UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

PART 1- THE DECLARATION

RECORD OF DECISION
DORADO GROUNDWATER CONTAMINATION SITE
DORADO, PUERTO RICO

September 2021

630396

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Dorado Groundwater Contamination Superfund Site
Dorado, Puerto Rico
EPA ID No. PRN000201872

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) documents the U.S. Environmental Protection Agency's (EPA's) selected remedial action for the Dorado Groundwater Contamination Superfund Site (Site) located in the Municipality of Dorado, Puerto Rico, which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. §§ 9601-9675, as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. This decision document explains the factual and legal basis for selecting the remedy for the Site. This decision is based on the Administrative Record file for this remedy (refer to Appendix II of Part II - Decision Summary).

The Puerto Rico Department of Natural and Environmental Resources (DNER) concurs with the selected remedy. Refer to Appendix III of the Decision Summary for a copy of the concurrence letter.

ASSESSMENT OF SITE

The selected remedy complies with federal and Commonwealth requirements that are legally applicable or relevant and appropriate requirements and is cost effective. The response action selected in this Record of Decision is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

DESCRIPTION OF THE SELECTED REMEDY

Based upon an evaluation of various alternatives, EPA, in consultation with DNER, selects a remedy that will address the groundwater contamination detected at the Site. The selected remedy includes the following components:

- Monitored Natural Attenuation and
- Institutional controls to restrict groundwater usage and well installation.

The estimated total present-worth cost of the selected remedy is $830,000.00.

The environmental benefits of the selected remedy may be enhanced by giving consideration, during the design, to technologies and practices that are sustainable in accordance with EPA Region 2 Clean and Green Energy Policy.

STATUTORY DETERMINATIONS

The selected remedy meets the requirements for remedial actions set forth in CERCLA Section 121, 42 U.S.C. § 9621. It is protective of human health and the environment, complies with federal and Commonwealth requirements that are legally applicable or relevant and appropriate to the remedial action, is cost-effective, and utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable.

Because this remedy will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, but it will take more than five years to attain remedial action objectives and cleanup levels, a policy review may be conducted within five years of construction completion of the remedy to ensure that the remedy is, or will be, protective of human health and the environment.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the Administrative Record for the Site.

- Contaminants of concern and their respective concentrations can be found in the "Site Characteristics" section of the ROD (page 5).
- Baseline risk represented by the contaminants of potential concern may be found in the "Summary of Site Risks" section of the ROD (page 9).
- A discussion of cleanup levels for contaminants of concern and a discussion of principal threat waste may be found in the "Remedial Action Objectives" and "Principal Threat Waste" sections of the ROD (page 15 and page 21).
- A discussion of current and potential future Site and resource uses can be found in the "Current and Potential Future Site and Resource Uses" section of the ROD (page 8).
- Estimated capital, annual operation and maintenance, and total present worth costs are discussed in the "Description of Alternatives" section of the ROD (page 16).
- Key factors that led to selecting the remedy (*i.e.*, how the selected remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decisions) may be found in the "Comparative Analysis of Remedial Alternatives" and "Statutory Determinations" sections of the ROD (page 18 and page 22).

CERTIFICATION

This decision document includes all the elements required to support the selected remedy in accordance with the *Guide to Preparing Superfund Proposed Plans, Record of Decision, and Other Remedy Selection Decision Documents* [EPA 540-R-98-031 OSWER 9200.1-23P (July 1999)].

AUTHORIZING SIGNATURE

Evangelista, Pat

Digitally signed by Evangelista, Pat
Date: 2021.09.28 17:29:23 -04'00'

Pat Evangelista, Director
Superfund and Emergency Management Division
EPA - Region 2

September 28, 2021
Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

PART II – DECISION SUMMARY

RECORD OF DECISION
DORADO GROUNDWATER CONTAMINATION SITE
DORADO, PUERTO RICO
September 2021

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SITE NAME, LOCATION, AND DESCRIPTION

The Site consists of an area of groundwater contamination that, to date, has not been attributed to any specific source. The dilute plume is located within the municipality of Dorado in north-central Puerto Rico. The Site includes public supply wells that are part of the Maguayo and Dorado Urbano water supply systems, which serve populations of 36,630 and 31,061 people, respectively. These groundwater systems are operated as a public utility by the Puerto Rico Aqueduct and Sewer Authority (PRASA). There are two active water supply wells in the Maguayo Urbano Water System (Nevárez and Santa Rosa). The remaining wells in the system were taken offline because of contamination. Analysis of samples from wells in the Maguayo and Dorado Urbano systems have revealed detections of volatile organic compounds (VOCs), primarily tetrachloroethylene (PCE) and trichloroethylene (TCE), since the 1980s. The United States Geological Survey (USGS) reported PCE and TCE detections in samples collected from the Maguayo and Dorado Urbano system wells from November 1984 to May 1985. On September 9, 2016, EPA listed the Site on the National Priorities List because the groundwater contamination lies within a designated Wellhead Protection Area and based on the groundwater migration pathway score derived from the Hazard Ranking System evaluation.

