

# Phase I Environmental Site Assessment

## ASTM Standard Practice E1527-13



### **Property:**

CRIM No. 363-000-001-21  
Peñuelas Closed Municipal Solid Waste Landfill  
Santo Domingo Ward, PR-383 km 1.4 int.  
Peñuelas, Puerto Rico 00624

### **Prepared for:**

Americas for Conservation + the Arts (AFC+A)  
1942 Broadway Street, Suite 210  
Boulder, CO 80302

**Dated: May 17, 2019**

## Executive Summary

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Environment & Ecological Services LLC (hereinafter referred to as “EES”) has been retained by Americas for Conservation + the Arts, (hereinafter referred to as “AFC+A”, “Client” or “User”) to conduct a Phase I Environmental Site Assessment (ESA) in conformance with the ASTM Practice E1527-13, Standard Practice for Environmental Site Assessments. The subject property, the Peñuelas Closed Municipal Solid Waste Landfill (CMSWL), is located in the Santo Domingo Ward, with access through state road PR-383 km 1.4 int., Peñuelas, Puerto Rico. The objective of this assessment is to determine the presence or absence of Recognized Environmental Conditions (RECs), as defined in ASTM E1527-13. There are no exceptions of deletions from the ASTM Practice E1527-13. Please refer to the table below for further description of the subject property.

<b>Address:</b>	Santo Domingo Ward, PR-383 km 1.4 int., Peñuelas, Puerto Rico 00624
<b>Parcel Number<sup>1</sup>:</b>	363-000-001-21
<b>Owner:</b>	Municipality of Peñuelas
<b>Nature of Use:</b>	Industrial / Closed Municipal Solid Waste Landfill
<b>Total Parcel Area<sup>2</sup>:</b>	25,063.659 square meters

Please refer to Figure 1 – Site Location Map, Figure 2 – Plat Map, and Appendix A - Site Photographs.

### Findings

Based on the information presented in this report, EES made the following findings:

- EQB order the Municipality of Peñuelas to close the landfill in August 10, 1993;
- The Municipality of Peñuelas submitted a Landfill Closure Plan on March 28, 1994;
- EQB **partially** approved the closure plan, authorizing the municipality to begin closure activities on May 6, 1994. However, EQB also requested a revised Landfill Closure Plan for approval, including a Groundwater Monitoring Plan and a Landfill Gas Monitoring Plan.
- On January 27, 1995, the Municipality of Peñuelas submitted a revised Landfill Closure Plan and a Groundwater Monitoring Plan;
- Closure activities continue during 1995 to 1996 with the municipality’s contractor implementing changes outside the partially approved Landfill Closure Plan;
- 1996 Survey Drawings prepared by Muñoz Polanco & Associates showed that the landfill covers an area of 34, 688.0391 square meters of 8.8258 cuerdas;<sup>3</sup>
- On April 19, 1996 the Municipality of Peñuelas submitted a new Landfill Closure Design to EQB;
- By the end of December 1996, the municipality concluded landfill closure activities onsite;
- On January 22, 1997, EQB requested that the municipality prepare a revised Groundwater Monitoring Plan and a Landfill Gas Monitoring Plan for review and approval of the agency.
- On April 22, 1997, personnel from the Municipality of Peñuelas, EQB and the Puerto Rico Solid Waste Authority (SWA) met to discuss the current status of the landfill;
- On May 15, 1997, EQB requested that the municipality prepared a Groundwater Monitoring Plan, a Geologic/Hydrogeologic Assessment, and a Landfill Gas Monitoring Plan;

<sup>1</sup> Property Number as registered at the Municipal Revenue Collection Center (CRIM, for its Spanish acronym).

<sup>2</sup> Parcels area information as registered from deed documents and submitted to the Municipality Revenue Collection Center (CRIM, for its Spanish acronym) website. Retrieved on May 14, 2019 from <https://www.satasgis.crimpr.net/cdpprc/>.

<sup>3</sup> The subject property (Parcel No. 363-000-001-21) is currently registered in the CRIM with an area of 25,063.659 square meters or 6.3769 cuerdas.

- On June 14, 2000, EQB notified the municipality that it may exempt the groundwater monitoring requirement if it was scientifically proven that the landfill pollutants are not likely to migrate to the existing aquifer, pursuant Rule 551(b) of the EQB Solid Waste Management Regulations;
- On August 25, 2000, the municipality’s consultant, Geological Engineering and Environmental Services, submitted a landfill assessment (“*Evaluación Técnica y Físico Ambiental en Torno al Antiguo Vertedero Municipal de Peñuelas*”) to obtain coverage under Rule 551(b) of EQB regulations;
- On September 13, 2000, EQB reviewed the landfill assessment determined that the municipality still needed to prepare and implement a Groundwater Monitoring Plan pursuant EQB regulations;
- On September 10, 2001, Geological Engineering and Environmental Services requested EQB to reconsider exempting the municipality from preparing and implementing a Groundwater Monitoring Plan;
- On September 20, 2001, EQB asserted that the municipality had to prepare and implement a Groundwater Monitoring Plan pursuant Rule 551; and
- On June 24, 2003, EQB requested the municipality to prepare and implement a Groundwater Monitoring Plan and Landfill Gas Monitoring Plan pursuant Rule 554(A) and Rule 547(B) of the Solid Waste Management Regulations.

**Conclusions, Opinions, and Recommendations**

Based on the findings of this assessment, EES has reached the following conclusions and recommendations regarding recognized environmental conditions (RECs) at the subject property:

<u>Recognized Environmental Conditions</u>	<u>Potential Impact</u>
Potential groundwater contamination from solid waste landfill	High Risk
Potential methane and/or other landfill gas presence and/or migration	High Risk

Based on the information developed and provided as part of this assessment EES has reached the following conclusions and recommendations regarding the recognized environmental conditions (RECs):

1. Prior to proposing any post-closure activities, a Comprehensive Groundwater Monitoring Plan pursuant the requirements of the Puerto Rico Regulations for the Management of Non-Hazardous Wastes, Regulation Number 5717, of November 14, 1997, as amended, should be developed and implemented to assess potential vertical and horizontal migrations of pollutants and/or interaction with the shallow, perched or deep aquifer systems.
2. Likewise, a Comprehensive Landfill Gas Monitoring Plan pursuant the requirements of the Puerto Rico Regulations for the Management of Non-Hazardous Wastes, *supra*, should be developed and implemented to assess existing landfill gas conditions and extent.

The environmental professional who have conducted the site visit and reviewed the results of the data collection effort have concluded that the aforementioned are “recognized environmental conditions” (RECs). The RECs have been quantified based on a range of qualitative impacts on the soil, water, or air resources or structures on the subject property.

As per contractual agreement, EES has provided recommendations for further study above. It is up to the user of this report, based on his risk tolerance, fiduciary responsibility or the applicable laws and regulations, to determine the extent of further inquiry and assessment.

