

**DRAFT
MATERIAL REMOVAL
WORK PLAN**

**ROBERTO CLEMENTE TOWN PARK
400 BROADWAY
BRENTWOOD, NY 11717**

***PREPARED FOR:*
TOWN OF ISLIP
401 MAIN STREET
ISLIP, NY 11751**

***PREPARED BY:*
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SEPTEMBER 5, 2014

**ROBERTO CLEMENTE TOWN PARK
400 BROADWAY, BRENTWOOD, NY**

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DRAFT MATERIAL REMOVAL WORK PLAN

1.0 INTRODUCTION

This Material Removal Work Plan (“WP”) was prepared by Enviroscience Consultants, Inc. (“Enviroscience”) to detail the safe removal of contaminated soil that was illegally disposed on soccer fields and within a recharge basin at the Roberto Clemente Town Park at 400 Broadway in Brentwood, New York (“the Site”). Based on current estimates, the amount of illegally disposed soil at the Site is 50,000 tons, which covers approximately 4 acres on the former soccer fields and less than an acre within the eastern portion of a recharge basin. Figure 1 shows the Site location, and Figure 2 shows the general site layout.

Based on the findings of an investigation that was performed by Enviroscience for the Suffolk County District Attorney’s Office in May 2014, soils at the Site contain elevated levels of organic compounds and metals, some of which exceed the New York State Department of Environmental Conservation (“NYSDEC”) Part 375 Protection of Public Health Residential Soil Cleanup Objectives (“SCOs”). Additionally, non-friable asbestos-containing building material (“ACM”) was identified as a component in the illegally disposed materials at the Site, which requires the material removal from the Site to be classified as a Large Asbestos Project. For the purposes of this Work Plan, all soils and materials that will be excavated and removed from the Site are considered asbestos-contaminated soil or ACM unless supplemental testing is performed. These soils and debris require removal as an early step to alleviate potential threats to public health and safety or to the environment and in order for the Site to be restored to its original use, which was for recreational purposes.

2.0 SITE BACKGROUND

2.1 Site Description

Roberto Clemente Town Park is a multiple-use recreational park that is located in a residential setting in the hamlet of Brentwood, New York. The Suffolk County Tax Map Nos. for the Park are Section 500 District 185 Block 1 Lots 94.2 and 101.2, which is zoned Residential A District.

The Park occupies approximately 30 acres on the west side of Broadway, north of West 18th Street and south of Nolin Street. Timberline Drive borders the Park to the west. The adjoining properties to the north and west are zoned Residential B District, and the adjoining properties to the south and east are zoned Residential A District. Residential A and Residential B Districts differ by lot areas and setbacks.

The Site was used, in part, for mining purposes in the 1940s, according to historical topographical maps. Ponds were located on the Site in the 1950s, and it is believed that the Town acquired the Site in the 1960s. Development of the Site into a public park (which was originally known as Timberline Park) with current ball fields, basketball court and a swimming pool complex occurred during the 1970s and 1980s.

The Park is currently closed to the public due to the recent illegal dumping activities, however, it includes swimming pool facilities, baseball fields, basketball courts, parking lots, support buildings, and a playground, along with the soccer fields and recharge basin that have been covered by the recent illegal dumping activities, which is visible in Figure 2. The approximate area of the soccer fields is 4 acres, while the impacted area within the recharge basin is less than an acre. This WP pertains to activities that will be performed in connection with the former soccer fields, the recharge basin, and its immediate adjoining locations, which are located in the western portion of the Park.

2.2 Previous Investigation

As previously discussed, Enviroscience investigated the Site for the Suffolk County District Attorney's Office in May 2014. The investigation included soil samples from the

former soccer fields and the recharge basin, along with background samples from other portions of the Park.

The investigation's results showed that non-friable ACM was present, along with elevated levels of organic compounds and metals, which were above the NYSDEC Part 375 Protection of Public Health Residential SCOs. However, no elevated levels were identified in the background sample results, and none of the results showed hazardous waste characteristics in any of the samples that were obtained from the Site.

2.3 Site Characterization

Based on the investigation's results, several of the compounds and metals that were identified at the Site are considered hazardous substances, along with asbestos, as that term is defined in 42 U.S. Code ("USC") 9601. However, the overall threat to public health and the surrounding environment is relatively low at this time.

3.0 IMPLEMENTATION OF ACTIVITIES

Material removal activities will be performed by excavating the recently illegally disposed soils and materials from the Site by machinery for proper offsite disposal at approved facilities. Based on the previous investigation results and coordination with the NYSDEC, approximately three-quarters of the soil that will be excavated from the former soccer fields are currently suitable for disposal in a Long Island landfill or other NYSDEC Part 360 Subtitle D landfill since the investigation's results in the central and northern portions of the former soccer fields showed no exceedances of the NYSDEC's SCOs for Protection of Groundwater. Therefore, soils excavated from these portions of the Site are suitable for disposal at the Town's Blydenburgh Road Landfill. The other soils and materials will require disposal at approved facilities off of Long Island.

Prior to the implementation of the material removal activities, at least three groundwater monitoring wells will be installed and sampled to determine the baseline groundwater conditions at the Site. However, these groundwater monitoring wells will not be installed within the areas of illegal dumping that will be addressed in this WP. The NYSDEC has

already approved the installation and sampling of these groundwater monitoring wells in their August 25, 2014 letter to the Town.

3.1 Groundwater Monitoring

Prior to the start of material removal activities, a total of three groundwater monitoring wells will be installed and sampled at the Site to establish baseline groundwater conditions and to evaluate whether there may be long-term impacts to the groundwater beneath the Site and its immediate vicinity. Figure 3 shows the anticipated well locations. The groundwater monitoring wells will be installed using a subcontracted drilling company, selected by and provided oversight by Enviroscience personnel. Prior to all drilling activities, the augers will be decontaminated.

Two of the wells will be installed as downgradient wells, and one well will be installed as an upgradient well. Based on information obtained from the Suffolk County Department of Health Services (“SCDHS”) Water Table Contours Map (March 2002), along with topographic elevation information from a U.S. Geological Survey (“USGS”) Topographic Map, the approximate depth to the regional groundwater table beneath the Site is 15 feet, and the estimated regional groundwater flow direction is to the southeast.

Prior to the installation of the groundwater monitoring wells, the one-call utility markout service will be contacted to request identification of subsurface utilities in the proposed drilling locations. Information regarding the presence and locations of subsurface utilities will also be requested from the Town of Islip and mapped prior to the commencement of groundwater monitoring well installation activities.

At each groundwater monitoring well installation location, manual techniques, including the use of a post-hole digger and a hand auger, will be used to hand-clear the locations to a depth of five feet. All of the groundwater monitoring wells will be installed using a hollow-stem auger drill rig.

For the well installation, a drill rig will utilize 4.25-inch diameter augers to a total boring depth of approximately 24 feet. The anticipated depth of the wells will be 23 feet below grade, however, the total depth of the borings and the wells will be based on the actual depth-to-water at each location in order to have the wells installed to a depth of 8 feet into the regional groundwater.

During the well installations, the soil cuttings will be continuously characterized for composition and texture, along with field screening for indications of impacted soil by using visual methods and a photo-ionization detector (“PID”). As previously stated, the wells will not be installed in locations of the illegally disposal materials. No soil samples for laboratory analysis are anticipated during well installations.

The borings will be completed as two-inch diameter Schedule 40 PVC groundwater monitoring wells that will be screened with 10 feet of 2-inch diameter Schedule 40 PVC flush joint #20 slot screen. The wells will be gravel packed from one foot below the maximum screen depth to three feet above the highest screen depth with a Morie #2 gravel pack. Above the gravel pack, one foot of Morie #00 sand will be installed followed by two feet of bentonite (prepared at two pounds of bentonite per gallon of water). The wells will be backfilled from the bentonite seal to grade with drill cuttings that contain no indications of impacted soil, and the groundwater monitoring wells will be finished at grade with locking caps, locks, 8-inch diameter manholes, and a six-inch concrete pad. Well construction logs, including soil characterization results, will be submitted with the initial groundwater monitoring report, which will be prepared as a separate deliverable from the report for other portions of this WP.

Subsequent to installation, the total depth of the wells and their depth-to water levels will be measured using a Solinst water level indicator to the nearest one-hundredth of a foot. The wells will then be developed by pumping groundwater from the wells. Prior to measuring the static water level and developing the wells, the water level indicator and submersible pump will be decontaminated using an Alconox and potable water wash.

The groundwater generated from well development activities will be discharged to the ground surface.

Based on the anticipated 8 linear feet of groundwater in the wells, the well casing volume should be approximately 1.3 gallons. The development of the three wells will be performed by Enviroscience personnel using a Grundfos variable-speed RediFlow 2 submersible pump, and the following parameters will be measured using real-time instruments after each casing volume: temperature; pH; conductivity; and turbidity.

The development of the wells will be considered complete when there is a 10% or less difference in two consecutive parameter measurements, along with turbidity readings of less than 50 nephelometric turbidity units (“NTUs”). After their development, the groundwater monitoring wells will be surveyed for location and relative elevation in order to calculate the site-specific groundwater flow direction based on water level measurements that will be obtained during groundwater monitoring events.

At least 48-hours after the development of the wells, the three groundwater monitoring wells will be purged and sampled. Prior to purging, the depths to groundwater in the wells will be measured to the nearest one-hundredth of a foot using a water level indicator. Prior to its use, the water level indicator and other down-well equipment will be decontaminated.

During well purging, standard parameters (temperature, pH, conductivity, and turbidity) will be measured after each casing volume using real-time field-measuring equipment. The purge water will be discharged to the ground surface. The groundwater from each well will be sampled after at least three well casing volumes of water are purged from each well and there is a 10% or less difference in two consecutive parameter measurements, along with turbidity readings of less than 50 NTUs. A maximum five casing volumes will be purged from each well. If five casing volumes are reached prior to achieving stability, the well will be sampled.

All of the groundwater samples for laboratory analysis will be obtained using dedicated polyethylene bailers, collected in laboratory-supplied containers, preserved properly, placed in an ice-filled cooler, and transported to York Analytical Laboratories, Inc., which is a National Environmental Laboratory Approval Program (“NEVLAP”)-accredited laboratory, New York Certification No. 10854. The samples will be analyzed for NYSDEC Part 375 parameters, which include VOCs, SVOCs, metals, pesticides, PCBs, and an herbicide. The groundwater monitoring event immediately following the activities described in this WP will include NYSDEC Part 375 parameters. However, the NYSDEC will review the results of the two rounds of sampling to determine whether further monitoring will be required. After sample collection, the locking j-plugs and well covers were replaced to protect the wells. Also, a chain-of-custody form will be completed to document the sequence of sample possession.

3.2 Contractor Selection

The material removal site work will be conducted by an experienced and qualified contractor (“Contractor”) following a public procurement process administered by the Town of Islip. Since the project is considered a large asbestos abatement project, this project requires a licensed Asbestos Abatement Contractor with New York State Certified Asbestos Supervisors and Handlers. The Town will designate areas within the Park for lay down of materials, locations of decontamination and sanitary facilities, equipment parking, vehicle staging and other essential activities.

The competitive procurement will be managed pursuant to General Municipal Law. The Town will consider the work to be time sensitive. Specific time frames for mobilization, excavation, transport and disposal of fill materials will be solicited from responding proposers, and all proposers will be requested to devote sufficient resources to complete the work within 120 days of award. The proposer submitting the best overall proposal (as determined by the Town) in terms of cost, demonstrated experience, commitment of resources, project organization, and time required to complete removal will be offered a contract.

Enviroscience and the Town of Islip will prepare all of the Contract bid documents. The plans and specifications as well as this WP, including the asbestos handling variance (dated July 14, 2014) will be used by the Contractor for implementation of the Site's material removal. A copy of the variance is provided in Appendix B.

3.3 Contractor's Responsibility

Following contract award, the Contractor will be required to prepare and submit a project schedule and a project-specific Health & Safety Plan ("HASP"). A separate HASP (which is provided in Appendix C) has been prepared by Enviroscience to address overall project health and safety concerns for the community and to cover activities conducted by the Town of Islip and the Town of Islip's consultants. The Contractor's HASP will be prepared in conformance with the general requirements of the WP HASP, including worker safety requirements and procedures for their employees and subcontractors, as appropriate. Any work place sampling conducted in support of personnel protective equipment selection will be the responsibility of the Contractor and requires approval from the Town of Islip prior to sample collection.

3.4 Mobilization & Site Preparation

After the submittal of the baseline groundwater monitoring report and selection of a Contractor for the Site's material removal, the Contractor will mobilize for site preparation. The entire work area will be prepared in accordance with Industrial Code Rule ("ICR") 56-11.5(c)(2). The Site's preparation activities include installation of materials to provide additional protection to the surrounding area and the environment during material removal activities, along with other operations that are designed to facilitate material removal activities.

As part of site preparations, temporary roads may be constructed by the Contractor on the former soccer fields to allow more efficient loading of excavated material from these locations. Also, the contractor will install and maintain temporary security fences, critical barriers, staging areas, stormwater control measures, and decontamination zones

prior to site work. Comprehensive details of site preparation activities will be provided in the contractor specification materials.

3.5 Management & Site Control

Enviroscience will oversee all contractors and/or subcontractors conducting the work outlined in this WP. A qualified representative from Enviroscience will be on site during all field activities.

For this project, the work area is defined as extending 25 feet from the perimeter of the immediate work area, and it will be identified with warning signs and barrier tape. Access to each work area will be through one access point, secured with barrier tape and signs, and a remote locking decontamination unit. For areas where a distance of 25 feet is not possible, the areas shall be cordoned off as practical, and a daily asbestos abatement air sample shall be included within 10 feet of the barrier.

Only certified persons in connection with the asbestos abatement and authorized visitors will be permitted in the immediate work areas where material excavation and loading is actively occurring. All equipment operators utilized for removal and loading activities within the regulated abatement work area must be certified in compliance with ICR 56-3.2. Unauthorized personnel shall not be allowed to access any regulated asbestos abatement work area except for waste hauler truck drivers. These truck drivers will be restricted to their enclosed cabs while temporarily in the regulated work area for waste transfer activities only.

When present, Enviroscience field personnel will meet onsite with Town of Islip officials to discuss the day's activities prior to and at the completion of the day's activities, as warranted. Enviroscience will maintain a daily site control log that shall include a record of all visiting personnel.

Access to Roberto Clemente Town Park will be restricted with a security fence and a locked gate, which is the present condition at the Site. The exact methods for site

security will be itemized in the contractor specification documents, but, these measures will include sign in/sign out sheets, warning tape and warning signs, and implementation of safe work practices detailed in 29 CFR 1910.120 and 29 CFR 1926.65, along with ICR 56-7.4(c).

4.0 SITE REMEDY

4.1 Overview

The action proposed for the Site is excavation of recently illegally disposed soil and materials, which includes specific procedures that have been approved by the New York State Department of Labor (“NYSDOL”) for ACM handling. A copy of the NYSDOL-approved variance is provided in Appendix B.

The soil will be excavated from the former soccer fields and the recharge basin as a large asbestos abatement project for proper offsite disposal at approved facilities. At the conclusion of the excavation, confirmatory soil endpoint samples will be obtained to evaluate the effectiveness of the remedial effort. If the endpoint sample results are acceptable, no further action is anticipated, however, additional remedial effort would be proposed in the event that the endpoint samples are not acceptable.

In accordance with the NYSDOL-approved variance, the excavation shall be performed by a licensed Asbestos Abatement Contractor with New York State Certified Asbestos Supervisors and Handlers. All equipment operators utilized for removal and loading activities within the regulated asbestos abatement work area must be certified in compliance with ICR 56-3.2. The material shall be disposed as non-friable asbestos waste at a landfill approved to take non-friable asbestos waste.

Before commencing work, the Contractor will submit an Excavation Plan to the Town for approval. The Excavation Plan shall describe the sequence of the work, the means and methods of excavating contaminated soils, the equipment and personnel to be employed, the proposed schedule of excavation, and the points of disposal of the material to be

removed. Engineering controls and work practices will be utilized, including regulated work areas, a personal decontamination unit, wet methods, and air monitoring.

All of the work will be performed in accordance with ICR 56 for Controlled Demolition with Asbestos In-place and Exterior Project Removal of Non-Friable ACM. The work is identified as a Large Asbestos Project, and a full-time Project Monitor shall be on-site and be responsible for oversight for the abatement contractor during all abatement activities to ensure compliance with ICR 56 and Variance conditions.

The soils will be continuously wetted with amended water, prior to, during, and after removal. Amended water is water that contains a surfactant that facilitates the absorption of water by ACM. Fog nozzles or similar type equipment shall be used to perform the wetting as per ICR 56-11.5(c)(8). ACM shall be maintained in an adequately wet condition prior to, during, and after removal. No dry disturbance or removal of ACM or asbestos-contaminated fill is permitted.

In the immediate work area, Enviroscience will provide environmental monitors that will be present to visually evaluate for the presence of suspect ACM and pockets of impacted soils that may require special handling or disposal to an alternative facility. Multiple work areas will be permitted providing all of the work areas have dedicated environmental monitors and comply with other portions of this WP. If friable suspect ACM is encountered, excavation will be immediately stopped and the suspect material will be investigated and handled properly. If soils that do not appear to be suitable for local disposal are identified, the material will be segregated on polyethylene sheeting and covered while awaiting disposal.

It is anticipated that the soil for disposal from the recharge basin may be relocated to a secure location at the Site, outside of the recharge basin since direct loading from the recharge basin to trucks may not be feasible due to the presence of a relatively steep incline along the perimeter of the recharge basin. All relocated soil will be placed on at

least two layers 6-mil fire retardant polyethylene sheeting and covered between the times of its relocation and loading for offsite disposal.

The non-friable asbestos waste and contaminated soil will be loaded into lined dumpsters or trucks, and covered with at least two layers of 6-mil fire retardant polyethylene sheeting as per ICR 56-11.5(c)(11). There shall be no visible emissions or water leakage from these containers.

Once a truck has been loaded, a waste disposal manifest will be completed and signed, and a copy of the manifests will remain onsite. Additionally, an inventory of the waste hauling trucks leaving the Site will be recorded with the date, time, truck number, license plate number, destination, and approximate weight. Due to the residential location of the Site, specific truck routes will be assigned by the Town of Islip, as well as hours of operation and other special requirements.

4.2 Disposal

The soil excavated from the Site will be transported to approved facilities for proper disposal, which includes a landfill approved to take non-friable asbestos waste. Based on the large amount of soil that requires disposal (which is estimated at 50,000 tons), daily limits for landfills and facilities, and other limitations, its anticipated that multiple landfills and/or facilities will be used for this project, which will require final approval by the Town of Islip.

Approximately three-quarters of the soil that will be removed from the former soccer fields (shown in Figure 4) does not exceed the NYSDEC Part 375 Protection of Groundwater SCOs, and can therefore be disposed of in Long Island Landfills. The Town proposes to dispose of this soil at the Blydenburgh Road Landfill (Permit No. 1-4728-00628/00017), owned by the Islip Resource Recovery Agency. Use of this facility will expedite the removal process. The balance of the material to be removed from the former soccer fields and all of the material to be removed from the recharge basin will be disposed of at landfills that are authorized to accept the material and are located off Long

Island, as proposed by the Contractor. The Town will obtain authorizing permits and acceptance letters from all facilities proposing to accept material from the Site.

To identify the soil suitable for disposal at Blydenburgh at the Site, demarcation boundaries will be installed in the former soccer fields prior to excavation activities. It is also anticipated that during excavation activities, there may be pockets of impacted soil that do not appear to be suitable for Long Island disposal. These materials will be segregated and tested, if warranted, and allocated for disposal at a facility located off of Long Island, as appropriate.

The past investigation results may be used by the Contractor for waste characterization purposes, and the former samples may be analyzed for additional parameters as required by the disposal facilities, providing the samples are still within their acceptable holding times, which varies for each analytical method. However, Town of Islip approval will be required prior to any additional testing by the Contractor.

4.3 Equipment Decontamination

A personal decontamination facility will be utilized to comply with ICR 56-7.5. The decontamination unit will be sized for a large project and will either be a prebuilt trailer unit or constructed of stud framing and plywood.

An equipment decontamination area shall be cordoned off within each work area for cleaning heavy equipment as per ICR 56-11.5 (c)(4). All waste, tools and equipment, personnel decontamination unit, and the waste/equipment decontamination facility will be removed from the Site in accordance with ICR 56-10. Prior to any equipment leaving the Site, equipment, supplies and materials will be decontaminated. Rinse water from decontamination operations may be discharged to the ground surface in the work areas during remedial efforts.

4.4 Post Material Removal Sampling

After material removal at the Site, confirmatory soil endpoint samples will be obtained from the former soccer fields and the recharge basin to evaluate the effectiveness of the removal efforts. Additionally, another round of groundwater monitoring will be performed.

For the confirmatory soil endpoint samples, a total of five samples will be obtained from the former soccer fields and a total of three samples will be obtained from the recharge basin prior to the Contractor's final demobilization from the Site. Additional confirmatory soil endpoint samples will be obtained if requested by the NYSDEC.

The confirmatory soil endpoint samples will be obtained using a decontaminated manual hand auger or dedicated equipment from ground surface locations approved by the NYSDEC. Subsequent to retrieval, the soils will be evaluated with a ("PID") to screen for the presence of organic vapors, and the material will be visually inspected for suspect ACM. Any suspect ACM found during the laboratory macroscopic analysis will be analyzed using polarized light microscopy to identify asbestos. Additionally, a certified Project Monitor from Enviroscience will conduct a visual inspection to determine if the area is dry and free of visible asbestos debris/residue. If the visual inspection is unacceptable, the abatement work area will be re-cleaned.

The samples for laboratory chemical analysis will be collected in three 5-gram Encore samplers, one 4-ounce glass container, and one 8-ounce glass container. The chemical analytical laboratory will provide the sample containers, and the samples will be placed in ice-filled cooler and properly preserved. The suspect ACM samples will be collected in sealed plastic bags.

The sample for laboratory chemical analysis will be transported to York Analytical Laboratories, Inc., which is a NEVLAP-accredited laboratory, New York Certification No. 10854. The soil samples will be analyzed for NYSDEC Part 375 parameters, which

include VOCs, SVOCs, metals, pesticides, PCBs, and an herbicide. A chain-of-custody form was completed to document the sequence of sample possession.

The samples for asbestos analysis will be transported to Enviroscience, which is a U.S. Department of Commerce NVLAP (No. 200531) and New York State Department of Health (“NYSDOH”) Environmental Laboratory Approval Program (“ELAP”)-certified laboratory (Identification No. 11681). Suspect asbestos-containing building materials in the soils will be analyzed by USEPA Methods 600/M4-82/20 for friable materials, along with ELAP Item 198.6/4 for non-friable materials. A chain-of-custody form will also be completed to document the sequence of sample possession.

The confirmatory endpoint soil samples will be compared to the NYSDEC Residential Soil Cleanup Objectives. If the results exceed the NYSDEC SCOs or ACM is identified, additional soil excavation and cleaning may be necessary or other actions may be presented for NYSDEC consideration.

Subsequent to the collection of confirmatory soil endpoint samples, an additional round of groundwater sampling will be performed for analysis of NYSDEC Part 375 parameters, which will be performed in accordance with the methods discussed earlier in this WP.

5.0 HEALTH & SAFETY PLANS

5.1 Site-Specific Health & Safety Plan

The purposes of the WP Health and Safety Plan (“HASP”) is to establish protocols for protecting the community, Town of Islip employees and Enviroscience personnel from incidents that may arise while performing field activities associated with the scope of work contained in this WP. A copy of the HASP is provided in Appendix C, which includes the following:

- Air monitoring;
- Security of the Site;
- Worker safety/Site safety;

- On-Site Project Manager;
- Noise and odor monitoring and controls;
- Hours of operation; and
- General good neighbor policies.

The HASP has been prepared in accordance with Occupational Safety and Health Administration (“OSHA”) regulation 29 CFR 1910.120 “Hazardous Waste Operations and Emergency Response”. The HASP establishes personnel protection standards, mandatory operations procedures, and provides contingencies for situations that may arise while fieldwork is being conducted at the Site. All Town and Town consultant personnel will be required to abide by the procedures set forth in this HASP. Personal protective equipment as required by ICR 56-7.6 will be utilized by all workers and authorized visitors. The contractor that will be hired by the Town will be responsible for preparation of their own site-specific HASP.

Personnel performing fieldwork may encounter conditions that are unsafe or potentially unsafe. The Constituents of Concern (“COCs”) during the WP activities includes organic compounds and metals, along with ACM associated with mobilized dust. However, safety protocols discussed in the HASP should minimize these risks.

Other potential risks are associated with other hazards (i.e., electricity, water, temperature, heavy equipment, falling objects, loss of balance, tripping, etc.). It is important that personnel protective equipment (“PPE”) and safety requirements be appropriate to protect against potential and/or known hazards. PPE will be selected based on the type(s), concentration(s), and routes of personnel exposure from hazardous substances at a site. In situations where the type of materials and possibilities of contact are unknown or the potential hazards are not clearly identifiable, a more subjective (but conservative) determination will be made of the PPE required for initial safety. Adherence to the HASP will minimize the possibility that personnel at the Site or the surrounding community will be injured or exposed to site-related contaminants during field activities.

5.2 Community Air Monitoring Plan

A Community Air Monitoring Plan (“CAMP”) will be implemented as part of the work plan. Enviroscience, on behalf of the Town of Islip, has prepared the CAMP, which is provided in Appendix D. The intent and objective of environmental/ambient air monitoring associated with the CAMP is to monitor air quality during soil excavation activities in order to provide a measure of protection for the community and site workers from potential airborne contaminant releases as a result of work activities. Air monitoring for particulates (particulate matter less than 10 microns in size) (PM-10) will be conducted upwind of work areas (exclusion zone) to establish background conditions and downwind of the exclusion zone to monitor possible contaminant migration. Environmental air monitoring and observations of visible emissions during excavation activities will be performed according to methods contained in the CAMP. Enviroscience personnel will administer the CAMP.

5.3 Asbestos Air Monitoring

Asbestos air monitoring and analysis will be conducted as per ICR 56-4 and will be conducted daily during abatement and cleaning activities as per ICR 56-11.5(a). A copy of the asbestos air monitoring specification is provided in Appendix E.

6.0 SCHEDULE

Implementation of the WP activities will begin with the installation of three groundwater monitoring wells, which will likely be performed during September 2014. A public notice soliciting proposals to perform the removal of material at the Park will be published upon approval of this RMW. The Town expects to receive, review and evaluate proposals, followed by a contract award within 30 days of publication. Mobilization and removal activities will commence immediately following award. A detailed schedule will be established and approved in the contract to perform the work. At the conclusion of the removal work, the Town will evaluate the Site to determine whether additional remedial activities will be necessary.

7.0 REPORTING

Upon completion of activities discussed in this WP, a Material Removal Action Report (“RAR”) will be prepared by Enviroscience and submitted to the NYSDEC to discuss all material removal/abatement activities associated with the Site. The RAR will document each activity specified within this WP and will include the following:

- Introduction;
- Background;
- Environmental Settings;
- Environmental Conditions;
- Material Removal/Abatement Actions;
- Deviations from Anticipated Conditions;
- Deviations from the WP;
- Inventory of Disposed Materials;
- Photographic Documentation;
- Daily Field Logs;
- Laboratory Results;
- CAMP Results; and
- Manifests, Weight Tickets & Receipts.

Along with the RAR, which is a formal requirement, weekly updates will be provided by the Town to keep the community and other interested parties informed on the project’s progress.

8.0 PROJECT ORGANIZATION

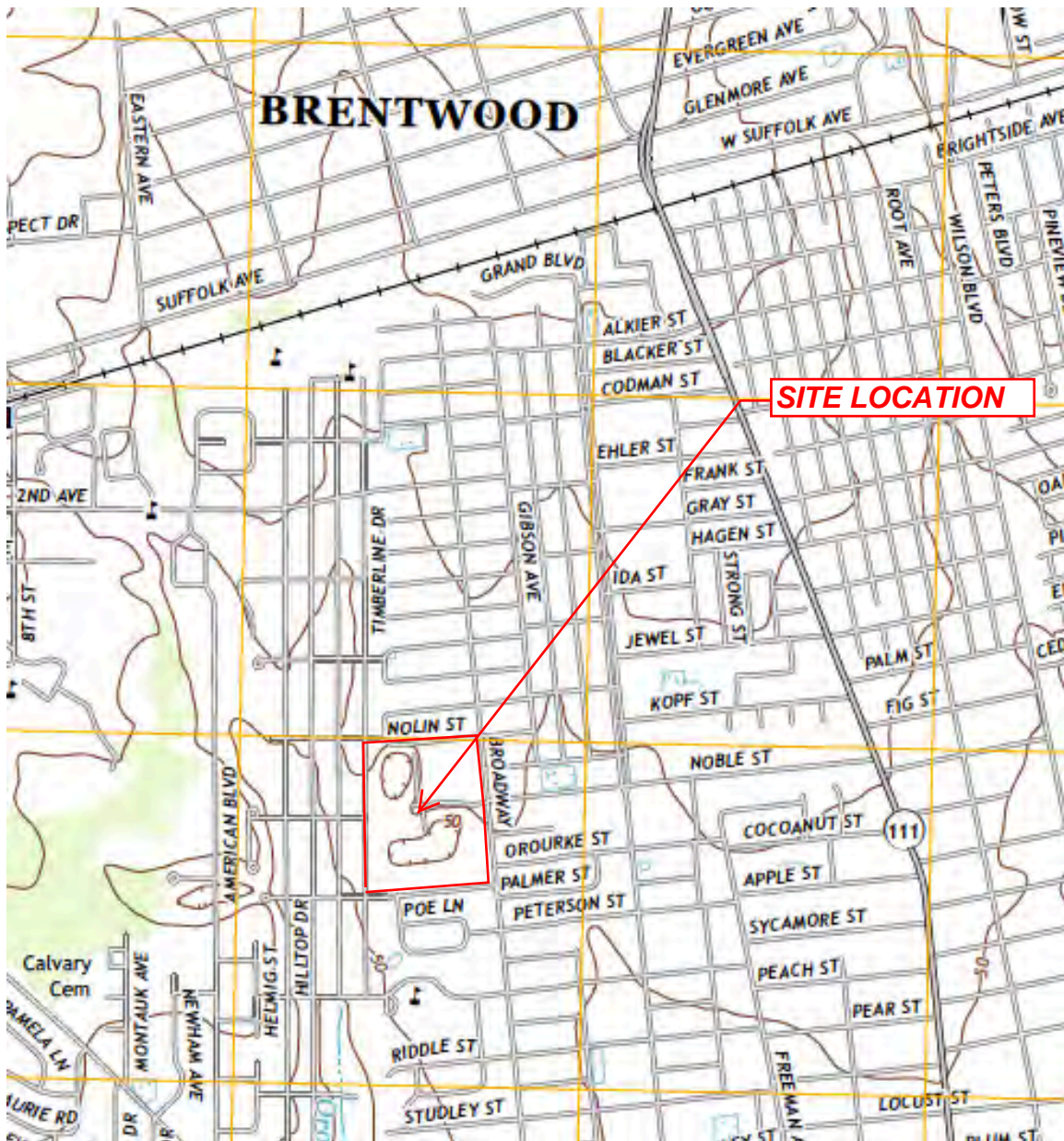
Provided below is a table of various key personnel that are or will be involved in the implementation of this WP, contractor oversight and other related activities.

Project Implementation-Key Personnel

Key Personnel	Name	Phone Number
NYSDEC Project Manager	Syed Rahman, P.E.	631-444-8375
NYSDEL Point of Contact	Barbara Eisenbery	917-596-9408
Town of Islip Environmental Control	Eric M. Hofmeister	631-224-5645
Town of Islip Deputy Parks Commissioner	Inez Birbiglia	631-224-5411
Enviroscience Program Manager	Glenn Neuschwender	Office 631-580-3191 Mobile 631-831-1648
Enviroscience Asbestos Project Manager	Bart Gallagher	Office 631-580-3191 Mobile 631-774-5289
Enviroscience Soil Project Manager	Greg Menegio	Office 631-580-3191 Mobile 631-905-4869

FIGURES

Figure 1
Site Location
Roberto Clemente Park
400 Broadway, Brentwood, NY



Source: U.S. Geological Survey, 7.5-Minute Topographic Map, Central Islip, 2013



0 475 950 ft.

Scale: 1:5,514

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

Roberto Clemente Park

FIGURE 2: GENERAL LAYOUT

ROBERTO CLEMENTE TOWN PARK

400 BROADWAY, BRENTWOOD, NY

Town of Isip GIS Geocortex IMF

Printed Aug 20, 2014

Source Data Used by Permission



Google earth

feet
meters

1000

400



FIGURE 3: PROPOSED GROUNDWATER MONITORING WELL LOCATIONS
ROBERTO CLEMENTE TOWN PARK, 400 BROADWAY, BRENTWOOD, NY



Google earth

feet 1000
meters 300



FIGURE 4: ANTICIPATED DEMARCATON FOR DISPOSAL
ROBERTO CLEMENTE TOWN PARK, 400 BROADWAY, BRENTWOOD, NY

APPENDIX A
July 2014
NYSDOL-Approved Asbestos Abatement Variance



New York State Department of Labor
Andrew M. Cuomo, Governor
Peter M. Rivera, Commissioner

July 15, 2014

Enviroscience Consultants
2150 Smithtown Ave
Ste 3
Ronkonkoma, NY 11779

RE: File No. 14-0889

Dear Sir/Madam:

**STATE OF NEW YORK
DEPARTMENT OF LABOR
DIVISION OF SAFETY AND HEALTH**

The attached is a copy of Decision, dated, 7/15/2014, which I have compared with the original filed in this office and which I DO HEREBY CERTIFY to be a correct transcript of the text of the said original.

If you are aggrieved by this decision you may appeal within 60 days from its issuance to the Industrial Board of Appeals as provided by Section 101 of the Labor Law. Your appeal should be addressed to the Industrial Board of Appeals, Empire State Plaza, Agency Building 2, 20th Floor, Albany, New York, 12223 as prescribed by its Rules and Procedure, a copy of which may be obtained upon request.

WITNESS my hand and the seal of the
NYS Department of Labor, at the City of
Albany, on this day of 7/15/2014.

A handwritten signature in black ink, appearing to read "Edward A. Smith", is written over a horizontal line.