The current and future land use at the Site includes residential, agricultural, commercial, and industrial properties. The Site is located within the Río de la Plata drainage basin, which can be used for recreational activities such as swimming or wading. Río de la Plata is the most significant surface water body in the vicinity of the Site and receives some groundwater discharge from the dilute Dorado plume.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

Since 2008, EPA has made multiple attempts to identify the source or sources of groundwater contamination in the general area of the Site. In 2008, EPA launched the Maguayo Site Discovery Initiative to identify possible hazardous waste sites near the contaminated wells. Based on these efforts, EPA identified 21 facilities for further investigation. Through environmental database searches and reconnaissance activities, EPA also identified other industrial facilities near the groundwater contamination.

In 2011 and 2013, EPA conducted preliminary assessment/site inspection sampling at the 21 facilities identified for further investigation, and in 2015, EPA conducted site reassessment sampling at five of these facilities. The sampling efforts included collection of surface soil samples, subsurface soil samples, and groundwater samples, where encountered, from each facility. The sampling effort at one active dry-cleaning facility also included collection of soil gas samples. Analytical results documented the presence or apparent presence of chlorinated solvents at several facilities; however, there are no data to connect any of the facilities to the supply well contamination conclusively. In addition, the varied nature of the underlying karst limestone aquifer makes it difficult to determine the groundwater flow direction and thus where contamination originates.

In September 2015, EPA collected groundwater samples from five active water supply wells and eight inactive water supply wells owned by PRASA, as well as from one commercial production well operated by a water bottling plant. Chloroform, bromodichloromethane, cis-1,2-dichloroethene, PCE, and TCE were each detected in at least one groundwater sample.

EPA Hazard Ranking System and National Priority List Inclusion

In 2016, EPA prepared a Hazard Ranking System Report in order to document the results of EPA's investigations to date and its determination to include the Site on the National Priorities List (NPL). EPA added the Site to the NPL on September 9, 2016.

Remedial Investigation/Feasibility Study

A Remedial Investigation (RI) Report was prepared by EPA to document the nature and extent of the soil, sediment, surface water, porewater, and groundwater contamination at the Site. EPA also prepared a Human Health Risk Assessment (HHRA) Report to document the current and future effects of Site contaminants on human health associated with the contamination found at the Site. EPA also conducted a Screening Level Ecological Risk Assessment (SLERA) to evaluate any potential for ecological risks from the presence of Site contaminants in surface water and sediment. A description of the HHRA and SLERA for this Site is provided in the Summary of Risk Section of this ROD.

A Focused Feasibility Study (FFS) was also prepared to present and analyze cleanup alternatives suitable for the Site. The purpose of the FFS was to identify, develop, screen, and evaluate a range of remedial alternatives that protect human health and the environment from potential risks at the Site and enable EPA to select a remedy for the Site. A detailed description of the cleanup alternatives evaluated for this Site is provided in the Description of Alternatives Section of this ROD.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the RI, a Community Involvement Plan was developed to assess any community concerns about the Site and encourage public participation. As part of this plan and as required by Superfund regulations, EPA prepared a Proposed Plan. A Proposed Plan summarizes the remedial alternatives and identifies EPA's preferred alternative and the rationale for that preferred alternative.

On July 19, 2021, EPA made available to the public the following documents: the Proposed Plan, the RI Report, the HHRA and SLERA Reports, and the FFS Report for the Site. All of these documents, along with others, are included in the Administrative Record for the selection of the remedy, which was made available to the public at the following locations:

Dorado Municipal Library
The Jane Stern
331 Calle Méndez Vigo
Dorado, Puerto Rico 00646

(788) 796-3675
Monday – Friday, Hours: 9:00 am -12:00 pm and 1:00 -4:45pm

U.S. Environmental Protection Agency City View Plaza II- Suite 7000 #48 PR-165 Km. 1.2 Guaynabo, PR 00968-8069
(787) 977-5865
Hours: Monday – Friday - 9:00 am to 5:00 pm
Office is currently closed because of the pandemic

Puerto Rico Department of Natural & Environmental Resources Emergency Response and Superfund Program Edificio de Agencias Ambientales Cruz A. Matos Urbanización San José Industrial Park 1375 Avenida Ponce de León San Juan, PR 00926-2604
(787) 999-2200 ext. 5900, 5901 y 5150.
Hours: Monday – Friday - 9:00 am to 3:00 pm

U.S. EPA Records Center, Region 2
290 Broadway, 18th Floor New York, New York 10007-1866
(212) 637-4308
Hours: Monday-Friday – 9:00 am to 5:00 pm
Office is currently closed because of the pandemic

The Administrative Record file, which contains copies of the Proposed Plan and supporting documentation, is available online at: https://www.epa.gov/superfund/dorado-ground-water-contamination.