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## Acronyms

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<b>ACM</b>	Asbestos-Containing Material
<b>AFC+A</b>	Americas for Conservation + the Arts
<b>AgF</b>	Aguilita Gravelly Clay Loam
<b>AST</b>	Aboveground Storage Tank
<b>ASTM</b>	ASTM International (formerly American Society for Testing and Materials)
<b>AUL</b>	Activity and/or Use Limitations
<b>BMS</b>	Brownfields Management System
<b>CBPR</b>	Puerto Rico Firefighters Corp
<b>CERCLA</b>	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
<b>CERCLIS</b>	Comprehensive Environmental Response, Compensation and Liability Information System
<b>CFR</b>	Code of Federal Regulations
<b>CORRACTS</b>	RCRA Corrective Action Sites
<b>CRIM</b>	Municipal Revenue Collection Center
<b>EDR</b>	Environmental Data Resources, Inc.
<b>EES</b>	Environmental & Ecological Services LLC
<b>EPA</b>	United States Environmental Protection Agency
<b>EQB</b>	Puerto Rico Environmental Quality Board
<b>ERNS</b>	Emergency Response Notification System
<b>ESA</b>	Environmental Site Assessment
<b>FEMA</b>	Federal Emergency Management Agency
<b>FINDS</b>	Facility Index System
<b>FtC2</b>	Fraternidad Clay
<b>GIS</b>	Geographical Information System
<b>HC</b>	Historical Cleaners
<b>HAS</b>	Historical Auto Stations
<b>HUD</b>	United States Department of Housing and Urban Development
<b>IC / EC</b>	Institutional Controls / Engineering Controls
<b>IOP</b>	Innocent Owner/Operator Program
<b>LBP</b>	Lead-Based Paint
<b>LUST</b>	Leaking Underground Storage Tank
<b>MGP</b>	Manufactured Gas Plant
<b>MSL</b>	Mean Sea Level
<b>NFRAP</b>	No Further Remedial Action Planned
<b>NOAA</b>	National Oceanic and Atmospheric Administration
<b>NPL</b>	Superfund National Priority List
<b>OGPe</b>	Puerto Rico Permits Management Office
<b>OSHA</b>	Occupational Safety and Health Administration

<b><i>PACM</i></b>	Presumed Asbestos-Containing Material
<b><i>PCB</i></b>	Polychlorinated Biphenyls Compounds
<b><i>pCi/L</i></b>	picoCuries per Liter
<b><i>PRASA</i></b>	Puerto Rico Aqueduct and Sewer Authority
<b><i>PREPA</i></b>	Puerto Rico Electric Power Authority
<b><i>PRIDCO</i></b>	Puerto Rico Industrial Development Company
<b><i>PRHTA</i></b>	Puerto Rico Highway and Transportation Authority
<b><i>PRPB</i></b>	Puerto Rico Planning Board
<b><i>PRPRO</i></b>	Puerto Rico Property Registry Office
<b><i>RCRA</i></b>	Resource Conservation and Recovery Act of 1976
<b><i>REC</i></b>	Recognized Environmental Condition
<b><i>RGA</i></b>	Recovered Government Archives
<b><i>Tjl</i></b>	Limestone Member
<b><i>TRIS</i></b>	Toxic Inventory Information System
<b><i>TSCA</i></b>	Toxic Substances Control Act of 1976
<b><i>TSD</i></b>	Treatment, Storage, and Disposal Facilities
<b><i>USDA-NRCS</i></b>	United States Department of Agriculture Natural Resources Conservation Service
<b><i>USGS</i></b>	United States Geological Survey
<b><i>UST</i></b>	Underground Storage Tank
<b><i>VCP</i></b>	Voluntary Cleanup Program



## 1.0 Introduction

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### 1.1 Purpose

This assessment was designed to provide an objective, independent, professional opinion of the potential environmental risks associated with the subject property. The purpose of this environmental assessment was to identify recognized environmental conditions (RECs) at the subject property. “Recognized environmental conditions” means the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. The term is not intended to include *de minimis* conditions that generally do not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis* are not recognized environmental conditions.

The identification of recognized environmental conditions in connection with the subject property may impose an environmental liability on owners or operators of the site, reduce the value of the site, or restrict the use or marketability of the site, and therefore, further investigation may be warranted to evaluate the scope and extent of potential environmental liabilities.

### 1.2 Scope of Services

This assessment was performed in accordance with the scope of services outlined in the American Society for Testing and Materials (ASTM) E 1527-13, Standard Practice for Environmental Site Assessments. There are no exceptions or deletions from the ASTM Practice E 1527-13. The services performed by Environmental & Ecological Services LLC (EES) for this Phase I Environmental Site Assessment (ESA) was conducted in a manner consistent with the level of care and skill ordinarily exercised by firms similar to EES which are currently providing similar services. The scope of this assessment includes the following:

- Records Review - Review of records (environmental databases, local and state records, historical records, etc.).
- Site Reconnaissance - A visit and inspection of the subject property.
- Interviews - Interviews conducted with present and past owners (if feasible), operators and occupants of the subject property; and with local and/or state government officials.
- Report Preparation - The evaluation of information and the preparation of the report including the findings, conclusions and recommendations for additional investigation(s).

Typically, a Phase I ESA does not include sampling or testing of air, soil, groundwater, surface water, or building materials. These activities would be carried out in a Phase II ESA, if required.

### 1.3 Significant Assumptions

There is a possibility that even with the proper application of these methodologies that there may be conditions that exist on the subject property that could not be identified within the scope of the assessment

or which were not reasonably identifiable from the available information. EES believes that the information obtained from the record review and the interviews concerning the subject property is reliable. However, EES cannot and does not warrant or guarantee that the information provided by these sources is accurate or complete. The methodologies of this assessment are not intended to produce all-inclusive or comprehensive results, but rather to provide the Client with information relating to the subject property.

#### **1.4 Limitation and Exceptions**

This report has been prepared for the exclusive use of the Client and should not be reproduced or disseminated without the written approval of EES and the Client. EES has retained a copy of this report. No additions or deletions are permitted without the express written consent of EES. Use of this report in whole or in part by parties other than the Client is prohibited.

Information obtained from public records review, the site inspection, and interviews were used to characterize the subject property. Although the services provided are extensive, findings and conclusions are limited to and by the information obtained. If information becomes available concerning the subject property that was not included in this report, it should be made available to EES so that the conclusions and/or recommendations can be re-examined and modified, if applicable. Further non-intrusive and intrusive investigations and assessment methods are available that could further characterize the subject property's soil and ground water conditions.

The Site Plan is a sketch of the subject property, which identifies observations of characteristics of the subject property, of significance, at the time of the inspection of the subject property. These plans are not drawn to scale and should not be relied upon as an engineering plan.

EES's interviews are limited by the quality and completeness of answers provided to the proposed questions during the interview(s). The extent of historical research performed by EES is limited to availability, cost, and timeliness of utilizing various resources such as aerial photographs, historical Sanborn Maps, and Land Evidence Records (deeds pertaining to historical site ownership), all of which may indicate the historical utilization of the subject property. It should be noted that while the chain-of-ownership research and information provided should be accurate, it should in no way be construed as an actual Title search and should not be utilized or relied upon for any legal purposes.

Events occurring on the subject property after May 9, 2019, the date of the inspection, are beyond the scope of this report. EES makes no expressed or implied representations or warranties regarding any changes in condition of the premises after this date.

#### **1.5 Special Terms and Conditions**

Authorization to perform this assessment was given by Mr. Jonathan Cintrón, Executive Director of Americas for Conservations + the Arts (AFC+A). on March 30, 2019. Mr. Jonathan Cintrón also provided instructions as to the location of the subject property and an explanation of the facilities to be assessed.

The following is a list of terminology that is used throughout this report and therefore should be defined:

- Actual Knowledge: The knowledge actually possessed by an individual who is a real person, rather than an entity.