Edward A. Smith, P.E.
Senior Safety and Health Engineer
Engineering Services Unit

PD

STATE OF NEW YORK
DEPARTMENT OF LABOR
STATE OFFICE BUILDING CAMPUS
ALBANY, NEW YORK 12240-0100

Variance Petition

of

Enviroscience Consultants, Inc.
Petitioner's Agent on Behalf of

Town of Islip
Petitioner

in re

Premises: Roberto Clemente Park
400 Broadway
Brentwood, NY 11717

Exterior Non Friable Debris in Soil Cleanup

File No. 14-0889

DECISION

Case 1

ICR 56

The Petitioner, pursuant to Section 30 of the Labor Law, having filed Petition No. 14-0889 on July 14, 2014 with the Commissioner of Labor for a variance from the provisions of Industrial Code Rule 56 as hereinafter cited on the grounds that there are practical difficulties or unnecessary hardship in carrying out the provisions of said Rule; and the Commissioner of Labor having reviewed the submission of the petitioner dated July 10, 2014; and

Upon considering the merits of the alleged practical difficulties or unnecessary hardship and upon the record herein, the Commissioner of Labor does hereby take the following actions:

Case No. 1

ICR 56-11.5

VARIANCE GRANTED. The Petitioner's proposal for removal of non friable ACM debris in soil (approx. 38,500 cu. yd.) at the subject premises in accordance with the attached 10-page stamped copy of the Petitioner's submittal is accepted with modifications noted; subject to the Conditions noted below:

THE CONDITIONS

1. A full time independent project monitor shall be on site and responsible for oversight of the abatement contractor during all abatement activities to ensure compliance with ICR 56 and variance conditions and to ensure that no visible emissions are generated. If visible emissions are observed, work practices shall be altered according to the project monitor's recommendations.
2. As written with modifications noted.
3. Usage of this variance is limited to those asbestos removals identified in this variance or as outlined in the Petitioner's proposal.

In addition to the conditions required by the above specific variances, the Petitioner shall also comply with the following general conditions:

GENERAL CONDITIONS

1. A copy of this DECISION and the Petitioner's proposals shall be conspicuously displayed at the entrance to the personal decontamination enclosure.
2. This DECISION shall apply only to the removal of asbestos-containing materials from the aforementioned areas of the subject premises.
3. The Petitioner shall comply with all other applicable provisions of Industrial Code Rule 56-1 through 56-12.
4. The NYS Department of Labor Engineering Service Unit retains full authority to interpret this variance for compliance herewith and for compliance with Labor Law Article 30. Any deviation to the conditions leading to this variance shall render this variance Null and Void pursuant to 12NYCRR 56-12.2. Any questions regarding the conditions supporting the need for this

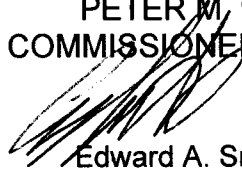
variance and/or regarding compliance hereto must be directed to the Engineering Services Unit for clarification.

5. This DECISION shall terminate on July 31, 2015.

Date: July 14, 2014

By

PETER M. RIVERA
COMMISSIONER OF LABOR



Edward A. Smith, P.E.
Senior Safety and Health Engineer

PREPARED BY: Paul Demick
Senior Safety and Health Inspector

REVIEWED BY: Edward A. Smith, P.E.
Senior Safety and Health Engineer

14 - 0889

ENVIROSCIENCE CONSULTANTS, INC.

**2150 SMITHTOWN AVENUE
RONKONKOMA, NEW YORK 11779
PHONE: (631) 580-3191 FAX: (631) 580-3195**

**Town of Islip
Roberto Clemente Park
400 Broadway
Brentwood, New York 11717**

Outdoor Non-friable ACM Debris Contaminated Soil Fill

Roberto Clemente Park is a Town of Islip community park. The park has been closed to the public following the discovery of non-friable asbestos debris in fill that was dumped in the park.

There is approximately 38,500 cubic yards of dirt fill comingled with non-friable asbestos materials that include pieces of roof shingle, floor tile, and transite. The contaminated fill is located at two sites within the park; a soccer field measuring approximately 300' x 500', and a recharge basin (150' x 175'). See the attached diagram and photos.

This variance is needed to allow machine excavation, removal and loading of the contaminated fill into approved containers or vehicles for proper transport and disposal.

Scope of Work

The work is to be done by a licensed Asbestos Abatement Contractor with New York State Certified Asbestos Supervisors and Handlers. The abatement contractor is to mechanically remove the ACM contaminated material using excavators and loaders. The material is to be disposed as non-friable asbestos waste at a landfill approved to take non-friable asbestos waste.

The Town is requesting relief from specific sections of NYS ICR 56 to facilitate complete cleaning and decontamination of the outdoor site. And, to increase safety by using machines to eliminate the need for Handlers to work below grade.

Engineering controls and work practices will be utilized in general accordance with ICR 56-11.5, including regulated work areas, a personal

decontamination unit, equipment decontamination area, wet methods, and air monitoring.

Abatement Conditions:

14-0889

We propose the use of the following abatement procedures:

1. It is proposed that the work be done in accordance with 56-11.5 Controlled Demolition with Asbestos In-place, and 56-11.6 Exterior Project Removal of Non-friable ACM.
2. The work is identified as a Large Asbestos Project.
3. A full-time Project Monitor shall be on-site and be responsible for oversight of the abatement contractor during all abatement activities to ensure compliance with ICR56 and Variance conditions, and to ensure that there are no visible emissions.
4. Area air monitoring and analysis will be conducted as per 56-4, and will be conducted daily during abatement and cleaning activities as per 56-11.5 (a).
5. The entire work area is outdoors and will be prepared in accordance with 56-11.5 (c) (2). The work areas will extend twenty-five (25) feet from the perimeter of the immediate work area, and be identified with warning signs and barrier tape. Access to each work area will be through one access point, secured with barrier tape and signs, and a remote locking decontamination unit as described below.
6. For areas where a distance of 25-feet are not possible, the areas shall be cordoned off as practical, and a daily abatement air sample shall be included within 10-feet of the barrier.
7. Only certified persons and authorized visitors will be permitted in the work areas. Unauthorized personnel shall not be allowed to access any regulated abatement work area, with the exception of waste hauler truck drivers. These truck drivers will be restricted to their enclosed cab while temporarily in the regulated work area for waste transfer activities only. All

equipment operators utilized for removal and loading activities within the regulated abatement work area must be certified in compliance with ICR 56-3.2.

8. A personal decontamination facility will be utilized and will comply with 56-7.5 a, b, d). The decontamination unit will be sized for a large project and will either be a pre-built trailer unit, or will be constructed of stud framing and plywood.
9. Adequate toilet facilities will be readily accessible to the personal decontamination enclosure.
10. An equipment decontamination area shall be cordoned off within each work area for cleaning heavy equipment as per 56-11.5 (c) (4).
11. Appropriate warning signs in accordance with 56-7.4(c) will be posted at the exterior of the work area boundary fence/barriers.
12. Personal protective equipment as required by ICR 56-7.6 will be utilized by all workers and authorized visitors.
13. Electric power to the work areas is to be disconnected and locked out. The Contractor is to verify that power is off and locked out before allowing men onto the work areas.
14. All power to be used by the Abatement Contractor in the work areas is to be protected by ground fault circuit interrupters (GFCI).
15. The materials will be continuously wetted with amended water, prior to, during, and after removal. Fog nozzles or similar type equipment shall be used to perform the wetting as per 56-11.5 (c) (8). Asbestos Containing Materials (ACM) shall be maintained in an adequately wet condition prior to, during, and after removal. No dry disturbance or removal of ACM or asbestos-contaminated fill is permitted.

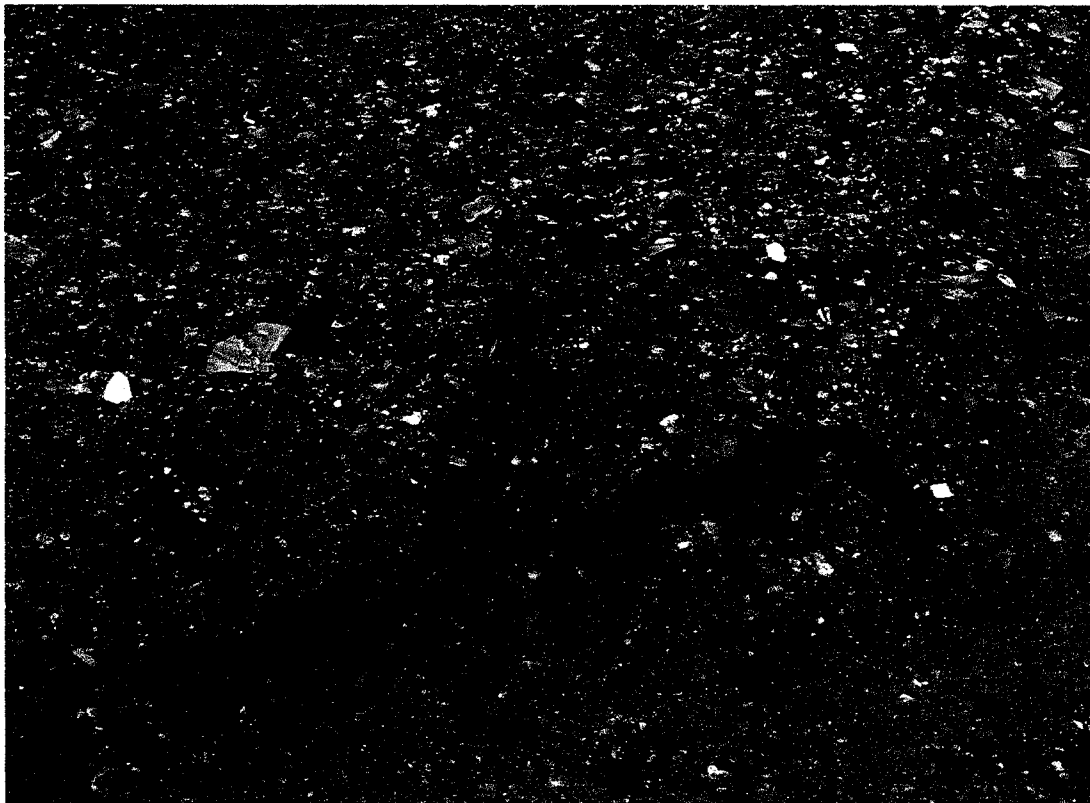
16. The non-friable asbestos waste and contaminated soil will be loaded into lined dumpsters or trucks, and covered with at least two layers of six-mil fire retardant polyethylene sheeting per 56-11.5 (c) (11). There shall be no visible emissions or water leakage from these containers
17. The non-friable asbestos waste shall be disposed at a landfill approved to take non-friable asbestos waste.
18. A visual inspection will be conducted by a certified Project Monitor, hired by the Owner as per Subpart 56-9.2 (e) (1). The Project Monitor shall determine if the area is dry and free of visible asbestos debris/residue.
19. If the visual inspection is unacceptable the abatement work area shall be re-cleaned.
20. All waste, tools and equipment, personnel decontamination unit, waste/equipment decontamination facility will be removed from the site in accordance with Subpart 56-10.
21. The Contractor is not exempt from OSHA personal air monitoring requirements.
22. The Contractor will comply with all other applicable provisions of ICR 56.
23. A copy of the site-specific variance will be posted at the entrance to the decontamination unit.

Since these work procedures were previously allowed on other projects, it is assumed that they will not violate the spirit and purpose of Industrial Code Rule 56, or compromise the health of workers, occupants, or the environment.

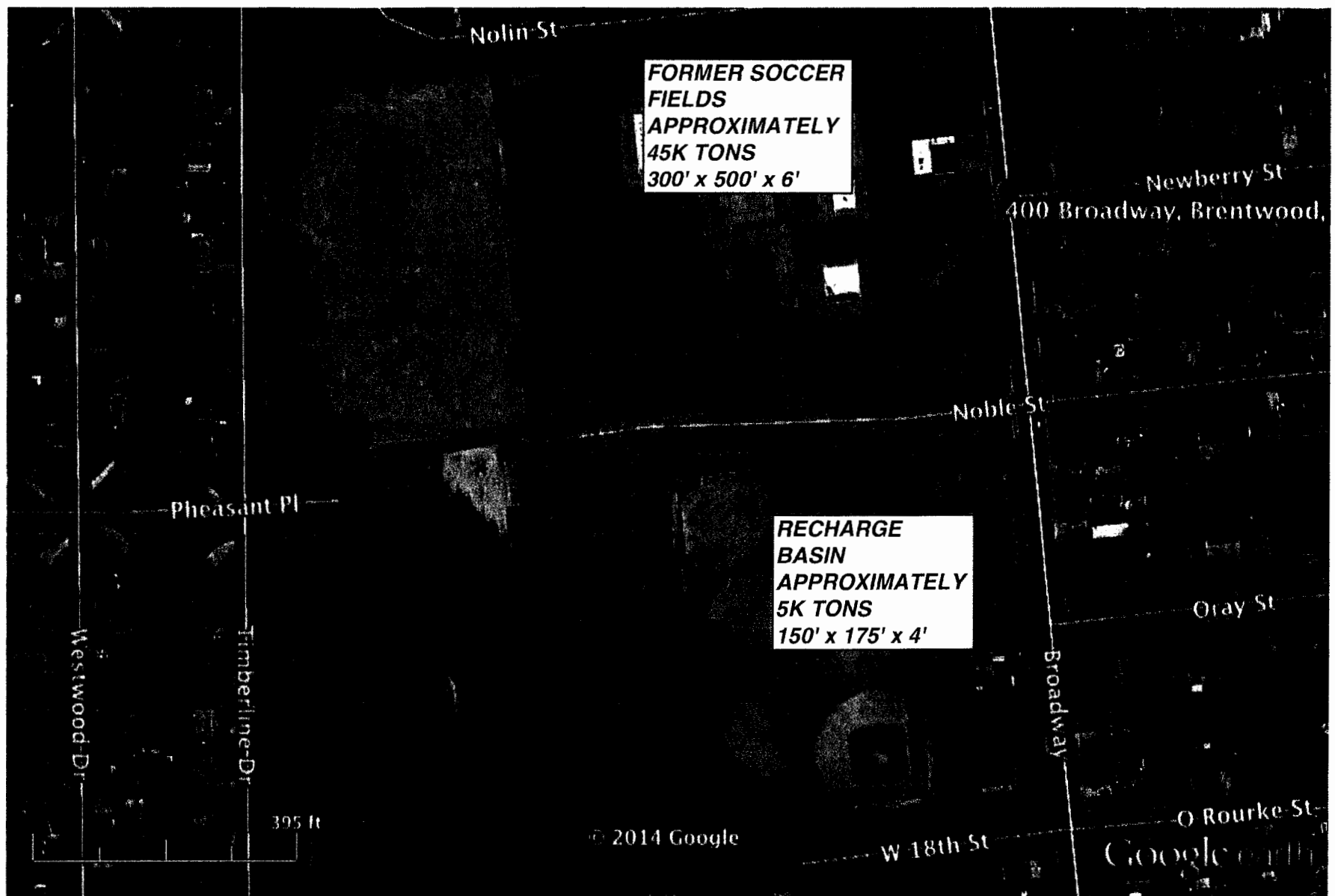
Reference: Variance 14-0825 granted 7/1/14.
Variance 14-0251 granted 3/20/14, amended 4/16/14.



Typical Fill at Roberto Clemente Park, Brentwood, NY



Close-up of Fill at Roberto Clemente Park, Brentwood, NY



Google earth

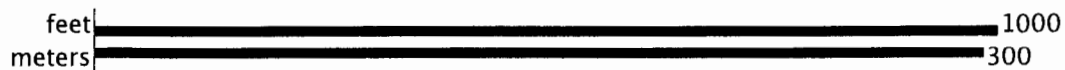


FIGURE 1: SITE LAYOUT, ROBERTO CLEMENTE PARK, 400 BROADWAY, BRENTWOOD, NY

14-0889

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APPENDIX B
Health & Safety Plan

**DRAFT
HEALTH & SAFETY PLAN**

**ROBERTO CLEMENTE TOWN PARK
400 BROADWAY
BRENTWOOD, NY 11717**

***PREPARED FOR:*
TOWN OF ISLIP
401 MAIN STREET
ISLIP, NY 11751**

***PREPARED BY:*
ENVIROSCIENCE CONSULTANTS, INC.
2150 SMITHTOWN AVENUE, SUITE 3
RONKONKOMA, NY 11779**

SEPTEMBER 5, 2014

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ATTACHMENT

Title
A
NYSDOL-Approved Variance
B
Dust Monitoring Instrumentation Manufacturer's Instructions

SECTION 1.0

INTRODUCTION

This Health and Safety Plan (HASP) has been written for compliance with the Occupational Health and Safety Administration (OSHA) Hazardous Waste Operations Standards (29 CFR 1910.120); U.S. Environmental Protection Agency (USEPA) 40 CFR 311; Standard Operating Safety Guidelines (Office of Solid Waste and Emergency Response), 1988; and the Occupational Safety and Health Guidance Manual for Hazardous Waste Activities (U.S. Department of Health and Human Services, 1985). Since this project is considered a Large Asbestos Project, Site activities will also be regulated by the New York State Department of Labor (NYSDOL) and performed in accordance with Industrial Code Rule (ICR) 56, which is itemized in the NYSDOL-approved Variance that is provided in Attachment A.

1.1 Scope and Applicability of the HASP

This HASP is designed to be applicable to Enviroscience Consultants, Inc. (Enviroscience) personnel during either performance or witnessing the removal of contaminated soil that was recently illegally disposed on soccer fields and within a recharge basin at Roberto Clemente Town Park. The Site work will be done in accordance with ICR 56-11.5 Controlled Demolition with Asbestos In-place, and ICR 56-11.6 Exterior Project Removal of Non-friable ACM. The Site work is identified as a Large Asbestos Project.

The Site's address is 400 Broadway in Brentwood, New York. This HASP may also be modified or amended to meet the specific needs of the proposed work. This HASP will detail Site safety procedures, Site background, and safety monitoring. The Health and Safety Officer (HSO) will be present at the Site to inspect the implementation of this HASP. Additionally, a full-time Project Monitor shall be on-site and be responsible for oversight of the abatement contractor during all Site activities to ensure compliance with ICR 56 and Variance conditions, and to ensure that there are no visible emissions.

The contractor that will be responsible for removal and disposal of the recent illegally disposed materials on the Site will be required to prepare their own Site-specific HASP, which shall also be in accordance with ICR 56. Enviroscience will review the contractor's HASP and provide oversight for compliance with their HASP. Presently, the contractor has not been selected. This HASP will be revised upon contractor selection so that the name of the contractor for the material removal will be provided.

The HASP has been formulated as a guide to complement professional judgment and experience, however, specifications detailed in the Variance (which is Attachment A) are required by law.

1.2 Site Work Zone and Visitors

The three general work zones at the Site will be the Exclusion Zone, Contamination Reduction Zone, and the Support Zone. The work zones may be extended if, in the judgment of the HSO, Site conditions warrant.

The Exclusion Zone will be the active work area where the recent illegally disposed soils and materials are physically being removed. The entire work area is outdoors and will be prepared in accordance with ICR 56-11.5 (c) (2), which will be established by the HSO.

The work areas will extend 25 feet from the perimeter of the immediate work area or active work area, and it will be identified with warning signs and barrier tape. Access to the work area will be through one access point, secured with barrier tape and signs, and a remote locking decontamination unit. For areas where a distance of 25 feet are not possible, the areas shall be cordoned off as practical, and a daily asbestos abatement air sample shall be included within 10-feet of the barrier.

Entry into the Exclusion Zone requires PPE in accordance with this HASP and ICR 56-7.6 for all workers and authorized visitors. Only certified persons and authorized visitors will be permitted in the work areas. Unauthorized personnel shall not be allowed to access any regulated abatement work area with the exception of waste hauler truck drivers. These truck drivers will be restricted to

their enclosed cab while temporarily in the regulated work area for waste transfer activities only. All equipment operators utilized for removal and loading activities within the regulated abatement work area must be certified in compliance with ICR 56-3.2.

The Contamination Reduction Zone is the location where decontamination is performed. It is commonly known as a buffer zone between the contaminated and clean areas. A personal decontamination facility will be utilized in this zone and it will comply with ICR 56-7.5. The decontamination unit will be sized for a large project and will either be a pre-built trailer unit, or will be constructed of stud framing and plywood.

Entry to the Contamination Reduction Zone from the Support Zone requires PPE. The Contamination Reduction Zone will have adequate toilet facilities, a water source, trash containers for disposal of sacrificial PPE, and soap for washing will be available. After use, the disposable protective clothing and rinsate from washing will be containerized and properly disposed. All waste, tools and equipment, personnel decontamination unit, waste/equipment decontamination facility will be removed from the site in accordance with ICR 56-10.

No visitors will be permitted within the active work zone without the consent of the HSO. All visitors permitted by the HSO will be required to be familiar with, and comply with, this HASP, along with the NYSDOL Variance. The HSO will

deny access to those whose presence within the active work zone is unnecessary or those who are deemed by the HSO to be in noncompliance with this HASP or the NYSDOL Variance.

All Enviroscience personnel will receive adequate training prior to entering the Site. These Site workers will be trained for compliance with 29 CFR 1910.120 regulations covering Hazardous Waste Operations and Emergency Response. At a minimum, these personnel are required to be trained to recognize the hazards on-Site and the provisions of this HASP. During the Site pre-entry briefings or periodic site briefings, the HSO will discuss this HASP with Enviroscience personnel. Workers or visitors not in attendance during the health and safety talk will be required to have the discussion with the HSO prior to entering the work zone. Additionally, those workers that will be permitted within the active work zone will be licensed by NYSDOL for asbestos in accordance with the NYSDOL Variance with the exception of authorized visitors that may enter the active work zone for a limited period of time.

Emergency telephone numbers and directions to the nearest hospital are provided in Section 8.0 of this HASP.

SECTION 2.0

KEY PERSONNEL AND RESPONSIBILITIES

The Project Manager for this project will be Mr. Glenn Neuschwender from Enviroscience. The HSO will be Mr. Glenn Neuschwender from Enviroscience. Mr. Greg Menegio, Ms. Kathryn Loddengaard or another alternate from Enviroscience will be designated as the Alternate HSO (AHSO) when the HSO is not on-Site.

TABLE 2.1

KEY ENVIROSCIENCE PROJECT PERSONNEL CONTACT INFORMATION

Title	Name	Phone Numbers
Project Manager	Glenn Neuschwender	Office (631) 580-3191 GN Mobile (631) 831-1648
HSO	Glenn Neuschwender	Office (631) 580-3191 Mobile (631) 831-1648
AHSO (First Alternate)	Greg Menegio	Office (631) 580-3191 Mobile (631) 905-4869
AHSO (Second Alternate)	Kathryn Loddengaard	Office (631) 580-3191 Mobile (631) 831-3758

SECTION 3.0

SITE BACKGROUND

The Site is the former soccer fields and recharge basin in the westernmost portion of Roberto Clemente Town Park, which is located at 400 Broadway in Brentwood, New York. The entire project is considered a Large Asbestos Project, and some of soil at the Site is impacted with organic compounds and metals, which are considered Constituents of Concern (CoCs) for the project since their some of their levels are above the New York State Department of Environmental Conservation (NYSDEC) Residential Use Soil Cleanup Objectives (SCOs).

TABLE 3.1
CONSTITUENTS OF CONCERN

Contaminant	Routes of Potential Exposure
ACM (non-friable)	Inhalation
Organic Compounds and Metals	Dermal Contact, Inhalation & Ingestion

SECTION 4.0

TASK/OPERATION HEALTH AND SAFETY ANALYSIS

This section will present health and safety analysis for (1) inspection of the contractor's activities, including abatement, which involves soil excavation and loading; (2) implementation of the Community Air Monitoring Plan (CAMP) and asbestos air monitoring; and (3) post-material removal sampling activities. The evaluation of hazards for these specific tasks was performed based on Site-specific knowledge, including information presented in Section 3.0 of this HASP and the final Material Removal Work Plan that was prepared by Enviroscience (dated September 5, 2014).

4.1 Inspection of Contractor's Activities

The tasks pertaining to the Inspection of Contractor's Activities are itemized in the Work Plan, including inspections of excavations and loading in connection with the abatement of the Site.

4.1.1 Hazard Identification

Site-specific hazards generally encountered during the Inspection of Contractor's Activities include the following: exposure to dust-containing CoCs if impacted soils are caused to be airborne; heavy equipment hazards; electric/utility hazards; excavation hazards; strains/sprains due to walking and inspecting on soft and uneven ground surfaces; and slip, trip and fall hazards on soft and uneven ground surfaces.

4.1.2 Hazard Prevention

To minimize exposure to dust, the abatement materials will be continuously wetted with amended water, prior to, during, and after removal. Fog nozzles or similar type equipment shall be used to perform the wetting as per ICR 56-11.5 (c) (8). ACM shall be maintained in an adequately wet condition prior to, during, and after removal. No dry disturbance or removal of ACM or asbestos-contaminated fill is permitted. A dust-monitoring instrument (DustTrak II Aerosol Monitor Model 8530 or similar equipment to allow for real-time dust monitoring) will be utilized in the active work area at the height of the workers' breathing zone to evaluate dust/airborne particulate levels, along with asbestos air monitoring.

The dust monitoring results will be compared to a threshold value for particulates. The monitoring will be performed in order to obtain a worst-case scenario of potential dust levels in the breathing zone. The threshold level for the instrument has been determined and it is discussed in Section 7.0, along with additional information pertaining to dust monitoring. The asbestos air monitoring will be performed in compliance with the NYSDOL Variance that is provided in Attachment A.

To minimize hazards from heavy equipment, electric/utilities, and excavations, safe construction practices will be employed including the following: use of

backup warning alarms on heavy equipment; wearing of safety vests; and the use of ground-fault interrupter (GFI) for electrical equipment.

Also, adequate PPE will be required, which is discussed in Section 6.0 of this HASP. Standing orders detailing both prohibited and required actions will be established, which are discussed in Section 8.0, including no eating, drinking, or smoking in the active work zone.

4.2 Implementation of the CAMP & Asbestos Air Monitoring

The tasks pertaining to the Implementation of the CAMP and Asbestos Air Monitoring are provided in the CAMP, which is also attached to this Work Plan, along with Attachment A that contains the NYSDOL Variance addressing asbestos. The majority of these activities will be performed outside of the work zone in upwind and downwind locations relative to the work zone. Although the Site worker responsible for implementing the CAMP and asbestos air monitoring will be outside of the active work zone, this Site worker may enter the active work zone as necessary to achieve the CAMP's objectives, along with asbestos air monitoring objectives. The purpose of the CAMP and asbestos air monitoring is to evaluate outdoor (ambient) air quality outside of the Site work area during excavation and loading activities to provide a measure of protection for the community.

4.2.1 Hazard Identification

Site-specific hazards generally encountered during the Implementation of the CAMP and Asbestos Air Monitoring include the following: heavy equipment hazards; electrical/utility hazards; excavation hazards; exposure to dust-containing CoCs if impacted soils are disturbed and caused to be airborne; strains/sprains due to walking and inspecting on soft and uneven ground surfaces; and slip, trip and fall hazards on soft and uneven ground surfaces.

4.2.2 Hazard Prevention

To minimize exposure to dust, all soils for excavation will be wetted with amended water, dust suppression methods will be employed, and care will be employed during excavation and loading activities. A dust-monitoring instrument (DustTrak II Aerosol Monitor Model 8530 or similar equipment to allow for real-time dust monitoring) will be utilized in the active work area at the height of the workers' breathing zone to evaluate dust/airborne particulate levels, along with asbestos air monitoring.

The dust monitoring results will be compared to a threshold value for particulates. The monitoring will be performed in order to obtain a worst-case scenario of potential dust levels in the breathing zone. The threshold level for the instrument has been determined and it is discussed in Section 7.0, along with additional information pertaining to dust monitoring. The asbestos air monitoring will be

performed in compliance with the NYSDOL Variance that is provided in Attachment A.

To minimize hazards from heavy equipment, electric/utilities, and excavations, safe construction practices will be employed including the following: use of backup warning alarms on heavy equipment; wearing of safety vests; and the use of GFI for electrical equipment.

Also, adequate PPE will be required, which is discussed in Section 6.0 of this HASP. Standing orders detailing both prohibited and required actions will be established, which are discussed in Section 9.0, including no eating, drinking, or smoking in the active work zone.

4.3 Post-Material Removal Sampling Activities

The specific responsibilities of the Post-Material Removal Sampling Activities are itemized in the Work Plan, including sample collection in the former soccer fields and the recharge basin, the Site.

4.3.1 Hazard Identification

Site-specific hazards generally encountered during the Post-Material Removal Sampling Activities include the following: electrical/utility hazards; exposure to dust-containing CoCs if surfaces were not effectively remediated, then disturbed and caused to be airborne; strains/sprains due to walking and inspecting on soft

and uneven ground surfaces; and slip, trip and fall hazards on soft and uneven ground surfaces.

4.3.2 Hazard Prevention

To minimize exposure to dust and CoCs, samples will be collected gently by a NYSDOL-licensed asbestos inspector hand using gloved protection. A dust-monitoring instrument and asbestos air sampling will be utilized in the active work area.

To minimize hazards from electric/utilities, safe construction practices will be employed including the use of GFI for electrical equipment.

4.4 Health Hazards & Exposure Responses

The effects of CoC exposure are long-term in nature. Initial signs of exposure may include stomachaches, cramping, nausea, fatigue, and weakness, while long-term signs of exposure may include memory loss, muscle and joint pain, weight loss, kidney problems, seizure and paralysis.

If soil containing CoCs comes in contact with the eyes, immediately wash the eyes (including underneath the eyelids) with water. Personal eye-washing stations will be provided in the active work zone. Contact lenses should not be worn unless protected by safety goggles or glasses. Seek immediate medical attention.

If CoC contaminated soil contacts skin, wash the skin with handi-wipes prior to leaving the active work zone.

If a person breaths in large amounts of dust, move the exposed person to fresh air.

If contaminated soil has been swallowed, seek medical attention immediately.

4.5 Other Safety Considerations

4.5.1 Noise

During Site activities, the operation of equipment may generate harmful levels of noise, which the HSO will monitor using a Quest SoundPro DL decibel meter or similar equipment. Noise levels will be monitored in decibels (dBs) in the A-Weighted, slow response mode. Noise level readings exceeding the 29 CFR 1910.95 permissible noise exposure limits, which are summarized in Table 4.1.1, will require hearing protection.

Hearing protection will be available to Site workers. The hearing protection may include foam, expansion-fit earplugs, or other approvable hearing protection with a U.S. Environmental Protection Agency (USEPA) noise reduction rating of at least 29 dBs. Hearing protection must alleviate worker exposure to noise to an eight-hour time-weighted average of 90 dBs or less. Exposure to impulsive or impact noise should not exceed 140 dB peak sound pressure level. In the event

the hearing protection is inadequate, work will cease until a higher level of hearing protection is obtained or exposure is decreased.

TABLE 4.1.1
PERMISSIBLE NOISE EXPOSURES

Duration per Day (in hours)	Sound Level (in dBA-slow response)
8	90
6	92
4	95
3	97
2	100
1	105

4.5.2 Slip, Trip and Fall Preventative Measures

To reduce the potential for slipping, tripping and falling, the work zone will be kept clear of unnecessary supplies, materials, and equipment. All Site workers will be required to wear steel toe work boots beneath disposable friction-covered boot covers.

4.5.3 Insects

Insect problems are a potential threat during Site operations. Potential insect problems include bees, wasps, and hornets. Prior to the commencement of field operations, the work zone will be inspected for hives and insect activity.

Additionally, each Site worker will be asked to disclose any allergies related to insect stings and bites. Site workers with allergies will be required to keep anti-allergy medicine on Site.

4.5.4 Heat and Cold Stress

Heat stress may become a concern. PPE selection may effect work period duration or work mission duration, particularly with heat stress hazards. PPE includes Tyvek suits, which increase heat stress potential by decreasing natural ventilation. To reduce the potential for heat stress, the following measures will be employed:

- An adequate supply of water and other liquids will be brought to the Site. To prevent dehydration, personnel will be encouraged to drink generous amounts of water even if not thirsty, although not in the Exclusion Zone.
- A shady rest area will be designated to provide shelter.

When the temperature is above 70 degrees Fahrenheit and personnel are wearing PPE that may decrease natural ventilation, heat stress monitoring could be implemented by monitoring heat rate using the radial pulse for 30 seconds at the beginning of a rest period. The heart rate should not exceed 110 beats per minute. If the heart rate is higher, the work period will be shortened or strenuous activities will be modified.

Indications of heat stress range from mild (fatigue, irritability, anxiety, or decreased concentration, dexterity, or movement) to fatal. Medical help will be obtained for serious conditions. Some heat-related problems are as follows:

- Heat rash caused by continuous exposure to heat and humid air and aggravated by chafing cloths. Heat rash decreases the ability to tolerate heat as well as being a nuisance.
- Heat cramps caused by profuse perspiration with inadequate fluid intake and chemical replacement (especially salts). Signs of heat cramps include muscle spasm and pain in the abdomen and extremities.
- Heat exhaustion caused by increased stress on various organs to meet increased demand to cool the body. Signs of heat exhaustion include shallow breathing; pale, cool, and moist skin; profuse sweating; and dizziness.
- Heat stroke is the most severe form of heat stress, and it can be fatal. Medical help must be obtained immediately since the body must be cooled immediately to prevent serious injury or death. Signs of heat stroke include hot, dry skin; no perspiration; nausea; dizziness and confusion; strong, rapid pulse; and coma.

Cold stress is not expected to be a concern for this project.

SECTION 5.0

PERSONNEL TRAINING REQUIREMENTS

All Enviroscience personnel will receive adequate training prior to entering the Site. Site workers will be trained for compliance with 29 CFR 1910.120 regulations covering Hazardous Waste Operations and Emergency Response. At a minimum, all personnel are required to be trained to recognize the hazards on-Site and the provisions of this HASP. During the Site pre-entry briefings or periodic site briefings, the HSO will discuss this HASP.

SECTION 6.0

PERSONAL PROTECTIVE EQUIPMENT

6.1 General Considerations

The two basic objectives of PPE are to protect the wearer from safety and health hazards, and to prevent the wearer from incorrect use and/or malfunctioning of the PPE. Potential Site hazards were discussed previously in this HASP. The duration of Site activities is estimated to be no more than three months.

The personal protection level for Site activities, based on past investigations, is anticipated to be Level C in the Exclusion Zone and those entering the Contaminant Reduction Zone from the Support Zone.