The public had the opportunity to ask questions and submit comments on the proposed remedial alternatives described in the Proposed Plan and EPA's preferred alternative through a link at https://www.epa.gov/superfund/dorado-ground-water-contamination, by telephone at (787) 977-5814, and by email to the EPA Remedial Project Manager at santos.luis@epa.gov. A notice of the availability of the Proposed Plan and supporting documentation was published in the "Primera Hora" newspaper on July 12, 2021 (Attachment B of Appendix IV). A public comment period was held from July 19, 2021 to August 18, 2021. In addition, a public meeting was held on August 5, 2021, at the Teatro Juan Boria, Mendez Vigo St. Dorado Puerto Rico, from 5:00 pm to 7:00 pm. The purpose of the public meeting was to present the Proposed Plan to the community and provide an opportunity for the public to ask questions or give comments on the proposed remedial alternatives described in the Proposed Plan and EPA's preferred alternative. At this meeting, representatives from EPA answered questions and received comments about the response activities conducted at the Site and the proposed cleanup plan for the Site. No substantive comments were received during the public meeting related to EPA's preferred alternative. Refer to Attachment A of Appendix IV for a copy of the Proposed Plan and a Proposed Plan fact sheet in Spanish. A copy of the Administrative Record Index for the Site is provided in Appendix II. Attachment C of Appendix IV of this ROD contains the official transcript of the public meeting. In addition, EPA's responses to written comments received during the public comment period are included in the Responsiveness Summary, which is included as Appendix IV of this ROD.

SCOPE AND ROLE OF RESPONSE ACTION

EPA completed RI and FFS, the results of which are presented in this ROD. The selected remedy presented here is expected to be the final action for the site.

SITE CHARACTERISTICS

CONCEPTUAL SITE MODEL

Based on the available data, the conceptual model of groundwater flow at the Site is best described as blanket sand deposits that transition to alluvium east of the Site. The coarser material in the alluvium likely allows for faster recharge in areas where it is present. The Upper Aquifer is highly transmissive with values ranging from 1,000 to over 10,000 square meters per day (m^2/day). Historical pumping in the aquifer likely served to distribute contamination. Now with the majority of pumps turned off, contamination would be expected to move downgradient with groundwater flow (advection) with little retardation as a result of adsorption. The RI data indicate a slightly elevated concentration of a chlorinated volatile organic compound (CVOC) plume core around Maguayo 3, 4, 5, and 7 and USGS Maguayo 2 within a wider, dilute plume. The RI data also indicate an historical, widespread, low concentration of chloroform and suggest that chloroform found in the 2015 pre-remedial investigation and during the RI could be related to leaks of chlorinated water in the wellfield rather than coming from any Site-related potential contamination.

Transport of Contamination

The RI data indicate the presence of a dilute CVOC plume with no identified source. CVOCs were found at low levels in all 18 wells sampled. CVOC exceedances of screening criteria were limited to PCE detections in wells Maguayo 3, 4, 5, and 7 and USGS Maguayo 2, with a maximum PCE concentration of 15 micrograms per liter (µg/L) in well Maguayo 4 and a similar concentration of PCE (13 µg/L) in Maguayo 5. The concentrations of PCE and other CVOCs in these five wells suggest a slightly elevated CVOC plume core within the wider dilute plume.

With widespread historical pumping of the public supply wells, the highly transmissive aquifer, and despite multiple efforts to identify sources at the Site, no discrete source of contamination has been able to be identified.

Limited evidence was found for sustained destructive natural attenuation (either biotic or abiotic degradation) at the Site. Aerobic conditions, fast-moving groundwater, and a lack of organic carbon are not conducive to the growth of bacteria capable of dehalogenating PCE. However, the nondestructive mechanisms of dilution and dispersion actively serve to reduce groundwater concentrations over time.

TOPOGRAPHY

The Site is situated within the Northern Limestone Province of Puerto Rico at an elevation of approximately 95 meters (295 feet) above mean sea level. The areas immediately surrounding the

Site to the east, west, and south are relatively flat. North of the Site is an area of steep mogotes (limestone hills). The topography of the land to the south of the Site is dominated by karst features; several sinkholes are present within one mile of the Site.

REGIONAL GEOLOGY

The unconsolidated deposits at the Site are derived from the weathering of parent limestone. They consist of hard, stiff, often dry, sandy, and clayey silt and clay. The Aguada and Aymamón Limestone units are the bedrock units in the area of the Site, with the less weathered Aymamón Limestone making up the mogotes in the area and the Aguada Limestone underlying the Aymamón Limestone. These units make up the Upper Aquifer, which is a drinking water aquifer. The Upper Aquifer is bound by a confining unit or the transition to saltwater.

