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Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process¹

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1. Scope

1.1 This guide

1.1.1 This practice² covers a framework for employing good commercial and customary practices in conducting a Phase II environmental site assessment (ESA) of a parcel of commercial property with respect to the potential presence of a range of contaminants which are within the scope of CERCLA as well as petroleum products:

1.1.1 This guide is intended to provide practical procedural guidance for the continuation of an assessment conducted in accordance with the most recent edition of Practice E1527 or E1528, or both. Practice E1527 is the practice for conducting Phase I ESAs for a parcel of commercial property and Practice E1528 is the transaction screen practice. Both practices define a process that is intended to constitute “all appropriate inquiry into the previous ownership and uses of a property” to determine whether hazardous substances or petroleum products have been disposed or released there in order to satisfy one element of the innocent purchaser defense to CERCLA liability.

1.1.2 Because this guide for conducting Phase II ESAs describes a process for further evaluating a parcel of commercial property with recognized environmental conditions, as defined in Practices E1527 and E1528, users of this guide should understand the requirements and limitations of those practices. It is strongly recommended that the user refer to and apply the guide in concert with Practices E1527 and E1528 covers a process for conducting a Phase II environmental site assessment (ESA) of a parcel of property with respect to the *presence* or the likely *presence of substances* including but not limited to those within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (e.g., *hazardous substances*), pollutants, contaminants, petroleum and *petroleum products*, and controlled *substances* and constituents thereof. It specifies procedures based on the *scientific method* to characterize *property* conditions in an objective, representative, reproducible, and defensible manner. To promote clarity in defining *Phase II ESA* objectives and transparency in communicating and interpreting *Phase II ESA* results, this practice specifies adherence to requirements for documenting the scope of assessment and constraints on the conduct of the assessment process.

1.1.1 A user’s interest in the *presence* or likely *presence of substances in environmental media* at a property may arise in a wide variety of legal, regulatory, and commercial contexts, and may involve diverse objectives including those listed in 1.2. This practice contemplates that the *user* and the *Phase II Assessor* will consult to define the scope and objectives of investigation in light of relevant factors, including without limitation the *substances* released or possibly released at the *property*, the nature of the concerns presented by their *presence* or likely *presence*, the portion of the property to be investigated, the information already available, the degree of confidence needed or desired in the results, the degree of investigatory sampling and *chemical testing* needed to achieve such confidence, and any applicable time and resource constraints. This practice requires that Phase II activities be conducted so that the resulting scope of work is performed, and the stated objectives are achieved, in a scientifically sound manner.

¹ This guide practice is under the jurisdiction of ASTM Committee E50 on Environmental Assessment and is the direct responsibility of Subcommittee on Environmental Assessment, Risk Management and Corrective Action and is the direct responsibility of Subcommittee E50.02 on Commercial Real Estate Transactions:

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² As used herein, a “Standard” is a document that has been developed and established within the consensus principles of the Society and that meets the approval requirements of ASTM procedures and regulations. A “Guide” A “practice” is a compendium definitive set of information or a series of options instructions for performing one or more specific operations that does not recommend produce a specific course of action. A guide increases the awareness test result. A “guide,” in contrast, is a compendium of information and approaches in or a given subject area. A “Practice,” in contrast, is series of options that does not recommend a definitive set specific course of instructions for performing one or more specific operations that does not produce action. A guide increases the awareness of information and approaches in a test result given subject area. See Form and Style for ASTM Standards, 10th ed., 1996. http://www.astm.org/COMMIT/Blue_Book.pdf.

1.1.2 A *Phase II ESA* in accordance with this practice may follow site assessment activities in accordance with Practice E1527 for *Phase I Environmental Site Assessments: Phase I Environmental Site Assessment Process*, Practice E2247 for *Environmental Site Assessments: Phase I Environmental Site Assessment for Forestland or Rural Property*, EPA's *All Appropriate Inquiries (AAI) Rule*, 40 C.F.R. Part 312, or Practice E1528 for *Limited Environmental Due Diligence: Transaction Screen Process*. Users of this practice should have knowledge and understanding of Practice E1527 and the *AAI Rule* because a *Phase II ESA* may address a likely presence of hazardous substances or petroleum products identified in previous assessment reports as a recognized environmental condition (REC). In defining the scope and purposes of a *Phase II ESA*, however, previous decisions to classify property conditions or areas as RECs, or to refrain from doing so, are not determinative as to whether investigation of the same conditions or areas is appropriate to meet the objectives of the Phase II ESA.