6.2 Level C Protection

Personal Protective Equipment:

- Air-purifying respirator with N, R, or P100 cartridges (such as North® Model 7700-30L or similar with North ® Model P100 particulate filters or similar)
- Safety glasses or goggles
- Chemical resistant coveralls, including Tyvek® coveralls (disposable)
- Safety vest
- Nitrile gloves (disposable)
- Steel toe work boots
- Boot covers (disposable)

- Hard-hat

Criteria for Selection of Level C Protection (meeting all criteria permits use):

- Oxygen concentrations are not less than 19.5% by volume
- Measured air concentrations for particulates will be reduced by the respirator to below 0.05 mg/m³ for dust/particulates.
- Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect any body area left unprotected by PPE
- Job functions do not require self-contained breathing apparatus (SCBA)

6.3 Reassessment of Protection Program

The level of protection provided by PPE selection shall be upgraded or downgraded based upon changes in Site conditions, including hazards. During the project, the appropriateness of PPE with respect to hazards will be regularly evaluated, and reassessment may be necessary during new work phases, changes in tasks, changes in contaminants, changes in personnel, and/or working conditions, including temperature.

6.4 Inspection

The PPE inspection program will entail a series of different inspections, as follows:

- Inspection and operational testing of equipment received from factory or distributor.

- Inspection of equipment as it is issued to workers.
- Inspection after use.
- Periodic inspection of stored equipment.
- Inspection when a question arises concerning the appropriateness of the selected equipment, or when problems with equipment arise.
- The primary inspection of the PPE in use for activities at the Site will occur prior to its immediate use and will be conducted by the user. This ensures that the specific device or article has been reviewed by the user and that the user is familiar with its use. Table 6.4.1 provides a summary of a PPE Inspection Checklist.

Records will be kept by the HSO of all inspection procedures. Individual identification numbers will be assigned to all reusable pieces of equipment and records should be maintained by that number. At a minimum, each inspection should record the ID number, date, inspector, and any unusual conditions or findings.

TABLE 6.4.1
SAMPLE PPE INSPECTION CHECKLIST

CLOTHING

Before use:

- Determine that the PPE material is appropriate for the CoCs and task.
- Visually inspect for imperfect seams, non-uniform coatings, tears, and malfunctioning closures.
- Hold up to light and inspect for pinholes. (For gloves, pressurize with air and listen for leaks.)
- Flex article to observe for cracks or other signs of deterioration.
- If the article was previously used, evaluate the product for discoloration, swelling, and stiffness, which may be indications of chemical attack.

During the work task:

- Evaluate the product for discoloration, swelling, and stiffness, which may be indications of chemical attack. It is important to realize that chemical breakthrough can occur without any advance visible signs.
- Visually inspect for seam separation, tears, punctures, and closure failures.

AIR-PURIFYING RESPIRATORS

Before use:

- Ensure the respirator has been adequately cleaned.
- Inspect for signs of pliability, deterioration, and distortion.
- Inspect the cartridges that they are the proper type for the intended use, the expiration date has not passed, and they have not been previously opened or used.
- Store air-purifying respirators individually within sealable plastic bags.

6.5 Site-Specific Levels of Protection

The Level of Protection for Site activities is anticipated to be Level C in the Exclusion Zone and Contaminant Reduction Zone.

SECTION 7.0

AIR-MONITORING PROGRAM

The purpose of an air-monitoring program is to identify and quantify airborne contaminants to verify and determine the level of worker protection. For this project, a real-time monitoring instrument will be used to evaluate dust/particulates less than 10 microns in size (PM-10).

7.1 Direct-Reading Monitoring Instrument

Direct-reading monitoring instrumentation will be used in the air-monitoring program to evaluate particulates in the work zone. The direct-reading instrumentation will provide information that is valuable for PPE selection, engineering controls, and work practices, and to evaluate whether Site workers are being exposed to particulate levels above 0.05 mg/m^3 .

Work zone monitoring will be performed using a real-time aerosol monitor in the workers' breathing zone. Respiratory protection will be used. The monitoring will evaluate the work area that has the greatest potential to generate particulates, which is during excavation and loading of impacted soils and materials. Periodic monitoring during other tasks in the work zone will also be performed.

Real-Time Aerosol Monitor

A dust-monitoring instrument (DustTrak II Aerosol Monitor Model 8530 or similar equipment to allow for real-time dust monitoring) will be utilized in the active work area at the height of the workers' breathing zone. A copy of the User's Manual for the dust-monitoring instrument is provided in Attachment B of this HASP. This instrumentation will be employed at the Site to measure dust/particulates less than 10 microns in size (PM-10).

The instrument's detection method involves the use of an internal light source, which is diffracted by particulates. The amount of diffraction is correlated to a particulate concentration in air and expressed milligrams per cubic meter (mg/m³). The unit uses rechargeable batteries, which typically allow for at least eight hours of operation, which is adequate for this project.

7.2 Site Air Monitoring

7.2.1 Air Monitoring Instrument- Dust and Aerosol Monitor

All tasks discussed in this HASP will be evaluated for airborne dust generation by using the real-time aerosol monitoring discussed in Section 7.1.

7.2.2 Threshold Level

The Site air monitoring for dust utilizes a threshold, which is 0.05 mg/m³. Also, Enviroscience will provide oversight of all contractor operations for compliance with their HASP. The threshold level for PM-10 for this project will be 0.05

mg/m³. If the threshold is exceeded in a work area, the work area's activities will be discontinued until the dust concentrations decrease to below the threshold. If the concentrations exceed its threshold, then the level of respiratory protection may be upgraded or other methods to reduce dust may be utilized.

7.2.3 Reporting Format

The report format for the air monitoring will be an air monitoring log, which will be uploaded from the instrumentation on a daily basis and maintained on-Site by the HSO. The information contained in the log will include the monitoring locations and tasks, dates and times, and particulate concentrations.

SECTION 8.0

SITE CONTROL MEASURES

8.1 Standing Orders and General Considerations for Site Control

The following are applicable during Site operations:

- All Site workers will enter and exit the work zones through the single Site access point.
- Sign in upon entry to the Exclusion Zone.
- Sign out upon exiting the Exclusion Zone.
- Wear appropriate Level of Protection as defined in this HASP in the Exclusion and Contamination Reduction Zones. (The Contaminant Reduction Zone is where decontamination is performed, and it is located immediately outside the Exclusion Zone.)
- Implement Buddy and Communication Systems in the Exclusion Zone.
- No smoking, eating, drinking, or application of cosmetics in the Exclusion and Contamination Reduction Zones.
- No matches or lighters in the Exclusion and Contamination Reduction Zones.

8.2 The Buddy System

All activities in the work zone will be conducted by pairing off the Site workers in groups of at least two (or three, if necessary). At the beginning of each day, the

Buddy System will be implemented. If a new worker arrives at the Site, a buddy will be assigned to the new person.

The Buddy System does not require that the buddies remain immediately adjacent to each other. For the activities discussed in this HASP, a line-of-sight Buddy System will be implemented. Each person (or buddy) should be able to:

- Provide assistance to their partner.
- Observe their partner for signs of chemical or heat exposure.
- Periodically check the integrity of their partner's protective clothing.
- Notify the HSO or others if emergency assistance is required.

8.3 Site Communication

Two sets of communication systems will be established at the Site: internal communication among on-Site personnel and external communication between on-Site and off-Site personnel.

Internal communication will be used to:

- Alert team members to emergencies.
- Pass along safety information such as heat stress and protective clothing checks, etc.
- Communicate changes in the work to be performed.
- Maintain Site control.

Due to ambient noise, verbal communication may be difficult at times. The HSO will carry a whistle (and compressed air horn if air-purifying respirators are donned) to signal Site workers. A single blast using a whistle or air horn will be the signal to immediately exit the work area through the controlled access point. This signal will be discussed prior to the commencement of daily activities.

Also, communication between buddies may be difficult at times. Therefore, a hand signal communication system may be utilized for on-Site communications.

The following is a list of hand signals and their definitions:

- Hands clutching throat means out of air or can not breath
- Hands on top of head means need assistance
- Thumbs up means ok, I'm alright, or I understand
- Thumbs down means no or negative
- Arms waving upright means send backup support
- Grip partner's wrist means exit area immediately

An external communication system will be established to:

- Coordinate emergency response.
- Report to the Project Manager.
- Maintain contact with essential off-Site personnel.

A field telephone will be available on the HSO. Additionally, the nearest landline phone will be identified prior to the commencement of field operations.

8.4 Work Zone Definitions

The three general work zones at the Site will be the Exclusion Zone, Contamination Reduction Zone, and the Support Zone.

The Exclusion Zone will be active work zone where excavation and loading of impacted soils and materials are being performed, and a 25-foot distance from the active work zone. There will be a controlled access point to the Exclusion Zone, and it will be the only access point to these areas during Site operations. Entry into the Exclusion Zone requires PPE.

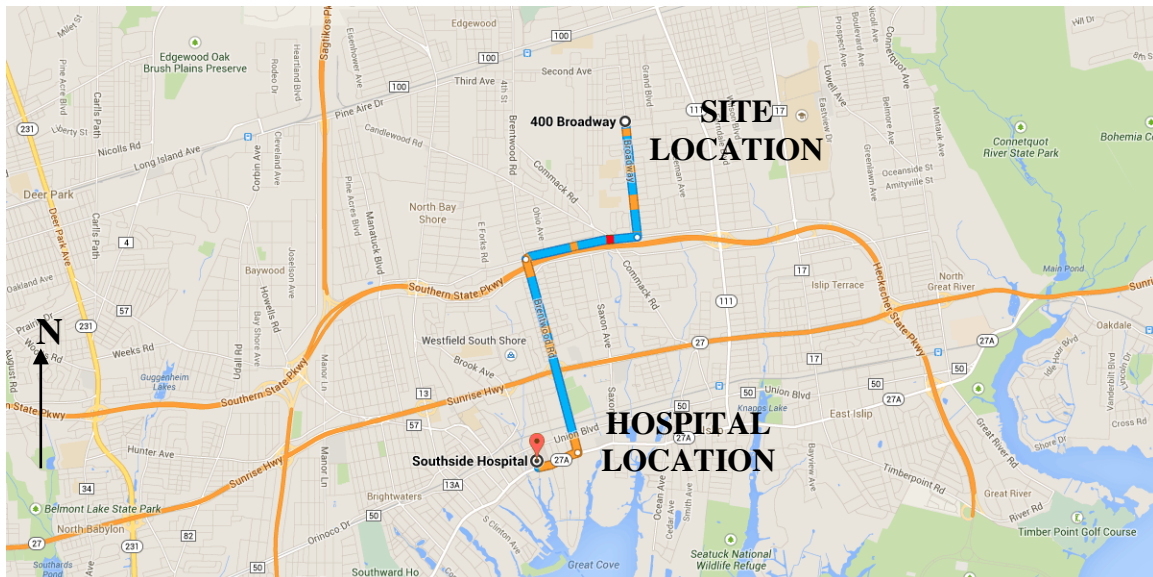
The Contamination Reduction Zone is the location where decontamination is performed. It is commonly known as a buffer zone between the contaminated and clean areas. Entry to the Contamination Reduction Zone from the Support Zone requires PPE. This zone will have waste disposal containers, a water source, and soap for washing will be available. The disposable protective clothing after use and rinsate from washing will be containerized and properly disposed.

The Support Zone is located in clean areas where the potential to encounter hazards are relatively low. Therefore, PPE is not required in the Support Zone.

8.5 Nearest Hospital Location and Route

Figure 8.5.1 shows the location of the Site, the nearest hospital (Southside Hospital) and a route to the hospital. The nearest hospital is the Southside Hospital, which is located at 301 East Main Street in Bay Shore, New York 11706. The hospital's direct phone number is (631) 968-3000, although 911 should be dialed in the event of an emergency. The route to the hospital will be verified by the HSO, and it should be familiar with all personnel.

FIGURE 8.5.1
ROUTE TO THE NEAREST HOSPITAL
(Southside Hospital, 301 East Main Street, Bay Shore, NY)



Directions from the Site to the nearest hospital:

- Head south on Broadway;
- Turn right onto Spur Drive North;

- Take 2nd left onto Brentwood Road;
- Turn right onto County Road 80/East Main Street; and
- Southside Hospital will be on the right.

SECTION 9.0

DECONTAMINATION PROCEDURES

All personnel, clothing, equipment, and materials that will not be properly disposed in the Contaminated Reduction Zone must be decontaminated to remove dust from them. Decontamination methods for dust will employ a method to physically remove the dust by wiping and rinsing field monitoring equipment and other reusable equipment.

All Site personnel should minimize contact with Site soil to minimize decontamination efforts. Personnel should perform initial cleaning on-Site in the Exclusion Zone as much as possible, although PPE should not be removed. For decontamination, outer garments should be removed first, followed by removal of gloves, and then washing hands and face with handi-wipes while in the Contamination Reduction Zone.

The effectiveness of decontamination procedures will be evaluated by the HSO during the beginning of Site activities and will be modified if they are determined to be ineffective. Visual observations will be used for this purpose. The HSO will visually inspect decontaminated materials for discoloration, stains, visible dirt, or other possible indications of residual dirt.

All disposable PPE will be discarded following use. All used PPE to be discarded will be placed in an appropriate receptacle for disposal.

SECTION 10.0

EMERGENCY RESPONSE PLAN

This section will present the Emergency Response Plan (ERP) for the Site. Pre-emergency planning will include reviewing this ERP with all Site workers prior to implementing the project.

Personnel Roles

During Site activities, several persons will be on-Site, including the HSO, sampling personnel, and construction inspection personnel, among others. Should an emergency arise, the HSO will assume control and decision-making. The HSO will resolve all disputes concerning health and safety requirements and precautions. The HSO will also:

- Be authorized to seek and purchase supplies as necessary.
- Have control over activities of everyone entering the Site.

The HSO will communicate, by field phone or other methods, with off-Site personnel to include the Project Manager to evaluate data and assist in the decision-making process. Phone numbers for the fire department, police, hospital, poison-control center, and the NYSDEC are listed in Table 10.1. The hospital that will be utilized in case of an emergency is Southside Hospital in Bay Shore, NY. The directions to the hospital are provided in Section 8.0. Copies of the directions to the hospital will be provided to all field personnel, and should be kept, along with this HASP, at the Site for reference.

Internal communications will consist of a single blast using a compressed-air horn if Level C is donned. This blast will signal that all workers should immediately exit the Exclusion Zone via the controlled access point.

TABLE 10.1
EMERGENCY CONTACT LIST

Organization	Contact	Telephone Number
Police	Suffolk County Police	911
Fire	Suffolk County Fire, Rescue & Emergency Services	911 or (631) 852-4818
Fire	Brentwood Fire Department	911 or (631) 273-7080
Hospital	Southside Hospital	911 or (631) 968-3000
USEPA Emergency Response Team		(800) 424-8802
NYSDEC	Spill Hotline	(800) 457-7362
National Response Center		(800) 424-8802
Poison Control Center		(212) 764-7667
Center for Disease Control		(404) 488-4100
Chemtrec		(800) 424-9555

Follow-up Response

Following an emergency or incident, a detailed report will be prepared by the HSO. All equipment will be restored to pre-emergency conditions. The HASP will be reviewed following an emergency to determine if it provided adequate information in dealing with the emergency. The HASP may be revised to incorporate additional information as needed.

Emergency Recognition and Prevention

Before daily work assignments begin, each day a brief on-Site meeting will be held by the HSO, which will address health and safety issues related to the day's work. Prior to the start of work, a detailed on-Site health and safety meeting will be held to review all potential hazards, contingencies, and safety measures.

Safe Distances and Places of Refuge

The main potential cause of work zone evacuation is significant dust generation. Preparations for a possible evacuation will be discussed prior to Site work activities. In general, evacuations will be to a designated location upwind of the Site. Wind direction will be monitored at each work location and as part of the CAMP. Workers will be notified at the beginning of the workday, and periodically throughout day if the wind direction changes. Safe distances will also be discussed prior to the start of work. The real-time dust instrument will be used to evaluate whether workers have evacuated to a sufficient distance.

At all times, vehicles that may be used in an emergency for transport to the hospital (or other destination) will have clear access to leave the Site. The HSO will ensure that an emergency vehicle does not become blocked-in by other vehicles.

Site Security and Control

The HSO will control entry of personnel into the work zone. No unnecessary persons will be permitted within the work zone.

Decontamination Procedures During an Emergency

In the event of a medical emergency, decontamination will be performed if it does not interfere with essential treatment. Decontamination will be performed by washing, rinsing, and/or cutting-off protective clothing and equipment.

Emergency Medical Treatment and First Aid

Medical emergencies will be treated, in general, by medical experts by transporting the victim to the nearby hospital. A first aid kit will be available on-Site for minor medical treatment.

ATTACHMENT A
NYSDOL-Approved Variance



New York State Department of Labor
Andrew M. Cuomo, Governor
Peter M. Rivera, Commissioner

July 15, 2014

Enviroscience Consultants
2150 Smithtown Ave
Ste 3
Ronkonkoma, NY 11779

RE: File No. 14-0889

Dear Sir/Madam:

**STATE OF NEW YORK
DEPARTMENT OF LABOR
DIVISION OF SAFETY AND HEALTH**

The attached is a copy of Decision, dated, 7/15/2014, which I have compared with the original filed in this office and which I DO HEREBY CERTIFY to be a correct transcript of the text of the said original.

If you are aggrieved by this decision you may appeal within 60 days from its issuance to the Industrial Board of Appeals as provided by Section 101 of the Labor Law. Your appeal should be addressed to the Industrial Board of Appeals, Empire State Plaza, Agency Building 2, 20th Floor, Albany, New York, 12223 as prescribed by its Rules and Procedure, a copy of which may be obtained upon request.

WITNESS my hand and the seal of the
NYS Department of Labor, at the City of
Albany, on this day of 7/15/2014.

A handwritten signature in black ink, appearing to read "Edward A. Smith", is written over a faint circular stamp.

Edward A. Smith, P.E.
Senior Safety and Health Engineer
Engineering Services Unit

PD

STATE OF NEW YORK
DEPARTMENT OF LABOR
STATE OFFICE BUILDING CAMPUS
ALBANY, NEW YORK 12240-0100

Variance Petition

of

Enviroscience Consultants, Inc.
Petitioner's Agent on Behalf of

Town of Islip
Petitioner

in re

Premises: Roberto Clemente Park
400 Broadway
Brentwood, NY 11717

Exterior Non Friable Debris in Soil Cleanup

File No. 14-0889

DECISION

Case 1

ICR 56

The Petitioner, pursuant to Section 30 of the Labor Law, having filed Petition No. 14-0889 on July 14, 2014 with the Commissioner of Labor for a variance from the provisions of Industrial Code Rule 56 as hereinafter cited on the grounds that there are practical difficulties or unnecessary hardship in carrying out the provisions of said Rule; and the Commissioner of Labor having reviewed the submission of the petitioner dated July 10, 2014; and

Upon considering the merits of the alleged practical difficulties or unnecessary hardship and upon the record herein, the Commissioner of Labor does hereby take the following actions:

Case No. 1

ICR 56-11.5

VARIANCE GRANTED. The Petitioner's proposal for removal of non friable ACM debris in soil (approx. 38,500 cu. yd.) at the subject premises in accordance with the attached 10-page stamped copy of the Petitioner's submittal is accepted with modifications noted; subject to the Conditions noted below:

THE CONDITIONS

1. A full time independent project monitor shall be on site and responsible for oversight of the abatement contractor during all abatement activities to ensure compliance with ICR 56 and variance conditions and to ensure that no visible emissions are generated. If visible emissions are observed, work practices shall be altered according to the project monitor's recommendations.
2. As written with modifications noted.
3. Usage of this variance is limited to those asbestos removals identified in this variance or as outlined in the Petitioner's proposal.

In addition to the conditions required by the above specific variances, the Petitioner shall also comply with the following general conditions:

GENERAL CONDITIONS

1. A copy of this DECISION and the Petitioner's proposals shall be conspicuously displayed at the entrance to the personal decontamination enclosure.
2. This DECISION shall apply only to the removal of asbestos-containing materials from the aforementioned areas of the subject premises.
3. The Petitioner shall comply with all other applicable provisions of Industrial Code Rule 56-1 through 56-12.
4. The NYS Department of Labor Engineering Service Unit retains full authority to interpret this variance for compliance herewith and for compliance with Labor Law Article 30. Any deviation to the conditions leading to this variance shall render this variance Null and Void pursuant to 12NYCRR 56-12.2. Any questions regarding the conditions supporting the need for this

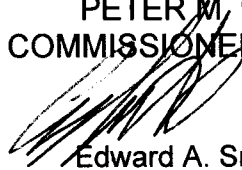
variance and/or regarding compliance hereto must be directed to the Engineering Services Unit for clarification.

5. This DECISION shall terminate on July 31, 2015.

Date: July 14, 2014

By

PETER M. RIVERA
COMMISSIONER OF LABOR



Edward A. Smith, P.E.
Senior Safety and Health Engineer

PREPARED BY: Paul Demick
Senior Safety and Health Inspector

REVIEWED BY: Edward A. Smith, P.E.
Senior Safety and Health Engineer

14 - 0889

ENVIROSCIENCE CONSULTANTS, INC.

**2150 SMITHTOWN AVENUE
RONKONKOMA, NEW YORK 11779
PHONE: (631) 580-3191 FAX: (631) 580-3195**

**Town of Islip
Roberto Clemente Park
400 Broadway
Brentwood, New York 11717**

Outdoor Non-friable ACM Debris Contaminated Soil Fill

Roberto Clemente Park is a Town of Islip community park. The park has been closed to the public following the discovery of non-friable asbestos debris in fill that was dumped in the park.

There is approximately 38,500 cubic yards of dirt fill comingled with non-friable asbestos materials that include pieces of roof shingle, floor tile, and transite. The contaminated fill is located at two sites within the park; a soccer field measuring approximately 300' x 500', and a recharge basin (150' x 175'). See the attached diagram and photos.

This variance is needed to allow machine excavation, removal and loading of the contaminated fill into approved containers or vehicles for proper transport and disposal.

Scope of Work

The work is to be done by a licensed Asbestos Abatement Contractor with New York State Certified Asbestos Supervisors and Handlers. The abatement contractor is to mechanically remove the ACM contaminated material using excavators and loaders. The material is to be disposed as non-friable asbestos waste at a landfill approved to take non-friable asbestos waste.

The Town is requesting relief from specific sections of NYS ICR 56 to facilitate complete cleaning and decontamination of the outdoor site. And, to increase safety by using machines to eliminate the need for Handlers to work below grade.

Engineering controls and work practices will be utilized in general accordance with ICR 56-11.5, including regulated work areas, a personal

decontamination unit, equipment decontamination area, wet methods, and air monitoring.

Abatement Conditions:

14-0889

We propose the use of the following abatement procedures:

1. It is proposed that the work be done in accordance with 56-11.5 Controlled Demolition with Asbestos In-place, and 56-11.6 Exterior Project Removal of Non-friable ACM.
2. The work is identified as a Large Asbestos Project.
3. A full-time Project Monitor shall be on-site and be responsible for oversight of the abatement contractor during all abatement activities to ensure compliance with ICR56 and Variance conditions, and to ensure that there are no visible emissions.
4. Area air monitoring and analysis will be conducted as per 56-4, and will be conducted daily during abatement and cleaning activities as per 56-11.5 (a).
5. The entire work area is outdoors and will be prepared in accordance with 56-11.5 (c) (2). The work areas will extend twenty-five (25) feet from the perimeter of the immediate work area, and be identified with warning signs and barrier tape. Access to each work area will be through one access point, secured with barrier tape and signs, and a remote locking decontamination unit as described below.
6. For areas where a distance of 25-feet are not possible, the areas shall be cordoned off as practical, and a daily abatement air sample shall be included within 10-feet of the barrier.
7. Only certified persons and authorized visitors will be permitted in the work areas. Unauthorized personnel shall not be allowed to access any regulated abatement work area, with the exception of waste hauler truck drivers. These truck drivers will be restricted to their enclosed cab while temporarily in the regulated work area for waste transfer activities only. All

equipment operators utilized for removal and loading activities within the regulated abatement work area must be certified in compliance with ICR 56-3.2.

8. A personal decontamination facility will be utilized and will comply with 56-7.5 a, b, d). The decontamination unit will be sized for a large project and will either be a pre-built trailer unit, or will be constructed of stud framing and plywood.
9. Adequate toilet facilities will be readily accessible to the personal decontamination enclosure.
10. An equipment decontamination area shall be cordoned off within each work area for cleaning heavy equipment as per 56-11.5 (c) (4).
11. Appropriate warning signs in accordance with 56-7.4(c) will be posted at the exterior of the work area boundary fence/barriers.
12. Personal protective equipment as required by ICR 56-7.6 will be utilized by all workers and authorized visitors.
13. Electric power to the work areas is to be disconnected and locked out. The Contractor is to verify that power is off and locked out before allowing men onto the work areas.
14. All power to be used by the Abatement Contractor in the work areas is to be protected by ground fault circuit interrupters (GFCI).
15. The materials will be continuously wetted with amended water, prior to, during, and after removal. Fog nozzles or similar type equipment shall be used to perform the wetting as per 56-11.5 (c) (8). Asbestos Containing Materials (ACM) shall be maintained in an adequately wet condition prior to, during, and after removal. No dry disturbance or removal of ACM or asbestos-contaminated fill is permitted.

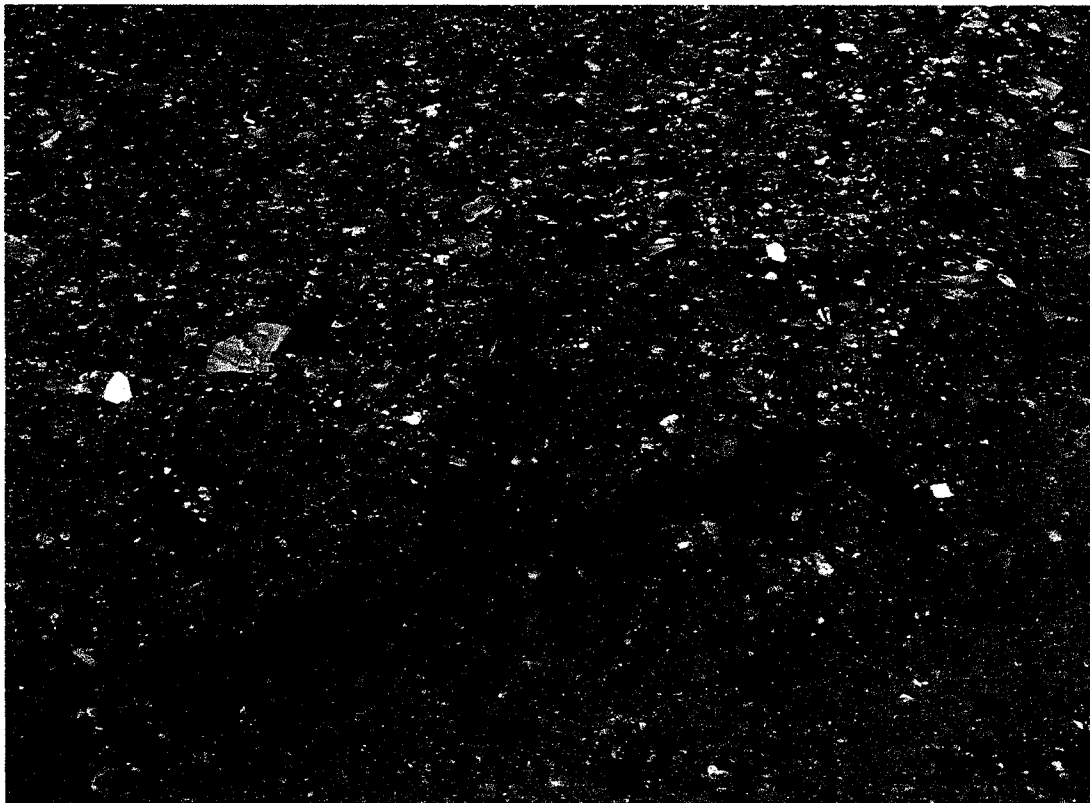
16. The non-friable asbestos waste and contaminated soil will be loaded into lined dumpsters or trucks, and covered with at least two layers of six-mil fire retardant polyethylene sheeting per 56-11.5 (c) (11). There shall be no visible emissions or water leakage from these containers
17. The non-friable asbestos waste shall be disposed at a landfill approved to take non-friable asbestos waste.
18. A visual inspection will be conducted by a certified Project Monitor, hired by the Owner as per Subpart 56-9.2 (e) (1). The Project Monitor shall determine if the area is dry and free of visible asbestos debris/residue.
19. If the visual inspection is unacceptable the abatement work area shall be re-cleaned.
20. All waste, tools and equipment, personnel decontamination unit, waste/equipment decontamination facility will be removed from the site in accordance with Subpart 56-10.
21. The Contractor is not exempt from OSHA personal air monitoring requirements.
22. The Contractor will comply with all other applicable provisions of ICR 56.
23. A copy of the site-specific variance will be posted at the entrance to the decontamination unit.

Since these work procedures were previously allowed on other projects, it is assumed that they will not violate the spirit and purpose of Industrial Code Rule 56, or compromise the health of workers, occupants, or the environment.

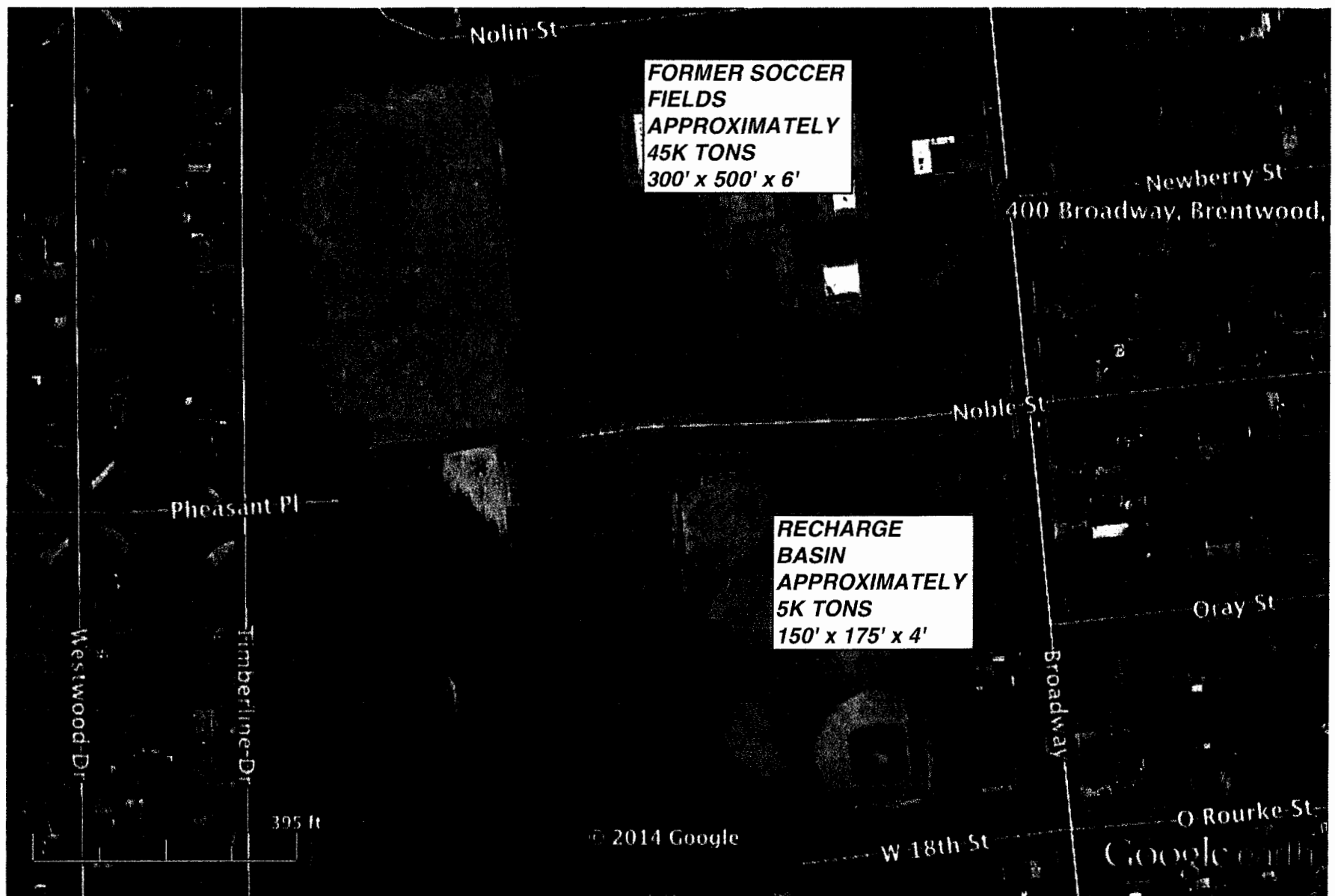
Reference: Variance 14-0825 granted 7/1/14.
 Variance 14-0251 granted 3/20/14, amended 4/16/14.



Typical Fill at Roberto Clemente Park, Brentwood, NY



Close-up of Fill at Roberto Clemente Park, Brentwood, NY



Google earth

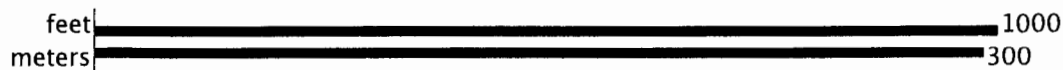


FIGURE 1: SITE LAYOUT, ROBERTO CLEMENTE PARK, 400 BROADWAY, BRENTWOOD, NY

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ATTACHMENT B
Dust Monitoring Instrumentation
Manufacturer's Instructions

HEALTH AND SAFETY

Exposure Monitoring

Model 8530/8531/8532 DUSTTRAK™ II Aerosol Monitor

Operation and Service Manual

P/N 6001893, Revision C
May 2009



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Address

TSI Incorporated / 500 Cardigan Road / Shoreview, MN 55126 / USA

Fax No.