Near the Site, the USGS indicates that the Upper Aquifer is highly transmissive, as mentioned above, with values ranging from 1,000 to over 10,000 square meters per day (m^2/day). Information provided in the *Well Information and Ground Water Population Apportionment* compiled by EPA indicates that the public supply wells impacted by CVOCs are completed in the Upper Aquifer. Flow rates reported for these wells range from 225 to 800 gallons per minute. Localized groundwater flow is primarily to the east; however, regional groundwater flow is primarily to the north. Discharge of the majority of the Upper Aquifer groundwater is expected to be the Atlantic Ocean to the north. Locally, some of the Upper Aquifer groundwater flows east toward the river and may then flow northward with the river toward the ocean. The shallowest portion of the Upper Aquifer may also discharge directly to the Río de la Plata.

LOCAL HYDROGEOLOGY

The hydrogeologic model of the Site is largely consistent with the regional geologic characterization. Site hydrogeologic units are described below:

- Blanket Sand Deposits – This unit consists primarily of reddish brown to yellowish brown silt and clay.
- The Aymamón Limestone is found at depths between 46 feet to 70 feet below ground surface at the Site. The upper Aymamón Limestone has soft zones, sometimes filled with clay, and the deeper zone has solution features, including cavities and fracture zones.

The depth to groundwater varies across the Site, but it occurs approximately 50 feet below ground surface at Maguayo 5.

Population and Land Use

According to 2010 census figures, the Dorado municipality has a population of 38,165 people and the population of the Maguayo barrio is 4,496. Dorado covers an area of approximately 23 square miles. The primary land use in the vicinity of the Site is agricultural, residential, industrial, commercial, and some tourist development.

SAMPLING STRATEGY

Environmental media investigated during the RI included soil, sediment, surface water, porewater, and groundwater. In 2019, the following RI field activities were completed:

- Existing well evaluation;
- Long-term groundwater monitoring;
- Groundwater sampling;
- Direct-push technology groundwater and soil sampling of the alluvial aquifer;
- Porewater, surface water, and sediment sampling; and
- Stage 1 A cultural resources, monitoring well, and ecological surveys.

SAMPLING RESULTS

Nature and Extent of Contamination

RI sample results were compared to Site-specific screening criteria to evaluate contamination, with a focus on Site-related contaminants detected in Site groundwater, surface water, sediment, and porewater.

Selection of Site-Related Contaminants

PCE and TCE were selected as the Site-related contaminants of potential concern based on review of past uses identified by historical data, the frequency and magnitude of detections in Site media during the RI investigation, and exceedances of their respective screening criteria.

ANALYTICAL RESULTS AND EVALUATION
GROUNDWATER ANALYTICAL RESULTS

Similar to the 2015 pre-remedial investigation, the RI data indicate the presence of a dilute CVOC plume with no identified source. CVOCs were found at low levels in all 18 wells sampled. CVOC exceedances of RI groundwater screening criteria were limited to PCE detections in wells Maguayo 3, 4, 5, and 7 and USGS Maguayo 2. PCE and other CVOC concentrations in these five wells, along with the concentrations detected in Maguayo 6, suggest a core of slightly elevated CVOC concentrations within a wider, dilute plume when compared to the concentrations found in wells to the north (San Carlos, Higuillar, San Antonio 2, San Antonio 3) and south (USGS Santa Rosa 1, USGS Santa Rosa 2, Dorado Dairy 2, Santa Rosa, Nevárez). It has been determined that this potential plume core migrates with groundwater flow toward the Río de la Plata, possibly discharging near the river sampling location SE-4. CVOC concentrations generally decrease as groundwater flows from west to east.

Except for one location (Higuillar Dry Cleaners), the results of the RI did not reveal any additional potential contaminant sources to investigate. The groundwater screening samples collected between Higuillar Dry Cleaners and the Maguayo wellfield did not include any detections above RI screening criteria. These findings, coupled with the widespread but mostly below MCL detections of PCE, TCE, and other CVOCs, indicate that there is no identified source for the observed CVOC contaminants.

Like the occurrence of other CVOCs, low concentrations of chloroform, a trihalomethane, were widespread across the sampled supply wells during Rounds 1 and 2 of the RI sampling. No chloroform concentrations exceeded the RI groundwater screening criteria of 60 µg/L; however, a concentration of 47 µg/L was detected in the Maguayo 3 Round 2 sample, and several locations consistently had concentrations between 10 and 20 µg/L. Higher concentrations of chloroform were generally but not always co-located with the highest PCE concentrations (*e.g.*, Maguayo 4, 5, and 7 and USGS Maguayo 2).

The low-level chloroform detections could plausibly be from leaks in the distribution system of chlorinated water in the wellfield area. The Maguayo wells are part of the distribution line from the Puerto Rico North Coast Superaqueduct, whose water is chlorinated. Chlorination of drinking water leads to the formation of trihalomethanes, including chloroform.

Co-located surface water, sediment, and porewater samples were collected from eight locations in the Río de la Plata. No CVOCs or trihalomethanes were found above detection limits in sediment samples collected. CVOCs and trihalomethanes detected in both the surface water and porewater were all detected below their RI screening criteria.

CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

The current and future land use at the Site includes residential, agricultural, commercial, and industrial properties. The Site is located within the Río de la Plata drainage basin, which can be used for recreational activities such as swimming or wading. Río de la Plata is the most significant surface water body in the vicinity of the Site and receives some groundwater discharge from the dilute Dorado plume.

SUMMARY OF SITE RISKS

As part of the RI/FFS, EPA conducted a baseline risk assessment to estimate the current and future effects of contaminants on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects of releases of hazardous substances from a site in the absence of any actions or controls to mitigate such releases, under current and future land uses. The baseline risk assessment includes a human health risk assessment (HHRA) and an ecological risk assessment. It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. This section of the ROD summarizes the results of the baseline risk assessment for the Site.

HUMAN HEALTH RISK ASSESSMENT

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario:

- *Hazard Identification* – in this step the analytical data collected is used to identify the contaminants of potential concern (COPC) at a site for each medium, with consideration of a number of factors explained below;
- *Exposure Assessment* – in this step the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways by which humans are potentially exposed are estimated;
- *Toxicity Assessment* – in this step, the types of adverse health effects associated with contaminant exposures are determined, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response) are considered; and
- *Risk Characterization* – in this step, outputs of the exposure and toxicity assessments are summarized and combined to provide a quantitative assessment of site-related risks. The risk characterization also identifies contamination with concentrations that exceed acceptable levels, defined in the NCP as an excess lifetime cancer risk greater than 1 x 10^{-6} – 1 x 10^{-4} (*i.e.*, an increase in the incidence of cancer of one in 10,000 to one in a million) or a hazard index greater than 1; contaminants at these concentrations are considered contaminants of concern (COCs) and are typically those that will require remediation at a site. Also included in this section is a discussion of the uncertainties associated with these risks.

Hazard Identification

In this step, COPCs in each medium were identified based on such factors as toxicity, frequency of occurrence, fate and transport of the contaminants in the environment, concentrations, mobility, persistence, and bioaccumulation. The baseline human health risk assessment began with selecting COPCs in in various media (*i.e.*, groundwater, sediment, and surface water) that could potentially cause adverse effects in exposed populations. COPCs are selected by comparing the maximum detected concentrations of each contaminant identified with state and federal risk-based screening values. The COPC screening conducted in the HHRA identified four COPCs in groundwater, including chloroform, PCE, TCE, and vinyl chloride. COPCs not considered to be site-related or that were found at concentrations similar to background are carried through the quantitative portion of the HHRA but not identified as primary COPCs for the Site. A comprehensive list of all COPCs can be found in the HHRA in the administrative record for this remedy. Only Site-related COPCs (*i.e.*, PCE and TCE) that had detections at or exceeding MCLs are included in Table 1. PCE concentrations in groundwater exceeded the federal drinking water MCL of 5 µg/L, and TCE was detected once at its federal MCL (also 5 µg/L).

Exposure Assessment

Consistent with Superfund policy and guidance, the HHRA is a baseline human health risk assessment and therefore assumes no remediation or institutional controls to mitigate or remove hazardous substance releases. Cancer risks and noncancer hazard indices were calculated based on an estimate of the reasonable maximum exposure (RME) expected to occur under current and future conditions at a site. The RME is defined as the highest exposure that is reasonably expected to occur at a site.

The Site includes residential, agricultural, commercial, and industrial properties. The Site is

located within the Río de la Plata drainage basin, which can be used for recreational activities such as swimming or wading. Río de la Plata is the most significant surface water body in the vicinity of the Site and receives some groundwater discharge from the dilute Dorado plume. Based on the current zoning and land use, residential and recreational exposure to Site contamination was evaluated in the HHRA.

Based on the current and anticipated future land uses described above, the following exposure populations and pathways were evaluated:

- Recreational User (adolescent [12 to <18 years]): incidental ingestion and dermal contact while swimming in the Río de la Plata.
- Residents (child [0-6 years] and adults): incidental ingestion, dermal contact, and inhalation of particulates and volatiles while bathing or showering released from groundwater if municipal supply water treatment is interrupted.

A summary of all the exposure pathways considered in the HHRA can be found in Table 2. Typically, exposures are evaluated using a statistical estimate of the exposure point concentration, which is usually an upper bound estimate of the average concentration for each contaminant, but in some cases may be the maximum detected concentration. A summary of the exposure point concentrations for the Site-related COPCs in groundwater and surface water can be found in Table 1, while a comprehensive list of the exposure point concentrations for all COPCs can be found in the HHRA.

Toxicity Assessment

In this step, the types of adverse health effects associated with contaminant exposures and the relationship between magnitude of exposure and severity of adverse health effects were determined. Potential health effects are contaminant-specific and may include the risk of developing cancer over a lifetime or other noncancer health effects, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some contaminants are capable of causing both cancer and noncancer health effects.