1.1.3 This guide has multiple purposes. It is intended to provide assistance to users in satisfying the appropriate inquiry element of CERCLA's innocent purchaser defense, as defined in 42 U.S.C. § 9601(35)(B), where a previous assessment satisfying that element identified recognized environmental conditions. This guide also is intended to assist a user in gathering reliable information about a property's environmental conditions to guide the user's business decisions. However, this guide does not purport to include the level of specificity required of technical standards that govern full characterization of a site's environmental conditions.

1.2

1.2 *Objectives*—The primary objectives of conducting a *Phase II ESA* are to evaluate the recognized environmental conditions identified in the *Phase I ESA* or transaction screen process for the purpose of providing sufficient information regarding the nature and extent of contamination to assist in making informed business decisions about the property; and where applicable, providing the level of knowledge necessary to satisfy the innocent purchaser defense under CERCLA.

1.2.1 To achieve these objectives, it may be appropriate to perform more than a single iteration of assessment. The guide fosters an iterative approach to *Phase II* assessments and allows the user to terminate the *Phase II ESA* at the point where sufficient data have been generated to meet the user's objectives.

1.2.2 At the completion of a *Phase II ESA*, the environmental professional should be able to conclude, at a minimum, that either (a) the *ESA* has provided sufficient information to render a professional opinion that there is no reasonable basis to suspect the presence of hazardous substances or petroleum products at the property associated with the recognized environmental conditions under assessment, or (b) the *ESA* has confirmed the presence of hazardous substances or petroleum products at the property under conditions that indicate disposal or release. If the information developed in the *ESA* is insufficient for the environmental professional to reach either of these conclusions, the environmental professional may recommend additional iterations of assessment if warranted to meet the objectives of the user. If the environmental professional reasonably suspects that unconfirmed hazardous substance or petroleum releases remain but concludes that further reasonable assessment is not expected to provide additional information of significant value, he may recommend that further assessment is not warranted. In such circumstances, the recommendation for no further assessment should be accompanied by an explanation why a reasonable suspicion of releases remains and why further reasonable assessment is not warranted. Depending upon the work scope, the environmental professional may also be able to provide guidance on the nature and extent of contamination in order to assist the user in making business decisions regarding the property.

1.2.3 This guide is intended to provide guidance for assessing recognized environmental conditions and developing technically sound data. It is not intended to satisfy the level of inquiry that may be necessary to support remedial solutions for a site. For further discussion of the use of this guide, refer to Section 4 on Significance and Use.

1.3 *Needs of the User*—Establishing the innocent purchaser defense may not be a realistic objective in some instances. Accordingly, the extent of assessment is based on the business objectives of the user as well as the degree of uncertainty acceptable to the user. In either case, the primary purpose of a *Phase II ESA* conducted in accordance with this guide is to assess and evaluate the recognized environmental conditions identified in the *Phase I ESA* or Transaction Screen Process.

1.3.1 The mere confirmation of contamination or the preliminary indication of the extent and magnitude of contamination may be sufficient for the purposes of many users. If a user desires a more complete characterization of the environmental condition of the property, further assessment may be undertaken. However, this guide should not be construed to require multiple iterations of assessments in all cases, either to establish the innocent purchaser defense or to meet other objectives. Many *Phase II ESAs* may in fact be restricted to only a single round of assessment, whatever the extent of contamination, if any, that might be revealed. —This practice is intended for use in any situation in which a *user* desires to obtain sound, scientifically valid data concerning actual property conditions, whether or not such data relate to property conditions previously identified as *RECs* or *data gaps* in *Phase I ESAs*. Without attempting to define all such situations, this practice contemplates that *users* may seek such data to inform their evaluations, conclusions, and choices of action in connection with objectives that may include, without limitation, one or more of the following:

1.2.1 *Objective 1*—Assess whether there has been a *release of hazardous substances* within the meaning of *CERCLA*, for purposes including *landowner liability protections* (i.e., *innocent landowner, bona fide prospective purchaser, and contiguous property owner*).

1.2.2 *Objective 2*—Provide information relevant to identifying, defining and implementing landowner “*continuing obligations*,” or the criteria established under *CERCLA* (e.g., taking *reasonable steps* to prevent or limit exposures to previously released

hazardous substances) for maintaining the *CERCLA landowner liability protections*.

1.2.3 Objective 3—Develop threshold knowledge of the *presence* of *substances* on properties within the scope of the *CERCLA* definition of a “brownfield site” and as required for qualifying for brownfields *remediation* grants from the *EPA* Brownfields Program.