- Adjoining Properties: Any real property or properties the border of which is contiguous or partially contiguous with that of the subject property, or that would be contiguous or partially contiguous with that of the subject property but for a street, road, or other public thoroughfare separating them.
- All Appropriate Inquiry: That inquiry constituting "all appropriate inquiry into previous ownership and uses of the subject property consistent with good commercial or customary practice", as defined in CERCLA, 42 U.S.C 9607 (b)(3), 9607 (q); and 9607 (r), assuming compliance with other elements of the defense.
- Activity and Use Limitation (AUL): Legal or physical restrictions or limitations on the use of, or access to, a site or facility: (1) to reduce or eliminate potential exposure to hazardous substances or petroleum products in the soil, soil vapor, groundwater, and/or surface water on the property, or (2) to prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment.
- Business Environmental Risk: A risk which can have a material environmental or environmentally-driven impact on the business associated with the current or planned use of a parcel of commercial real estate, not necessarily limited to those environmental issues required to be investigated in the E 1527-13 practice. Considerations of business environmental risk may involve addressing one or more non-scope considerations.
- Controlled Recognized Environmental Condition: A REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (e.g., as evidenced by the issuance of a NFA letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (e.g., property use restrictions, AULs, institutional controls, or engineering controls).
- Data Failure: A failure to achieve the historical research objectives of ASTM 1527-13 even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap.
- Data Gap: A lack of or inability to obtain information required by ASTM 1527-13 despite good faith efforts by the environmental professional (EP) to gather such information. Data gaps may result from incompleteness in any of the activities required by the ASTM 1527-13, including, but not limited to, site reconnaissance (for example, an inability to conduct the subject property visit) and interviews (for example, an inability to interview the key subject property manager, regulatory officials, etc.).
- Due Diligence: The process of inquiring into the environmental characteristics of a parcel of commercial real estate or other conditions, usually in connection with a property transaction.
- Environmental Professional: A person meeting the education, training and experience requirements, as set forth in the ASTM E 1527-13 practice.
- Hazardous Substance: A substance defined as a hazardous substance pursuant to CERCLA 42 USC 9601(14), as interpreted by USEPA regulations and the courts.
- Historical Recognized Environmental Condition: A past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted residential use criteria established by a regulatory authority, without subjecting the property to any required controls (e.g., property use restrictions, AULs, institutional controls, or engineering controls). Before calling the past release and HREC, the EP must determine whether the past release is a REC at the time the Phase I ESA is conducted (e.g., if there has been a change in the regulatory criteria). If the EP

considers this past release to be a REC at the time the Phase I ESA is conducted, the condition shall be included in the conclusions section of the report as a REC.

- Migrate/Migration: Refers to the movement of hazardous substances or petroleum products in any form, including, for example, solid and liquid at the surface or subsurface, and vapor in the subsurface.
- Obvious: That which is plain or evident; a condition or fact that could not be ignored or overlooked by a reasonable observer while visually or physically observing the subject property.
- Occupants: Those tenants, subtenants, or other persons or entities using the subject property or a portion of the subject property.
- Orphan: Refers to sites that are not precisely locatable from the information in environmental and regulatory databases.
- Owner: Generally, the fee owner of record of the subject property.
- Practically Reviewable: Information that is practically reviewable means that the information is provided by the source in a manner and in a form that, upon examination, yields information relevant to the subject property without the need for extraordinary analysis of irrelevant data.
- Reasonable Ascertainable: Information that is (1) publicly available, (2) obtainable from its source within reasonable time and cost constraints, and (3) practically reviewable.
- Recognized Environmental Conditions: The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.
- Subject Property or Target Property: The real property that is the subject of this ESA.
- User: The party seeking to use Practice E1527 to perform an environmental site assessment of the subject property.

## 1.6 User Reliance

This report is for the use and benefit of, and may be relied upon by, Americas for Conservation + the Arts (AFC+A USA) and any of its affiliates, and third parties authorized by AFC+A USA and Environmental & Ecological Services LLC (EES), including any lender(s) in connection with a secured financing of the property, and their respective successors and assigns, if applicable.

## 2.0 Site Description

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### 2.1 Site Location

The Property is located on the Santo Domingo Ward, with access through state road PR-383 km 1.4 int., Peñuelas, Puerto Rico. The property is not serviced by either the Puerto Rico Aqueduct and Sewer Authority (PRASA) or the Puerto Rico Electric Power Authority (PREPA). The surrounding properties consist of undeveloped land, with some residential properties to the east and northeast. Please refer to the table below for further description of the subject property.

<b>Address:</b>	Santo Domingo Ward, PR-363 km 1.4 int., Peñuelas, Puerto Rico 00624
<b>Parcel Number<sup>4</sup>:</b>	363-000-001-21
<b>Owner:</b>	Municipality of Peñuelas
<b>Nature of Use:</b>	Industrial / Closed Municipal Solid Waste Landfill
<b>Total Parcel Area<sup>5</sup>:</b>	25,063.659 square meters

Please refer to Figure 1 – Site Location Map, Appendix A - Site Photographs, and Appendix B – Plat Map.

### 2.2 Current Property Use

The subject property is currently owned by the Municipality of Peñuelas. The former municipal solid waste landfill is currently vacant.

The property was not identified in the regulatory database report of Section 4.1.

### 2.3 Current Use of Adjoining Properties

The subject property is located within the Santo Domingo Ward of the Municipality of Peñuelas, Puerto Rico. During the vicinity reconnaissance, EES observed the following land use on properties in the immediate vicinity of the Property:

North:	Undeveloped Land / Municipal Access Road
South	Undeveloped Land
East:	Undeveloped Land and Some Residential Properties at over 100 meters from the subject property
West:	Undeveloped Land

No adjacent properties were identified in the regulatory database report of Section 4.1.

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<sup>4</sup> Property Number as registered at the Municipal Revenue Collection Center (CRIM, for its Spanish acronym).

<sup>5</sup> Parcels area information as registered from deed documents and submitted to the Municipality Revenue Collection Center (CRIM, for its Spanish acronym) website. Retrieved on May 14, 2019 from <https://www.satasgis.crimpr.net/cdprpc/>.

### 3.0 User Provided Information

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#### 3.1 Title Records

Based on historical data reviewed and limited information from the Municipal Revenue Collection Center (CRIM, for its Spanish acronym) and the Puerto Rico Property Registry Office (PRPRO), the following property information was obtained by EES:

<b>Parcel Number:</b>	363-000-001-21
<b>Owner Information:</b>	Unidentified

It is EES opinion that a full title-search may be required to identify any land title aggregations, segregations, and/or other real estate transactions that may not have been registered at the CRIM and/or PRPRO.

#### 3.2 Environmental Liens or Activity and Use Limitations

During the course of this investigation, the Client did not provide EES with any information pertaining to Activity and/or Use Limitations (AULs) associated with the subject property. EES reviewed information from the Puerto Rico Property Registry Office (PRPRO) Digital Real Estate Registry<sup>6</sup> regarding the subject property. No AULs were identified by EES in connection with the subject property.

#### 3.3 Specialized Knowledge and or Experience

No specialized knowledge in connection with the subject property or facility operations was identified by the Client.

#### 3.4 Commonly Known or Reasonable Ascertainable Information

No information was provided regarding any commonly known or reasonably ascertainable information that is material to RECs in connection with the property. EES researched online sources for any obvious or commonly known and reasonably ascertainable information regarding the subject property. No information was identified that is material to RECs in connection with the property.

#### 3.5 Valuation Reduction for Environmental Issues

EES was not provided with an appraisal for the subject property or any information supporting a potential valuation reduction of the property due to existing or historical environmental liens at the Property.

#### 3.6 Owner, Property Manager, and Occupant Information

The CMSWL has been owned and operated by the Municipality of Peñuelas since the early 1980s until it was ordered by the Puerto Rico Environmental Quality Board (EQB) to close operations in 1993.

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<sup>6</sup> See <https://karibe.ridpr.pr.gov/>.

