

8.3 Sample Labeling, Packaging and Shipping

All laboratory samples collected will be labeled in a clear and precise way for proper identification in the field and for tracking in the laboratory. Sample labels will be affixed to the sample containers and secured with clear tape. Samples will have preassigned, identifiable and unique numbers in accordance with Section 8.1. The sample labels will contain the following information:

- Sample number;
- Date and time of collection;
- Site name; and
- Analytical parameter.

Samples will be stored in a secure location on site pending shipment to the analytical laboratory. Samples will be retained in the custody of project personnel at all times or secured so as to deny access to anyone else. When samples are not under the direct control of the individual responsible for them, they must be stored in a locked container sealed with custody seals.

All samples will be placed in coolers or another delivery container with the appropriate chain-of-custody forms. All forms will be enclosed in plastic bags and affixed to the underside of the cooler lid. Empty space in the cooler will be filled with bubble wrap or styrofoam peanuts to prevent movement and breakage during shipment. Each cooler will be securely taped shut with strapping tape, and custody seals will be affixed to the front, right, and back of each cooler.

Samples will be shipped for immediate delivery to the contracted laboratory. Upon shipping, the laboratory will be notified of:

- Shipment date and expected delivery date;
- Total number of samples by matrix;
- Carrier, air bill number(s), method of shipment (e.g., priority);
- Irregularities or anticipated problems associated with the samples; and
- Whether additional samples will be sent or if the shipment is the last one.

8.4 Chain-of-Custody Forms and QA/QC Summary Forms

A chain-of-custody form will be maintained for all samples to be submitted for laboratory analysis, from the time the sample is collected for analysis to its final deposition. The chain-of-custody must include the following:

- Sample identification number;
- Site name;
- Sample date;
- Number and volume of sample containers;
- Required analysis;
- Signature and name of samplers; and
- Signature(s) of any individual(s) with control over samples.

Every transfer of custody must be noted and signed for; a copy of this record is kept by each individual who has signed. The original records will accompany the sample shipment with a separate record for each cooler.

Corrections on sample paperwork will be made by drawing a single line through the mistake, initialing and dating the deletion. The correct information will be entered above, below or after the mistake.

9 Quality Assurance and Quality Control (QA/QC)

9.1 Quality Assurance/Quality Control Samples

The QA/QC samples described in the following subsections, which are also listed in Table AB5-1, will be collected during this investigation.

9.1.1 Filter Blanks

A filter blank is an unused filter that is analyzed to determine the background asbestos structure count for the sample medium. The blank is kept with the sample set in the field but is not opened at any time. Six filter blanks, one each day, will be submitted to the laboratory with the activity-based outdoor air samples. Each filter blank sample will be identified as a filter blank on the chain of custody form.

9.1.2 Field Trip Blanks

A field trip blank is a filter cassette that has been taken to the sampling site, opened, and then closed. Such a filter is analyzed to determine the background asbestos structure count for the measurement. Twelve field trip blanks, two each day, will be generated for the activity-based outdoor air sampling. These samples will be sent blind to the laboratory and will not be identified as a field trip blank on the chain-of-custody forms.

9.1.3 Field Duplicates and Co-located Samples

The generation of field duplicate samples is not possible due to the sample collection procedure. For this project, co-located samples will be collected instead (i.e., a sample collected using a sample pump with the intake positioned immediately next to and at the same height as the original sample). The co-located samples are collected to evaluate the reproducibility of sampling and analysis. START data quality guidelines require that at least 10 percent of samples analyzed must be co-located. Co-located samples will be preserved, packaged, and sealed in the same manner as other samples. A separate sample number will be assigned to each co-located sample, and all co-located samples will be submitted blind to the laboratory. If the data quality indicator (DQI) goal for precision is not met for the co-located pairs, the impact on data quality will be evaluated. The rationale for co-located sample locations is indicated in Table AB9-1

9.1.4 Laboratory QC Samples

Laboratory QC is described in the *El Dorado Hills Naturally Occurring Asbestos, Multimedia Exposure Assessment, El Dorado Hills, California, Quality Assurance Project Plan.* One laboratory performance evaluation sample will be sent with other samples blind to the laboratory and will not be identified as a performance evaluation sample on the chain-of-custody forms.

Table AB9-1 Summary of Co-located Sample Location Rationale	
Co-Located Sampler Location	**Rationale**
All personal sample pumps worn by sampling team members during the activity-based scenarios.	Objective is to have one co-located personal sample pump sample and one co-located high-volume stationary sample pump sample each day of activity-based sampling. A secondary goal was to have co-located samples from each sample pump position within each scenario. Actual selected sample locations are random.
All high-volume stationary sample pumps during activity-based scenarios.	
All 6-hour scenario composite personal sample pumps.	The objective is to have one sample every three days. Actual selected sample pump locations are random.
All 6-hour scenario composite high-volume stationary sample pumps.	The selected sample pump location is random.
High-flow stationary sample pumps along New York Creek Nature Trail.	The selected sample pump locations were random.

9.1.5 Upwind Samples

One upwind sample will be collected with each playing field or area scenario. The upwind sample will be collected at approximately 100 yards upwind of the center of the playing field or area. No upwind samples will be collected during the New York Creek Nature Trail and Jackson Elementary School pathway scenarios.

9.2 Analytical and Data Package Requirements

Analytical and data package requirements are described in the *El Dorado Hills Naturally Occurring Asbestos, Multimedia Exposure Assessment, El Dorado Hills, California, Quality Assurance Project Plan.*

9.3 Data Validation

Data validation is described in the *El Dorado Hills Naturally Occurring Asbestos, Multimedia Exposure Assessment, El Dorado Hills, California, Quality Assurance Project Plan.*

9.4 Field Variances

As conditions in the field may vary, it may become necessary to implement modifications to the proposed sampling as presented in this FSP. When appropriate, the USEPA QA Office will be notified of the modifications and a verbal approval obtained before implementing the modifications. All modifications to the FSP will be with approval of the USEPA Task Monitor. Modifications to the approved FSP will be recorded in site records and reported in the post-sampling report.

Addendum AB-1

Scenario Procedures and Scenario Script Assignments

Addendum AB-2

Equipment List

Addendum AB-3

Field Data Sheets