(651) 490-3824

Limitation of Warranty and Liability (effective July 2000)

Seller warrants the goods sold hereunder, under normal use and service as described in the operator's manual, shall be free from defects in workmanship and material for twenty-four (24) months, or the length of time specified in the operator's manual, from the date of shipment to the customer. This warranty period is inclusive of any statutory warranty. This limited warranty is subject to the following exclusions:

- a. Hot-wire or hot-film sensors used with research anemometers, and certain other components when indicated in specifications, are warranted for 90 days from the date of shipment.
- b. Parts repaired or replaced as a result of repair services are warranted to be free from defects in workmanship and material, under normal use, for 90 days from the date of shipment.
- c. Seller does not provide any warranty on finished goods manufactured by others or on any fuses, batteries or other consumable materials. Only the original manufacturer's warranty applies.
- d. Unless specifically authorized in a separate writing by Seller, Seller makes no warranty with respect to, and shall have no liability in connection with, goods which are incorporated into other products or equipment, or which are modified by any person other than Seller.

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Buyer and all users are deemed to have accepted this LIMITATION OF WARRANTY AND LIABILITY, which contains the complete and exclusive limited warranty of Seller. This LIMITATION OF WARRANTY AND LIABILITY may not be amended, modified or its terms waived, except by writing signed by an Officer of Seller.

Service Policy

Knowing that inoperative or defective instruments are as detrimental to TSI as they are to our customers, our service policy is designed to give prompt attention to any problems. If any malfunction is discovered, please contact your nearest sales office or representative, or call TSI at (800) 874-2811 (USA) or (001 651) 490-2811 (International).

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These Application Notes can also be found under TSI's web site:

<http://www.tsi.com>

[*EXPMN-001 DustTrak II Theory of Operation.pdf*](#)

[*EXPMN-003 DustTrak II Impactor.pdf*](#)

Safety Information

IMPORTANT

There are no user serviceable parts inside the instrument. Refer all repair and maintenance to a qualified factory-authorized technician. All maintenance and repair information in this manual is included for use by a qualified factory-authorized technician.

Laser Safety

- The Model 8530/8531/8532 DUSTTRAK™ II is a Class I laser-based instrument.
- During normal operation, you will **not** be exposed to laser radiation.
- Precaution should be taken to avoid exposure to hazardous radiation in the form of intense, focused, visible light.
- Exposure to this light may cause blindness.

Take these precautions:

- **DO NOT** remove any parts from the DUSTTRAK™ II monitor unless you are specifically told to do so in this manual
- **DO NOT** remove the housing or covers. There are no serviceable components inside the housing.



WARNING

The use of controls, adjustments, or procedures other than those specified in this manual may result in exposure to hazardous optical radiation.






WARNING

There are no user-serviceable parts inside this instrument. The instrument should only be opened by TSI or a TSI approved service technician.

When operated according to the manufacturer's instruction, this device is a Class I laser product as defined by U.S. Department of Health and Human Services standards under the Radiation Control for Health and Safety Act of 1968. A certification and identification label like the one shown below is affixed to each instrument.

Labels

Advisory labels and identification labels are attached to the instrument.

<p>1. Serial Number Label (bottom)</p>	<p>DUSTTRAK™ II - Model 8530</p> <p>S/N 8533060401</p>  <p>WFO JUNE 1999 2204</p> <p>THIS LASER PRODUCT CONFORMS TO THE CANADIAN BUREAU OF RADIOLOGICAL HEALTH AND SAFETY REGULATIONS</p> <p>TC-100 100 Campbell Road Greenwich, CT 06830 U.S.A. www.hydrex.com</p> 
<p>2. Laser Radiation Label (internal)</p>	<p>DANGER!</p> <p>VISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM</p> <p>WARNING: NO USER SERVICABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL</p>
<p>3. European symbol for non- disposable item. Item must be recycled.</p>	

Description of Caution/Warning Symbols

Appropriate caution/warning statements are used throughout the manual and on the instrument that require you to take cautionary measures when working with the instrument.

Caution



Caution

Failure to follow the procedures prescribed in this manual might result in irreparable equipment damage. Important information about the operation and maintenance of this instrument is included in this manual.

Warning






WARNING

Warning means that unsafe use of the instrument could result in serious injury to you or cause damage to the instrument. Follow the procedures prescribed.

Caution and Warning Symbols

The following symbols may accompany cautions and warnings to indicate the nature and consequences of hazards:

	Warns that the instrument contains a laser and that important information about its safe operation and maintenance is included in the manual.
	Warns that the instrument is susceptible to electro-static discharge (ESD) and ESD protection should be followed to avoid damage.
	Indicates the connector is connected to earth ground and cabinet ground.

Reusing and Recycling



As part of TSI Incorporated's effort to have a minimal negative impact on the communities in which its products are manufactured and used:

- ☐ Do **not** dispose of used batteries in the trash. Follow local environmental requirements for battery recycling.
- ☐ If instrument becomes obsolete, return to TSI for disassembly and recycling.



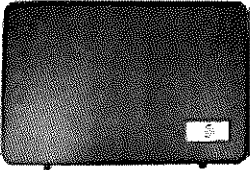
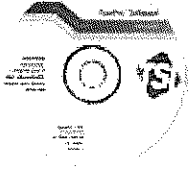
Chapter 1

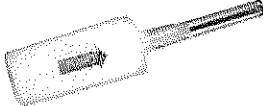

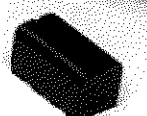



Unpacking and Parts Identification

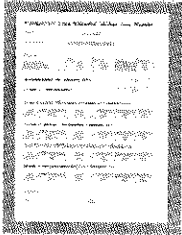
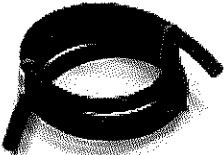


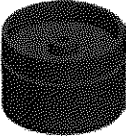


Carefully unpack the Model 8530/8531/8532 DUSTTRAK™ II Aerosol Monitor from the shipping container. Use the tables and illustrations below to make certain that there are no missing components. Contact TSI immediately if anything is missing or damaged.

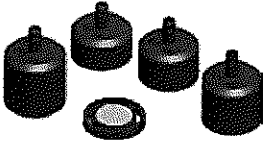
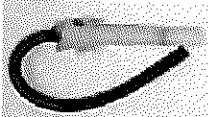



Unpacking the DUSTTRAK™ II Aerosol Monitor



Compare all the components you received with those listed in the table below. If any parts are missing, contact TSI.

Item	Qty	Part Number	Description
 or 	1	8530 8531 8532	Desktop II Desktop II HC Handheld II
	1	801670 801669	Desktop II Carrying Case Handheld II Carrying Case
	1	1090014	Data Analysis Software CD- ROM

Item	Qty	Part Number	Description
	1	800663	Zero Filter
 or 	1	801680 801681	6600 mAh Lithium Ion Rechargeable Battery (Desktop) Rechargeable lithium ion battery (Handheld)
	1	1303740	USB cable
	1	801652	Analog/alarm output cable (Desktop models only)
	1		Operation and Service Manual

Item	Qty	Part Number	Description
	1		Calibration Certificate
	1	801688	Conductive Tubing
	1	801668	Filter removal tool (Spanner Driver)
  	4 2 1	801673	Spare Internal Filter Elements Desktop Model Only 37-mm filter includes: Filter body top Filter body bottom Mesh screen Comes with 37-mm cartridge opening tool
	8	801666	Spare Internal Filters Handheld Model Only

Item	Qty	Part Number	Description
	1	801667	Impactor Kit PM _{2.5} assembled Top Bottom Impaction Plate PM _{1.0} Top PM _{4.0} Top PM ₁₀ Top Extra Impaction Plate
	1	801691	Dorr-Oliver Cyclone
	1	801692	Power Supply – Desktop
		801694	Power Supply – Handheld
	2		Stylus When shipped, one stylus will be in the accessory bag, the second stylus attached to instrument.
	1	3012094	Screwdriver, dual ended. (For Handheld Models only)

Item	Qty	Part Number	Description
	1	801674	Impactor Oil
	2	801698	Inlet cap When shipped, one inlet will be in the accessory bag, the second inlet attached to instrument.

Parts Identification for the DUSTTRAK™ II Desktop Aerosol Monitor Models 8530/8531

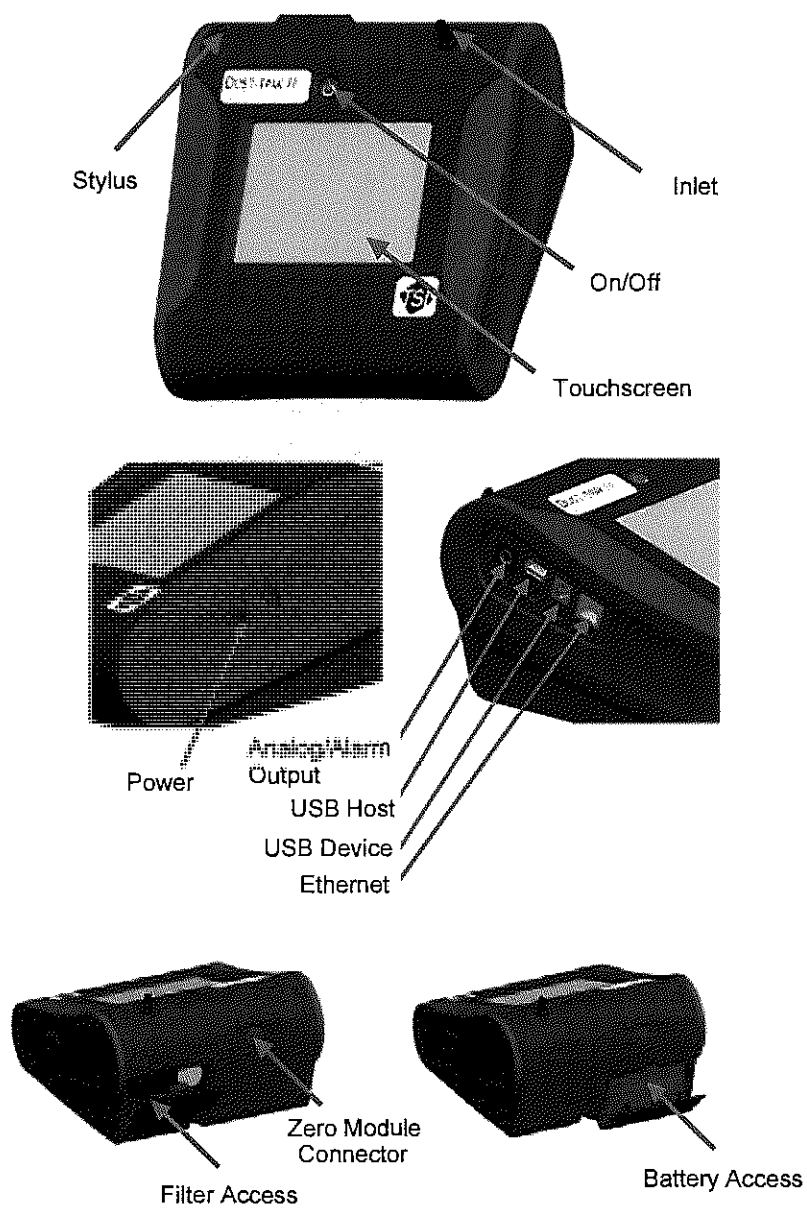


Figure 1-1: Features on Desktop Model

Parts Identification for the DUSTTRAK™ II Handheld Aerosol Monitor Model 8532

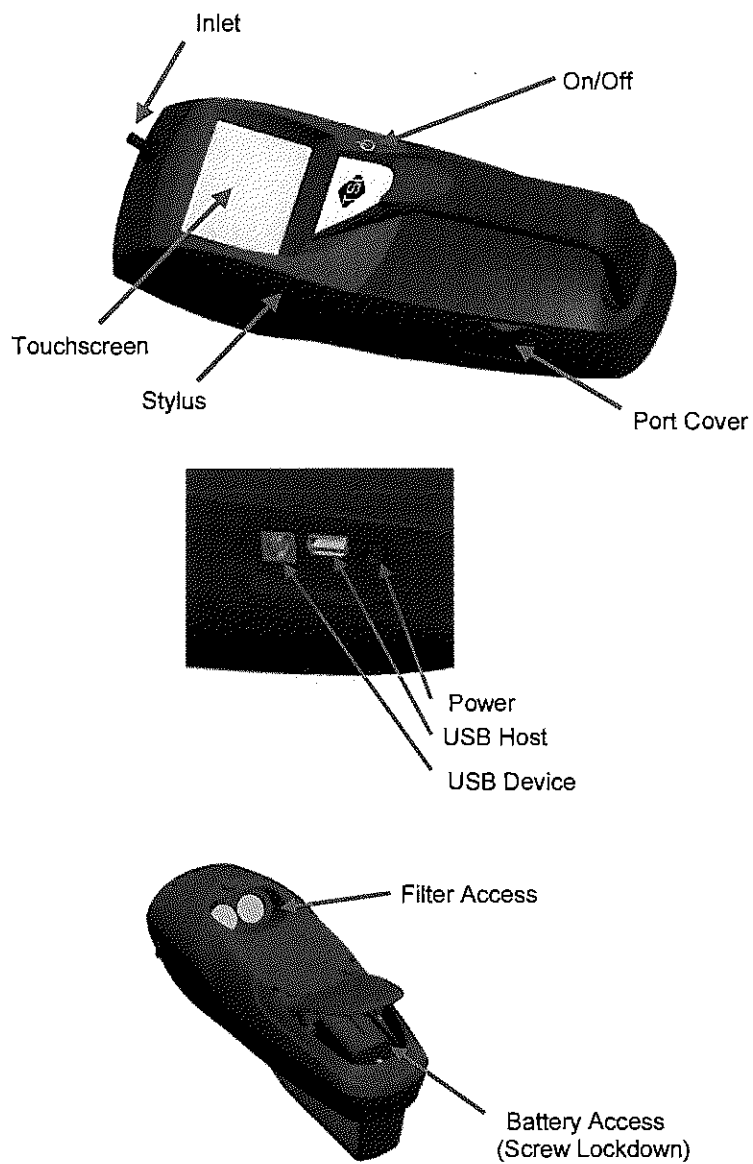


Figure 1-2: Features on Handheld Model

Chapter 2

Setting Up

Supplying Power to the DUSTTRAK™ II Aerosol Monitor

The DUSTTRAK™ II Aerosol Monitor must be powered by either batteries or use of the external AC adapter.



WARNING

The instrument has been design to be used with batteries supplied by TSI. Do **not** use a substitute.



WARNING

Do **not** use non-rechargeable batteries in this instrument. Fire, explosions, or other hazards may result.

Installing the Batteries in Model 8530/8531 Desktop

Remove the battery cover and slide one or two batteries into the battery slots. A single battery can be put into either slot. Orient the batteries with the label side facing up (see figure 2-1).

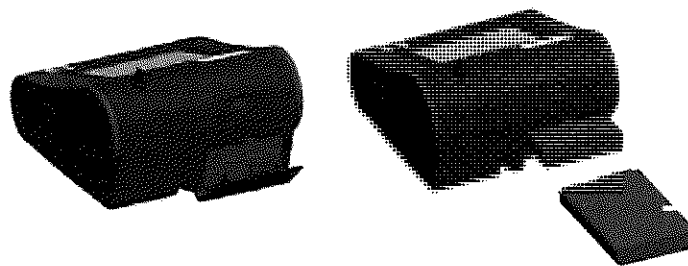


Figure 2-1: Batteries into Desktop Unit

Installing the Batteries in Model 8532 Handheld

Remove the battery cover by loosening captured screw on the bottom of the unit. Orient battery with brass connectors facing forward. Insert battery into cavity and slide forward to engage into pins. Replace the battery cover and secure by tightening screw (see figure 2-2).

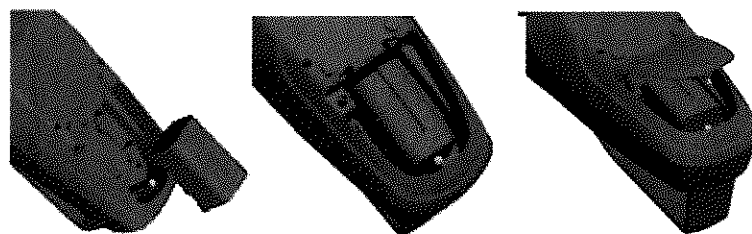


Figure 2–2: Batteries into Handheld Unit

Using the AC Adapter to Run Instrument

The AC adapter allows you to power the DUSTTRAK™ monitor from an AC wall outlet. When using the AC adapter, the batteries (if installed) will be bypassed.

Battery Charging

This instrument will charge the Lithium Ion battery packs. Insert the batteries into the battery compartment, plug the instrument into AC power, and turn the instrument on. Batteries will charge only when the instrument is on and in stand-by mode. Batteries will not be charged if the instrument is turned off or is actively taken measurements. Charging will stop when the batteries have been fully charged.

Inlet Cap

When using the DUSTTRAK™ monitor to sample environmental air, the inlet cap should be put over the instrument. This cap will keep large objects from dropping into and plugging the inlet. The cap will also keep direct light from shining into the chamber and skewing the results.

The inlet cap can simply be pressed onto the instruments inlet.

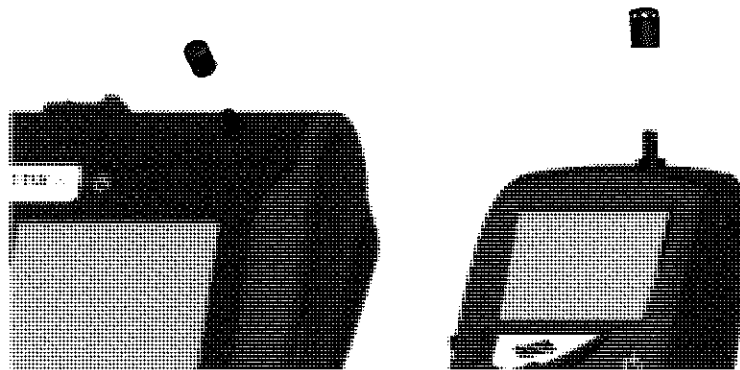


Figure 2-3: Putting on Inlet Cap

Size-Selective Impactors

Size-selective impactors can be attached to the inlet of the DUSTTRAK™ II instruments. Size-selective impactors can be used to pre-condition the size range of the particles entering the instrument. PM₁, PM_{2.5}, PM₄ (Respirable) and PM₁₀ impactors are available. **The instrument must run at the factory default setting of 3.0 L/min for the impactors to achieve the correct cut points.**

The size-selective impactor is composed of three parts; the cap, impaction plate and bottom. Selection of the cap will determine cut size of the impactor. Each cap is labeled with the particle cut size (1 µm, 2.5 µm, 4.0 µm or 10 µm). The same impaction plate and bottom are used on all impactor sizes.

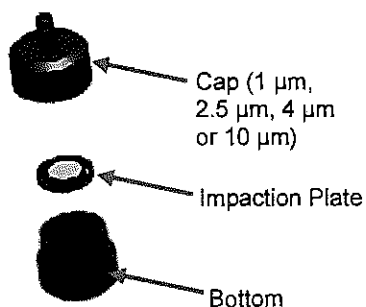


Figure 2-4: Size-Selective Impactor

The impactor assembly is attached to the instrument in place of the inlet cap. The inlet cap does not need to be used if an impactor is being used. See [Chapter 4, "Maintenance,"](#) for instructions on how to add oil to the impaction plate.

Dorr-Oliver Cyclone

A Dorrr-Oliver cyclone is shipped with the instrument. The Dorrr-Oliver cyclone removes particles over 4.0 μm in size. The Dorrr-Oliver cyclone is attached to the instrument by sliding the cyclone clip over the protruding catch. The tube from the Dorrr-Oliver cyclone needs to be routed to the inlet of the instrument.

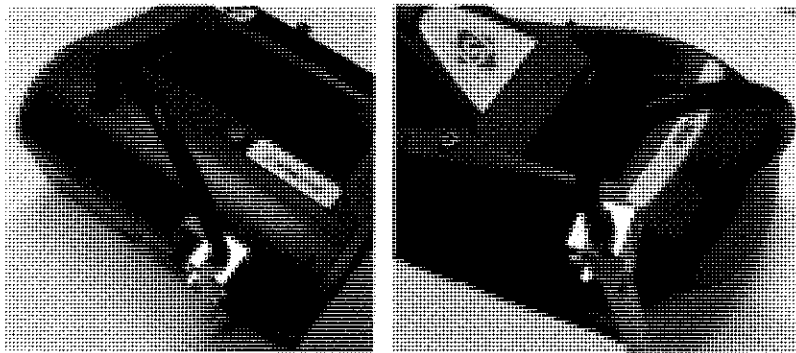


Figure 2-5: Installing Dorrr-Oliver Cyclone

Inlet attachments (impactors or inlet cap) should *not* be used when using the Dorrr-Oliver Cyclone. **The instrument flow rate must be changed to 1.7 L/min when using the Dorrr-Oliver Cyclone in order to achieve a 4 μm (respirable) cut-point.** See the [Flow Cal](#) instructions in the Operations chapter for instructions on how to change the instruments flow rate.

Instrument Setup

The DUSTTRAK™ II monitor can be connected to a computer to download data and upload sampling programs.

Connecting to the Computer

Connect the USB host port of a Microsoft Windows®-based computer to the USB device port on the side of the DUSTTRAK™ monitor.

*Windows is a registered trademark of Microsoft Corporation.

Installing TRAKPRO™ Data Analysis Software

TRAKPRO™ software can preprogram the DUSTTRAK™ monitor, download data, view and create raw data and statistical reports, create graphs, and combine graphs with data from other TSI instruments that use TRAKPRO™ software. The following sections describe how to install the software and set up the computer.

Note
To use TRAKPRO™ software with the DUSTTRAK™ Aerosol Monitor, the PC must be running Microsoft Windows® and the computer must have an available Universal Serial Bus (USB) port.

1. Insert the TRAKPRO™ Data Analysis Software CD into the CD-ROM drive. The install screen starts automatically.

Note
If the software does not start automatically after a few minutes, manually run the program listed on the label of the CD using the Run command on the Windows Start Menu.

2. Follow the directions to install TRAKPRO™ software.

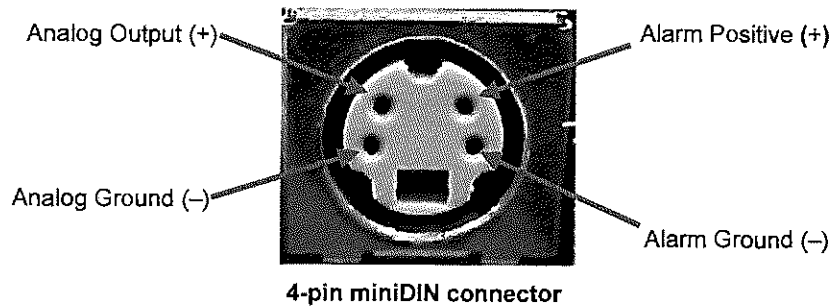
TRAKPRO™ software contains a comprehensive installation guide. It is recommended to print out this prior to starting the TRAKPRO™ software installation on your computer, so it may be consulted during the installation. The TRAKPRO™ Software manual is located in the "Help" file in TRAKPRO™ software. There is no separately printed TRAKPRO Data Analysis software manual.

*Microsoft and Windows are registered trademarks of Microsoft Corporation.

Connecting Analog/Alarm Output

The Analog/Alarm Output Cable plugs into the alarm connection on the side of the instrument. This feature is on the desktop models (8530/8531) only.

The cable contains a 4-pin, mini-DIN connector. The pin-outs for the connector and the wiring for the cable are shown below.



Cable Wiring Diagram	
Brown Wire	Analog Ground
Orange Wire	Analog Out
Red Wire	Alarm (+)
White Wire	Alarm (-)
Black Wire	Shield

Figure 2-6: Cable Wiring Diagram

Wiring the Analog Output

System specifications:

- Output voltage: 0 to 5 VDC.
- Output impedance: 0.01 ohm.
- Maximum output current: 15 mA.
- Correct polarity must be observed (see pin-outs above).

The output cable supplied by TSI (part no. 801652) is labeled with the pin-out wiring diagram. Additional equipment may be needed for making connections to the system that TSI does not supply. It is the user's responsibility to specify and supply all additional equipment.

Wiring the Alarm

System specifications:

- Maximum voltage: 15 VDC (**DO NOT USE AC POWER**)
- Maximum current: 1 Amp
- Correct polarity must be observed (see pin-outs above)
- The alarm switch, located inside the DUSTTRAK™ monitor must be located on the ground side of the alarm system.



WARNING

The DUSTTRAK™ monitor Alarm Output function should *not* be used to detect hazardous conditions or to provide an alarm for protecting human life, health or safety.



Caution

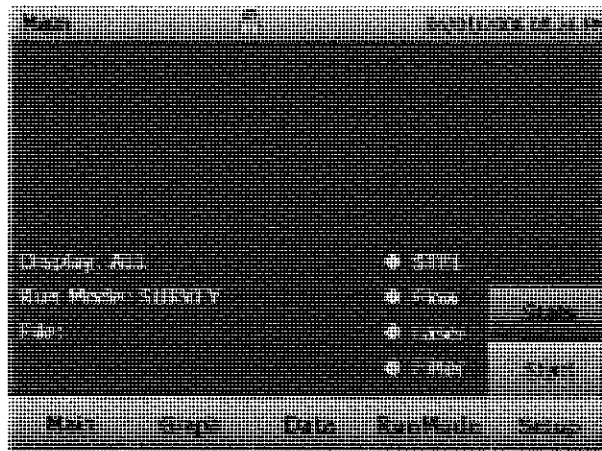
The alarm switch must *not* be wired to AC power! Failure to properly install the user alarm could damage the DUSTTRAK™ instrument and/or void the instrument warranty! Please read and follow all instructions before wiring or operating the user alarm.

Chapter 3

Operation

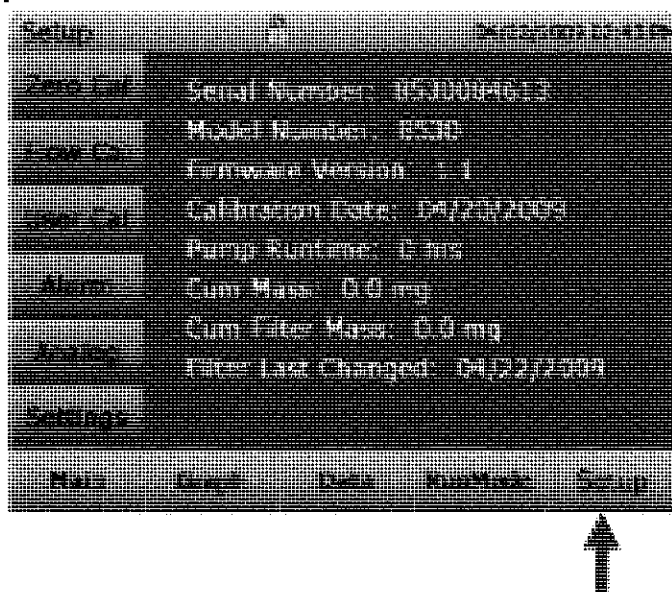
Getting Started

The **START UP** screen is displayed initially when the instrument is turned on, following the initial TSI logo splash screen.



Using a stylus or finger tip, touch the “buttons” on the screen to activate different menus.

Setup Menu

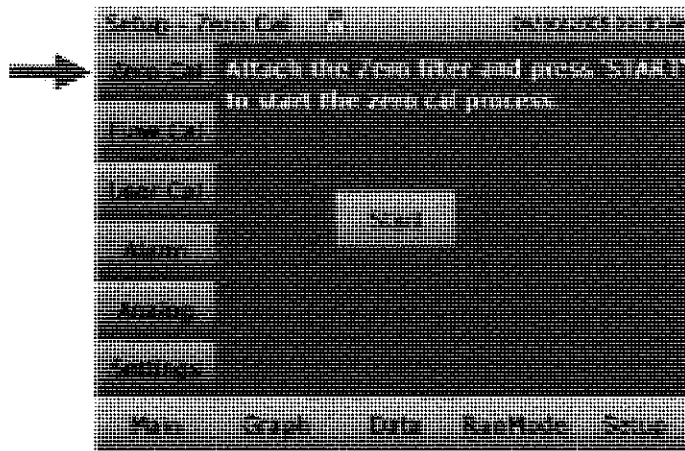


Pressing **Setup** activates the Setup Menu touchscreen buttons along the left edge of the screen. Setup cannot be accessed when the instrument is sampling.

The main screen of the **Setup** screen displays the following information:

Serial Number	The instruments serial number.
Model Number	The instruments model number.
Firmware Version	Instruments current version of firmware.
Calibration Date	Date of the last factory calibration.
Pump Run Time	Pump running time in hours.
Cum Mass Conc	Amount of mass run through instrument over life.
Cum Filter Conc	Amount of mass run through instrument since last filter change.
Filter Time	Date of last filter change.

Zero Cal



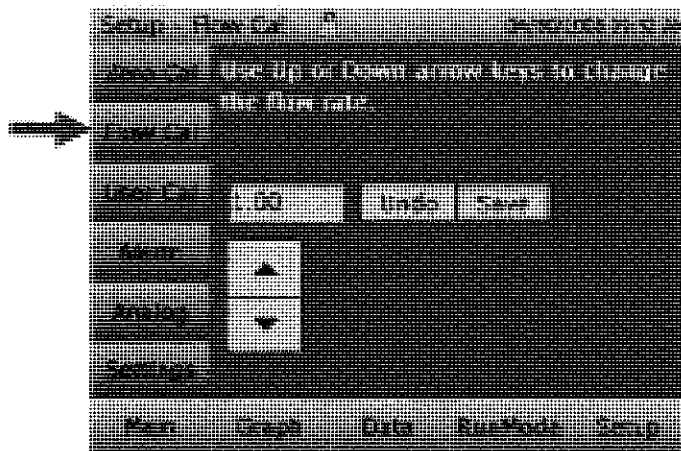
Zero Cal should be run the first time the instrument is used and should be repeated prior to every use. Zero Cal requires that the zero filter be attached prior to running.

Never perform a zero cal without attaching a zero filter.

1. Press **Zero Cal** Button
2. Attach Zero Filter
3. Press the **Start** button to start Zeroing process.
4. A count-down clock will appear indicating the time remaining. The screen will indicate "Zero Cal Complete" when done.

Remove filter after zeroing has been completed. The instrument is now zero calibrated and ready for use.

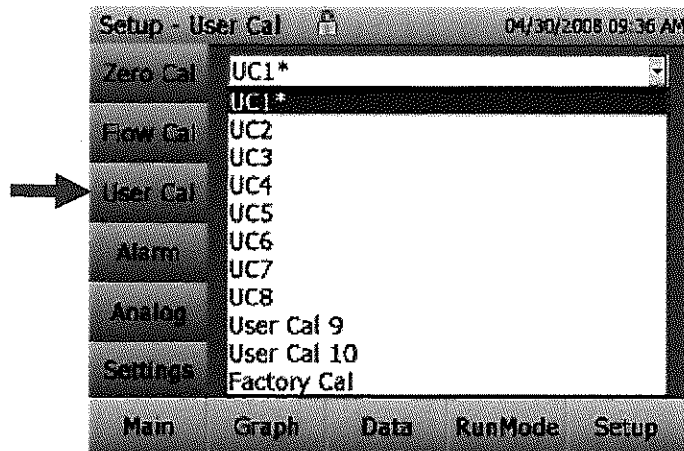
Flow Cal



Flow Cal is run if the user wants to change the flow set point. The flow set point is factory set to 3 L/min total flow. 2 L/min of the total flow is measured aerosol flow. 1 L/min of total flow is split off, filtered and used for sheath flow. There is an internal ΔP flowmeter in the DUSTTRAK™ II instrument that controls flow rate to $\pm 5\%$ if factory setpoint. It is recommended to check the flows with an external flow reference meter, especially when collecting data. The pump will automatically start when entering the Flow Cal screen.

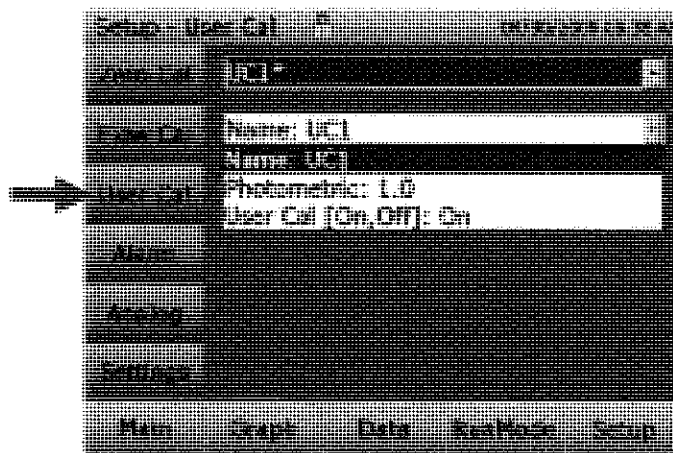
1. Attach a flow calibrator (reference flow meter) to inlet port. You may use a bubble buret, mass flow meter, dry piston or rotameter as flow measurement devices.
2. Move the arrows up or down to achieve desired flow on the reference flowmeter. Each up or down arrow will change the flow about 1%. Allow time between button presses to let pump change to the new flow rate.
3. Select save once the desired flow rate is achieved. Select **Undo** to return to the factory set point.

User Cal



User Cal allows the user to store and use 10 different calibration factors. The currently active user calibration is highlighted with an asterisk “*”.

Four variables can be set for each user calibration.



Name	User can rename calibration to a description name.
Photometric	Changes the factory calibration of particle signal, based on Arizona Road Dust, to actual aerosol being measured. See below for sets to set this calibration.

Size Corr	Changes the factory calibration of the particle distribution, based on Arizona Road Dust, to actual aerosol being measured. See below for sets to set this calibration.
User Cal [on,off]	Selecting On will activate current user calibration and deactivate the previously selected user calibration.

Photometric Calibration Factor

In most situations, the DUSTTRAK™ monitor with its built-in data logging capability can provide very good information on how the concentration of an aerosol changes for different processes over time. Factory calibration to the respirable fraction of standard ISO 12103-1, A1 test dust is fairly representative of a wide variety of ambient aerosols. Because optical mass measurements are dependent upon particle size and material properties, there may be times in which a custom calibration would improve your accuracy for a specific aerosol.

Determining a aerosol specific photometric calibration requires that you determine a true mass concentration (e.g., gravimetric analysis) for the aerosol you want to measure. The true mass concentration is used to calculate the custom calibration factor for that aerosol. Once you have a custom calibration factor, you can reuse it each time you make measurements in the same aerosol environment.

Determining the Calibration Factor for a Specific Aerosol

The DUSTTRAK™ II monitor is factory calibrated to the respirable fraction of standard ISO 12103-1, A1 test dust. The DUSTTRAK™ monitor can be easily calibrated to any arbitrary aerosol by adjusting the custom calibration factor. The DUSTTRAK™ monitor's custom calibration factor is assigned the value of 1.00 for the factory calibration to standard ISO test dust. This procedure describes how to determine the calibration factor for a specific aerosol. Using the value of 1.00 will always revert back to the factory calibration.