### **3.7 Reason for Performing Phase I ESA**

This Phase I ESA is being conducted as part of a real estate due diligence process.

## 4.0 Records Review

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The information contained in this report was compiled from publicly available sources, including, but not limited to, information from databases managed by the United States Environmental Protection Agency (EPA), the Puerto Rico Environmental Quality Board (EQB) and the Puerto Rico Permits Management Office (OGPe, for its Spanish acronym).

### 4.1 Standard Environmental Records Sources

Relevant, readily available and practically reviewable documents, records, and other information were obtained and reviewed as part of this Phase I ESA. This section provides a list of sources of information and supporting documents.

#### Federal Source Records and Information

- Environmental Data Resources, Inc. (EDR) federal environmental record databases search report prepared for EES.
- U.S. Geological Survey (USGS), Topographic Maps of Peñuelas, PR, including 7.5- minute series quadrangles from:
  - 2018;
  - 2013;
  - 1982;
  - 1972;
  - 1964;
  - 1958;
  - 1952; and
  - 1946.
- Historical aerial photographs of the subject property and vicinity obtained from the USGS, Digital Orthophoto Quadrangles (DOQ), the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Army Corps of Engineers (USACE).

#### Commonwealth of Puerto Rico Source Records and Information

- EDR environmental record databases search report prepared for EES.
- Records maintained by the Puerto Rico Environmental Quality Board (EQB)<sup>7</sup>.
- Records maintained by the Puerto Rico Permits Management Office (OGPe, for its Spanish acronym)<sup>8</sup>.
- Records maintained by the Puerto Rico Property Registry Office (PRPRO)<sup>9</sup>.
- Historical aerial photographs of the subject property and vicinity obtained from the Municipal Revenue Collection Center (CRIM, for its Spanish acronym), the Puerto Rico Highway and Transportation Authority (PRHTA), and the Puerto Rico Planning Board (PRPB).

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<sup>7</sup> Online access at: <http://www.agencias.pr.gov/agencias/ica/areasprogramaticas/AreaCalidadAgua/>.

<sup>8</sup> Online access at: [https://ogpe.pr.gov/freedom/publicSearch/search?role=ROLE\\_REQUESTOR](https://ogpe.pr.gov/freedom/publicSearch/search?role=ROLE_REQUESTOR), <http://gis.jp.pr.gov/CasosArpe/Casos.aspx> and <http://jp.pr.gov/Servicios/Radicación-de-Casos/Casos-Radicados-JP>.

<sup>9</sup> Online access at: <https://karibe.ridpr.pr.gov>.



- Information from the Puerto Rico Firefighters Corps (CBPR, for its Spanish acronym).

#### Municipal Source Records and Information

- CRIM parcel maps, parcel information, and ownership history.
- Historical Sanborn Fire Insurance maps of the subject property and vicinity researched by EDR.

#### **4.2 Federal and State Database Records Search**

EES engaged EDR to scan both federal and state environmental record databases and provide a summary of facilities that are identified on any of the lists searched. The federal databases searched, and specified search radii, are as follows:

<b>Federal Database</b>	<b>Specified Search Radii</b>	<b>No. of Sites Identified</b>
National Priorities Site List (NPL)	1.0 mile	0
Delisted NPL Site List	1.0 mile	0
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) List	0.5 mile	0
CERCLIS No Further Remedial Action Planned (NFRAP) List	0.5 mile	0
Resource Conservation and Recovery Act (RCRA) Corrective Action Report (CORRACTS) Facilities List	1.0 mile	0
RCRA Non-CORRACTS Facilities List	0.5 mile	0
RCRA Generators lists	0.25 mile	0
RCRA Non-Generators list	0.25 mile	0
Institutional Controls / Engineering Controls Registries	0.5 mile	0
Emergency Response Notification System (ERNS) List	Target Property	0

The state databases searched, and the specified search radii, are as follows:

<b>State Database</b>	<b>Specified Search Radii</b>	<b>No. of Sites Identified</b>
State Leaking Underground Storage Tanks (LUST) List	0.5 mile	0
State Registered Underground Storage Tank (UST) List	0.25 mile	0
Voluntary Cleanup Sites	0.5 mile	0
Brownfield Sites	0.5 mile	0
Local Landfill/Solid Waste Disposal Sites	0.5 mile	0
Local Hazardous Waste/Contaminated Sites	Target Property	0
Local Land Records	Target Property	0
Records of Emergency Release Reports	Target Property	0
High Risk Historical Records	1 mile	0
Recovered Government Archives	Target Property	0

Additionally, EDR identified a total of 8 “orphan” records. Most of the records correspond to the LUST list. Based on the information available, the locations of the orphan sites were reviewed. None of the sites were found within the minimum search distance from the subject property.

### **Subject Property**

Databases identified on:           None  
Comments:                            N/A

### **NPL, Delisted NPL, CERCLIS & NFRAP Sites**

The National Priority List (NPL) is the USEPA database of uncontrolled or abandoned hazardous waste sites identified for priority remedial actions under the Superfund program. The Delisted NPL is the database of delisted Superfund sites. The Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) List contains sites which are either proposed to be or on the NPL, and sites which are in the screening and assessment phase for possible inclusion on the NPL. No Further Remedial Action Planned (NFRAP) sites may be sites where, following an initial investigation, no contamination was found, contamination was removed quickly, or the contamination was not serious enough to require federal Superfund action or NPL consideration.

No NPL, delisted NPL, CERCLIS or NFRAP sites were identified within the study radii.

### **RCRA Facilities**

Regulated hazardous waste activity is tracked under the Resource Conservation and Recovery Information System as defined by the Resource Conservation Act (RCRA). Facilities that treat, store or dispose of hazardous waste are listed in the RCRA TSD database. Facilities that generate hazardous wastes are listed in the RCRA Generators (RCRA GEN) database. This database includes facilities that generate at least 1,000 kg/month of non-acutely hazardous waste or 1 kg/month of acutely hazardous waste, referred to as large-quantity generators, and those that generate less than 1,000 kg/month of non-acutely hazardous waste, referred to as small-quantity generators. RCRA facilities that have had a release of hazardous waste or constituents to the environment, for which the government is requiring corrective action, are tracked in the Corrective Action Tracking System (RCRA COR) database, while generators that are known to have violated RCRA regulations are tracked in the RCRA violations and enforcement (RCRA Viol). These violations can be the result of paperwork problems and are not necessarily related to releases of hazardous material.

No RCRA COR, RCRA TSD, or RCRA NonGEN facilities were identified within the study radii.

### **ERNS Incidents and Spills Sites**

The Emergency Response and Notification System (ERNS) is a national database containing records of releases of oil and hazardous substances reported to the USEPA, U.S. Coast Guard, the National Response Center and the Department of Transportation, since 1986.

No ERNS or Spills sites were identified within the study radius.

### **Local Landfill / Solid Waste Disposal Sites**

The Local Solid Waste Landfill Database (SWL) is a collection of known regulated and unregulated solid waste landfills, incinerators, or transfer stations.

No SWL sites were identified within the study radius.

### **FINDS & TRIS Database Sites**

The Facility Index System (FINDS)<sup>10</sup> report is a computerized inventory of all facilities that are regulated or tracked by the USEPA. These facilities are assigned an identification number that serves as a cross-reference for other databases in the USEPA's program system. The Toxic Inventory Information System (TRIS) report contains information concerning the industrial release and/or transfer of toxic chemicals, as reportable under Title III of the Superfund Amendments and Re-authorization Act of 1986 (Sara Title III). Inclusion on this database is required for facilities that release reportable amounts of chemicals into the environment.

