

Chapter 1 : Field Sampling Procedures Manual - [PDF Document]

Field Sampling Procedures Manual August The August edition of NJDEP's Field Sampling Procedures Manual replaces the edition as the most current technical guidance associated with procedures and equipment utilized for the collection of environmental samples.

This new manual replaces the edition as the most current technical guidance associated with procedures and equipment utilized for the collection of environmental samples. It also represents the first edition published on the World Wide Web, which brings the benefit of improved access to information for the public and regulated community. The primary intent of the manual has always been to promote accuracy and consistency when environmental samples are collected and prepared for chemical analysis by public and private entities. The validity of analytical data is directly dependent upon the integrity of the field procedures employed to obtain a sample. The methods and procedures described herein are intended for use by those State of New Jersey regulatory agencies that require chemical, physical and certain biological analysis of samples for remedial evaluation and monitoring purposes. Furnishing guidance for a broad range of field activities is meant to improve the planning, implementation and documentation of most field-sampling activities. Said guidance may often suggest several ways to collect a sample, all of which may be scientifically correct under site or matrix specific circumstances. Hyperlinks that direct the reader to a variety of web sites are intended to enhance specific information with the emphasis on enhance, not necessarily replace. Maintaining a balance between the evolving nature of environmental sampling and well-established regulatory oversight means that care should be taken when preparing documents based on the procedures outlined herein. All methodologies presented in this manual may not be applicable to specific site situations; a certain procedure, though included in the text of the manual or by hyperlink reference may be disallowed at the discretion of NJDEP program personnel if determined inappropriate in a particular situation. This manual has been prepared in an effort to represent the best available technology for field sampling activities associated with hazardous site investigations and remedial actions. It is also an appropriate reference for certain aspects of water data acquisition, water allocation, wastewater treatment operations, radiological assessment, geophysical investigations and other regulated programs that require field sampling. Procedures outlined herein have been developed through internal peer review, extensive literature research, practical field application and analysis of data from a quality assurance perspective. Environmental sampling inherently may present extraneous variables, which may ultimately affect the outcome of analytical results. Since the nature of environmental media sampling warrants the analysis of a small aliquot relative to the bulk material, proper sampling techniques must be employed to obtain a sample which retains its scientific integrity and is legally defensible. To meet these conditions a sample must be collected and handled so as to keep its original physical form and chemical composition to as great an extent as possible. The achievement of consistency in sampling procedures and techniques helps to ensure the provision of data having acceptable quality, comparability and usability. The importance of data quality has been recognized through stringent laboratory quality control programs. This manual is intended to compliment these processes by establishing appropriate quality control during sampling collection. Quality assurance measures coupled with a comprehensive site specific sampling plan will improve the chance of collecting representative samples. This is important to ensure that public and private monetary resources are utilized in an effective manner. From sampling plan preparation through chain of custody procedures, the manual details the handling requirements and offers a variety of collection techniques for sample collection of various matrices. Related concerns such as personnel protection, geophysical investigation techniques, use of portable instrumentation, etc. The reader is cautioned to be aware of the differences between materials presented in this manual as guidance, and specific requirements contained within control documents e. Control documents have legal precedence over this manual and may prescribe certain sampling activities or methods unique to a particular program, site or matrix. In all cases and when sampling within specific conditions set forth by any control documents, this manual should be utilized as a technical guidance document only. It is recognized by the Department that alternative sampling methods are

continually being developed and accepted for use by various regulatory agencies. Examples of these include methods for the collection of ambient air and soil gas using summa canisters, monitoring ground water using passive diffusion bags, certain field analytical methods and other newly designed equipment for sample acquisition. Use of new or alternative-sampling devices should be reviewed and approved for site use by the regulatory program governing the investigation. Geological Survey USGS will no doubt continue to publish recommended procedures that improve efficiency, accuracy as well as specific devices. As a result, the Department will be updating this manual as needed to keep the most current and accepted sampling methods available to the public. Also, inquiries related to obtaining certification for certain analyze immediately parameters related to environmental sampling should be made directly to the Office of Quality Assurance. These include Laboratory Certification pursuant to N. The Department also remains available for and encourages open discussion regarding uses and applications of additional procedures not presented herein, or suggestions for modifications to procedures presented. To that end we hope your experience using this manual is useful, informative and interactive. Any questions on information contained in the manual may be addressed to:

Chapter 2 : NJDEP SRP - Guidance: Field Sampling Procedures Manual

NJDEP's Field Sampling Procedures Manual (FSPM) details the scope of field sampling protocol for site investigation and monitoring activities. From sampling plan preparation through chain of custody procedures, the manual details the handling requirements and offers a variety of collection techniques for sample collection of various matrices.

Background Samples – Samples that are collected and used to compare site conditions to the surrounding environment. Background samples are collected and handled in the same manner as all other samples. It involves checking the instrument with a known concentration of a surrogate to insure that the instrument provides a proper response. Caliper – A mechanical device that is used to measure the diameter of a borehole. Cleanup Standard – The combination of numeric and narrative standards established pursuant to this chapter for a contaminant or group of contaminants. Colorimetric Tube – Device used to estimate the concentration of a specific gas in air. Combustible Gas Indicator CGI – Instrument used to determine the potential for combustion or explosion in an unknown atmosphere. Composite Sample – A non-discrete sample composed of more than one specific aliquot collected at various sampling points or times. Contamination Reduction Zone – Transition zone between contaminated area exclusion zone and clean area. The zone is where all personnel decontamination of hazardous waste is conducted. Dielectric Constant – The relationship between two charges, that is their distance of separation in relation to the force of attraction. Diffusion Sampler – Type of sampling device which functions by the passive movement of contaminant molecules through a concentration gradient created within a stagnant layer of air between the contaminated atmosphere and the indicator material. Distilled Water – Prepared by thermal distillation using a still of all-borosilicate glass, fused quartz, tin or titanium with the distillate meeting the following characteristics of Type I Type II water: The resultant water shall have the same characteristics as those for distilled water noted above. Electrical Resistivity – Geophysical sensing technique used to determine the structure and physical properties of subsurface geologic materials which can be used to detect anomalies which may indicate the presence of hazardous materials e. Electromagnetics – Geophysical method which induces and detects electrical current flow within geologic strata. Environmental Samples – Samples of naturally occurring matrices such as soil, sediment, ground water, surface water and air. Exclusion Zone – Designated zone of a hazardous waste site where contamination is known to or may occur and can only be entered with appropriate personnel protection. Flame Ionization Detector FID – An air monitoring instrument that utilizes the principle of hydrogen flame ionization for detection and measurement of organic vapors. Flowmeter – Measures the vertical movement of fluid in a borehole. Gas Chromatography – Analytical technique for separating compounds of a sample and qualitatively and quantitatively identifying them. Geostatistics – Statistical methodology that incorporates contaminant relationships between sample locations to derive conclusions about concentrations at locations lying between those points. Grab Sample – A discrete aliquot that is representative of one specific sample site location at a specific point in time. Ground Water – The portion of the water beneath the land surface that is within the zone of saturation below the seasonally high water table where all pore spaces of the geologic formation are filled with water. Handling Time – All trip blanks, field blanks, and environmental sample containers must be received in the field within one day of preparation in the lab. They may be held on site for a maximum of two calendar days. They must then be shipped back to the lab at the end of the second calendar day. Holding Time – The analytical time clock for all samples and blanks measured between the time of sample collection and analytical extraction. Typically determined by matrix and specific analytical method requirements. Homogenization – Process whereby a sample is mixed in a stainless steel bowl or in-situ until a consistent physical appearance is achieved. This is performed for all parameters except volatiles. Koc – A coefficient that relates the partitioning of the organic compound between the adsorbed phase and the soil solution relative to the organic carbon fraction. Kriging – A geostatistical technique, which interpolates concentration values for locations between sampling points. Laboratory Decontaminated – The decontamination of sampling equipment and bottles in a controlled setting. Lower Explosive Limit LEL – Minimum concentration of a combustible gas measured as a