To determine a new calibration factor you need some way of accurately measuring the concentration of aerosol, hereafter referred to as the reference instrument. A gravimetric analysis is often the best choice, though it is limited to nonvolatile aerosols. The internal 37 mm filter cartridge, in the desktop units, can be used to collect the reference gravimetric reference sample.

To make an accurate calibration you must simultaneously measure the aerosol concentration with the DUSTTRAK™ monitor and your reference instrument.

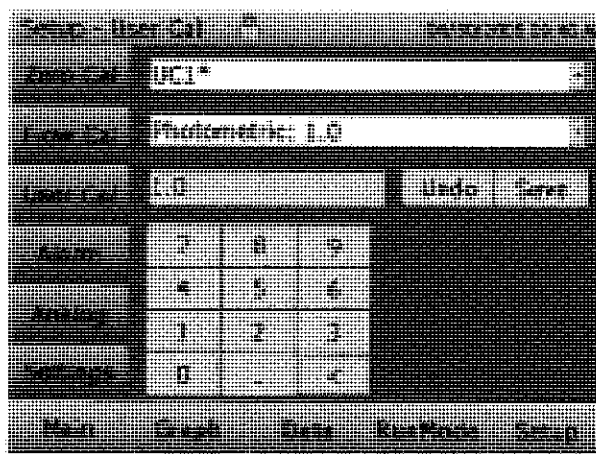
1. Zero the DUSTTRAK™ II monitor.
2. Put the instrument in Manual Log (Manual Logging is reviewed later in this section).
3. Set the logging interval. One minute (i.e., “01:00”) is often a good choice.
4. Co-locate the DUSTTRAK™ II monitor and the reference sampler together so that they are measuring from the same area. The 37mm filter cartridge in the desktop unit can be used to collect the particles to be weighed for the gravimetric reference.
5. Start sampling aerosol with both instruments at the same time.

Note
Greater accuracy will be obtained with longer samples. The time you permit for sampling often depends on the reference instrument and characteristics of the measured aerosol. It may take some time to collect sufficient aerosol onto a filter cassette for accurate gravimetric analysis. Refer to instructions of your reference instrument for sampling times.

6. Stop sampling with both instruments at the same time.
7. Record the DUSTTRAK™ monitor average concentration. This can be done by viewing the sample average in the Data screen. (Data Screen is reviewed later in this chapter)
8. Determine the mass concentration in mg/m³ from your reference instrument. For gravimetric sampling this means having the gravimetric sample weighed.
9. Compute the new calibration constant, NewCal, using the following formula:

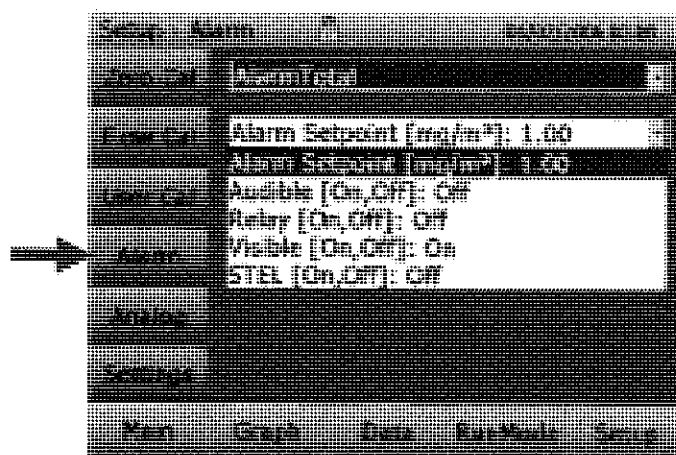
$$\text{NewCal} = \left(\frac{\text{Reference Concentration}}{\text{DustTrak Concentration}} \right) \cdot \text{CurrentCal}$$

10. Select **Photometric** from the User Cal drop down selection and enter the NewCal factor using the onscreen controls.




Alarm

Alarm allows the user to set an alarm level that will be triggered if the instrument's reading goes above the setpoint.




Alarm Setpoint [mg/m³]	<p>The alarm setpoint is the mass concentration level upon which the alarm is triggered.</p> <p>Alarm will be triggered if the mass concentration, taken at the logging interval, rises above the setpoint.</p>
Audible [On, Off]	<p>When the audible alarm is turned on, the instrument will activate internal beeper when Alarm level is reached or surpassed.</p>

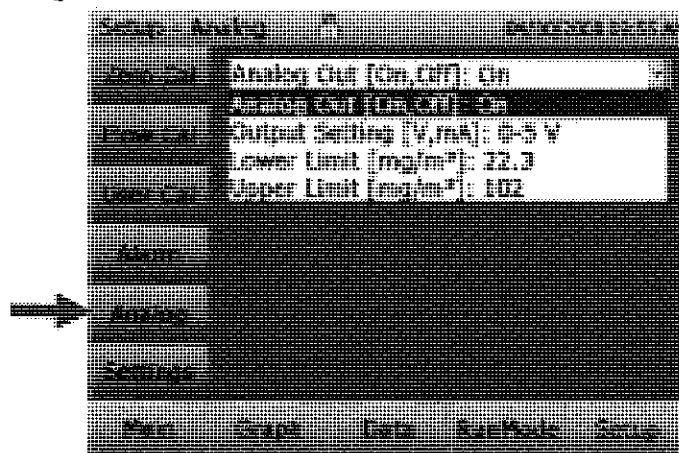
Relay [On, Off]	When the relay alarm is turned on, unit will close relay switch when Alarm level is reached or surpassed.
Visible [On, Off]	When the visible alarm is turned on, unit will show the alarm icon  in title bar when Alarm level is reached or surpassed.
STEL [On, Off]	<p>When the STEL alarm is turned on, STEL data will be collected when alarm level is reached or surpassed.</p> <p>STEL selection is available on the 8530 and 8531 desktop models only.</p> <p>See STEL Note below.</p>

STEL Alarm

STEL stands for Short Term Exposure Limit. When a STEL alarm is selected, the instrument will inspect the data on a second by second basis, independent from the selected logging interval. If the mass exceeds the STEL limit, then a STEL even will be triggered and the following actions will be taken.

STEL indicator	<p>The STEL indicator</p>  <p>will show Red on the main screen.</p>
Data	<p>Data will be taken a 1 minute logging interval for 15 minutes.</p> <p>This data will be stored in a separate file named STEL_XXX, where XXX will be matched to the logged data file.</p> <p>The instrument will also continue to log the mass concentration data at the logging interval selected.</p>
STEL Alarm repeat	If the instrument remains over the STEL limit after the 15 minute interval, or if the instrument exceeds the STEL limit later during the sample period, additional STEL files will be generated.

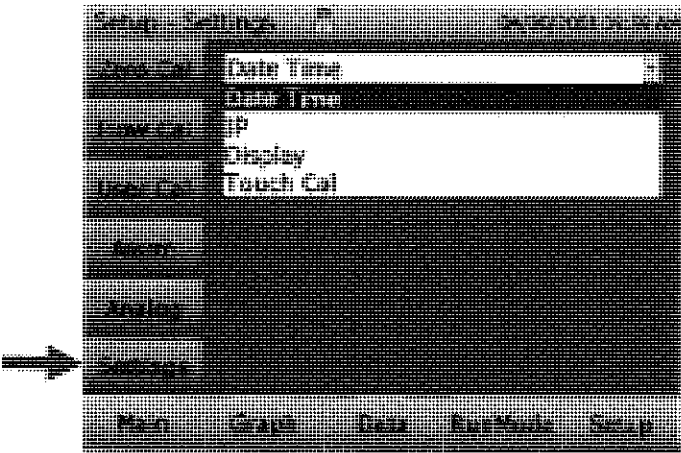
Analog



Analog setup screen sets the parameters that will drive the analog out port. Applies to the 8530/8531 Desktop models only.

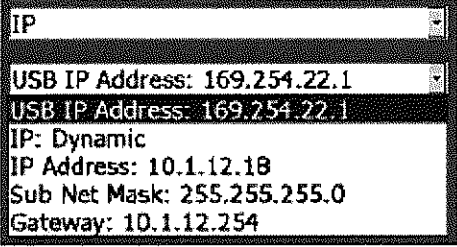


Analog out [On, Off]	Turns analog out port on.
Size Fraction	Selects the size channel that will drive the analog out.
Output Setting [V, mA]	Select between 0–5 V and 4–20 mA.
Lower Limit [mg/m ³]	Mass concentration reading of the selected channel that will correspond to 0 V or 4 mA.
Upper Limit [mg/m ³]	Mass concentration reading of the selected channel that will correspond to 5 V or 20 mA.

Settings



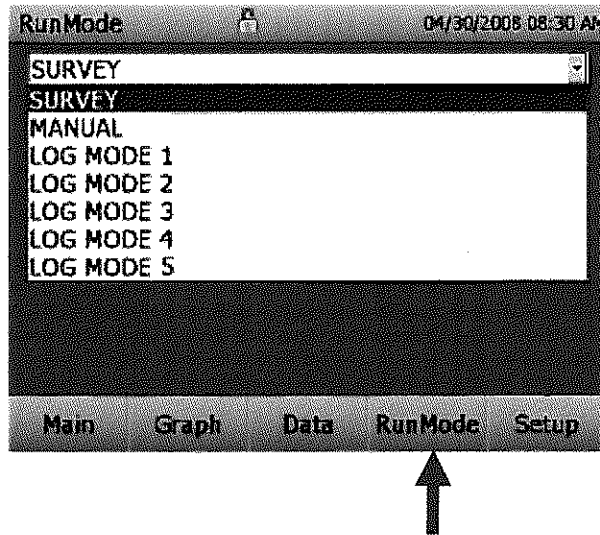
Settings screen sets basic unit parameters.

Date Time	<div data-bbox="673 898 1141 1121"><p>Date Time</p><p>Current Date: 04/30/2008 mm/dd/yy</p><p>Current Date: 04/30/2008 mm/dd/yyyy</p><p>Current Time: 09:59:48 hh:mm:ss</p><p>Date Format [...]: mm/dd/yyyy</p><p>Time Format [...]: AM/PM</p></div> <p>Sets current date, current time and date/time format. Time can be set in 12 or 24 hour format. Date can be set in yyyy/dd/mm, yyyy/mm/dd or yyyy/dd/mm.</p>
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IP	 <p>USB PORT IP Address:</p> <p>USB IP is the address assigned to the instrument by the NDIS driver. It is shown but cannot be changed.</p> <p>Ethernet Port IP parameters: (Model 8530, 8531 Desktop only.)</p> <p>IP method can be set to static or dynamic.</p> <p>For static IP, IP address, default gateway, and subnet mask can be set.</p> <p>For Dynamic, The IP assigned by the network is shown. This cannot be changed.</p> <p>See Note below.</p>
Display	 <p>Switches between blue and while backgrounds.</p>
Touch Cal	 <p>Calibrates the touch cal screen.</p>

IP Notes
<p>After changing the instrument to Dynamic or Static, the instrument must be rebooted.</p> <p>In Dynamic Mode, the unit will show the IP to which is assigned (after being rebooted).</p>

Run Mode

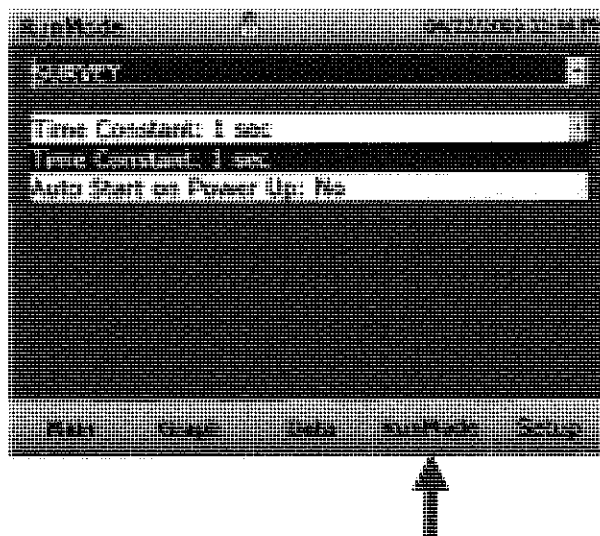


The RunMode tab brings up sampling mode options.

Sampling mode options include **Survey Mode**, **Manual Log**, and **Log Mode 1-5**.

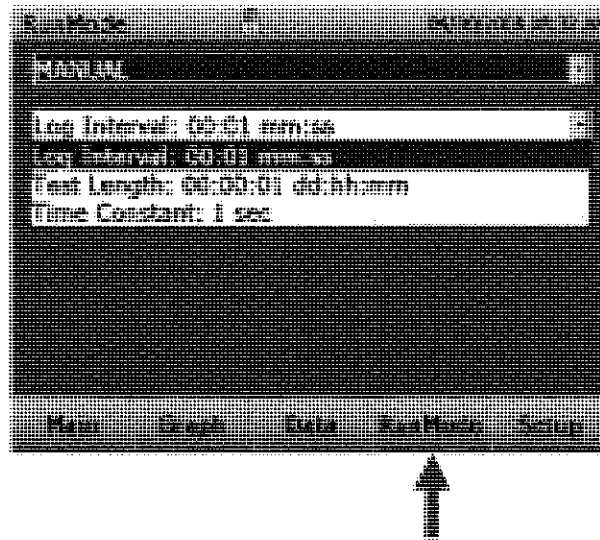
Survey	Survey Mode runs a real time, continuous active sample, but does not log data.
Manual	Manual Log sets the instrument to log data for a specified run time.
Log Modes	Log Mode starts and stops the instrument at specified times, run for a specified test length, and perform multiple tests of the same length with a specified time period between tests.

Survey Mode



Time Constant	Time Constant can be set from 1 to 60 seconds. This will control the update rate of the main screen. It is the rolling average of data displayed on the main screen and is not linked to logged data in either Manual or Program Log modes.
Auto Start on Power Up	When set to “Yes”, unit will start a measurement upon being powered on, if the unit was set to “Survey” when it was turned off. When set to “No”, the unit will be in idle when it is powered on.

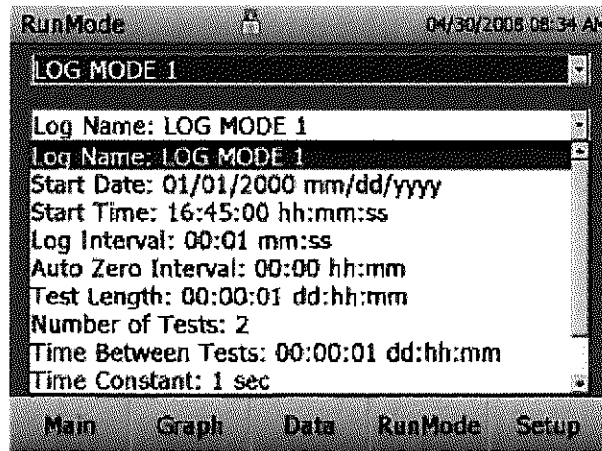
Manual Mode



Log Interval	The log interval can be set from 1 second to 60 minutes. It is the amount of time between logged data points.
Test Length	Test length can be set from 1 minute to the limit of the data storage.
Time Constant	Time Constant can be set from 1 to 60 seconds. This will control the update rate of the main screen. It is the rolling average of data displayed on the main screen and is not linked to logged data in either Manual or Program Log modes.

In Manual mode, data will be stored to a file named "*Manual_XYZ*" where *XYZ* is an incrementing integer.

Log Mode (1–5)



Log Name	Log Name, brings up a virtual keypad to name the Logged Data file.
Start Date	Start Date, select the date the test will start.
Start Time	Start Time, select the time the test will start.
Log Interval	The log interval can be set from 1 second to 60 minutes. It is the amount of time between logged data points.
Auto Zero Interval	Interval between re-zeroing the instrument using the Auto-Zero accessory. Models 8530 and 8531 desktop only.
Test Length	From 1 minute to the limit of the data storage.
Number of Tests	Number of tests, 1 to 999.
Time between Tests	Time between tests, 1 minute to 30 days.
Time Constant	Time Constant can be set from 1 to 60 seconds. This will control the update rate of the main screen. It is the rolling average of data displayed on the main screen and is not linked to logged data in either Manual or Program Log modes.

Use Start Date	Use Start Date, option to use programmed start date or by pass programmed start date.
Use Start Time	Use Start Time, option to use programmed start time or bypass programmed start time.

In Log mode, data will be stored to a file named “*LogName_XYZ*” where *LogName* is the user entered log name and *XYZ* is an incrementing integer.

Taking Mass Concentration Measurements

Measurements are started and controlled from the main screen.

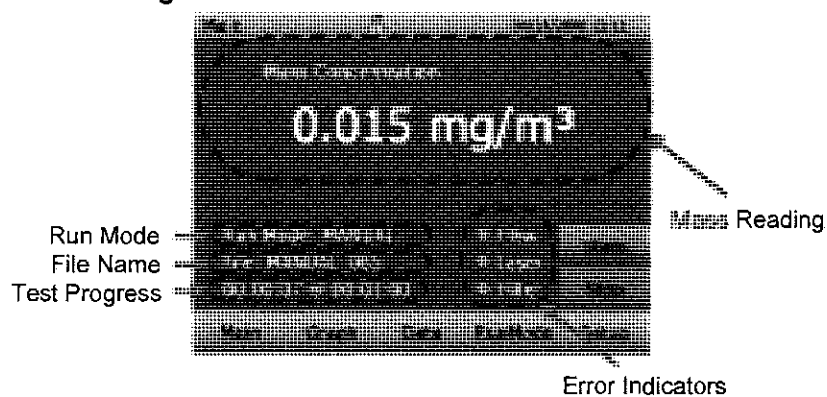
Prior to starting a measurement the instrument should be zeroed from the **Setup** screen and the run mode should be configured and selected from the **RunMode** screen.



When the instrument is on, but not taking any mass measurements the start button will be green and instruments pump will not be running. To start taking a measurement, press the green start button.

While taking a measurement the screen will display the current measured mass concentration. The various regions of the screen are shown below.

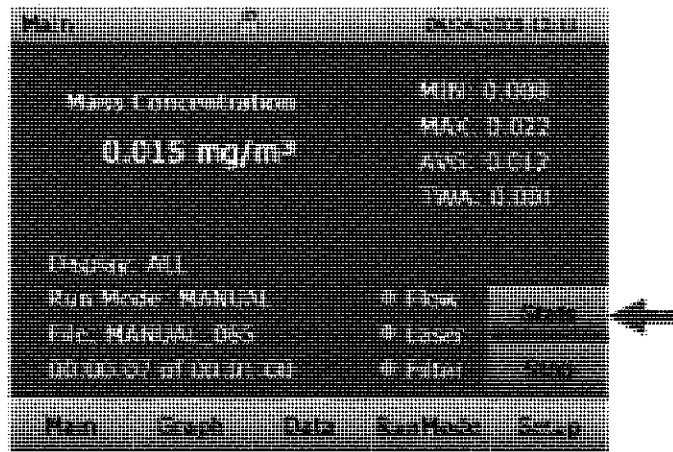
Screen Regions



Mass Reading	Shows the instruments mass measurements.
Run Mode Region	Shows the run mode selected from the RunMode screen.
File Name Region	Displays the file name to which the data is currently being saved.
Test Progress Region	Shows the time-based progress of the test.
Error Indicator Region	Shows the current stats of the instrument STEL: Shows if STEL is in progress (desktop instruments only) Flow: Status of the flow control Laser: Status of the Laser Filter: Status of the Filter See Chapter 5, "Troubleshooting," to resolve any of these error conditions.

Stats

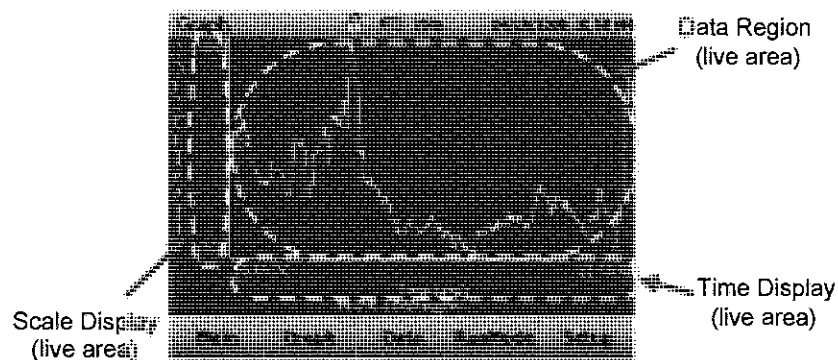
The Stats button will show the statistics of the mass measurement. When the Stats button is pressed, the main mass reading will reduce in font size, and the measurement statistics will show on the right side of the screen.

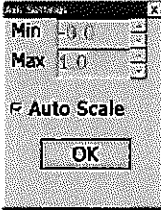
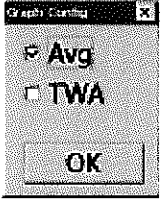


Graphing

During sampling, pressing the **Graph** button displays current readings in graphical form.

- During Survey Mode, five (5) minutes of running real-time data is displayed graphically.
- During Logging Mode, the entire log test time is displayed on the graph.

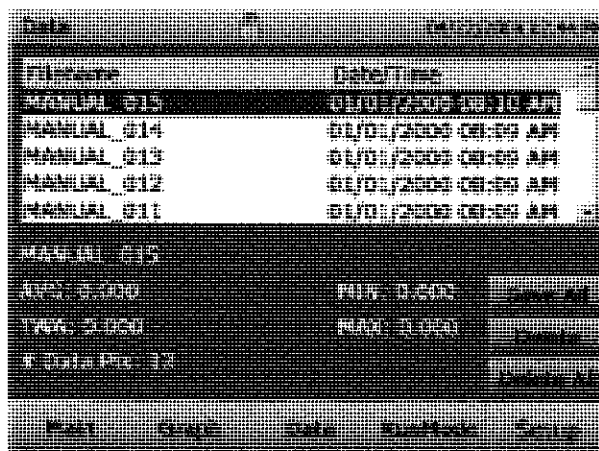


Time Display	<p>Pressing the Time x-axis label on the graph screen switches between Time (s), Time (abs), and Time (rel).</p> <p>Time (s): Elapsed time from first logged point (log interval) to the last logged point (test length).</p> <p>Time (rel): Relative time from zero to last logged point (test length – log interval).</p> <p>Time (abs): Absolute time from first logged point (test start + log interval) to last logged point (test stop).</p>
Scale Display	<p>Pressing in the Scale Display area will bring up a dialog that will allow changing between auto scaling and user scaling of the Y-axis.</p> 
Data Region	<p>Pressing the data region will bring up a dialog to show TWA or Average lines.</p>  <p>TWA: Will show a secondary line on the graph showing the time weighted average of the data. This line will not show if test time is less then 15 minutes.</p> <p>Average: Show a secondary line on the graph of the running average of the data.</p>

In Graphing Mode, pressing **Main** returns the instrument to the Main Screen display.

Viewing Data

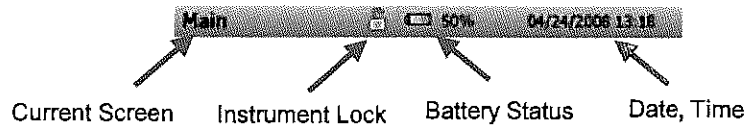
The **Data** button opens a list of data files for viewing.








Select File	Press the arrows on the right side of the screen to scroll up or down to the data file to be viewed.
Data Statistics	Statistics on the selected file <ul style="list-style-type: none"> o File Name o Sample Average o Sample TWA o Sample Maximum Reading o Sample Minimum Reading o Number of Data Points in the File
Save All Button	Downloads data to a USB thumb drive. USB thumb drive must be attached to the USB host port. Data is saved as a .csv file that can be viewed in Microsoft® Excel® spreadsheet software.
Delete Button	Deletes the currently highlighted file.
Delete All Button	Deletes all the files stored on the instrument.
Graph Button	Data can also be viewed in graphical form by pressing the Graph button while the data file is highlighted.

Title Bar

The Title Bar shows common instrument information.



Current Screen	Title of the current screen that is being displayed.
Instrument Lock	<p>Icon shows if the instrument touchscreen is in an unlocked or locked condition.</p> <p>Unlocked: </p> <p>Locked: </p> <p>To lock the touchscreen controls, touch the “lock” icon, immediately followed by three (3) quick touches on the current screen (Main) word along the top tool bar. Repeat the process to unlock the screen.</p>
Battery Status	<p>Show the current % life of the battery and show if the battery is currently being charged:</p> <p>Charging:  (unfilled portion of the icon filled yellow)</p> <p>Not Charging:  (unfilled portion of the icon transparent)</p>
Date and Time	Indicates the instruments current date and time.
Alarm	If the instrument is in an alarm status, an alarm icon  will appear in the title bar.

Chapter 4

Maintenance

The DUSTTRAK™ II aerosol monitor can be maintained in the field using the instructions below. Additionally, TSI recommends that you return your DUSTTRAK™ II to the factory for annual calibration. For a reasonable fee, we will quickly clean and calibrate the unit and return it to you in “as new” working condition, along with a Certificate of Calibration. This “annual checkup” helps ensure that the DUSTTRAK™ II is always in good operating condition.



WARNING

There are no user-serviceable parts inside this instrument. The instrument should only be opened by TSI or a TSI approved service technician.

Maintenance Schedule

Your DUSTTRAK™ II Aerosol Monitor requires maintenance on a regular basis. Table 4–1 lists the factory recommended maintenance schedule.

Some maintenance items are required each time the DUSTTRAK™ monitor is used or on an annual basis. Other items are scheduled according to how much aerosol is drawn through the instrument. For example, cleaning the inlet sample tube is recommended after 350 hours of sampling a 1 mg/m^3 concentration of aerosol. This recommendation should be pro-rated according to how the instrument is used. 350 hours at 1 mg/m^3 is the same amount of aerosol as 700 hours at 0.5 mg/m^3 or 175 hours at 2 mg/m^3 , etc.

Table 4–1. Recommended Maintenance Schedule

Item	Frequency
Perform zero check	Before each use.
Clean inlet	350 hr. at 1 mg/m^3 *
Clean $2.5 \mu\text{m}$ calibration impactor	Before every use.
Replace internal filters	350 hr. at 1 mg/m^3 * or when indicated by the main screen filter error indicator.
Return to factory for cleaning and calibration	Annually

*Pro-rated, see discussion above.

The DUSTTRAK™ monitor keeps track of the accumulated amount of aerosol drawn through it since its last cleaning. When the internal filter replacement is due, the filter error indicator will turn from green to red.

TSI recommends that you perform a zero check prior to each use for the DUSTTRAK™ monitor and certainly before running any extended tests, and after the instrument experiences a significant environmental change. Examples of significant environmental changes would be ambient temperature changes that exceed 15°F (8°C) or moving from locations with high aerosol concentrations to low concentrations.

Zeroing Instrument

1. Attach the zero filter to the inlet of the instrument.

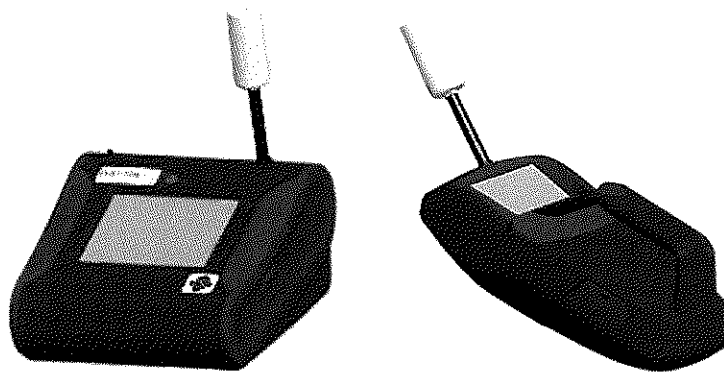


Figure 4-1: Attach Zero Filter to Inlet

2. Follow zero calibration instructions detailed in the operations section of this manual.

Cleaning the Inlet

The inlet should be cleaned based on the schedule in Table 4–1.

1. Turn the DUSTTRAK™ monitor off.
2. Unscrew the inlet nozzle from the instrument (Figure 4-2).

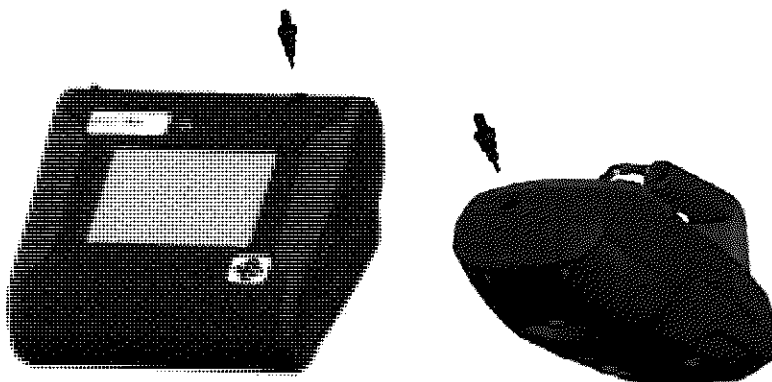


Figure 4-2: Unscrew Inlet Nozzle

3. Clean the inlet port. A cotton swab can be used to clean the outside of the inlet port. The swabs can be dampened with water or a light solvent (e.g., isopropanol). The inside of the sample tube can be cleaned using a small brush, along with a light solvent. Dry the tube by blowing it out with compressed air, or let it air-dry thoroughly.

Note
Be <i>careful</i> not to blow particles into the DUSTTRAK™ monitor inlet port.

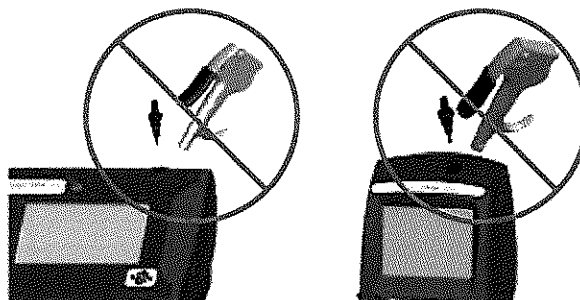


Figure 4-3: Do NOT Blow into Instrument

4. Screw (hand-tighten) inlet back into instrument.

Cleaning and Oiling Impactors

The calibration impactor should be cleaned prior to every use, using it to perform a Standard Calibration (size correction) on the instrument, as described in the [Operations](#) section.

1. Unscrew Impactor. Check O-ring on the impactor base.
2. Clean outside and inside of Impactor and the impactor plate using a clean brush and a light solvent. Dry impactor parts by blowing it out with compressed air, or let it air-dry thoroughly.
3. Apply 2 drops of oil (included) to the impactor plate. Do *not* over-fill impaction plate.

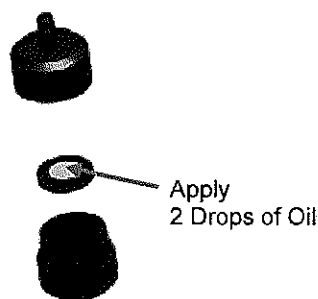


Figure 4-4: Apply 2 Drops of Oil to Impactor Plate

4. Screw (hand-tighten) impactor back together.

Replacing the Internal Filters

The internal filters should be replaced based on the schedule in Table 4–1 or when the filter indicator on the main screen changes to red.

1. Turn the instrument off.
2. Remove old filters from the instrument.

Handheld Model

- a. Use the enclosed filter removal tool (PN 801668) tool to unscrew the two filter caps located on the bottom of the instrument.
- b. Pull the old filters out of the two filter wells. If filter wells are visibly dirty, blow out with compressed air.

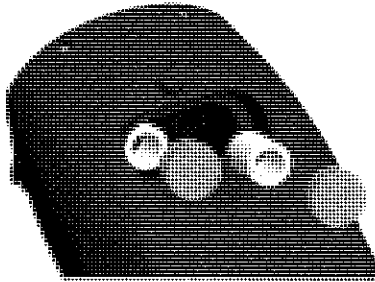


Figure 4-5: Pull Filters Out of Two Filter Wells (Handheld Model)

- c. Put two (2) new filters into the filter wells and screw filter caps back into place.

Note
<p>Replacement filters were shipped with the new instrument. Additional filters can be ordered from TSI under PN 801666.</p>

Desktop Model

Put two (2) new filters into the filter wells and screw filter caps

- a. Open filter access door on the back of the instrument.
- b. Use the enclosed filter removal tool (PN 801668) to unscrew filter cap.
- c. Pull out single cylindrical filter from filter well. If filter well is visibly dirty, blow out with compressed air.

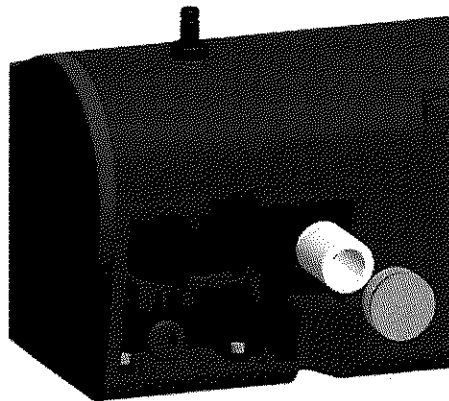


Figure 4-6: Pull out Single Cylindrical Filter from Filter Well (Desktop Model)

- d. Put new filter back into filter well and screw filter cap back into place.
- e. Open blue retention clip by pinching ends inward and pushing down.

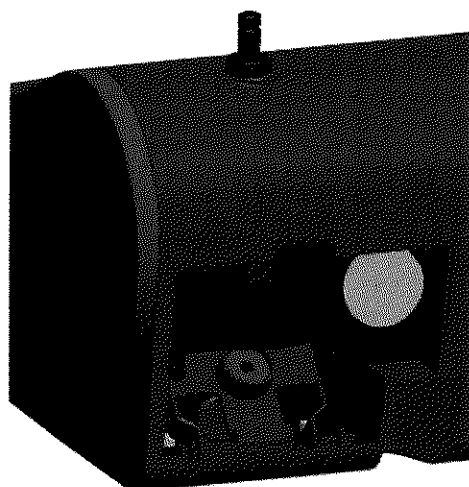


Figure 4-7: Open Blue Retention Clip

- f. Remove 37-mm filter cassette by pulling downward and outward.



Figure 4-8: Remove 37-mm Filter Cassette

- g. Open filter cassette using enclosed tool PN 7001303.