No FINDS or TRIS sites were identified in the target property.

### **State/Local UST & LUST Sites**

The Leaking Underground Storage Tank (LUST) database is a listing of confirmed or suspected releases from underground storage tanks that have been reported to the state. The state Underground Storage Tank (UST) database is an inventory of all regulated USTs.

No LUST sites were identified within or adjacent to the target property.

### **Federal IC, EC and Brownfield Sites**

Federal Institutional Controls (IC) and Engineering Controls (EC) are Superfund sites that have either an engineering or an institutional control. The data includes the control and the media contaminated. The EPA Brownfields Management System (BMS) is a database designed to assist EPA in collecting, tracking, and updating information, as well as reporting on the major activities and accomplishments of the various Brownfield Grant Programs. The database defines a brownfield site as "real property where expansion or redevelopment is complicated by actual or perceived environmental contamination.

No Federal Brownfield IC or EC regulatory sites were identified within the study radius.

### **State/Tribal IC/EC, VCP or Brownfields Sites**

State/Tribal Brownfields is a listing of all former industrial properties that lie dormant or underutilized due to liability associated with real or perceived contamination. Some sites are noted as having institutional controls placed on them. The Brownfields Management System (BMS) is an analytical database designed to assist EPA in collecting, tracking, and updating information, as well as reporting on the major activities and accomplishments of the various Brownfield Grant Programs. The database defines a brownfield site as "real property where expansion or redevelopment is complicated by actual or perceived environmental contamination."

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<sup>10</sup> Online access at <https://www.epa.gov/enviro/frs-query-page>.

State/Tribal VCP is a listing of all sites in the Voluntary Cleanup Program (VCP) and the Innocent Owner/Operator Program (IOP). Some VCP and IOP sites are noted as having institutional (IC) or engineering (EC) controls placed on them.

No State/Tribal IC/EC, VCP or Brownfield regulatory sites were identified within the study radius.

### **Other Historical or Regulatory Findings**

**EDR Proprietary Manufactured Gas Plants:** The EDR Proprietary Manufactured Gas Plant (MGP) Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination. There are no MGP sites located within one mile of the subject property.

**EDR Exclusive Historical Auto Stations (HAS):** EDR searched selected national collections of business directories and collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns but may not show up in current government records searches. There are no HAS sites located within one mile of the subject property.

**EDR Exclusive Historical Cleaners (HC):** EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns but may not show up in current government records searches. There are no HC sites located within one mile of the subject property.

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. This database falls within a category of information EDR classifies as "Recovered Government Archives", or RGA. There are no RGA LUST sites located within the subject property.

A copy of the environmental regulatory databases and EDR's report are included in Appendix C.

### 4.3 Additional Environmental Records Sources

EES contacted the following local agencies responsible for information regarding any hazardous materials response incidents, chemical emergencies or notices or environmental violations at the subject property.

#### 4.3.1 Puerto Rico Environmental Quality Board

EES reviewed the Puerto Rico Environmental Quality Board (EQB) database for UST and LUST. UST and LUST records found match the information provided by EDR. Furthermore, EES reviewed the EQB's Land Pollution Control Area (LPCA) available files for the Peñuelas CMSWL (See Appendix D – Additional Environmental Records Sources), including:

- Inspection Reports from 1993 to 2003;
- Deficiency letter sent by the EQB to the Municipality of Peñuelas from 1993 to 2003;
- EQB Administrative Orders for Closure of the Municipality of Peñuelas Landfill, dated August 10, 1993 and October 11, 1993;
- Contractor's Landfill Closure Specifications;
- Contractor Environmental Assessments and Investigations;

Based on the reviewed of the documentation provided by EQB, EES made the following findings:

- EQB order the Municipality of Peñuelas to close the landfill in August 10, 1993;
- The Municipality of Peñuelas submitted a Landfill Closure Plan on March 28, 1994;
- EQB partially approved the closure plan, authorizing the municipality to begin closure activities on May 6, 1994. However, EQB also requested a revised Landfill Closure Plan for approval, including a Groundwater Monitoring Plan and a Landfill Gas Monitoring Plan.
- On January 27, 1995, the Municipality of Peñuelas submitted a revised Landfill Closure Plan and a Groundwater Monitoring Plan;
- Closure activities continue during 1995 to 1996 with the municipality's contractor implementing changes outside the partially approved Landfill Closure Plan;
- 1996 Survey Drawings prepared by Muñoz Polanco & Associates showed that the landfill covers an area of 34, 688.0391 square meters of 8.8258 cuerdas;<sup>11</sup>
- On April 19, 1996 the Municipality of Peñuelas submitted a new Landfill Closure Design to EQB;
- By the end of December 1996, the municipality concluded landfill closure activities onsite;
- On January 22, 1997, EQB requested that the municipality prepare a revised Groundwater Monitoring Plan and a Landfill Gas Monitoring Plan for review and approval of the agency.
- On April 22, 1997, personnel from the Municipality of Peñuelas, EQB and the Puerto Rico Solid Waste Authority (SWA) met to discuss the current status of the landfill;
- On May 15, 1997, EQB requested that the municipality prepared a Groundwater Monitoring Plan, a Geologic/Hydrogeologic Assessment, and a Landfill Gas Monitoring Plan;
- On June 14, 2000, EQB notified the municipality that it may exempt the groundwater monitoring requirement if it was scientifically proven that the landfill pollutants are not likely to migrate to the existing aquifer, pursuant Rule 551(b) of the EQB Solid Waste Management Regulations;
- On August 25, 2000, the municipality's consultant, Geological Engineering and Environmental Services, submitted a landfill assessment ("*Evaluación Técnica y Físico Ambiental en Torno al Antiguo Vertedero Municipal de Peñuelas*") to obtain coverage under Rule 551(b) of EQB regulations;

<sup>11</sup> The subject property (Parcel No. 363-000-001-21) is currently registered in the CRIM with an area of 25,063.659 square meters or 6.3769 cuerdas.

- On September 13, 2000, EQB reviewed the landfill assessment determined that the municipality still needed to prepare and implement a Groundwater Monitoring Plan pursuant EQB regulations;
- On September 10, 2001, Geological Engineering and Environmental Services requested EQB to reconsider exempting the municipality from preparing and implementing a Groundwater Monitoring Plan;
- On September 20, 2001, EQB asserted that the municipality had to prepare and implement a Groundwater Monitoring Plan pursuant Rule 551; and
- On June 24, 2003, EQB requested the municipality to prepare and implement a Groundwater Monitoring Plan and Landfill Gas Monitoring Plan pursuant Rule 554(A) and Rule 547(B) of the Solid Waste Management Regulations.

#### **4.3.2 Puerto Rico Permits Management Office**

EES reviewed the Puerto Rico Permits Management Office (OGPe, for its Spanish acronym) database<sup>12</sup> for information pertaining to any records of code violations or other similar circumstances that could be of environmental concern for the subject property. No records of building code or permit violations were found for the subject property.

#### **4.3.3 Puerto Rico Firefighters Corp**

EES reviewed the Puerto Rico Firefighters Corps (CBPR, for its Spanish acronym) records for information regarding any hazardous materials response incidents, chemical emergencies or notices or environmental violations at the subject property. No records of hazardous material response incidents were found for the subject property.

### **4.4 Physical Settings**

EES reviewed several sources of publications such as the United States Geological Survey (USGS), the Federal Emergency Management Agency (FEMA) Maps, the United States Department of Agriculture (USDA) Soil Survey, and EDR to gather information pertaining to the subject property and its vicinity's physical setting source.