Under current EPA guidelines, the likelihood of carcinogenic risks and noncarcinogenic hazards associated with exposure to site contaminants are considered separately. Consistent with current EPA policy, it was assumed that the toxic effects of the Site-related contaminants would be additive. Thus, cancer and noncancer risks associated with exposures to individual COPCs were summed to indicate the potential risks and hazards associated with mixtures of potential carcinogens and noncarcinogens, respectively.

Toxicity data for human health risk assessments are derived from the Integrated Risk Information System database, the Provisional Peer Reviewed Toxicity Database, or other sources that are identified as an appropriate reference for toxicity values consistent with EPA's directive on toxicity values. This information is presented in Table 3 (non-carcinogenic toxicity data summary) and Table 4 (cancer toxicity data summary). Only information for Site-related COPCs (*i.e.*, PCE and TCE) are included in Tables 3 and 4. Additional toxicity information for all COPCs is presented in the HHRA.

Risk Characterization

In this step, outputs of the exposure and toxicity assessments were summarized and combined to provide a quantitative assessment of Site risks. Exposures were evaluated based on the potential risk of developing cancer and the potential for noncancer health hazards.

Noncarcinogenic risks were assessed using a hazard index (HI) approach, based on a comparison of expected contaminant intakes to benchmark comparison levels of intake (reference doses, reference concentrations). Reference doses (RfDs) and reference concentrations (RfCs) are estimates of daily exposure levels for humans (including sensitive individuals) that are thought to be safe over a lifetime of exposure. The estimated intake of contaminants identified in environmental media (*e.g.*, the amount of a contaminant ingested from contaminated drinking water) is compared to the RfD or the RfC to derive the hazard quotient (HQ) for the contaminant in the particular medium. The HI is obtained by adding the HQs for all compounds within a particular medium that impacts a particular receptor population.

The HQ for oral and dermal exposures is calculated as indicated below. The HQ for inhalation exposures is calculated using a similar model that incorporates the RfC, rather than the RfD.

HQ = Intake/RfD

Where: HQ = hazard quotient
Intake = estimated intake for a contaminant (mg/kg-day)
RfD = reference dose (mg/kg-day)

The intake and the RfD will represent the same exposure period (*i.e.*, chronic, subchronic, or acute).

As previously stated, the HI is calculated by summing the HQs for all contaminants for likely exposure scenarios for a specific population. An HI greater than 1 indicates that the potential exists for noncarcinogenic health effects to occur as a result of site-related exposures, with the potential for health effects increasing as the HI increases. When the HI calculated for all contaminants for a specific population exceeds 1, separate HI values are then calculated for those contaminants that are known to act on the same target organ. These discrete HI values are then compared to the acceptable limit of 1 to evaluate the potential for noncarcinogenic health effects on a specific target organ. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media.

A summary of the noncarcinogenic hazards associated with receptors are shown in Table 5. The total noncancer HIs for child resident (0.8), adult resident (0.9), and adolescent recreational user (0.0006) are all below EPA's threshold value of 1.

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a carcinogen, using the cancer slope factor (SF) for oral and dermal exposures and the inhalation unit risk (IUR) for inhalation

exposures. Excess lifetime cancer risk for oral and dermal exposures is calculated from the following equation, while the equation for inhalation exposures uses the IUR, rather than the SF:

Risk = LADD x SF

Where: Risk = a unitless probability (1×10^{-6}) of an individual developing cancer
LADD = lifetime average daily dose averaged over 70 years (mg/kg-day)
SF = cancer slope factor, expressed as [1/(mg/kg-day)]

These risks are probabilities that are usually expressed in scientific notation (such as 1×10^{-4}). An excess lifetime cancer risk of 1×10^{-4} indicates that one additional incidence of cancer may occur in a population of 10,000 people who are exposed under the conditions identified in the assessment. Again, as stated in the NCP, the acceptable risk range for site-related exposure is 1×10^{-6} to 1×10^{-4}.

As shown in Table 6, the estimated cancer risk for the child/adult resident of 1×10^{-4} is equal to the upper end of EPA's acceptable cancer risk range for the RME scenario, primarily because of the presence of chloroform, a contaminant that is not thought to be Site-related in groundwater. The risk was primarily driven by inhalation of chloroform from groundwater used as tap water. Inhalation risks may be overestimated by the combination of assumptions used to model indoor air concentrations for the RME scenario and the nonlinear dose-response of chloroform. It should be noted that chloroform was also not detected in groundwater at concentrations exceeding drinking water standards. TCE was detected once at a concentration equal to the MCL of 5 ug/L, and PCE was found slightly above the MCL of 5 ug/L in three out of 18 on-site wells.

In addition, cancer risks were evaluated for current and future adolescent recreational users from exposure to contaminants in surface water while swimming in the Río de la Plata. The total cancer risk for adolescent recreational users (3×10^{-9}) is below EPA's cancer risk range.