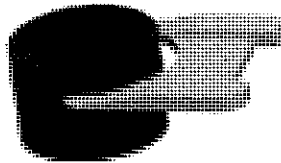


Figure 4-9: Open Filter using Enclosed Tool

- h. Remove screen mesh from filter cassette and blow out using compressed air. Blow in reverse direction to remove captured particulate.
- i. Replace mesh in filter cassette and press halves together. Make sure filter has been fully closed. The filter tool PN 7001303 can be used to ensure the filter is fully closed.

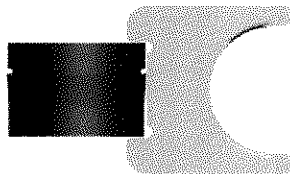


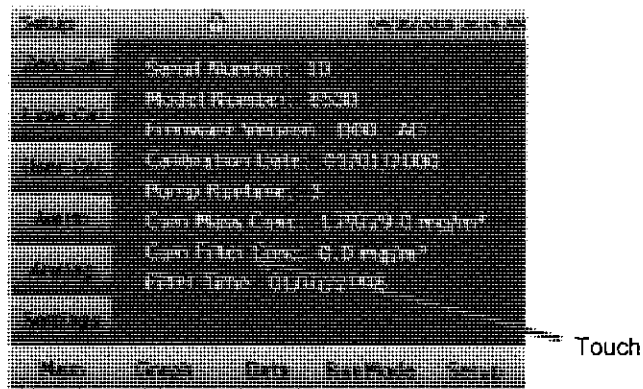
Figure 4-10: Replace Mesh in Filter Holder

- j. Place filter cassette back into position and close blue retaining clip. Make sure retaining clip snaps back into place.

Note
Replacement filters (HEPA and 3-mm Filter Cassette with mesh filter) were shipped with the new instrument. Additional filters can be ordered from TSI under PN 801673.
TSI does not supply any filter media for the filter cassette. Any commercially available 37-mm filter media may be used with the DUSTRAK™ II or DRX desktop instruments to collect gravimetric reference samples.

3. **It is important to reset the instruments filter counter after replacing filters. Resetting the counter will clear the filter error condition shown on the main screen.** Reset the counters by the following:
- a. Turn on the instrument.
- b. Press the **Setup** button to go into the setup screen.

- c. Touch the **Cum Filter Conc:** (live key) to reset the aerosol mass.



- d. *Replace user serviceable filters?* Dialog will appear. Press **OK**.
- e. *Reset filter concentration?* Dialog will appear. Press **Yes** to reset the cumulative filter concentration to zero.
- f. The Setup screen will not show zero for the **Cum Filter Concentration** and the current date for the **Filter Time**.

Storage Precautions

When storing the DUSTTRAK™ monitor for more than 30 days, you should charge and remove the batteries. This prevents damage due to battery leakage.

This instrument must be stored in a location where the temperature remains between -20 and 60°C (-4 and 140°F).

Chapter 5

Troubleshooting

The table below lists the symptoms, possible causes, and recommended solutions for common problems encountered with the DUSTTRAK™ II monitor.

Symptom	Possible Cause	Corrective Action
Erratic zero reading.	Leak.	Check connections for leaks. Replace zero filter.
	Dirty inlet port and/or sample tube.	Clean inlet port. Clean or replace tubing.
	Internal filter(s) not installed properly (leaking).	Inspect internal filter wells to make certain the filters and o-rings are seated properly. Replace internal filters if necessary.
Run Mode Error: The start time has passed	The selected Run Mode program has "Use Start Date" selected, but the start date is prior to the current date.	Correct or change the run mode program
Run Mode Error: The selected log mode will exceed the allowed number of samples	The selected Run Mode program is programmed to save more samples than is room in memory.	Reduce the number of samples by reducing the test length or increasing the logging interval.
Instrument runs slow	Large amount of data in memory	Large data files or many small data files will cause instrument to slow, due to need to read and display large amounts of data.

Symptom	Possible Cause	Corrective Action
No display.	Unit not switched on.	Switch unit on.
	Low or dead batteries.	Recharge the batteries or plug in the AC adapter.
No touch - screen response.	Instrument currently busy	The instrument will take time to open large data files and save configuration information. During this time, the instrument will not respond to additional touchscreen touches.
	Instrument Touchscreen is locked	If the lock in the title bar is red, unlock the instrument following the instructions in the <u>Chapter 3, Operation: Title Bar</u> section of this manual.
Analog output does not work	Cable/connector not correctly installed.	Make sure cable connector is fully seated.
	Output wired with reverse polarity.	Make sure analog out (+) and analog ground (-) are wired correctly to data-logger.
Analog output is not in proportion to display	Analog output range in DUSTTRAK™ monitor may be set incorrectly.	Check analog output setting in the <u>Setup->Analog</u> screen. Make sure the channel of interest is selected. Make sure that the correct output (0-5V, 4-20 mA) is selected.
	Data logger scaling factor may be set incorrectly.	Review the scaling factor set in the <u>Setup-Analog</u> screen.
Alarm output does not work. Alarm does not turn on correctly.	Alarm function not turned on.	Turn the alarm function on in the <u>Settings->Alarm</u> screen.
	Alarm setting incorrect.	Check the alarm settings in the <u>Settings->Alarm</u> screen.
	Alarm output wired with reverse polarity.	Alarm wires are polarized. Voltage input must be wired to alarm input (+).

Symptom	Possible Cause	Corrective Action
Instrument does not store new data	Memory is full. Instrument is in Survey mode.	Delete or transfer historic data. The instrument does not store data in survey mode. Can to manual or program log mode.
Flow Error is indicated on front screen	If sampling from a duct, instrument may have problems overcoming pressure differences. Flow obstruction. Internal pump failing, indicated by inability to adjust flow rate to full range. Filter Cassette clogged or has mass loading.	Attach both the input and the exhaust port into the duct. Remove obstruction if still present. Press any key to bypass. Factory service may be required. Replace the filter cassette. See the maintenance section of the manual.
Laser Error indicated on front screen	Laser background is too high. Laser is failing	Remove and clean inlet nozzle. Pay close attention to the tip of the nozzle that is inserted into the instrument to ensure it is clear of any contamination. Factory service may be required.
Filter Error indicated on front screen.	Filters need to be replaced	Replaced the filters per instructions in the maintenance section of this manual. Make sure to reset the filter mass and date once the filters have been changed.

Appendix A

Specifications

Specifications are subject to change without notice.

Sensor Type	90° light scattering
Range	8530 Desktop 0.001 to 150 mg/m ³ 8531 Desktop HC 0.001 to 400 mg/m ³ 8532 Handheld 0.001 to 150 mg/m ³
Resolution	±0.1% of reading of 0.001 mg/m ³ , whichever is greater
Zero Stability	±0.002 mg/m ³ 24 hours at 10 sec time constant
Particle Size Range	Approximately 0.1 to 10 µm
Flow Rate	3.0 L/min set at factory 1.4 to 3.0 L/min adjustable
Flow Accuracy	±5% factory setpoint Internal flow controlled
Temperature Coefficient	+0.001 mg/m ³ per °C
Operational Temp	0 to 50°C
Storage Temp	-20 to 60°C
Operational Humidity	0-95% RH, non-condensing
Time Constant	Adjustable 1 to 60 seconds
Data Logging	45 days at 1 minute samples
Log Interval	1 second to 1 hour
Physical Size (HWD)	Handheld: 4.9 x 4.75 x 12.45 in. Desktop: 5.3 x 8.5 x 8.8 in.
Weight	Handheld: 2.9 lb, 3.3 lb with battery Desktop: 3.45 lb, 4.45 lb – 1 battery, 5.45 lb – 2 batteries
Communications	8530/31: USB (Host and Device) and Ethernet. Stored data accessible using thumb drive 8532: USB (Host and Device). Stored data accessible using thumb drive.
Power—AC	AC power adapter included. 115 to 240 VAC

Battery	<p>8530/31: Up to 2 Removable Li-Ion External and Internal charging Life, 1 battery: 9 hours typical Life, 2 battery: 18 hours typical</p> <p>8532: 1 Removable Li-Ion External and Internal charging Life: 6 hours typical</p>
Analog out	<p>8530/31: User selectable output 0 to 5 V or 4 to 20 mA User selectable scaling</p>
Alarm Out	<p>8530/31: Relay or sound buzzer Relay No latching MOSFET User selectable set point 5% deadband Connector 4-pin, Mini-DIN connectors</p> <p>8532: Sound buzzer</p>
Screen	<p>8530/31: 5.7" color touchscreen</p> <p>8532: 3.5" color touchscreen</p>
Gravimetric Sampling	8530/31: Removable 37-mm Cartridge
EMI/RF Immunity:	<p>Complies with Emissions Directive Standard: EN50081-1:1992</p> <p>Complies with Immunity Directive Standard: EN50082-1:1992*</p>

*ESD Shock may require instrument reboot

Appendix B

Zero Module

The Zero Module (PN 801690) allows for automatic re-zeroing of the DUSTTRAK™ Instrument during long sampling runs. The Zero Module works only with the 8530 and 8531 desktop models.

The AutoZero module is attached to the main instrument in two steps. The first step is to place the Zero module over the instrument's inlet and press down. The Zero module has an O-ring seal that will engage with the instrument's inlet.

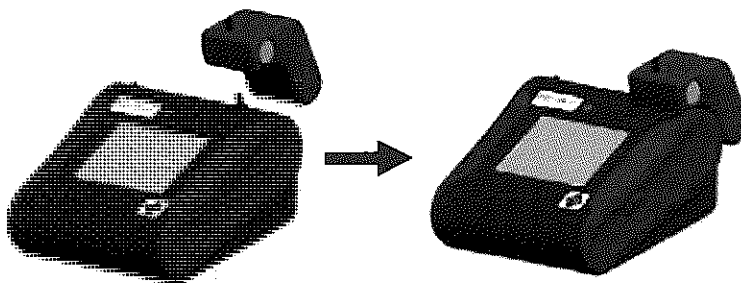


Figure B-1: Place Zero Module Over Inlet and Press Down

The second step is attaching the cable from the Zero module to the Zero module connector located on the back of the instrument.

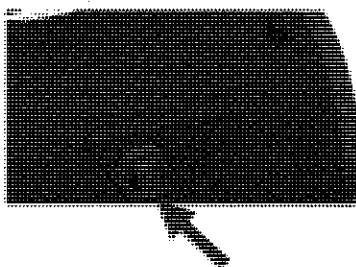


Figure B-2: Zero Module Connector

The Zero Module can only be used in a program log mode. The Zero module function is controlled through these two program mode options:

Auto Zero Interval	Interval between re-zeroing the instrument using the Auto-Zero accessory.
Use Auto Zero	Select Yes to use the Zero Module. Select No to not use the Zero Module.

Important points on Zero Module operation:

- The Zero module will take one (1) minute to take a zero reading. The first 45 seconds of that period is used to clear the chamber of particles. Readings from last 15 second of the period, when the chamber is cleared of particles, will be averaged to determine the Zero offset.
- The log interval, when the Zero module is activated, must be two (2) minutes or greater. Data will not be recorded to the log file when the Zero module is activated.

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APPENDIX C
Community Air Monitoring Plan

**DRAFT
COMMUNITY AIR
MONITORING PLAN**

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**ROBERTO CLEMENTE TOWN PARK
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COMMUNITY AIR MONITORING PLAN

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ATTACHMENTS

Title
A NYSDOH Generic Community Air Monitoring Plan
B Air Monitoring Equipment User Manual

COMMUNITY AIR MONITORING PLAN

ROBERTO CLEMENTE TOWN PARK 400 BROADWAY, BRENTWOOD, NY

1.0 OBJECTIVE

The objective of this Community Air Monitoring Program (CAMP) is to monitor air quality during Site operations, which will be excavation of soils and materials in the areas of the former soccer fields and the recharge basin. These locations are defined as the Site, and they are located at the property known as 400 Broadway in Brentwood, New York. Roberto Clemente Town Park occupies the property. Implementation of the CAMP will be performed by Enviroscience Consultants, Inc.

The excavation will be limited to the Site, which occupies approximately five acres in the westernmost portion of the Park. Therefore, there is a potential for dust generation, which may contain organic compounds, along with metals, that were identified at the Site above the New York State Department of Environmental Conservation (NYSDEC) Residential Soil Cleanup Objectives (SCOs). The dust may become airborne from personnel, equipment, materials, and supplies that are in connection with Site excavation, loading, and decontamination operations.

Organic compounds, along with metals and non-friable asbestos-containing building material (“ACM”), are identified as Contaminants of Concern. This CAMP has been

developed to provide a measure of protection for the community from potential airborne contaminant releases as a result of work activities.

The air monitoring in this CAMP will be performed for particulates less than 10 microns in size (PM-10) at two transient stations at upwind and downwind locations relative to the active work area. If multiple work areas will be employed, one additional downwind transient monitoring locations would be employed per additional active work area. No monitoring for volatile organic compounds (VOCs) will be performed since no VOCs are identified as a Contaminant of Concern.

The monitoring will be performed at one transient upwind location and one transient downwind location relative to the active work area, which will be moved throughout the course of the project in the former soccer fields and recharge basin. Environmental air monitoring and observations of visible emissions during Site activities will be performed according to the methods described in this CAMP.

2.0 AIR MONITORING METHODS

2.1 Air Monitoring Locations

During work at the Site, air monitoring for particulates will consist of two transient stations operating simultaneously to confirm no significant amount of dusts are being generated in the active work area. The particulate monitoring stations will have one downwind location and one upwind location relative to the active work area at the Site. Since both monitoring station locations are transient

based on the wind direction, they will be moved based on the observed wind direction and Site operations.

The wind speed and direction in the Site's vicinity will be recorded based on visual observations, and outdoor temperature will be measured using a thermometer. The wind conditions will be evaluated in the immediate vicinity of the active work area since nearby trees and buildings affect local wind conditions, along with the lower topographic elevation of the recharge basin. All of the monitoring will be performed continuously to collect data and record one-minute and 15-minute averages that may be observed in real-time and uploaded to a laptop computer on a daily basis.

The laptop computer containing the data will be present at the Site, along with a hard copy of the data from previous days. For file security, the data will be uploaded to our company's file server on a daily basis. Weather observation will be performed continuously, and the recordings will note changes in weather conditions.

2.2 Daily Monitoring Guidelines

Air monitoring will be performed continuously during the remediation activities since ground intrusive activities will be performed, along with other activities that have the potential to generate airborne dust at the Site. Therefore, air monitoring will not be limited to periods when ground intrusive activities are being

performed. Particulate monitoring will be performed until the completion of activities at the Site, which is defined by obtaining acceptable soil endpoint samples, as determined by the NYSDEC.

This continuous air monitoring program during Site operations is in compliance with the New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan. A copy of the NYSDOH Generic CAMP is provided in Attachment A. It should be noted that the discussions in the NYSDOH Generic CAMP regarding VOCs are not applicable to this Site since no VOCs are identified as a Contaminant of Concern. Therefore, no monitoring for VOCs will be performed. Additionally, the thresholds and response levels used in this CAMP are 50% lower than the levels presented in the NYSDOH Generic CAMP as an additional measure of community protection.

During non-operational hours, air monitoring will not be performed. However, equipment, materials and supplies that may be stored at the Site will be decontaminated prior to storage, and air monitoring will be performed during decontamination periods, including at end of the workday. No Site remediation operations will be performed without air monitoring. The anticipated operational hours for Site remediation activities are from 7:00 AM to 6:00 PM during regular business days.

Prior to each day, the anticipated daily activities will be identified and evaluated to determine areas of high emission potential. Generally, these will be in the areas of the former soccer fields and the recharge basin. Also, the wind direction will be determined and periodically reviewed, as necessary, throughout the workday by using visual methods. For comparison, the daily weather forecast for Brentwood provided by the National Weather Service will be recorded.

Observations will be recorded by the Environmental Professional responsible for implementing the CAMP by pen in a dedicated logbook with standard entry fields to be completed, along with notes and observations. This logbook will be in addition to the data that will be printed daily from the air monitoring stations. The instrumentation data will also be saved electronically.

Once the areas of high emissions potential and the wind direction have been determined, one transient air monitoring station will be placed upwind and one transient air monitoring station will be placed downwind. Immediately prior to Site activities, the real-time monitoring for particulates will be initiated. Site work will not be performed until all air monitoring locations are operational. In the event of a malfunction, Site work may be performed as long as there is one fully operational particulate monitor for the downwind station, providing that there is no exceedance of the lower particulate threshold.

Once Site actions begin, the work areas will be visually evaluated for dust emissions and dust suppression and decontamination methods that will be applied by the contractor. Throughout the day, the work activities and wind direction may change. Therefore, the locations of the air monitoring stations will be relocated after change of a 15-minute duration is noted in the wind direction or the location of Site activities. As a precautionary measure and due to the sensitive nature of the project, the air monitoring stations will be located no more than 100 feet away from the highest potential emissions source.

2.3 Air Sampling Equipment and Calibration

Air monitoring will be performed using real-time instrumentation for the evaluation of particulates. As discussed in Section 2.1 of this CAMP, the air monitoring network will have two transient stations operating simultaneously. One air monitoring station will be located downwind of the active work area or other emissions source and one exterior air monitoring station will be located upwind of the active work area or other emissions source.

The anticipated air monitoring equipment for particulates is the TSI DustTrak II 8530 Desktop Aerosol Particulate Monitor or similar. This instrument provides real-time data. A copy of the user manual is provided in Attachment B.

As previously discussed, all air monitoring locations will have a real-time measuring instrument for particulate monitoring. The data collected for

particulate monitoring will include one-minute running averages to evaluate immediate emission conditions and 15-minute running averages for comparisons to the lower particulate threshold.

Data for particulate monitoring will be available at the monitoring locations, and the data will be uploaded to computer on a daily basis where it will be saved electronically. Hard-copy printouts of previous days' data will be available on-Site, as well.

Audible alarms will be programmed for all instrumentation used for implementation of this CAMP when minimum thresholds for particulates are obtained. The particulate thresholds and response actions are discussed in Section 3.1 of this CAMP. Monitoring both the one-minute and 15-minute averages allows for the anticipation and quick response to immediately implement or immediately decrease airborne dust generation to minimize the likelihood for a 15-minute average exceedance of the lower dust threshold.

To ensure quality measurements from the air monitoring instrumentation, a calibration schedule will be maintained in accordance with the manufacturer's recommendations for the TSI DustTrak II 8530 Desktop Aerosol Particulate Monitor or the equipment that is used. A summary of the calibration schedule is provided in Table 2.3.1.

TABLE 2.3.1

CAMP AIR MONITORING EQUIPMENT CALIBRATION SCHEDULES

Sampling Equipment	Manufacturer's Recommended Calibration Schedule
TSI DustTrak II 8530	<p><u>Factory service:</u> once per year</p> <p><u>General Calibration (zero air):</u> at least once per field day</p> <p><u>Internal filter replacement:</u> once per 700 hours at 1,000 ug/m³</p> <p><u>Clean nozzle:</u> once per 350 hours at 1,000 ug/m³</p> <p><u>Check flow rate:</u> once per month</p> <p><u>Sampling pump:</u> factory calibration and cleaning once per two years</p>

3.0 AIR MONITORING DATA EVALUATION

3.1 Air Quality Threshold Levels and Responses

Particulate (PM-10) concentrations will be compared to thresholds, and response actions will be in compliance with the NYSDOH Generic CAMP. The initial threshold for particulate/dust action for this project is 50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), which is lower than the initial 100 $\mu\text{g}/\text{m}^3$ threshold in the NYSDOH Generic CAMP.

If the downwind level exceeds $50 \mu\text{g}/\text{m}^3$ above the upwind level for a 15-minute average or visible dust is observed leaving the active work area, then work shall be stopped and additional dust suppression techniques beyond those already employed by the Contractor will be required. Once the additional dust suppression techniques are employed by the contractor, additional work may be performed providing that the additional Site does not exceed $50 \mu\text{g}/\text{m}^3$ above the upwind levels and no visible dust is leaving the active work area.

If dust suppression methods are not effective in reducing the particulate concentrations to a level below $50 \mu\text{g}/\text{m}^3$, work will be stopped and Site operations will be re-evaluated. Once the work has been re-evaluated and corrective action is imposed, Site work may resume providing that airborne particulate concentrations are less than $50 \mu\text{g}/\text{m}^3$ due to dust suppression methods or operational changes.

All daily written logs and one-minute and 15-minute averages will be electronically logged and available for review by New York State Department of Environmental Conservation (NYSDEC) and NYSDOH personnel.

3.2 Notification

The NYSDEC will be promptly notified prior to any modifications of this CAMP and of corrective action required for compliance with the CAMP.

3.3 Quality Assurance

All data from the air monitoring stations will be uploaded to a computer on a daily basis. Electronic files will be maintained at the Site on a laptop computer and stored on a secure server. A copy of the logbook will be maintained in the project's hard-copy file on a daily basis. Logbook records will include notes and observations for the Site's activities, including recordings of data if electronic recording instrumentation malfunctions. If there is a need for equipment, supplies or materials, including rental instrumentation, a full-time Environmental Professional will be on-Site to implement CAMP operations and ensure compliance with the CAMP. Presently, it is anticipated that Ms. Julie Moriarity from Enviroscience will be responsible for implementing the CAMP.

To ensure quality information is obtained from the field instruments, a calibration schedule will be maintained according to the manufacturer's recommendations. General calibrations will be performed in the field by the Environmental Professional responsible for implementing the CAMP, and documentation of other calibrations will be verified and maintained with the file.

-

ATTACHMENT A
NYSDOH GENERIC COMMUNITY AIR
MONITORING PLAN

Appendix 1A

New York State Department of Health Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical- specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.
3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.
4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ mcg}/\text{m}^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

ATTACHMENT B
AIR MONITORING EQUIPMENT
USER MANUAL

HEALTH AND SAFETY

Exposure Monitoring

Model 8530/8531/8532 DUSTTRAK™ II Aerosol Monitor

Operation and Service Manual

P/N 6001893, Revision C
May 2009



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- b. Parts repaired or replaced as a result of repair services are warranted to be free from defects in workmanship and material, under normal use, for 90 days from the date of shipment.
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TO THE EXTENT PERMITTED BY LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE LIMIT OF SELLER'S LIABILITY FOR ANY AND ALL LOSSES, INJURIES, OR DAMAGES CONCERNING THE GOODS (INCLUDING CLAIMS BASED ON CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) SHALL BE THE RETURN OF GOODS TO SELLER AND THE REFUND OF THE PURCHASE PRICE, OR, AT THE OPTION OF SELLER, THE REPAIR OR REPLACEMENT OF THE GOODS. IN NO EVENT SHALL SELLER BE LIABLE FOR ANY SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES. SELLER SHALL NOT BE RESPONSIBLE FOR INSTALLATION, DISMANTLING OR REINSTALLATION COSTS OR CHARGES. No Action, regardless of form, may be brought against Seller more than 12 months after a cause of action has accrued. The goods returned under warranty to Seller's factory shall be at Buyer's risk of loss, and will be returned, if at all, at Seller's risk of loss.

Buyer and all users are deemed to have accepted this LIMITATION OF WARRANTY AND LIABILITY, which contains the complete and exclusive limited warranty of Seller. This LIMITATION OF WARRANTY AND LIABILITY may not be amended, modified or its terms waived, except by writing signed by an Officer of Seller.

Service Policy

Knowing that inoperative or defective instruments are as detrimental to TSI as they are to our customers, our service policy is designed to give prompt attention to any problems. If any malfunction is discovered, please contact your nearest sales office or representative, or call TSI at (800) 874-2811 (USA) or (001 651) 490-2811 (International).

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These Application Notes can also be found under TSI's web site:

<http://www.tsi.com>

[*EXPMN-001 DustTrak II Theory of Operation.pdf*](#)

[*EXPMN-003 DustTrak II Impactor.pdf*](#)

Safety Information

IMPORTANT

There are no user serviceable parts inside the instrument. Refer all repair and maintenance to a qualified factory-authorized technician. All maintenance and repair information in this manual is included for use by a qualified factory-authorized technician.

Laser Safety

- The Model 8530/8531/8532 DUSTTRAK™ II is a Class I laser-based instrument.
- During normal operation, you will **not** be exposed to laser radiation.
- Precaution should be taken to avoid exposure to hazardous radiation in the form of intense, focused, visible light.
- Exposure to this light may cause blindness.

Take these precautions:

- **DO NOT** remove any parts from the DUSTTRAK™ II monitor unless you are specifically told to do so in this manual
- **DO NOT** remove the housing or covers. There are no serviceable components inside the housing.



WARNING

The use of controls, adjustments, or procedures other than those specified in this manual may result in exposure to hazardous optical radiation.






WARNING

There are no user-serviceable parts inside this instrument. The instrument should only be opened by TSI or a TSI approved service technician.

When operated according to the manufacturer's instruction, this device is a Class I laser product as defined by U.S. Department of Health and Human Services standards under the Radiation Control for Health and Safety Act of 1968. A certification and identification label like the one shown below is affixed to each instrument.

Labels

Advisory labels and identification labels are attached to the instrument.

1. Serial Number Label (bottom)	<p>DUSTTRAK™ II - Model 8530</p> <p>SN 8533060401</p>  <p>THIS LASER PRODUCT CONFORMS TO THE REQUIREMENTS OF THE FEDERAL COMMUNICATIONS COMMISSION (FCC) PART 15.247, CLASS B, DIGITAL DEVICE, AND THE CANADIAN RADIO INTERFERENCE ACT (C.R.I.A.) PART 247, CLASS B, DIGITAL DEVICE.</p> <p>TECHNICAL 1300 Campbell Road Bloomington, MN 55425 U.S.A. www.honeywell.com</p> 
2. Laser Radiation Label (internal)	<p>DANGER!</p> <p>VISIBLE LASER RADIATION WHEN OPEN. AVOID DIRECT EXPOSURE TO BEAM</p> <p>WARNING: NO USER SERVICABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL</p>
3. European symbol for non-disposable item. Item must be recycled.	

Description of Caution/Warning Symbols

Appropriate caution/warning statements are used throughout the manual and on the instrument that require you to take cautionary measures when working with the instrument.

Caution



Caution
Failure to follow the procedures prescribed in this manual might result in irreparable equipment damage. Important information about the operation and maintenance of this instrument is included in this manual.




Warning



WARNING
Warning means that unsafe use of the instrument could result in serious injury to you or cause damage to the instrument. Follow the procedures prescribed.

Caution and Warning Symbols

The following symbols may accompany cautions and warnings to indicate the nature and consequences of hazards:

	Warns that the instrument contains a laser and that important information about its safe operation and maintenance is included in the manual.
	Warns that the instrument is susceptible to electro-static discharge (ESD) and ESD protection should be followed to avoid damage.
	Indicates the connector is connected to earth ground and cabinet ground.

Reusing and Recycling



As part of TSI Incorporated's effort to have a minimal negative impact on the communities in which its products are manufactured and used:

- ☐ Do **not** dispose of used batteries in the trash. Follow local environmental requirements for battery recycling.
- ☐ If instrument becomes obsolete, return to TSI for disassembly and recycling.



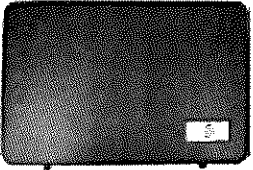
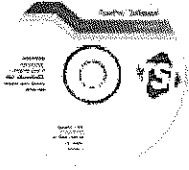
Chapter 1

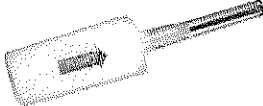

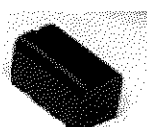



Unpacking and Parts Identification

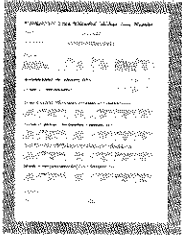
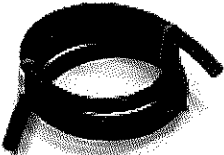


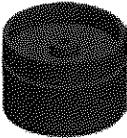


Carefully unpack the Model 8530/8531/8532 DUSTTRAK™ II Aerosol Monitor from the shipping container. Use the tables and illustrations below to make certain that there are no missing components. Contact TSI immediately if anything is missing or damaged.

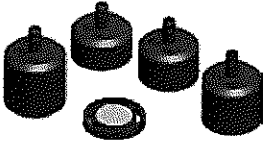
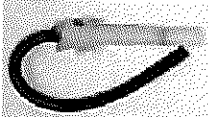



Unpacking the DUSTTRAK™ II Aerosol Monitor



Compare all the components you received with those listed in the table below. If any parts are missing, contact TSI.

Item	Qty	Part Number	Description
 or 	1	8530 8531 8532	Desktop II Desktop II HC Handheld II
	1	801670 801669	Desktop II Carrying Case Handheld II Carrying Case
	1	1090014	Data Analysis Software CD- ROM

Item	Qty	Part Number	Description
	1	800663	Zero Filter
 or 	1	801680 801681	6600 mAh Lithium Ion Rechargeable Battery (Desktop) Rechargeable lithium ion battery (Handheld)
	1	1303740	USB cable
	1	801652	Analog/alarm output cable (Desktop models only)
	1		Operation and Service Manual

Item	Qty	Part Number	Description
	1		Calibration Certificate
	1	801688	Conductive Tubing
	1	801668	Filter removal tool (Spanner Driver)
  	4 2 1	801673	Spare Internal Filter Elements Desktop Model Only 37-mm filter includes: Filter body top Filter body bottom Mesh screen Comes with 37-mm cartridge opening tool
	8	801666	Spare Internal Filters Handheld Model Only

Item	Qty	Part Number	Description
	1	801667	Impactor Kit PM _{2.5} assembled Top Bottom Impaction Plate PM _{1.0} Top PM _{4.0} Top PM ₁₀ Top Extra Impaction Plate
	1	801691	Dorr-Oliver Cyclone
	1	801692	Power Supply – Desktop
		801694	Power Supply – Handheld
	2		Stylus When shipped, one stylus will be in the accessory bag, the second stylus attached to instrument.
	1	3012094	Screwdriver, dual ended. (For Handheld Models only)

Item	Qty	Part Number	Description
	1	801674	Impactor Oil
	2	801698	Inlet cap When shipped, one inlet will be in the accessory bag, the second inlet attached to instrument.

Parts Identification for the DUSTTRAK™ II Desktop Aerosol Monitor Models 8530/8531

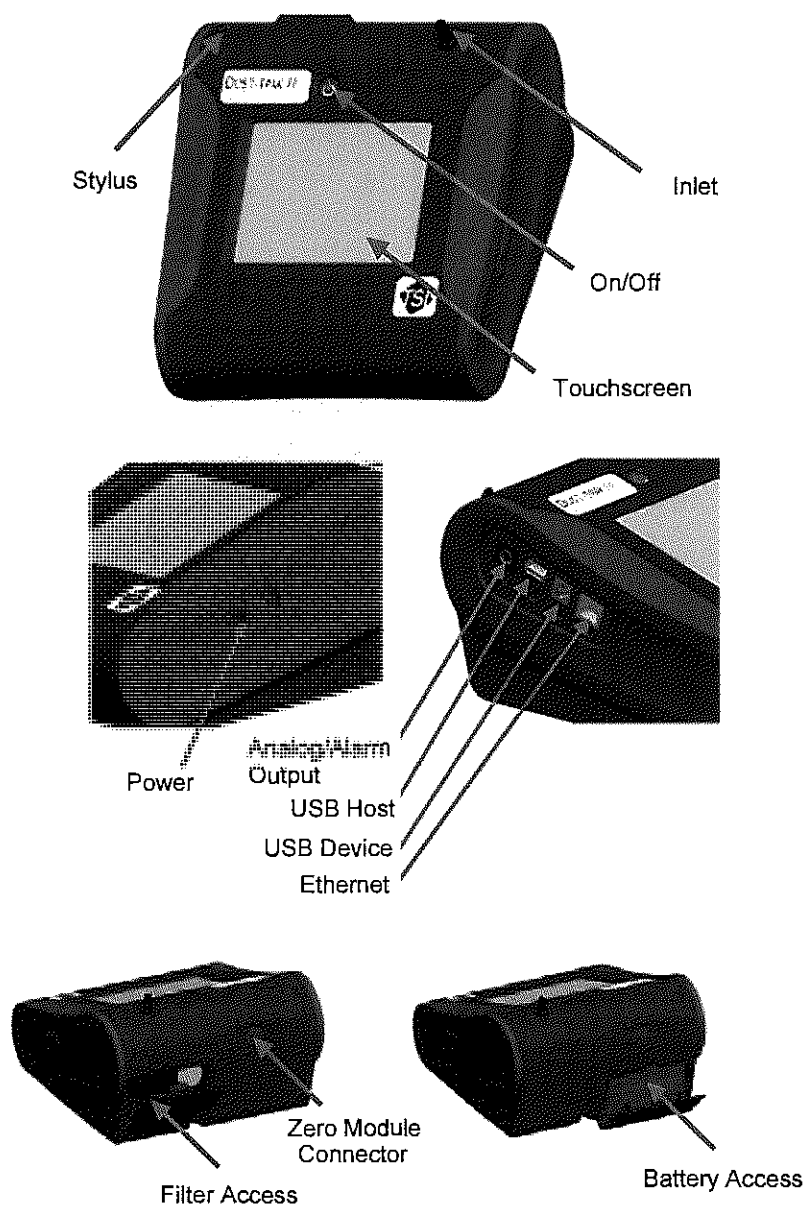


Figure 1-1: Features on Desktop Model

Parts Identification for the DUSTTRAK™ II Handheld Aerosol Monitor Model 8532

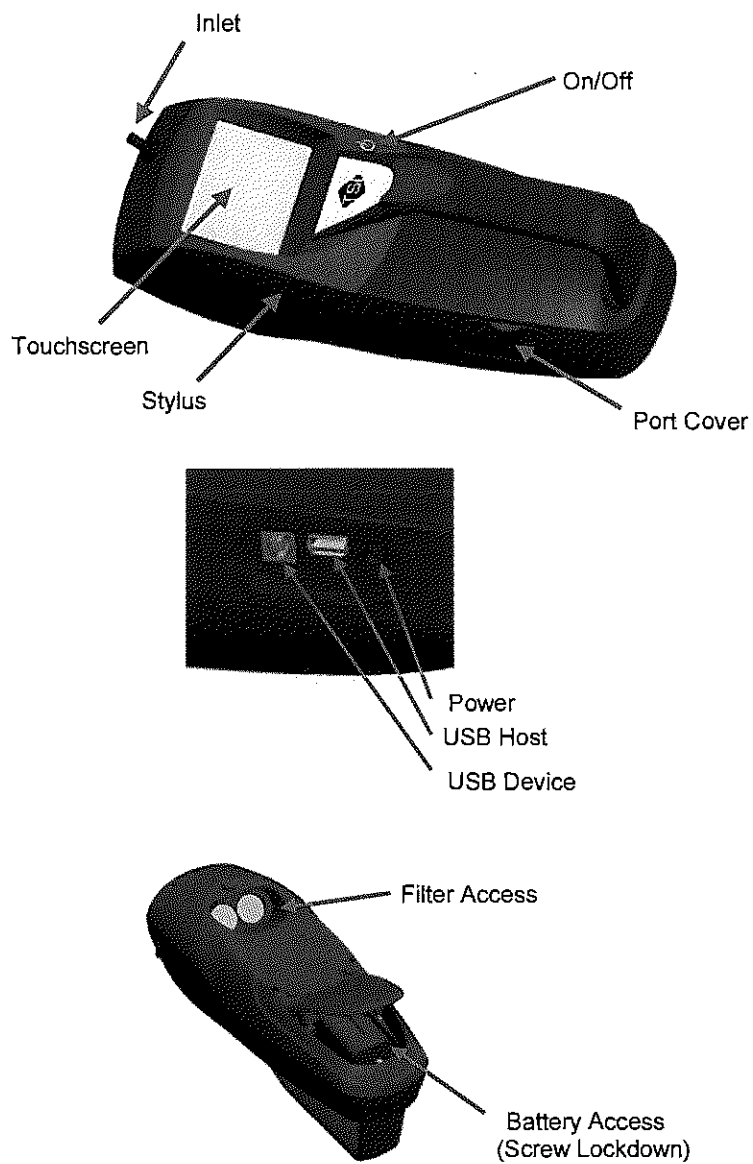


Figure 1-2: Features on Handheld Model

Chapter 2

Setting Up

Supplying Power to the DUSTTRAK™ II Aerosol Monitor

The DUSTTRAK™ II Aerosol Monitor must be powered by either batteries or use of the external AC adapter.