The United States Geological Survey (USGS), Peñuelas Quadrangle 7.5-Minute series topographic map was reviewed for this Phase I ESA. This map was first published by the USGS in 1946, and last revised in 2018. According to the contour lines on the topographic map, the elevation of the subject property is approximately 540 feet above mean sea level (MSL). The contour lines in the area of the subject property indicate the area is flat with a gentle slope towards the north. There are no surface water bodies located on the property. According to previous subsurface investigation, the depth to groundwater is varies from 55 feet to 65 feet below grade surface (GEES, 2000; See Appendix D – Additional Environmental Records Sources).

The anticipated direction of groundwater flow is to the north. However, Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata. Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific

<sup>12</sup> Online access at: [https://ogpe.pr.gov/freedom/publicSearch/search?role=ROLE\\_REQUESTOR](https://ogpe.pr.gov/freedom/publicSearch/search?role=ROLE_REQUESTOR); <https://www.sip.pr.gov/web/guest/busqueda-de-casos>; <http://gis.jp.pr.gov/CasosArpe/Casos.aspx>; and <http://casos.sip.pr.gov/>.

geologic and soil strata data.

There are two types of soils present onsite. The soils hydrologic group in the area are Class B – moderate infiltration rates, and Class C – low infiltration rates. The Class B soils on-site belongs to the Aguilita gravelly clay loam (AgF), which is typically characterized as gravelly clay loam to a depth of 13 inches, and gravelly loam below 13 inches. The Class C soils on-site belongs to the Fraternidad clay (FtC2), which is typically characterized as clays up to a depth of 60 inches (See Appendix E – USDA-NRCS Custom Soil Report).

Based on the review of the USGS Geologic Map of the Peñuelas and Punta Cuchara Quadrangle, USGS MAP I-1042 (Krushensky and Monroe, 1978) and topographic map, the subject property is situated above Oligocene limestone (Tjl, Limestone Member), which exhibits white to grayish-orange limestone, mostly crystalline and coralline, and lenses of cobbles and sandy mudstone. (See Appendix F – USGS Geologic Map of Peñuelas and Punta Cuchara).

#### 4.5 Historic Use Information of the Property

EES researched several sources of historical information to identify the approximate year of development of the subject property and to determine the past use of the subject property since its initial development. Such sources included, but were not limited to, the research and review of PRPRO records, historical aerial photographs, historical Sanborn Maps, and topographic maps.

According to a review of aerial photographs and topographic maps, as well as information obtained from EQB, the subject property began to be used as a municipal landfill in the early 1980s, until it was ordered by EQB to close operations in 1993. No aerial photographs or records between the mid 1930s and late 1950s were found in order to determine the use of the parcel during that period. However, no developments or usages of the subject or adjacent properties were identified between the 1930s and 1962 that would be indicative of any RECs (See Appendix G – Historical Aerial Photographs and Topographic Maps).

Based on the information obtained during this ESA, it is the professional opinion of EES that a historical data failure, as defined in the ASTM guidelines, has occurred in attempting to document the history of the subject property between the mid 1930s and late 1950s. However, based on the information obtained, the lack of documentation is not deemed critical and did not affect the ability to identify potential REC(s) associated with the subject property.

##### 4.5.1 Aerial Photographs

EES reviewed aerial photographs obtained from various sources, including, but not limited to, EDR, CRIM, NOAA, PRHTA, PRPB, USACE, USDA, and USGS. The subject property began to be used as a municipal landfill in the early 1980s until it was ordered to close operations in 1993. No developments or usages of the subject or adjacent properties were identified on the aerials that would be indicative of any RECs. Please refer to Appendix G – Historical Aerial Photographs and Topographic Maps.

Year	Subject Property	Adjoining Properties
2017	Closed Municipal Solid Waste Landfill	Undeveloped land to the north; undeveloped land and some residential properties to the east; undeveloped land to the south; and undeveloped to the west.
2010	Closed Municipal Solid Waste Landfill	Undeveloped land to the north; undeveloped land and some residential properties to the east; undeveloped land to the south; and undeveloped to the west.

<b>Year</b>	<b>Subject Property</b>	<b>Adjoining Properties</b>
2007	Closed Municipal Solid Waste Landfill	Undeveloped land to the north; undeveloped land and some residential properties to the east; undeveloped land to the south; and undeveloped to the west.
2004	Closed Municipal Solid Waste Landfill	Undeveloped land to the north; undeveloped land and some residential properties to the east; undeveloped land to the south; and undeveloped to the west.
2002	Closed Municipal Solid Waste Landfill	Undeveloped land to the north; undeveloped land and some residential properties to the east; undeveloped land to the south; and undeveloped to the west.
1998	Closed Municipal Solid Waste Landfill	Undeveloped land to the north; undeveloped land and some residential properties to the east; undeveloped land to the south; and undeveloped to the west..
1993	Active Municipal Solid Waste Landfill	Undeveloped land to the north; undeveloped land and some residential properties to the east; undeveloped land to the south; and undeveloped to the west.
1987	Active Municipal Solid Waste Landfill	Undeveloped land to the north; undeveloped land and some residential properties to the east; undeveloped land to the south; and undeveloped to the west.
1977	Undeveloped Land	Undeveloped land to the north; undeveloped land and some residential properties to the east; undeveloped land to the south; and undeveloped to the west.
1972	Undeveloped Land	Undeveloped land to the north; undeveloped land and some residential properties to the east; undeveloped land to the south; and undeveloped to the west.
1962	Undeveloped Land	Undeveloped land to the north; undeveloped land to the east; undeveloped land to the south; and undeveloped to the west.

#### **4.5.2 Sanborn Fire Insurance Maps**

There was no Sanborn Fire Insurance Map coverage available for the property. See Appendix H – Certified Sanborn® Map Report.



## 5.0 Site and Area Reconnaissance

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### 5.1 Methodology and Limiting Conditions

On May 9, 2019, EES Environmental Professional, José L. Báez Romero, performed a walking inspection at the subject property. The weather conditions were very warm (upper 80s) and sunny at the time of the site inspection. Some of the areas were inaccessible due to overgrown shrubs, vines and trees. Thus, landfill structures such as gas vents, monitoring wells, drainage controls could not be located and/or inspected to verify current conditions (See Appendix A – Site Photographs).

### 5.2 General Site Setting

The subject property is located at Santo Domingo Ward, PR-383 km 1.4 int., Peñuelas, Puerto Rico 00624. Based on the NAD 83 coordinate datum (18.053243°, -66.741449°) the subject property is located in the USGS Peñuelas, Puerto Rico Topographic Quadrangle.

### 5.3 Exterior and Interior Observations

#### 5.3.1 *Petroleum Products*

There were no current indications of petroleum products located on the subject property.

#### 5.3.2 *Hazardous Materials*

There were no current indications of storage of hazardous materials located on the subject property.

#### 5.3.3 *Drum or Containers*

There were no current indications of drums or containers located on the subject property.

#### 5.3.4 *Underground Storage Tanks / Aboveground Storage Tanks*

EES reviewed government records for the identification of leaking underground storage tanks (LUST) within the subject property. No records of underground storage tanks (UST) or leaking underground storage tanks (LUST) were found for the subject property. EES did not observed any apparent evidence of existing or former aboveground storage tanks (ASTs) or USTs, other than the existing UIC system.

#### 5.3.5 *Intermodal Shipping Containers*

There were no current indications of intermodal shipping containers at the subject property.