Since VOCs were detected in groundwater, the potential for vapor intrusion (VI) into indoor air was also evaluated in the HHRA by conducting a screening level analysis. The VI screening level analysis consisted of comparing the maximum detected concentrations of VOCs in groundwater to EPA's chemical-specific vapor intrusion screening levels (VISLs). The VISLs provide groundwater levels associated with an indoor air concentration that represents a cancer risk ranging from 1×10^{-6} to 10^{-4} or a noncancer hazard quotient equal to 1. Concentrations higher than these screening values indicate the potential for vapor intrusion exists. The concentrations of COPCs did not exceed the VISL for groundwater set at a target cancer risk of 1×10^{-4} and target hazard quotient of 1, hence the vapor intrusion pathway is not of concern at the Site. The comprehensive details of the vapor intrusion screening analysis can be found in the HHRA.

In summary, the results of the HHRA indicated that cancer risks for current/future residents and recreational users are equal to and below EPA's cancer risk range, respectively. For noncancer hazards, the total HIs for current/future residents and recreational users are all below EPA's threshold value of 1. Further, based on a screening level analysis, subsurface vapor intrusion into indoor air is not of concern at the Site.

Because MCLs were exceeded in groundwater, the response action selected in this Record of Decision is necessary to protect the public health or welfare or the environment from actual or threatened releases of contaminants into the environment.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis;
- environmental parameter measurement;
- fate and transport modeling;
- exposure parameter estimation; and
- toxicological data.

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of contaminants in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. Environmental chemistry-analysis error can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the contaminants of potential concern, the period over which such exposure would occur, and the models used to estimate the concentrations of the contaminants of potential concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of contaminants. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the risk assessment provides upper-bound estimates of the risks to populations associated with the Site and is highly unlikely to underestimate actual risks related to the Site.

More specific information concerning public health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the risk assessment report.

ECOLOGICAL RISK ASSESSMENT

A screening-level ecological risk assessment (SLERA) was conducted to evaluate the potential for ecological risks from the presence of contaminants in surface water, sediment, and sediment porewater. The purpose of the SLERA was to evaluate the potential for impacts to sensitive ecological receptors from Site-related constituents of concern through exposure to surface water, sediment, and sediment porewater in the Río de la Plata. Surface water, sediment, and sediment porewater concentrations were compared to ecological screening values as an indicator of the potential for adverse effects to ecological receptors. A complete summary of all exposure scenarios can be found in the SLERA.

The conceptual site model (CSM) indicated that the majority of the Upper Aquifer groundwater is expected to discharge northward to the Atlantic Ocean, although locally, the shallowest portion of the Upper Aquifer discharges to the Río de la Plata. The maximum detected concentrations of contaminants in the groundwater have a potential to impact ecological receptors in the Río de la Plata. Baseline river flow near the Site is approximately 30 to 40 cubic feet per second, and a high proportion of that surface water is assumed to have resulted from the discharge of groundwater to surface water, primarily from upstream of the Site. The CSM illustrates, for each exposure medium, the ecological receptors and exposure pathways that are evaluated in the SLERA.

There is suitable ecological habitat throughout the well areas of the Site and along the Río de la Plata to support terrestrial and aquatic biota such as invertebrates, fish, amphibians, reptiles, birds, and mammals. Ecological receptors utilizing the Site may be exposed to chemicals present in sediment and surface water. They may be exposed, depending on the exposure medium, via direct contact or incidental ingestion. Exposure of higher trophic-level receptors can also occur through food chain exposure (via ingestion of food items that may have become contaminated through exposure to Site-related contaminants). The exposure pathways and exposure point concentrations in the specific media are discussed below**.**

Surface Water
None of the surface water sample results exceeded the ecological screening levels (ESLs) for any contaminants. Therefore, there are no site-related contaminants of potential ecological concern (COPECs), and ecological risk from surface water is below EPA criteria.

Sediment
Only one compound, acetone, exceeded the sediment ESLs, while the rest of the detected compounds were below the ESLs. Acetone detected in sediment exceeded the ESL, but acetone was also detected in trip blanks and equipment blanks. Acetone was not detected in groundwater, sediment porewater, or in surface water. Acetone is a common laboratory contaminant, and it is likely that the sediment detections were artifacts. Therefore, it is assumed that the acetone detected was not Site-related, and any ecological risk from sediment is below EPA criteria.

Sediment Porewater
None of the sediment porewater sample results exceeded surface water ESLs for any contaminants. Therefore, there are no Site-related COPECs, and any ecological risk from sediment porewater is below EPA criteria.

Based on a comparison of maximum detected concentrations of contaminants in the Site surface water, sediment, and sediment porewater to conservatively derived ESLs, the ecological risk at the Site is below EPA criteria.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are specific goals to protect human health and the environment. These objectives are based on available information and standards, such as applicable or relevant and appropriate requirements (ARARs), to-be-considered guidance, and Site-specific risk-based levels.