1.2.4 Objective 4—Provide information relevant to identifying, defining and evaluating property conditions associated with *target analytes* that may pose risk to human health or the environment, or risk of bodily injury to persons on the property and thereby give rise to potential liability in tort.

1.2.5 Objective 5—Provide information relevant to evaluating and allocating *business environmental risk* in transactional and contractual contexts, including transferring, financing and insuring properties, and due diligence relating thereto.

1.2.6 Objective 6—Provide information to support disclosure of liabilities and contingent liabilities in financial statements and securities reporting.

1.2.7 Additional information concerning these six objectives may be found in the Legal Appendix, Appendix X1.

1.3 Scope of Assessment in Relation to Objectives —The scope of a *Phase II ESA* is related to the objectives of the investigation. Both scope and objectives may require ongoing evaluation and refinement as the assessment progresses.

1.3.1 In developing the scope of work and in evaluating data and information concerning the property, the *Phase II Assessor* must determine whether the available information is sufficient to meet the objectives of the investigation. Even after conducting *Phase II* activities to generate additional data, the *Phase II Assessor* must independently evaluate the sufficiency of the data in relation to the objectives. As the investigation progresses, the objectives may be refined or redefined in consultation between the *user* and the *Phase II Assessor*.

1.3.2 A single round of sampling and *chemical testing* may not always provide data sufficient to meet the chosen objectives. If not, this practice contemplates additional sampling in an iterative sequence that concludes when the available data are sufficient. This practice also acknowledges, however, that the *user* may instead elect either to redefine the objectives so that they can be met with the data available, or to terminate the investigative process without meeting the stated objectives. The *Phase II Assessment* report must disclose any respect in which available data are insufficient to meet objectives.

1.3.3 This practice does not require full *site characterization* in every instance, but may be used to carry out an investigation sufficient for that purpose if desired to meet the *user’s* objectives.

1.4 Needs of the User—The *user* and *Phase II Assessor* must have a mutual understanding of the context in which the *Phase II ESA* is to be performed and the objectives to be met by the investigation, i.e. the specific questions to be answered or problems to be resolved by the *Phase II ESA*. The scope of *Phase II* activities must be defined in relation to those objectives.

1.4.1 The degree of confidence desired by the *user* influences the scope of the investigation and the evaluation of data. More extensive testing and more iterations of sampling and analysis may be needed if the objectives require detailed conclusions with high confidence. Less testing and fewer iterations of sampling and analysis may be needed if the objectives of the assessment include only general conclusions.

1.5 Limitations—The use of this guide is related to the scope as set forth in Section 1. For information purposes, Section 12 of this guide contains a non-exhaustive list of certain environmental conditions that are beyond the scope of this guide but that may warrant consideration by parties to a commercial property transaction. This guide provides an approach that may be employed to assess the environmental conditions listed in Section 12. Reference also should be made to 4.1—This practice is not intended to supersede applicable requirements imposed by regulatory authorities. This practice does not attempt to define a legal standard of care either for the performance of professional services with respect to matters within its scope, or for the performance of any individual *Phase II Environmental Site Assessment*.

1.5 Organization of This Guide—This guide has twelve sections and one appendix. Section

1.6 Organization of This Practice—This practice has nine sections and four appendices. Section 1 is the Scope section. Section covers the Scope of the practice. Section 2 is Referenced Documents. Section , Referenced Documents, lists ASTM and other organizations’ related standards and guidance that may be useful in conducting *Phase II ESAs* in accordance with this practice. Section 3, Terminology, contains definitions of terms and acronyms used in this guide.practice. Section 4 is Significance and Use of this guide. Section addresses the Significance and Use of this practice, including the legal context into which *Phase II ESAs* may fall. Section 5 is Contracting Considerations. Sections 6-11 constitute the main body of the *Phase II Environmental Site Assessment* guide and include objectives (see Section discusses development and documentation of the scope of the *Phase II ESA*, including the Statement of Objectives for the assessment. Section 6), developing the scope of work (see Section provides a *Phase II ESA* Overview, with purpose and goal descriptions. Section 7), assessment activities (see Section comprises the main body of Performing the *Phase II ESA*, and includes initiating scientific inquiry by formulating the question to be answered (7.1), collecting and evaluating information (7.2), identifying areas for investigation (7.3), developing the *conceptual model* (7.4), developing a plan and rationale for sampling (7.5), conducting the sampling (7.6), and validating the *conceptual model* (7.7). Interpretation of results is covered in Section 8), evaluation of data (see Section , *Phase II Environmental Site Assessment* report preparation is addressed in Section 9), interpretation of results (see Section 10) and recommended report preparation (see Section 11). Section 12 provides additional information regarding non-scope considerations. Appendix X1 provides a sample table of contents and report format for a written *Phase II Environmental Site Assessment Report*, supports Section 4, and contains legal considerations pertaining to *Phase II Environmental Site Assessment*. Appendix X2 contains contracting considerations between *Phase II assessor*

and user. Appendix X3 supports Section 9, and describes two examples and a sample table of contents illustrating possible approaches to reporting the results of a *Phase II Environmental Site Assessment*. Appendix X4 supplements Section 2 with a list of standards and references that may be relevant in conducting a *Phase II Environmental Site Assessment*.