#### 5.3.6 *Indications of Polychlorinated Biphenyls*

Polychlorinated biphenyls (PCBs) are a chemical component of many dielectric fluids, heat transfer fluids, hydraulic fluids, lubricating oils, paints, or coatings manufactured prior to July 2, 1979. Equipment that may potentially contain PCBs includes electrical equipment such as transformers or capacitors or hydraulically operated equipment, such as elevators, compaction equipment, or manufacturing equipment. The

manufacture and distribution in commerce of PCBs was banned for use in 1979 by the United States Congress, which enacted the Toxic Substance and Control Act (TSCA). There were no current indications of PCBs containing materials at the subject property.

#### **5.3.7 Pits, Ponds & Lagoons**

No evidence of pits, ponds and/or lagoons was noted on the subject property.

#### **5.3.8 Odors**

No significant odors were noted on the subject property.

#### **5.3.9 Stained Soil or Pavement**

No evidence of significantly stained soil or pavement which may be related to petroleum products of hazardous substances spills and/or leaks was noted on the subject property.

#### **5.3.10 Pools of Liquid**

No unidentified pools of liquid were noted on the subject property.

#### **5.3.11 Stressed Vegetation**

No evidence of stressed vegetation anticipated to be caused by contamination was noted on the subject property.

#### **5.3.12 Solid Waste Disposal**

No solid waste concerns (i.e., exposed waste material, debris, and/or piles of trash) were noted on the subject property.

#### **5.3.13 Medical/ Biological Wastes/ X-Ray or other Radioactive Activities**

No medical or biological wastes were observed. No x-ray or other radioactive activities were observed or reported.

#### **5.3.14 Drains and Sumps**

No drains or sumps were noted on the subject property.

#### **5.3.15 Septic Systems**

No septic systems are present on the subject property.

#### **5.3.16 Wastewater**

No wastewater, other liquid or any other discharge that may be conveyed into a drain, ditch, or water body was observed on the subject property.

### **5.3.17 Wells**

EES reviewed EDR's report and the Puerto Rico Aqueduct and Sewer Authority (PRASA) geographic information system (GIS) information for the location of public supply wells, water wells, dry wells, monitoring wells, irrigation wells, injections wells or abandoned wells. Thirteen (13) USGS monitoring wells were identified within a 1-mile of the subject property. One (1) PRASA public water supply wells were identified within a 1-mile of the subject property (See Appendix I – Public Supply Water Wells Map). No public water supply wells or other types were identified on the subject property.

### **5.3.18 Cisterns**

No aboveground evidence of cisterns was observed outside the existing building during the site reconnaissance.

## **5.4 Non-Scope Considerations**

### **5.4.1 Wetlands / Flood Plain**

No evidence of wetlands was noted on the subject property. The subject property is situated within Zone X, which is defined as areas determined to be outside of the 500-year floodplain (See Appendix J – National Flood Hazard Layer FIRMette).

### **5.4.2 Endangered Species**

Review of the United States Fish and Wildlife Service (USFWS) Information, Planning and Consultation System (IPaC) database indicated that listed endangered species exist at the subject property, including the Puerto Rican Nightjar (*Caprimulgus noctitherus*), Puerto Rican Boa (*Epicrates inornatus*), Puerto Rican Crested Toad (*Peltophryne lemur*), Bariaco (*Trichilia triacantha*), and *Eugenia woodburyana*. Thus, a formal consultation under Section 7 of the Endangered Species Act of 1973 may be required to determine the presence of the listed species prior to any proposed post-closure landfill activities(See Appendix K – USFWS IPaC Resources List).

### **5.4.3 Lead-Based Paint**

Lead is a highly toxic metal that affects virtually every system of the body. While adults can suffer from excessive lead exposures, the groups most at risk are fetuses, infants and children under 6. Congress passed the Residential Lead-Based Paint Hazard Reduction Act of 1992, also known as "Title X", to protect families from exposure to lead from paint, dust, and soil. Section 1018 of this law directed the Housing and Urban Development (HUD) and the EPA to require the disclosure of known information on lead-based paint (LBP) and LBP hazards before the sale or lease of most housing built before 1978. Sellers, landlords, and their agents are responsible for providing this information to the buyer or renter before sale or lease.

According to Section 1017 of Title X, "LBP hazard is any condition that causes exposure to lead from lead-contaminated dust; bare, lead-contaminated soil; or LBP that is deteriorated or intact LBP present on accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects." Therefore, under Title X intact lead-based paint on most walls and ceilings is not considered a "hazard,"

although the condition of the paint should be monitored and maintained to ensure that it does not become deteriorated. LBP is defined as any paint, varnish, stain, or other applied coating that has 1 mg/cm<sup>2</sup> (or 5,000 ug/g by weight) or more of lead.

No structures or facilities that may contain LBP were observed on the subject property.

#### **5.4.4 Potential Asbestos-Containing Material**

Asbestos is the name given to a number of naturally occurring, fibrous silicate minerals mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. Asbestos is commonly used as an acoustic insulator, thermal insulation, fire proofing and in other building materials. Exposure to airborne friable asbestos may result in a potential health risk because persons breathing the air may breathe in asbestos fibers. Continued exposure can increase the amount of fibers that remain in the lungs. Fibers embedded in lung tissue over time may cause serious lung diseases including: asbestosis, lung cancer, or mesothelioma.

The Occupational Safety and Health Administration (OSHA) regulation 29 CFR §1926.1101 requires certain construction materials to be *presumed* to contain asbestos, for purposes of this regulation. All thermal system insulation (TSI), surfacing material, and asphalt/vinyl flooring that are present in a building constructed prior to 1980 and have not been appropriately tested are “presumed asbestos-containing material” (PACM).

No structures or facilities that may contain asbestos-containing material (ACM) were observed on the subject property.

#### **5.4.5 Radon**

Radon is a colorless, odorless, naturally occurring, radioactive, inert, gaseous element formed by radioactive decay of radium (Ra) atoms. EPA has prepared a map to assist National and State organizations to target their resources and to implement radon-resistant building codes<sup>13</sup>. The map divides the country into three Radon Zones; Zone 1 being those areas with the average predicted indoor radon concentration in residential dwellings exceeding the US EPA Action Limit of 4.0 picoCuries per Liter (pCi/L). It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the US EPA recommends site-specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures.

Radon sampling was not conducted as part of this assessment. Review historic geometric mean radon levels within the Municipality of Peñuelas (0.1 pCi/L)<sup>14</sup> places the Property in Zone 3, where average predicted radon levels are less than 2.0 pCi/L.

Based upon the radon zone classification, radon is not considered to be a significant environmental concern.

<sup>13</sup> EPA Publication No. 402-R-93-071: EPA’s Map of Radon Zones – National Summary (1993). <https://www.epa.gov/radon/epa-map-radon-zones>.

<sup>14</sup> USGS Open File Report 93-292-K: Geologic Radon Potential of Guam and Puerto Rico (1995). <https://pubs.usgs.gov/of/1993/0292k/report.pdf>.

## 6.0 Vapor Encroachment Condition

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### 6.1 ASTM Standards

ASTM E1527-13 specifically requires assessing the potential for hazardous vapors to migrate onto or within the subject property or target property (TP). It does so by defining “migrate/migration” as “the movement of hazardous substances or petroleum products in any form, including, for example, solid and liquid at the surface or subsurface, and vapor in the subsurface,” and then requiring an analysis of surrounding property uses and database records for migration potential.