WARNING

The instrument has been design to be used with batteries supplied by TSI. Do *not* use a substitute.



WARNING

Do *not* use non-rechargeable batteries in this instrument. Fire, explosions, or other hazards may result.

Installing the Batteries in Model 8530/8531 Desktop

Remove the battery cover and slide one or two batteries into the battery slots. A single battery can be put into either slot. Orient the batteries with the label side facing up (see figure 2-1).

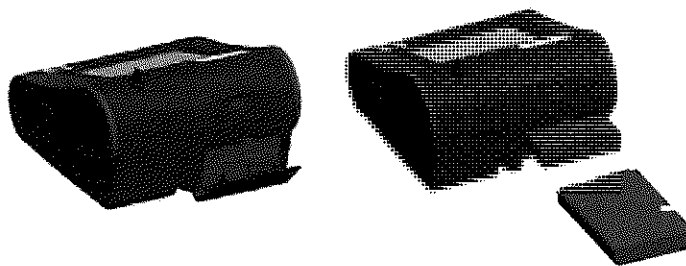


Figure 2-1: Batteries into Desktop Unit

Installing the Batteries in Model 8532 Handheld

Remove the battery cover by loosening captured screw on the bottom of the unit. Orient battery with brass connectors facing forward. Insert battery into cavity and slide forward to engage into pins. Replace the battery cover and secure by tightening screw (see figure 2-2).

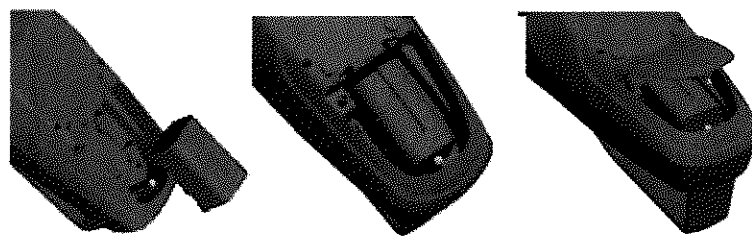


Figure 2–2: Batteries into Handheld Unit

Using the AC Adapter to Run Instrument

The AC adapter allows you to power the DUSTTRAK™ monitor from an AC wall outlet. When using the AC adapter, the batteries (if installed) will be bypassed.

Battery Charging

This instrument will charge the Lithium Ion battery packs. Insert the batteries into the battery compartment, plug the instrument into AC power, and turn the instrument on. Batteries will charge only when the instrument is on and in stand-by mode. Batteries will not be charged if the instrument is turned off or is actively taken measurements. Charging will stop when the batteries have been fully charged.

Inlet Cap

When using the DUSTTRAK™ monitor to sample environmental air, the inlet cap should be put over the instrument. This cap will keep large objects from dropping into and plugging the inlet. The cap will also keep direct light from shining into the chamber and skewing the results.

The inlet cap can simply be pressed onto the instruments inlet.

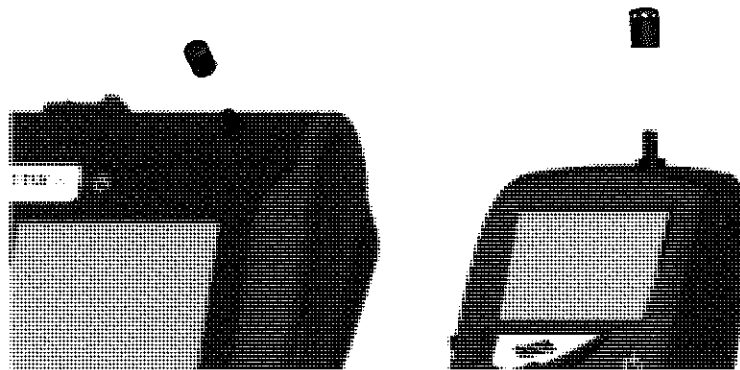


Figure 2-3: Putting on Inlet Cap

Size-Selective Impactors

Size-selective impactors can be attached to the inlet of the DUSTTRAK™ II instruments. Size-selective impactors can be used to pre-condition the size range of the particles entering the instrument. PM₁, PM_{2.5}, PM₄ (Respirable) and PM₁₀ impactors are available. **The instrument must run at the factory default setting of 3.0 L/min for the impactors to achieve the correct cut points.**

The size-selective impactor is composed of three parts; the cap, impaction plate and bottom. Selection of the cap will determine cut size of the impactor. Each cap is labeled with the particle cut size (1 µm, 2.5 µm, 4.0 µm or 10 µm). The same impaction plate and bottom are used on all impactor sizes.

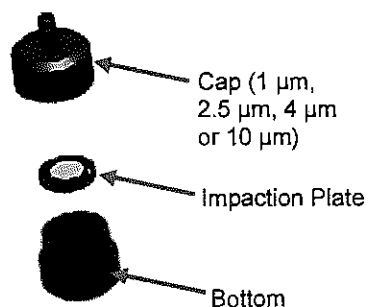


Figure 2-4: Size-Selective Impactor

The impactor assembly is attached to the instrument in place of the inlet cap. The inlet cap does not need to be used if an impactor is being used. See [Chapter 4, "Maintenance,"](#) for instructions on how to add oil to the impaction plate.

Dorr-Oliver Cyclone

A Dorrr-Oliver cyclone is shipped with the instrument. The Dorrr-Oliver cyclone removes particles over 4.0 μm in size. The Dorrr-Oliver cyclone is attached to the instrument by sliding the cyclone clip over the protruding catch. The tube from the Dorrr-Oliver cyclone needs to be routed to the inlet of the instrument.

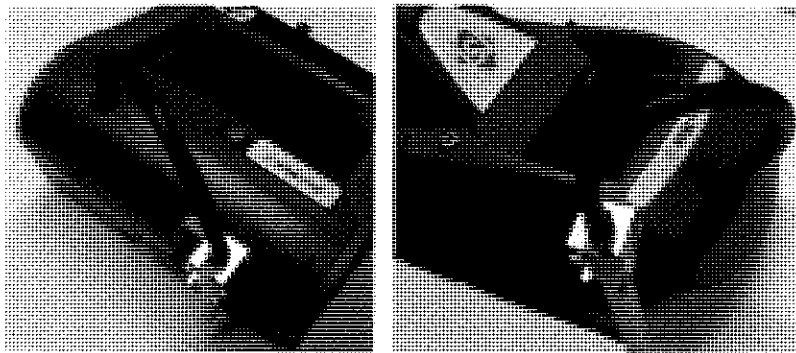


Figure 2-5: Installing Dorrr-Oliver Cyclone

Inlet attachments (impactors or inlet cap) should *not* be used when using the Dorrr-Oliver Cyclone. **The instrument flow rate must be changed to 1.7 L/min when using the Dorrr-Oliver Cyclone in order to achieve a 4 μm (respirable) cut-point.** See the [Flow Cal](#) instructions in the Operations chapter for instructions on how to change the instruments flow rate.

Instrument Setup

The DUSTTRAK™ II monitor can be connected to a computer to download data and upload sampling programs.

Connecting to the Computer

Connect the USB host port of a Microsoft Windows®-based computer to the USB device port on the side of the DUSTTRAK™ monitor.

*Windows is a registered trademark of Microsoft Corporation.

Installing TRAKPRO™ Data Analysis Software

TRAKPRO™ software can preprogram the DUSTTRAK™ monitor, download data, view and create raw data and statistical reports, create graphs, and combine graphs with data from other TSI instruments that use TRAKPRO™ software. The following sections describe how to install the software and set up the computer.

Note
To use TRAKPRO™ software with the DUSTTRAK™ Aerosol Monitor, the PC must be running Microsoft Windows® and the computer must have an available Universal Serial Bus (USB) port.

1. Insert the TRAKPRO™ Data Analysis Software CD into the CD-ROM drive. The install screen starts automatically.

Note
If the software does not start automatically after a few minutes, manually run the program listed on the label of the CD using the Run command on the Windows Start Menu.

2. Follow the directions to install TRAKPRO™ software.

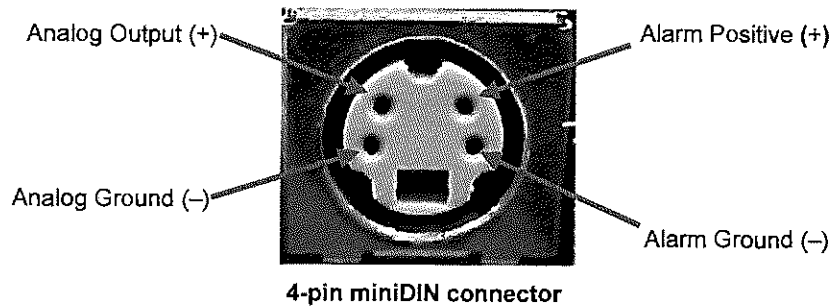
TRAKPRO™ software contains a comprehensive installation guide. It is recommended to print out this prior to starting the TRAKPRO™ software installation on your computer, so it may be consulted during the installation. The TRAKPRO™ Software manual is located in the "Help" file in TRAKPRO™ software. There is no separately printed TRAKPRO Data Analysis software manual.

*Microsoft and Windows are registered trademarks of Microsoft Corporation.

Connecting Analog/Alarm Output

The Analog/Alarm Output Cable plugs into the alarm connection on the side of the instrument. This feature is on the desktop models (8530/8531) only.

The cable contains a 4-pin, mini-DIN connector. The pin-outs for the connector and the wiring for the cable are shown below.



Cable Wiring Diagram	
Brown Wire	Analog Ground
Orange Wire	Analog Out
Red Wire	Alarm (+)
White Wire	Alarm (-)
Black Wire	Shield

Figure 2-6: Cable Wiring Diagram

Wiring the Analog Output

System specifications:

- Output voltage: 0 to 5 VDC.
- Output impedance: 0.01 ohm.
- Maximum output current: 15 mA.
- Correct polarity must be observed (see pin-outs above).

The output cable supplied by TSI (part no. 801652) is labeled with the pin-out wiring diagram. Additional equipment may be needed for making connections to the system that TSI does not supply. It is the user's responsibility to specify and supply all additional equipment.

Wiring the Alarm

System specifications:

- Maximum voltage: 15 VDC (**DO NOT USE AC POWER**)
- Maximum current: 1 Amp
- Correct polarity must be observed (see pin-outs above)
- The alarm switch, located inside the DUSTTRAK™ monitor must be located on the ground side of the alarm system.



WARNING

The DUSTTRAK™ monitor Alarm Output function should *not* be used to detect hazardous conditions or to provide an alarm for protecting human life, health or safety.



Caution

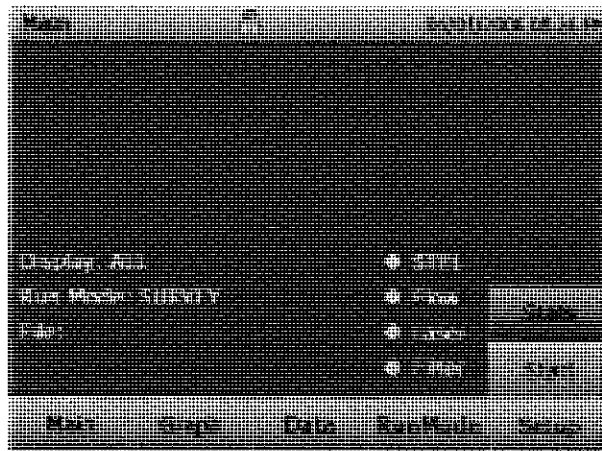
The alarm switch must *not* be wired to AC power! Failure to properly install the user alarm could damage the DUSTTRAK™ instrument and/or void the instrument warranty! Please read and follow all instructions before wiring or operating the user alarm.

Chapter 3

Operation

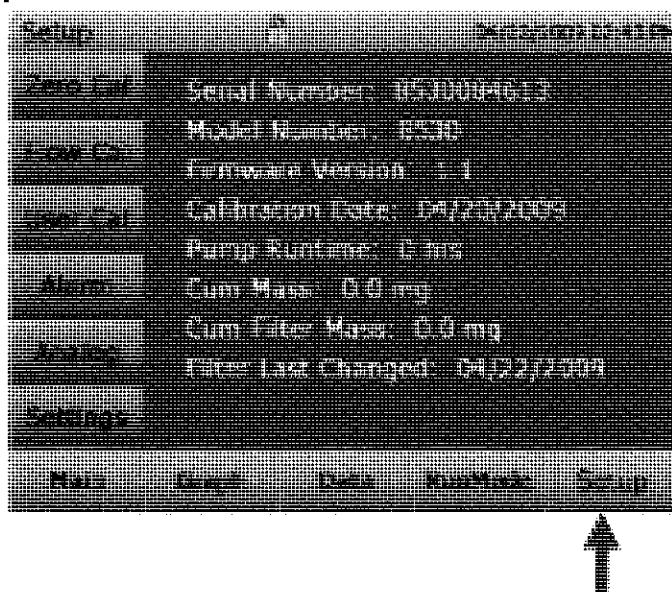
Getting Started

The **START UP** screen is displayed initially when the instrument is turned on, following the initial TSI logo splash screen.



Using a stylus or finger tip, touch the “buttons” on the screen to activate different menus.

Setup Menu

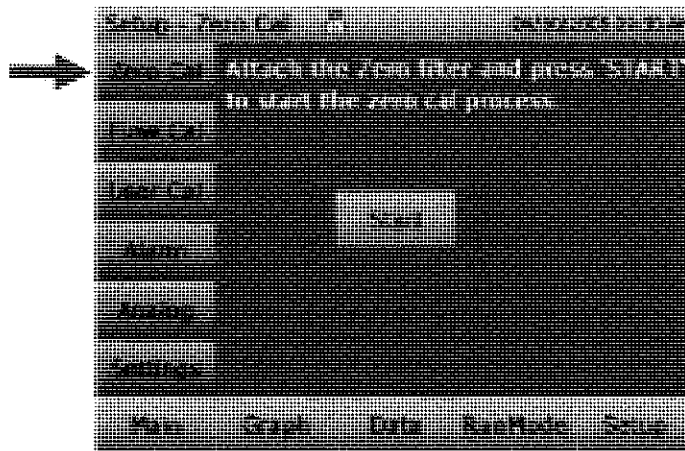


Pressing **Setup** activates the Setup Menu touchscreen buttons along the left edge of the screen. Setup cannot be accessed when the instrument is sampling.

The main screen of the **Setup** screen displays the following information:

Serial Number	The instruments serial number.
Model Number	The instruments model number.
Firmware Version	Instruments current version of firmware.
Calibration Date	Date of the last factory calibration.
Pump Run Time	Pump running time in hours.
Cum Mass Conc	Amount of mass run through instrument over life.
Cum Filter Conc	Amount of mass run through instrument since last filter change.
Filter Time	Date of last filter change.

Zero Cal



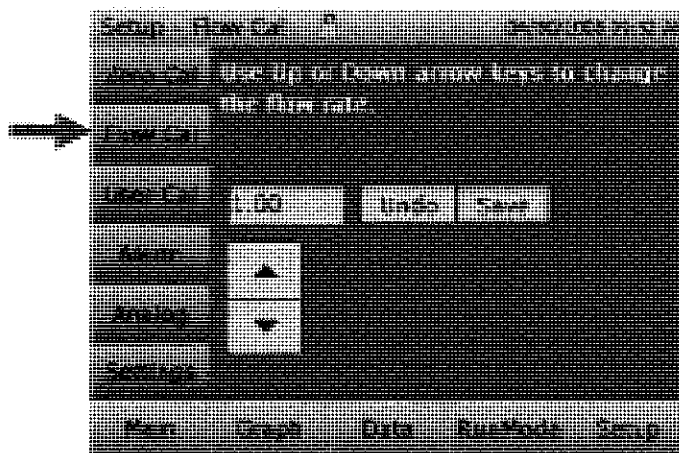
Zero Cal should be run the first time the instrument is used and should be repeated prior to every use. Zero Cal requires that the zero filter be attached prior to running.

Never perform a zero cal without attaching a zero filter.

1. Press **Zero Cal** Button
2. Attach Zero Filter
3. Press the **Start** button to start Zeroing process.
4. A count-down clock will appear indicating the time remaining. The screen will indicate "Zero Cal Complete" when done.

Remove filter after zeroing has been completed. The instrument is now zero calibrated and ready for use.

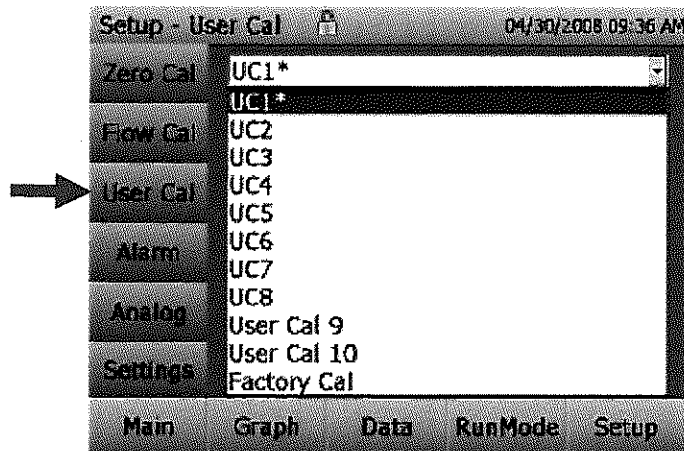
Flow Cal



Flow Cal is run if the user wants to change the flow set point. The flow set point is factory set to 3 L/min total flow. 2 L/min of the total flow is measured aerosol flow. 1 L/min of total flow is split off, filtered and used for sheath flow. There is an internal ΔP flowmeter in the DUSTTRAK™ II instrument that controls flow rate to $\pm 5\%$ if factory setpoint. It is recommended to check the flows with an external flow reference meter, especially when collecting data. The pump will automatically start when entering the Flow Cal screen.

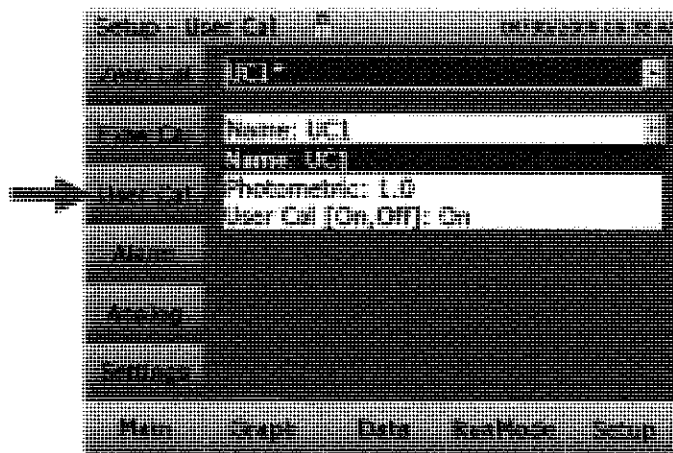
1. Attach a flow calibrator (reference flow meter) to inlet port. You may use a bubble buret, mass flow meter, dry piston or rotameter as flow measurement devices.
2. Move the arrows up or down to achieve desired flow on the reference flowmeter. Each up or down arrow will change the flow about 1%. Allow time between button presses to let pump change to the new flow rate.
3. Select save once the desired flow rate is achieved. Select **Undo** to return to the factory set point.

User Cal



User Cal allows the user to store and use 10 different calibration factors. The currently active user calibration is highlighted with an asterisk “*”.

Four variables can be set for each user calibration.



Name	User can rename calibration to a description name.
Photometric	Changes the factory calibration of particle signal, based on Arizona Road Dust, to actual aerosol being measured. See below for sets to set this calibration.

Size Corr	Changes the factory calibration of the particle distribution, based on Arizona Road Dust, to actual aerosol being measured. See below for sets to set this calibration.
User Cal [on,off]	Selecting On will activate current user calibration and deactivate the previously selected user calibration.

Photometric Calibration Factor

In most situations, the DUSTTRAK™ monitor with its built-in data logging capability can provide very good information on how the concentration of an aerosol changes for different processes over time. Factory calibration to the respirable fraction of standard ISO 12103-1, A1 test dust is fairly representative of a wide variety of ambient aerosols. Because optical mass measurements are dependent upon particle size and material properties, there may be times in which a custom calibration would improve your accuracy for a specific aerosol.

Determining a aerosol specific photometric calibration requires that you determine a true mass concentration (e.g., gravimetric analysis) for the aerosol you want to measure. The true mass concentration is used to calculate the custom calibration factor for that aerosol. Once you have a custom calibration factor, you can reuse it each time you make measurements in the same aerosol environment.

Determining the Calibration Factor for a Specific Aerosol

The DUSTTRAK™ II monitor is factory calibrated to the respirable fraction of standard ISO 12103-1, A1 test dust. The DUSTTRAK™ monitor can be easily calibrated to any arbitrary aerosol by adjusting the custom calibration factor. The DUSTTRAK™ monitor's custom calibration factor is assigned the value of 1.00 for the factory calibration to standard ISO test dust. This procedure describes how to determine the calibration factor for a specific aerosol. Using the value of 1.00 will always revert back to the factory calibration.

To determine a new calibration factor you need some way of accurately measuring the concentration of aerosol, hereafter referred to as the reference instrument. A gravimetric analysis is often the best choice, though it is limited to nonvolatile aerosols. The internal 37 mm filter cartridge, in the desktop units, can be used to collect the reference gravimetric reference sample.

To make an accurate calibration you must simultaneously measure the aerosol concentration with the DUSTTRAK™ monitor and your reference instrument.

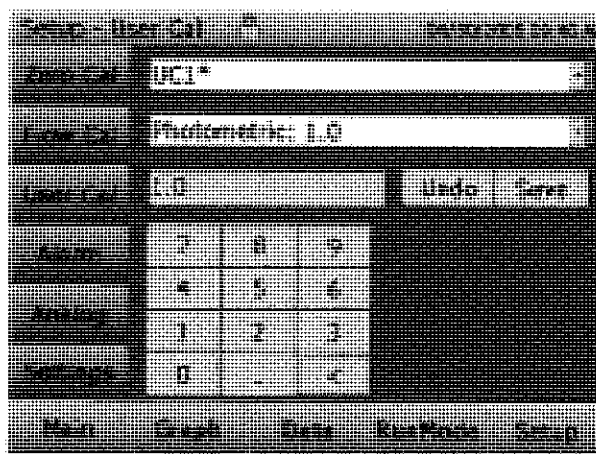
1. Zero the DUSTTRAK™ II monitor.
2. Put the instrument in Manual Log (Manual Logging is reviewed later in this section).
3. Set the logging interval. One minute (i.e., “01:00”) is often a good choice.
4. Co-locate the DUSTTRAK™ II monitor and the reference sampler together so that they are measuring from the same area. The 37mm filter cartridge in the desktop unit can be used to collect the particles to be weighed for the gravimetric reference.
5. Start sampling aerosol with both instruments at the same time.

Note
Greater accuracy will be obtained with longer samples. The time you permit for sampling often depends on the reference instrument and characteristics of the measured aerosol. It may take some time to collect sufficient aerosol onto a filter cassette for accurate gravimetric analysis. Refer to instructions of your reference instrument for sampling times.

6. Stop sampling with both instruments at the same time.
7. Record the DUSTTRAK™ monitor average concentration. This can be done by viewing the sample average in the Data screen. (Data Screen is reviewed later in this chapter)
8. Determine the mass concentration in mg/m³ from your reference instrument. For gravimetric sampling this means having the gravimetric sample weighed.
9. Compute the new calibration constant, NewCal, using the following formula:

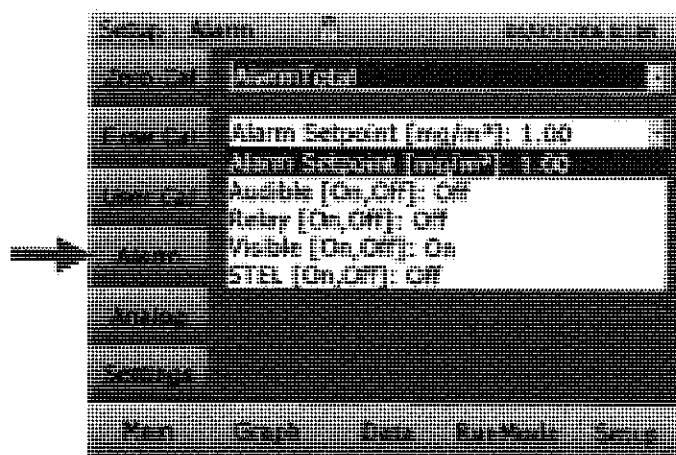
$$\text{NewCal} = \left(\frac{\text{Reference Concentration}}{\text{DustTrak Concentration}} \right) \cdot \text{CurrentCal}$$

10. Select **Photometric** from the User Cal drop down selection and enter the NewCal factor using the onscreen controls.




Alarm

Alarm allows the user to set an alarm level that will be triggered if the instrument's reading goes above the setpoint.




Alarm Setpoint [mg/m³]	<p>The alarm setpoint is the mass concentration level upon which the alarm is triggered.</p> <p>Alarm will be triggered if the mass concentration, taken at the logging interval, rises above the setpoint.</p>
Audible [On, Off]	<p>When the audible alarm is turned on, the instrument will activate internal beeper when Alarm level is reached or surpassed.</p>

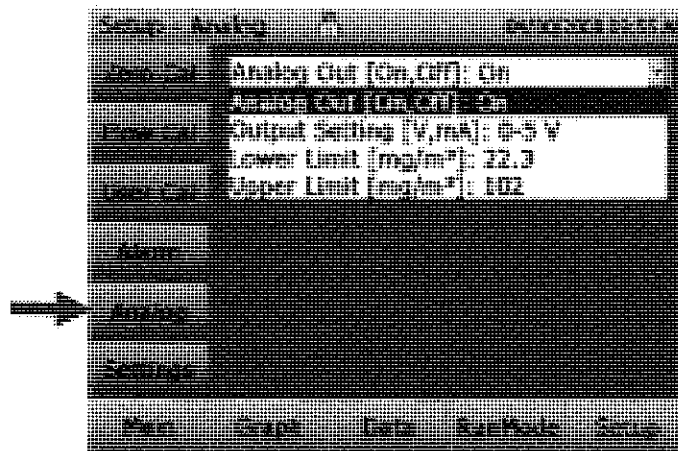
Relay [On, Off]	When the relay alarm is turned on, unit will close relay switch when Alarm level is reached or surpassed.
Visible [On, Off]	When the visible alarm is turned on, unit will show the alarm icon  in title bar when Alarm level is reached or surpassed.
STEL [On, Off]	<p>When the STEL alarm is turned on, STEL data will be collected when alarm level is reached or surpassed.</p> <p>STEL selection is available on the 8530 and 8531 desktop models only.</p> <p>See STEL Note below.</p>

STEL Alarm

STEL stands for Short Term Exposure Limit. When a STEL alarm is selected, the instrument will inspect the data on a second by second basis, independent from the selected logging interval. If the mass exceeds the STEL limit, then a STEL even will be triggered and the following actions will be taken.

STEL indicator	<p>The STEL indicator</p>  <p>will show Red on the main screen.</p>
Data	<p>Data will be taken a 1 minute logging interval for 15 minutes.</p> <p>This data will be stored in a separate file named STEL_XXX, where XXX will be matched to the logged data file.</p> <p>The instrument will also continue to log the mass concentration data at the logging interval selected.</p>
STEL Alarm repeat	If the instrument remains over the STEL limit after the 15 minute interval, or if the instrument exceeds the STEL limit later during the sample period, additional STEL files will be generated.

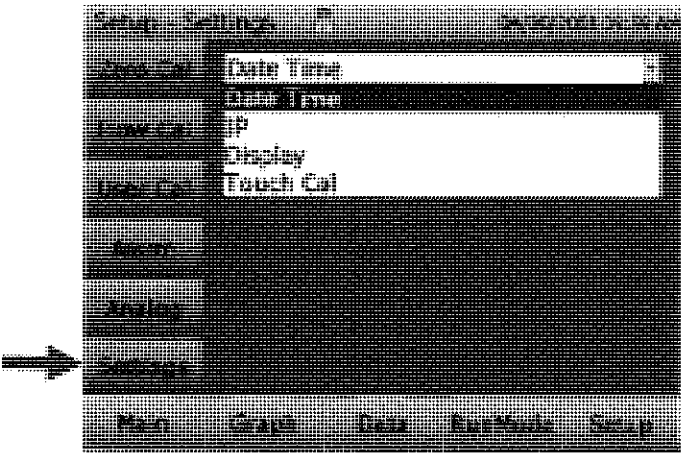
Analog



Analog setup screen sets the parameters that will drive the analog out port. Applies to the 8530/8531 Desktop models only.

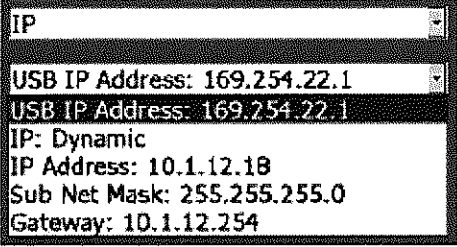


Analog out [On, Off]	Turns analog out port on.
Size Fraction	Selects the size channel that will drive the analog out.
Output Setting [V, mA]	Select between 0–5 V and 4–20 mA.
Lower Limit [mg/m ³]	Mass concentration reading of the selected channel that will correspond to 0 V or 4 mA.
Upper Limit [mg/m ³]	Mass concentration reading of the selected channel that will correspond to 5 V or 20 mA.

Settings



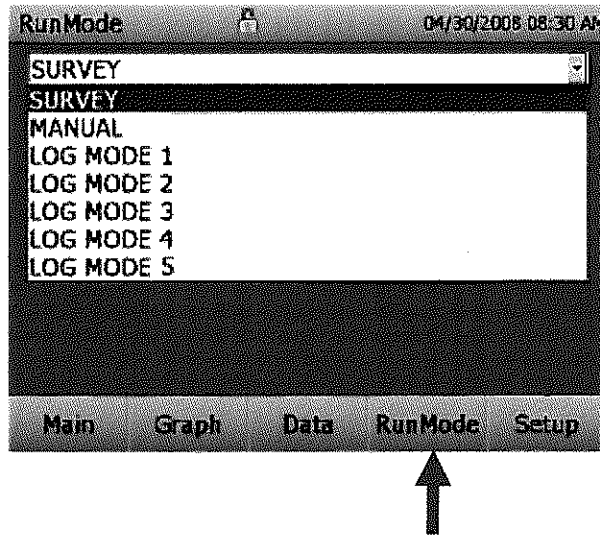
Settings screen sets basic unit parameters.

Date Time	<div data-bbox="673 898 1141 1121"><p>Date Time</p><p>Current Date: 04/30/2008 mm/dd/yy</p><p>Current Date: 04/30/2008 mm/dd/yyyy</p><p>Current Time: 09:59:48 hh:mm:ss</p><p>Date Format [...]: mm/dd/yyyy</p><p>Time Format [...]: AM/PM</p></div> <p>Sets current date, current time and date/time format. Time can be set in 12 or 24 hour format. Date can be set in yyyy/dd/mm, yyyy/mm/dd or yyyy/dd/mm.</p>
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IP	 <p>USB PORT IP Address:</p> <p>USB IP is the address assigned to the instrument by the NDIS driver. It is shown but cannot be changed.</p> <p>Ethernet Port IP parameters: (Model 8530, 8531 Desktop only.)</p> <p>IP method can be set to static or dynamic.</p> <p>For static IP, IP address, default gateway, and subnet mask can be set.</p> <p>For Dynamic, The IP assigned by the network is shown. This cannot be changed.</p> <p>See Note below.</p>
Display	 <p>Switches between blue and while backgrounds.</p>
Touch Cal	 <p>Calibrates the touch cal screen.</p>

IP Notes
<p>After changing the instrument to Dynamic or Static, the instrument must be rebooted.</p> <p>In Dynamic Mode, the unit will show the IP to which is assigned (after being rebooted).</p>

Run Mode

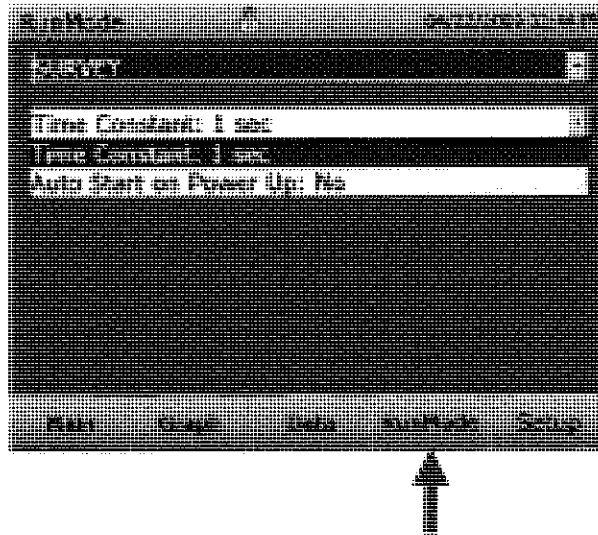


The RunMode tab brings up sampling mode options.