2. Referenced Documents

2.1 The references in this Section are for informational purposes. Although Phase II ESAs should utilize government- and industry-accepted practices and methods, this guide does not recommend the use of specific practices in the implementation of a Phase II ESA. Referenced Documents

2.1 The standards listed below are referenced in this practice.

2.2 *ASTM Standards:*

D5730 [Guide for Site Characterization for Environmental Purposes With Emphasis on Soil, Rock, the Vadose Zone and Ground Water](#)—ASTM Standards;³

D653 [Terminology Relating to Soil, Rock, and Contained Fluids](#)

D4750 [Test Method for Determining Subsurface Liquid Levels in a Borehole or Monitoring Well \(Observation Well\)](#)

E1527 [Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process](#)

E1528 [Practice for Limited Environmental Due Diligence: Transaction Screen Process](#)—Practice for Limited Environmental Due Diligence: Transaction Screen Process

E2247 [Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process for Forestland or Rural Property](#)

2.3 *Environmental Protection Agency Documents:*

Standards and Practices for All Appropriate Inquiries, Final Rule, Federal Register, Tuesday, November 1, 2005, Part III Environmental Protection Agency (codified at 40 CFR Part 312)⁴

3. Terminology

3.1 *Definitions:*

3.1.1 *aquifer*—as defined in Terminology D653, a geologic formation that is capable of providing a significant quantity of water. all appropriate inquiries (AAI)—those inquiries constituting “all appropriate inquiries... into the previous ownership and uses of the facility in accordance with generally accepted good commercial or customary standards and practices” as defined in *CERCLA*, 42 U.S.C. § 9601(35)(B), and the AAI Rule, 40 CFR Part 312, that must be conducted to qualify for certain *landowner liability protections (LLPs)* under *CERCLA*, and to qualify for brownfields *remediation* grants awarded under *CERCLA* section 104(k)(3)(A)(ii).

3.1.2 *ARARs*—an acronym for “applicable or relevant and appropriate requirements,” a term used in *CERCLA* and interpreted by EPA regulations. Applicable requirements means “those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a *CERCLA* site”, 40 C.F.R. § 300.5. Relevant and appropriate requirements means “those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not ‘applicable’ to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a *CERCLA* site, address problems or situations sufficiently similar to those encountered at the *CERCLA* site that their use is well suited to the particular site” 40 C.F.R. § 300.5. background concentration—the concentration of a *target analyte* in groundwater, surface water, air, soil gas, sediment, or soil at a reference location near an area under investigation, which is not attributable to the area under investigation. Background samples may contain the *target analyte*, due to either naturally occurring or man-made sources, but not due to the *release(s)* in question.

3.1.3 *business decision*—a decision based on various business risk management considerations relating to a specific property, such as a transfer of title or change in financing. Such considerations may also include the potential financial exposure associated with environmental risks, the value of the property compared with the cost of environmental assessment, and the participation and motivations of specific parties to the transaction (that is, owner, seller, buyer, lender, etc.). behavior, fate, and transport characteristics—natural attributes of a *target analyte* that can be predicted based on the distinguishing physico-chemical characteristics of the *target analyte* and the properties of the media in which the *target analyte* occurs.

3.1.4 *CERCLA*—the acronym for the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9601, *et seq.*, the primary federal statute that governs the imposition of liability for environmental cleanups. bona fide prospective purchaser (BFPP)—a person who meets the criteria stated at 42 U.S.C. § 9601(40) and thereby becomes eligible for the *bona fide prospective purchaser LLP*. See Legal Appendix, Appendix X1.

³ For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard’s Document Summary page on the ASTM website.

⁴ Guide D5730 covers the selection of the various ASTM Standards that are available for the investigation of soil, rock, the vadose zone, ground water, and other media where investigations have an environmental purpose.

⁴ Available from United States Environmental Protection Agency (EPA), Ariel Rios Bldg., 1200 Pennsylvania Ave., NW, Washington, DC 20004, <http://www.epa.gov>.