ASTM Standard E2600-15 is a Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions (Guide 2600). A footnote to the definition of “migrate/migration” in ASTM E1527-13 states “vapor migration in the subsurface is described in Guide 2600,” thereby placing some reliance on Guide 2600. Further, the goal of Guide 2600 is to identify a Vapor Encroachment Condition (VEC) which is *“the presence or likely presence of [chemicals of concern] vapors in the subsurface of the target property (TP) caused by the release of vapors from contaminated soil or groundwater either on or near the TP as identified by Tier 1 ... or Tier 2 ... procedures.”* Similarly, the goal of ASTM E1527-13 is to identify a Recognized Environmental Condition, or REC, which is *“the presence or likely presence of any substances or petroleum products in, on, or at a property... due to release to the environment... .”*

Guide 2600 specifies use of *“Phase I ESA-type information to determine if a VEC exists”* as part of a “Tier 1” screen. This includes an analysis of historical records; historical uses; federal, state, local, and tribal governmental records; physical setting information; and user-specialized knowledge. The Tier 1 screen even uses minimum search distances, focusing its analysis on potential petroleum releases within 1/10 of a mile from the target property, and up to 1/3 of a mile for hazardous material releases that migrate more easily than petroleum. Unless a Tier 1 screen can rule out a VEC, Guide 2600 calls for regulatory file reviews and/or soil, soil gas, or groundwater sampling under a Tier 2 screen process, similar to what occurs if a REC is identified under ASTM E1527-13.

### 6.2 Vapor Encroachment Screening Data

A Vapor Encroachment Screening (VES) model was performed to identify the potential for any VEC that may be present within the property (See Appendix L – EDR Vapor Encroachment Screening Report). The VES model did not identify any up-gradient sites that could represent potential sources for vapor intrusion at the subject property. Thus, the VES model did not identify any threats resulting from off-site past activities that would be classified as a potential VEC affecting the subject property.

## 7.0 Interviews

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### **7.1 Interview with Owner**

On May 10, 2019, EES interviewed Eng. Rose E. Rodríguez Dávila, Director of the Municipality of Peñuelas Planning Office. Mrs. Rodríguez Dávila did not reveal any knowledge environmental conditions with regards to the subject property.

### **7.2 Interview with Site Manager**

No interviews were conducted with the site manager. The property is currently unoccupied.

### **7.3 Interview with Former Occupants**

No interviews were conducted with former occupants.

## 8.0 Summary of Findings

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EES has performed this Phase I Environmental Site Assessment of the Subject Property, located at the Santo Domingo Ward, PR-383 km 1.4 int., Peñuelas, PR 00624, in general conformance with the scope and limitations of ASTM Standard E1527-13. Any exception to, or deletions from, this practice are described in Section 1.4 of this report. Based on the information presented in this report, EES made the following findings:

- EQB order the Municipality of Peñuelas to close the landfill in August 10, 1993;
- The Municipality of Peñuelas submitted a Landfill Closure Plan on March 28, 1994;
- EQB **partially** approved the closure plan, authorizing the municipality to begin closure activities on May 6, 1994. However, EQB also requested a revised Landfill Closure Plan for approval, including a Groundwater Monitoring Plan and a Landfill Gas Monitoring Plan.
- On January 27, 1995, the Municipality of Peñuelas submitted a revised Landfill Closure Plan and a Groundwater Monitoring Plan;
- Closure activities continue during 1995 to 1996 with the municipality's contractor implementing changes outside the partially approved Landfill Closure Plan;
- 1996 Survey Drawings prepared by Muñoz Polanco & Associates showed that the landfill covers an area of 34, 688.0391 square meters of 8.8258 cuerdas;<sup>15</sup>
- On April 19, 1996 the Municipality of Peñuelas submitted a new Landfill Closure Design to EQB;
- By the end of December 1996, the municipality concluded landfill closure activities onsite;
- On January 22, 1997, EQB requested that the municipality prepare a revised Groundwater Monitoring Plan and a Landfill Gas Monitoring Plan for review and approval of the agency.
- On April 22, 1997, personnel from the Municipality of Peñuelas, EQB and the Puerto Rico Solid Waste Authority (SWA) met to discuss the current status of the landfill;
- On May 15, 1997, EQB requested that the municipality prepared a Groundwater Monitoring Plan, a Geologic/Hydrogeologic Assessment, and a Landfill Gas Monitoring Plan;
- On June 14, 2000, EQB notified the municipality that it may exempt the groundwater monitoring requirement if it was scientifically proven that the landfill pollutants are not likely to migrate to the existing aquifer, pursuant Rule 551(b) of the EQB Solid Waste Management Regulations;
- On August 25, 2000, the municipality's consultant, Geological Engineering and Environmental Services, submitted a landfill assessment ("*Evaluación Técnica y Físico Ambiental en Torno al Antiguo Vertedero Municipal de Peñuelas*") to obtain coverage under Rule 551(b) of EQB regulations;
- On September 13, 2000, EQB reviewed the landfill assessment determined that the municipality still needed to prepare and implement a Groundwater Monitoring Plan pursuant EQB regulations;
- On September 10, 2001, Geological Engineering and Environmental Services requested EQB to reconsider exempting the municipality from preparing and implementing a Groundwater Monitoring Plan;
- On September 20, 2001, EQB asserted that the municipality had to prepare and implement a Groundwater Monitoring Plan pursuant Rule 551; and
- On June 24, 2003, EQB requested the municipality to prepare and implement a Groundwater Monitoring Plan and Landfill Gas Monitoring Plan pursuant Rule 554(A) and Rule 547(B) of the Solid Waste Management Regulations.

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<sup>15</sup> The subject property (Parcel No. 363-000-001-21) is currently registered in the CRIM with an area of 25,063.659 square meters or 6.3769 cuerdas.

## 9.0 Recommendations

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Based on the findings of this assessment, EES has reached the following conclusions and recommendations regarding recognized environmental conditions (RECs) at the subject property:

<b><u>Recognized Environmental Conditions</u></b>	<b><u>Potential Impact</u></b>
Potential groundwater contamination from solid waste landfill	High Risk
Potential methane and/or other landfill gas presence and/or migration	High Risk

Based on the information developed and provided as part of this assessment EES has reached the following conclusions and recommendations regarding the recognized environmental conditions (RECs):

1. Prior to proposing any post-closure activities, a Comprehensive Groundwater Monitoring Plan pursuant the requirements of the Puerto Rico Regulations for the Management of Non-Hazardous Wastes, Regulation Number 5717, of November 14, 1997, as amended, should be developed and implemented to assess potential vertical and horizontal migrations of pollutants and/or interaction with the shallow, perched or deep aquifer systems.
2. Likewise, a Comprehensive Landfill Gas Monitoring Plan pursuant the requirements of the Puerto Rico Regulations for the Management of Non-Hazardous Wastes, *supra*, should be developed and implemented to assess existing landfill gas conditions and extent.

The environmental professional who have conducted the site visit and reviewed the results of the data collection effort have concluded that the aforementioned are “recognized environmental conditions” (RECs). The RECs have been quantified based on a range of qualitative impacts on the soil, water, or air resources or structures on the subject property.

As per contractual agreement, EES has provided recommendations for further study above. It is up to the user of this report, based on his risk tolerance, fiduciary responsibility or the applicable laws and regulations, to determine the extent of further inquiry and assessment.



## 10.0 Deviations

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Other than the limitations and exception listed in Section 1.4, the following modification to the ASTM E1527-13 standard used in this report are listed below.

- Interviews to past operators/owners, former occupants and some local government agencies officials were not conducted as part of this Phase I ESA.

## 11.0 Additional Services

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No additional services were requested by the Client and are therefore not provided as part of this Phase I Environmental Site Assessment (ESA).

## 12.0 Signature and Certification Statement

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### **Environmental Professional Certification:**

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in 40 CFR §312.10(b).

I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR §312.

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José L. Báez Romero, PG,PSF

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May 17, 2019

Date

## Figures

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