percentage of the total constituents present in the atmosphere that will combust when ignited. Magnetometer â€” Instrument which is used to measure magnetic field strength in units of gamma. The sample is injected with a known concentration of a specific analyte. Passive Dosimeter â€” Device which utilizes the processes of diffusion and permeation to move a contaminant through a collection medium. Photo Ionization Detector PID â€” An air monitoring instrument that utilizes the principle of photoionization for the detection and measurement of organic and inorganic vapors. Piezometer â€” A cased boring used to determine the level of ground water. Retention Time â€” Period of time from the injection of the sample into the gas chromatography system until the point of maximum detector response for each substance. Sample Network â€” Statistical method used to describe the frequency and location of samples to be collected. Semivariogram â€” Tool that shows the relationships between observations at sampling points based on the distance from each sample to the other samples. Soil â€” The unconsolidated mineral and organic matter on the surface of the earth that has been subjected to and influenced by geologic and other environmental factors. Soil Gas â€” Subsurface gas that may be generated by biological, chemical and physical decomposition of spilled, stored or illegally disposed waste. Soil Texture â€” A measure of the percentages of various particles size groups in a volume of soil, typically sand, silt and clay. Sorbent Samples â€” Consist of air samples, which are collected utilizing special adsorbents such as activated carbon and silica gel. Subsurface Soil â€” The soil more than two feet below grade and extending downward to the top of the seasonally high water table. Support Zone â€” Uncontaminated area where administrative functions needed to keep site operations running smoothly are conducted. Surface Soil â€” The top two feet of soil below grade. Vapor Pressure â€” The pressure of a confined liquid such that the vapor collects above it. Volatilization â€” Process whereby certain compounds evaporate rapidly and easily into air at ordinary temperatures. Volumetric Water Content â€” The ratio of the volume of water in a porous volume to the total volume. Waste Samples â€” Samples that are comprised of process waste or other man made materials. Water Solubility â€” The extent to which a compound dissolves in water. Water Table â€” The seasonally high level in the saturated zone at which the hydraulic pressure is equal to atmospheric pressure. Well Purging â€” Process in which the standing water in a well column is evacuated. Weir â€” A device built to back up water.

Chapter 3 : NJDEP SRP - Guidance: Field Sampling Procedures Manual - Introduction

The information contained in the NJDEP's Field Sampling Procedures Manual is drawn from existing manuals, various reference documents and a broad range of colleagues with considerable practical and educational backgrounds.

Chapter 4 : NJDEP Field Sampling Procedures Manual

Provides an assortment of standard operating procedures for ground water and soil gas sampling. Resource Conservation and Recovery Act Groundwater Monitoring This manual describes procedures that the Agency believes are the most appropriate for designing, installing and operating a ground water monitoring system.

Chapter 5 : Guidance Documents and Forms

Description The August edition of NJDEP's Field Sampling Procedures Manual replaces the edition as the most current technical guidance associated with procedures and equipment utilized for the collection of environmental samples.

Chapter 6 : B.C. Field Sampling Manual - Province of British Columbia

The AASHTO standard test procedure reports the percentage of material finer than the No. sieve to the nearest %, except if the result is 10% or more, than it reports to the nearest whole number.

Chapter 7 : NJDEP SRP - Guidance: Field Sampling Procedures Manual - Cover

DOWNLOAD PDF FIELD SAMPLING PROCEDURES MANUAL

Its purpose is to make available a "Manual of Field Sampling and Testing Procedures" for use on Department projects and purchases. The publication shall be used in conjunction with the Standard Specifications, the.

Chapter 8 : NJDEP SRP - Guidance: Field Sampling Procedures Manual - Glossary of Technical Terms

Field Sampling Procedures Manual Chapter 5A - Page 1 of 94 Chapter 5 Sampling Equipment Table of Contents Introduction Table Materials of Construction for Ground Water Sampling Equipment.

Chapter 9 : Technical Bulletins and Fact Sheets

The specific sampling and field measurement procedures are based on the experience of the field investigators within the field branches and accepted professional practices which are referenced in each procedure.