Sampling mode options include **Survey Mode**, **Manual Log**, and **Log Mode 1-5**.

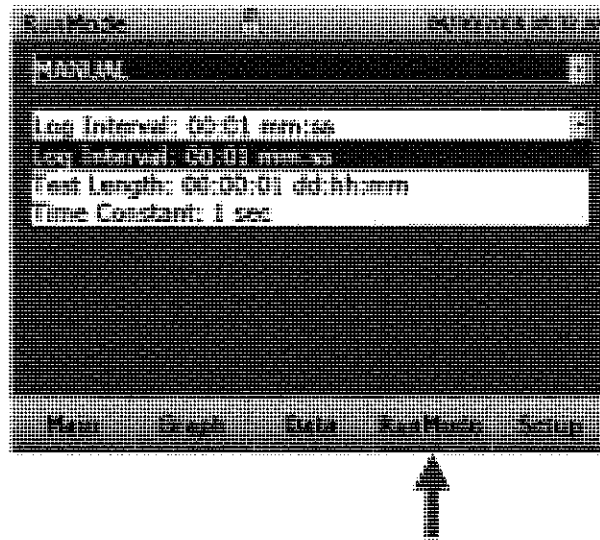
Survey	Survey Mode runs a real time, continuous active sample, but does not log data.
Manual	Manual Log sets the instrument to log data for a specified run time.
Log Modes	Log Mode starts and stops the instrument at specified times, run for a specified test length, and perform multiple tests of the same length with a specified time period between tests.

Survey Mode



Time Constant	Time Constant can be set from 1 to 60 seconds. This will control the update rate of the main screen. It is the rolling average of data displayed on the main screen and is not linked to logged data in either Manual or Program Log modes.
Auto Start on Power Up	When set to “Yes”, unit will start a measurement upon being powered on, if the unit was set to “Survey” when it was turned off. When set to “No”, the unit will be in idle when it is powered on.

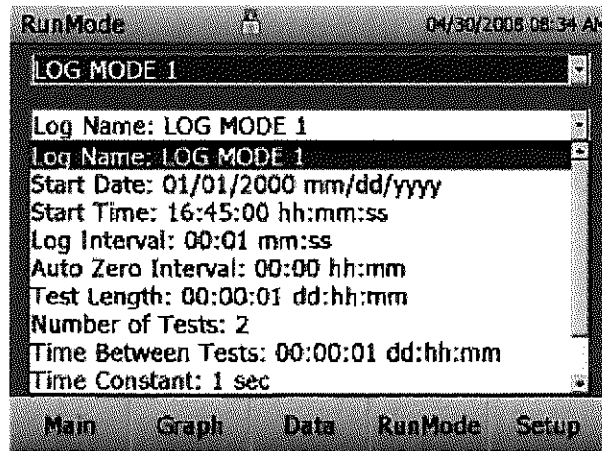
Manual Mode



Log Interval	The log interval can be set from 1 second to 60 minutes. It is the amount of time between logged data points.
Test Length	Test length can be set from 1 minute to the limit of the data storage.
Time Constant	Time Constant can be set from 1 to 60 seconds. This will control the update rate of the main screen. It is the rolling average of data displayed on the main screen and is not linked to logged data in either Manual or Program Log modes.

In Manual mode, data will be stored to a file named "*Manual_XYZ*" where *XYZ* is an incrementing integer.

Log Mode (1–5)



Log Name	Log Name, brings up a virtual keypad to name the Logged Data file.
Start Date	Start Date, select the date the test will start.
Start Time	Start Time, select the time the test will start.
Log Interval	The log interval can be set from 1 second to 60 minutes. It is the amount of time between logged data points.
Auto Zero Interval	Interval between re-zeroing the instrument using the Auto-Zero accessory. Models 8530 and 8531 desktop only.
Test Length	From 1 minute to the limit of the data storage.
Number of Tests	Number of tests, 1 to 999.
Time between Tests	Time between tests, 1 minute to 30 days.
Time Constant	Time Constant can be set from 1 to 60 seconds. This will control the update rate of the main screen. It is the rolling average of data displayed on the main screen and is not linked to logged data in either Manual or Program Log modes.

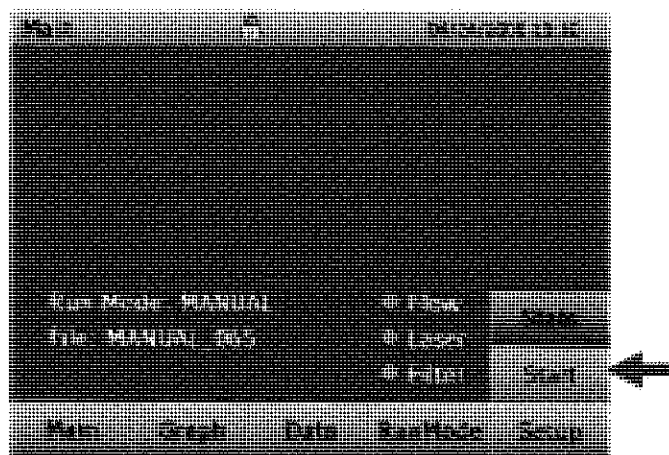
Use Start Date	Use Start Date, option to use programmed start date or by pass programmed start date.
Use Start Time	Use Start Time, option to use programmed start time or bypass programmed start time.

In Log mode, data will be stored to a file named “*LogName_XYZ*” where *LogName* is the user entered log name and *XYZ* is an incrementing integer.

Taking Mass Concentration Measurements

Measurements are started and controlled from the main screen.

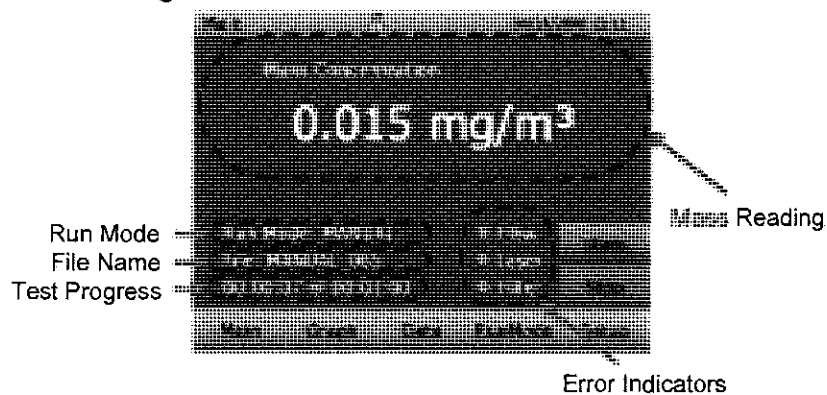
Prior to starting a measurement the instrument should be zeroed from the **Setup** screen and the run mode should be configured and selected from the **RunMode** screen.



When the instrument is on, but not taking any mass measurements the start button will be green and instruments pump will not be running. To start taking a measurement, press the green start button.

While taking a measurement the screen will display the current measured mass concentration. The various regions of the screen are shown below.

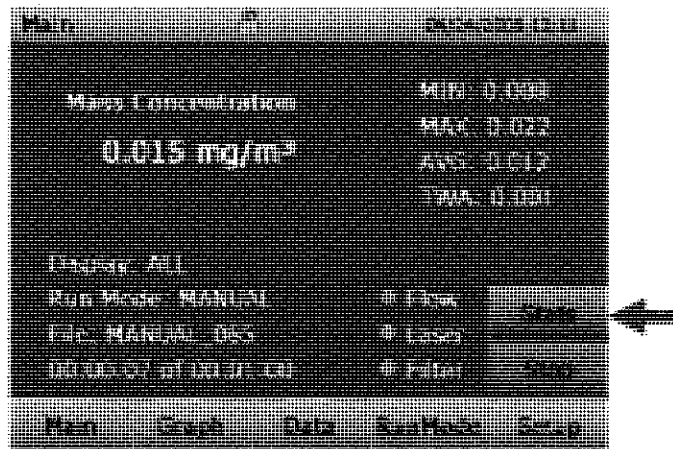
Screen Regions



Mass Reading	Shows the instruments mass measurements.
Run Mode Region	Shows the run mode selected from the RunMode screen.
File Name Region	Displays the file name to which the data is currently being saved.
Test Progress Region	Shows the time-based progress of the test.
Error Indicator Region	Shows the current stats of the instrument STEL: Shows if STEL is in progress (desktop instruments only) Flow: Status of the flow control Laser: Status of the Laser Filter: Status of the Filter See Chapter 5, "Troubleshooting," to resolve any of these error conditions.

Stats

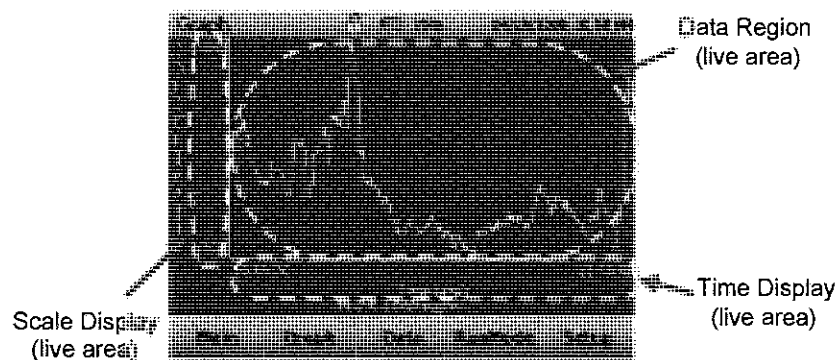
The Stats button will show the statistics of the mass measurement. When the Stats button is pressed, the main mass reading will reduce in font size, and the measurement statistics will show on the right side of the screen.

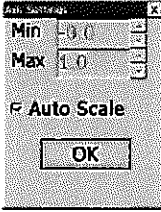
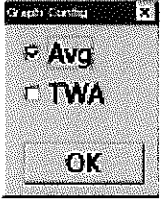


Graphing

During sampling, pressing the **Graph** button displays current readings in graphical form.

- During Survey Mode, five (5) minutes of running real-time data is displayed graphically.
- During Logging Mode, the entire log test time is displayed on the graph.

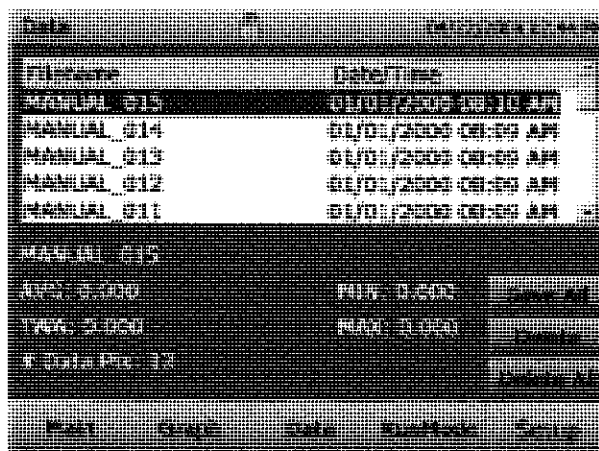


Time Display	<p>Pressing the Time x-axis label on the graph screen switches between Time (s), Time (abs), and Time (rel).</p> <p>Time (s): Elapsed time from first logged point (log interval) to the last logged point (test length).</p> <p>Time (rel): Relative time from zero to last logged point (test length – log interval).</p> <p>Time (abs): Absolute time from first logged point (test start + log interval) to last logged point (test stop).</p>
Scale Display	<p>Pressing in the Scale Display area will bring up a dialog that will allow changing between auto scaling and user scaling of the Y-axis.</p> 
Data Region	<p>Pressing the data region will bring up a dialog to show TWA or Average lines.</p>  <p>TWA: Will show a secondary line on the graph showing the time weighted average of the data. This line will not show if test time is less than 15 minutes.</p> <p>Average: Show a secondary line on the graph of the running average of the data.</p>

In Graphing Mode, pressing **Main** returns the instrument to the Main Screen display.

Viewing Data

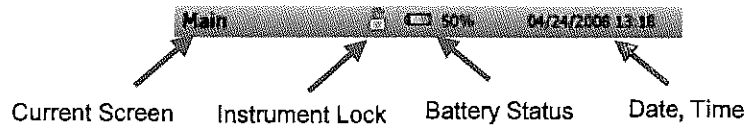
The **Data** button opens a list of data files for viewing.








Select File	Press the arrows on the right side of the screen to scroll up or down to the data file to be viewed.
Data Statistics	Statistics on the selected file <ul style="list-style-type: none"> o File Name o Sample Average o Sample TWA o Sample Maximum Reading o Sample Minimum Reading o Number of Data Points in the File
Save All Button	Downloads data to a USB thumb drive. USB thumb drive must be attached to the USB host port. Data is saved as a .csv file that can be viewed in Microsoft® Excel® spreadsheet software.
Delete Button	Deletes the currently highlighted file.
Delete All Button	Deletes all the files stored on the instrument.
Graph Button	Data can also be viewed in graphical form by pressing the Graph button while the data file is highlighted.

Title Bar

The Title Bar shows common instrument information.



Current Screen	Title of the current screen that is being displayed.
Instrument Lock	<p>Icon shows if the instrument touchscreen is in an unlocked or locked condition.</p> <p>Unlocked: </p> <p>Locked: </p> <p>To lock the touchscreen controls, touch the “lock” icon, immediately followed by three (3) quick touches on the current screen (Main) word along the top tool bar. Repeat the process to unlock the screen.</p>
Battery Status	<p>Show the current % life of the battery and show if the battery is currently being charged:</p> <p>Charging:  (unfilled portion of the icon filled yellow)</p> <p>Not Charging:  (unfilled portion of the icon transparent)</p>
Date and Time	Indicates the instruments current date and time.
Alarm	If the instrument is in an alarm status, an alarm icon  will appear in the title bar.

Chapter 4

Maintenance

The DUSTTRAK™ II aerosol monitor can be maintained in the field using the instructions below. Additionally, TSI recommends that you return your DUSTTRAK™ II to the factory for annual calibration. For a reasonable fee, we will quickly clean and calibrate the unit and return it to you in “as new” working condition, along with a Certificate of Calibration. This “annual checkup” helps ensure that the DUSTTRAK™ II is always in good operating condition.



WARNING

There are no user-serviceable parts inside this instrument. The instrument should only be opened by TSI or a TSI approved service technician.

Maintenance Schedule

Your DUSTTRAK™ II Aerosol Monitor requires maintenance on a regular basis. Table 4–1 lists the factory recommended maintenance schedule.

Some maintenance items are required each time the DUSTTRAK™ monitor is used or on an annual basis. Other items are scheduled according to how much aerosol is drawn through the instrument. For example, cleaning the inlet sample tube is recommended after 350 hours of sampling a 1 mg/m^3 concentration of aerosol. This recommendation should be pro-rated according to how the instrument is used. 350 hours at 1 mg/m^3 is the same amount of aerosol as 700 hours at 0.5 mg/m^3 or 175 hours at 2 mg/m^3 , etc.

Table 4–1. Recommended Maintenance Schedule

Item	Frequency
Perform zero check	Before each use.
Clean inlet	350 hr. at 1 mg/m^3 *
Clean $2.5 \mu\text{m}$ calibration impactor	Before every use.
Replace internal filters	350 hr. at 1 mg/m^3 * or when indicated by the main screen filter error indicator.
Return to factory for cleaning and calibration	Annually

*Pro-rated, see discussion above.

The DUSTTRAK™ monitor keeps track of the accumulated amount of aerosol drawn through it since its last cleaning. When the internal filter replacement is due, the filter error indicator will turn from green to red.

TSI recommends that you perform a zero check prior to each use for the DUSTTRAK™ monitor and certainly before running any extended tests, and after the instrument experiences a significant environmental change. Examples of significant environmental changes would be ambient temperature changes that exceed 15°F (8°C) or moving from locations with high aerosol concentrations to low concentrations.

Zeroing Instrument

1. Attach the zero filter to the inlet of the instrument.

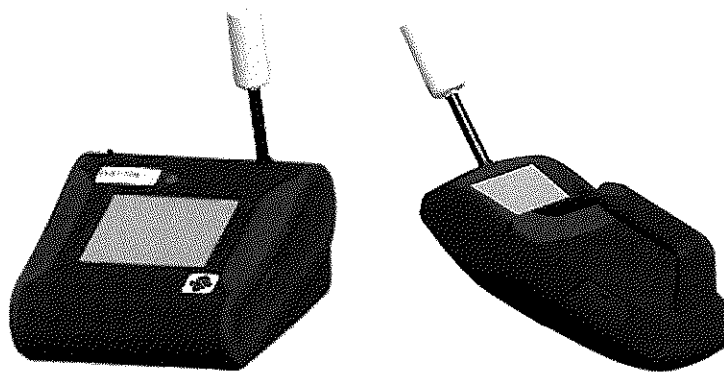


Figure 4-1: Attach Zero Filter to Inlet

2. Follow zero calibration instructions detailed in the operations section of this manual.

Cleaning the Inlet

The inlet should be cleaned based on the schedule in Table 4–1.

1. Turn the DUSTTRAK™ monitor off.
2. Unscrew the inlet nozzle from the instrument (Figure 4-2).

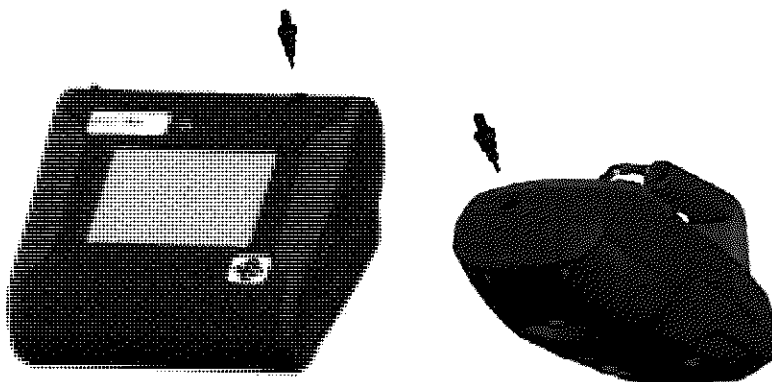


Figure 4-2: Unscrew Inlet Nozzle

3. Clean the inlet port. A cotton swab can be used to clean the outside of the inlet port. The swabs can be dampened with water or a light solvent (e.g., isopropanol). The inside of the sample tube can be cleaned using a small brush, along with a light solvent. Dry the tube by blowing it out with compressed air, or let it air-dry thoroughly.

Note
Be <i>careful</i> not to blow particles into the DUSTTRAK™ monitor inlet port.

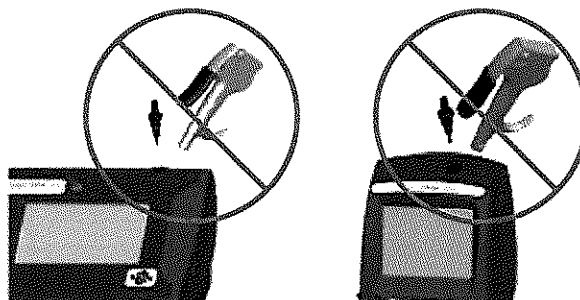


Figure 4-3: Do NOT Blow into Instrument

4. Screw (hand-tighten) inlet back into instrument.

Cleaning and Oiling Impactors

The calibration impactor should be cleaned prior to every use, using it to perform a Standard Calibration (size correction) on the instrument, as described in the [Operations](#) section.

1. Unscrew Impactor. Check O-ring on the impactor base.
2. Clean outside and inside of Impactor and the impactor plate using a clean brush and a light solvent. Dry impactor parts by blowing it out with compressed air, or let it air-dry thoroughly.
3. Apply 2 drops of oil (included) to the impactor plate. Do **not** over-fill impaction plate.

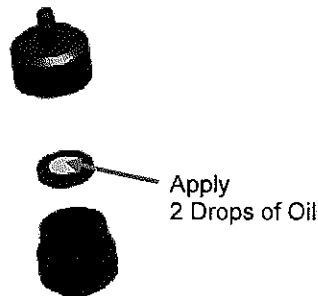


Figure 4-4: Apply 2 Drops of Oil to Impactor Plate

4. Screw (hand-tighten) impactor back together.

Replacing the Internal Filters

The internal filters should be replaced based on the schedule in Table 4–1 or when the filter indicator on the main screen changes to red.

1. Turn the instrument off.
2. Remove old filters from the instrument.

Handheld Model

- a. Use the enclosed filter removal tool (PN 801668) tool to unscrew the two filter caps located on the bottom of the instrument.
- b. Pull the old filters out of the two filter wells. If filter wells are visibly dirty, blow out with compressed air.

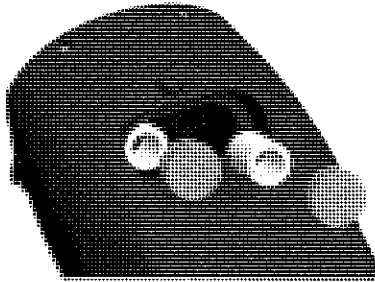


Figure 4-5: Pull Filters Out of Two Filter Wells (Handheld Model)

- c. Put two (2) new filters into the filter wells and screw filter caps back into place.

Note
<p>Replacement filters were shipped with the new instrument. Additional filters can be ordered from TSI under PN 801666.</p>

Desktop Model

Put two (2) new filters into the filter wells and screw filter caps

- a. Open filter access door on the back of the instrument.
- b. Use the enclosed filter removal tool (PN 801668) to unscrew filter cap.
- c. Pull out single cylindrical filter from filter well. If filter well is visibly dirty, blow out with compressed air.

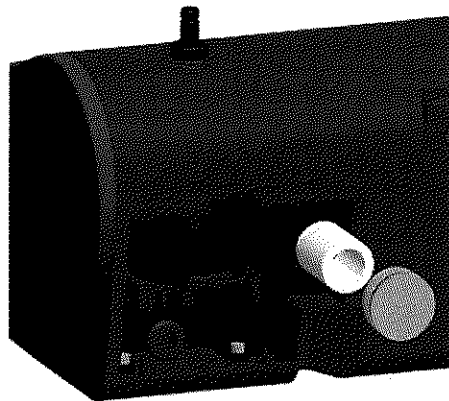


Figure 4-6: Pull out Single Cylindrical Filter from Filter Well (Desktop Model)

- d. Put new filter back into filter well and screw filter cap back into place.
- e. Open blue retention clip by pinching ends inward and pushing down.

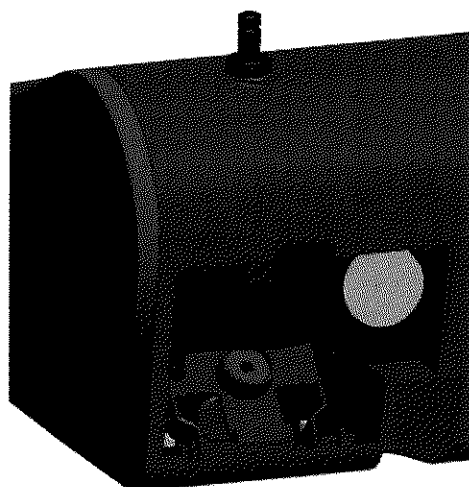


Figure 4-7: Open Blue Retention Clip

- f. Remove 37-mm filter cassette by pulling downward and outward.



Figure 4-8: Remove 37-mm Filter Cassette

- g. Open filter cassette using enclosed tool PN 7001303.



Figure 4-9: Open Filter using Enclosed Tool

- h. Remove screen mesh from filter cassette and blow out using compressed air. Blow in reverse direction to remove captured particulate.
- i. Replace mesh in filter cassette and press halves together. Make sure filter has been fully closed. The filter tool PN 7001303 can be used to ensure the filter is fully closed.

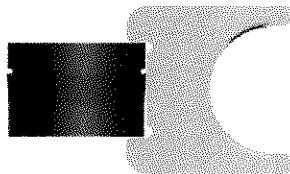


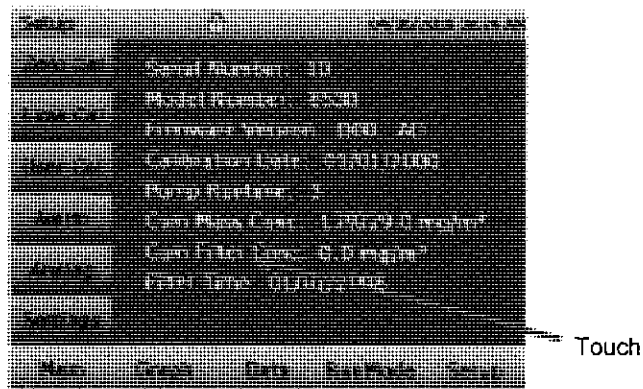
Figure 4-10: Replace Mesh in Filter Holder

- j. Place filter cassette back into position and close blue retaining clip. Make sure retaining clip snaps back into place.

Note
Replacement filters (HEPA and 3-mm Filter Cassette with mesh filter) were shipped with the new instrument. Additional filters can be ordered from TSI under PN 801673.
TSI does not supply any filter media for the filter cassette. Any commercially available 37-mm filter media may be used with the DUSTTRAK™ II or DRX desktop instruments to collect gravimetric reference samples.

3. **It is important to reset the instruments filter counter after replacing filters. Resetting the counter will clear the filter error condition shown on the main screen.** Reset the counters by the following:
- Turn on the instrument.
 - Press the **Setup** button to go into the setup screen.

- c. Touch the **Cum Filter Conc:** (live key) to reset the aerosol mass.



- d. *Replace user serviceable filters?* Dialog will appear. Press **OK**.
- e. *Reset filter concentration?* Dialog will appear. Press **Yes** to reset the cumulative filter concentration to zero.
- f. The Setup screen will not show zero for the **Cum Filter Concentration** and the current date for the **Filter Time**.

Storage Precautions

When storing the DUSTTRAK™ monitor for more than 30 days, you should charge and remove the batteries. This prevents damage due to battery leakage.

This instrument must be stored in a location where the temperature remains between -20 and 60°C (-4 and 140°F).

Chapter 5

Troubleshooting

The table below lists the symptoms, possible causes, and recommended solutions for common problems encountered with the DUSTTRAK™ II monitor.

Symptom	Possible Cause	Corrective Action
Erratic zero reading.	Leak. Dirty inlet port and/or sample tube. Internal filter(s) not installed properly (leaking).	Check connections for leaks. Replace zero filter. Clean inlet port. Clean or replace tubing. Inspect internal filter wells to make certain the filters and o-rings are seated properly. Replace internal filters if necessary.
Run Mode Error: The start time has passed Run Mode Error: The selected log mode will exceed the allowed number of samples	The selected Run Mode program has "Use Start Date" selected, but the start date is prior to the current date. The selected Run Mode program is programmed to save more samples than is room in memory.	Correct or change the run mode program Reduce the number of samples by reducing the test length or increasing the logging interval.
Instrument runs slow	Large amount of data in memory	Large data files or many small data files will cause instrument to slow, due to need to read and display large amounts of data.

Symptom	Possible Cause	Corrective Action
No display.	Unit not switched on.	Switch unit on.
	Low or dead batteries.	Recharge the batteries or plug in the AC adapter.
No touch - screen response.	Instrument currently busy	The instrument will take time to open large data files and save configuration information. During this time, the instrument will not respond to additional touchscreen touches.
	Instrument Touchscreen is locked	If the lock in the title bar is red, unlock the instrument following the instructions in the <u>Chapter 3, Operation: Title Bar</u> section of this manual.
Analog output does not work	Cable/connector not correctly installed.	Make sure cable connector is fully seated.
	Output wired with reverse polarity.	Make sure analog out (+) and analog ground (-) are wired correctly to data-logger.
Analog output is not in proportion to display	Analog output range in DUSTTRAK™ monitor may be set incorrectly.	Check analog output setting in the <u>Setup->Analog</u> screen. Make sure the channel of interest is selected. Make sure that the correct output (0-5V, 4-20 mA) is selected.
	Data logger scaling factor may be set incorrectly.	Review the scaling factor set in the <u>Setup-Analog</u> screen.
Alarm output does not work. Alarm does not turn on correctly.	Alarm function not turned on.	Turn the alarm function on in the <u>Settings->Alarm</u> screen.
	Alarm setting incorrect.	Check the alarm settings in the <u>Settings->Alarm</u> screen.
	Alarm output wired with reverse polarity.	Alarm wires are polarized. Voltage input must be wired to alarm input (+).

Symptom	Possible Cause	Corrective Action
Instrument does not store new data	Memory is full. Instrument is in Survey mode.	Delete or transfer historic data. The instrument does not store data in survey mode. Can to manual or program log mode.
Flow Error is indicated on front screen	If sampling from a duct, instrument may have problems overcoming pressure differences. Flow obstruction. Internal pump failing, indicated by inability to adjust flow rate to full range. Filter Cassette clogged or has mass loading.	Attach both the input and the exhaust port into the duct. Remove obstruction if still present. Press any key to bypass. Factory service may be required. Replace the filter cassette. See the maintenance section of the manual.
Laser Error indicated on front screen	Laser background is too high. Laser is failing	Remove and clean inlet nozzle. Pay close attention to the tip of the nozzle that is inserted into the instrument to ensure it is clear of any contamination. Factory service may be required.
Filter Error indicated on front screen.	Filters need to be replaced	Replaced the filters per instructions in the maintenance section of this manual. Make sure to reset the filter mass and date once the filters have been changed.

Appendix A

Specifications

Specifications are subject to change without notice.

Sensor Type	90° light scattering
Range	8530 Desktop 0.001 to 150 mg/m ³ 8531 Desktop HC 0.001 to 400 mg/m ³ 8532 Handheld 0.001 to 150 mg/m ³
Resolution	±0.1% of reading of 0.001 mg/m ³ , whichever is greater
Zero Stability	±0.002 mg/m ³ 24 hours at 10 sec time constant
Particle Size Range	Approximately 0.1 to 10 µm
Flow Rate	3.0 L/min set at factory 1.4 to 3.0 L/min adjustable
Flow Accuracy	±5% factory setpoint Internal flow controlled
Temperature Coefficient	+0.001 mg/m ³ per °C
Operational Temp	0 to 50°C
Storage Temp	-20 to 60°C
Operational Humidity	0-95% RH, non-condensing
Time Constant	Adjustable 1 to 60 seconds
Data Logging	45 days at 1 minute samples
Log Interval	1 second to 1 hour
Physical Size (HWD)	Handheld: 4.9 x 4.75 x 12.45 in. Desktop: 5.3 x 8.5 x 8.8 in.
Weight	Handheld: 2.9 lb, 3.3 lb with battery Desktop: 3.45 lb, 4.45 lb – 1 battery, 5.45 lb – 2 batteries
Communications	8530/31: USB (Host and Device) and Ethernet. Stored data accessible using thumb drive 8532: USB (Host and Device). Stored data accessible using thumb drive.
Power—AC	AC power adapter included. 115 to 240 VAC

Battery	<p>8530/31: Up to 2 Removable Li-Ion External and Internal charging Life, 1 battery: 9 hours typical Life, 2 battery: 18 hours typical</p> <p>8532: 1 Removable Li-Ion External and Internal charging Life: 6 hours typical</p>
Analog out	<p>8530/31: User selectable output 0 to 5 V or 4 to 20 mA User selectable scaling</p>
Alarm Out	<p>8530/31: Relay or sound buzzer Relay No latching MOSFET User selectable set point 5% deadband Connector 4-pin, Mini-DIN connectors</p> <p>8532: Sound buzzer</p>
Screen	<p>8530/31: 5.7" color touchscreen</p> <p>8532: 3.5" color touchscreen</p>
Gravimetric Sampling	8530/31: Removable 37-mm Cartridge
EMI/RF Immunity:	<p>Complies with Emissions Directive Standard: EN50081-1:1992</p> <p>Complies with Immunity Directive Standard: EN50082-1:1992*</p>

*ESD Shock may require instrument reboot

Appendix B

Zero Module

The Zero Module (PN 801690) allows for automatic re-zeroing of the DUSTTRAK™ Instrument during long sampling runs. The Zero Module works only with the 8530 and 8531 desktop models.

The AutoZero module is attached to the main instrument in two steps. The first step is to place the Zero module over the instrument's inlet and press down. The Zero module has an O-ring seal that will engage with the instrument's inlet.

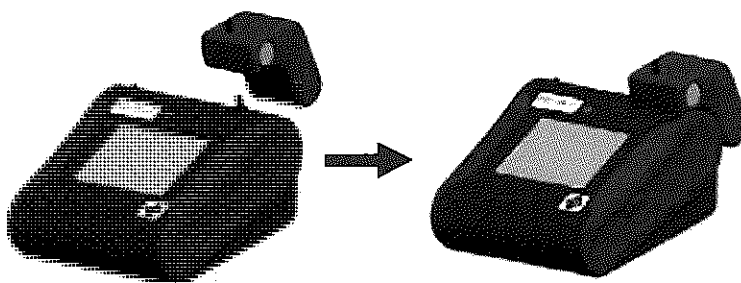


Figure B-1: Place Zero Module Over Inlet and Press Down

The second step is attaching the cable from the Zero module to the Zero module connector located on the back of the instrument.

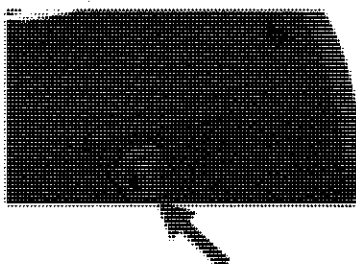


Figure B-2: Zero Module Connector

The Zero Module can only be used in a program log mode. The Zero module function is controlled through these two program mode options:

Auto Zero Interval	Interval between re-zeroing the instrument using the Auto-Zero accessory.
Use Auto Zero	Select Yes to use the Zero Module. Select No to not use the Zero Module.

Important points on Zero Module operation:

- The Zero module will take one (1) minute to take a zero reading. The first 45 seconds of that period is used to clear the chamber of particles. Readings from last 15 second of the period, when the chamber is cleared of particles, will be averaged to determine the Zero offset.
- The log interval, when the Zero module is activated, must be two (2) minutes or greater. Data will not be recorded to the log file when the Zero module is activated.

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