EPA concluded in the HHRA that the estimated total cancer risk from exposure of current or future residents to groundwater was equal to the upper end of EPA's acceptable risk range (1×10^{-4}). In addition, concentrations of PCE and TCE in groundwater, respectively, are greater than or equal to the federal MCLs for drinking water and Puerto Rico Water Quality Standards (PRWQS) for groundwater. Therefore, PCE and TCE are considered the contaminants of concern for the Site. As such, remedial action alternatives were developed to focus on preventing human exposure and restoring groundwater.

The Remedial Action Objectives (RAOs) for groundwater are to:

- Prevent current and future human exposure to groundwater with concentrations of PCE and TCE above drinking water standards, and
- Restore groundwater at the Site to its beneficial use (*i.e.*, drinking water) in a reasonable time frame

REMEDIATION GOAL

The development of remediation goals (RGs) is a requirement of the NCP (40 CFR 300.430(e)(2)(i)). Identification and selection of the RGs are typically based on RAOs, the current and anticipated future land uses, and the tentatively identified ARARs. The RGs are typically presented as chemical- and media-specific values that directly address the RAOs. These values are typically used as a preliminary value in the FS to guide evaluations of remedial alternatives.

Groundwater at the Site is classified as suitable for drinking water use (Class SG). In addition, groundwater at the Site has historically been used as a source of potable water supply in the Maguayo and Dorado Urbano systems; however, all the wells impacted by contamination above drinking water standards are not currently in use (only the Nevárez and Santa Rosa wells are currently active). To restore the groundwater at the Site to its beneficial use, the National Primary Drinking Water Standards (federal MCLs) are applicable or relevant and appropriate requirements, as are the promulgated groundwater standards listed in the PRWQS Regulation. Because the federal MCLs and PRWQS standards are the same for the two contaminants of concern, the federal MCLs were used to derive RGs.

The remediation goals are shown below:

Contaminants of Concern	**National Primary Drinking Water Standards (Federal MCLs) (µg/L)**	**Remediation Goals (µg/L)**
Tetrachloroethene (PCE)	5.0	5.0
Trichloroethene (TCE)	5.0	5.0

DESCRIPTION OF THE ALTERNATIVES

CERCLA Section 121(b)(1), 42 U.S.C. § 9621(b)(1), mandates that remedial actions must be protective of human health and the environment, be cost-effective, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants at a site. CERCLA Section 121(d), 42 U.S.C. § 9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants that at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA Section 121(d)(4), 42 U.S.C. § 9621(d)(4).

The timeframes presented below for each alternative reflect only the time required to construct or implement the remedy and do not include the time required to design the remedy, negotiate the performance of the remedy with any potentially responsible parties, or procure contracts for design and construction.

The cost estimates, which are based on available information, are order-of-magnitude engineering cost estimates that are expected to be within +50 to -30 percent of the actual cost of the project.

REMEDIAL ALTERNATIVES

The following alternatives are considered for the Site:

Alternative 1: No Action

Alternative 1, the "no action" alternative, is required under the NCP to be considered to provide an environmental baseline against which impacts of the various remedial alternatives can be compared. Under this alternative, no action would be taken to remediate the contaminated groundwater or to monitor contaminant concentrations associated with risks to human health or the environment.

Alternative 2: Monitored Natural Attenuation and Institutional Controls

Capital Cost	$161,000
Present Worth O&M Cost	$669,000
Total Present Worth Cost	$830,000
Construction Time Frame	One year
Timeframe to meet RAOs	Eighteen years

Under Alternative 2, a long-term program to conduct monitored natural attenuation (MNA) of groundwater within the target remediation zone (TRZ) would be instituted. The TRZ encompasses all groundwater with historical concentrations of PCE or TCE above RGs. This includes the area surrounding Maguayo 3, 4, 5, 7, and USGS Maguayo 2, as well as San Antonio 3 where TCE was detected equal to the RG. Only Maguayo 4 and 5 exceeded RGs in both rounds of the RI; other

wells only exceeded RGs in one of the two rounds. Vertically, the TRZ includes groundwater in both the blanket sand deposits and the Aguada/Aymamón limestone. The approximate areal extent of the TRZ is shown in Figure 2-1. The RI data reveals a large, dilute plume with concentrations slightly elevated above the RG for PCE. No potential source of contamination was identified, such as a facility where chlorinated solvents were released or the identification of chlorinated solvents waste in soil or nearby groundwater. As such, it is unlikely that a continuing source of contamination is present that would overwhelm the natural attenuation capacity of the aquifer and lead to increasing concentrations in the Maguayo wells area or the San Antonio 3 well. Decreasing concentration trends detected during the monitoring under this alternative would verify that no continuing source of contamination is present. If concentration increases are identified during monitoring, EPA could reevaluate MNA potential during five-year reviews. It has been calculated through solute transport modeling that 18 years is the conservative estimate of time to achieve RGs. According to guidance in EPA's, *Recommended Approach for Evaluating Completion of Groundwater Restoration Remedial Actions at a Groundwater Monitoring Well*, eight rounds of data are recommended to prove the following:

- That remediation goals are met.
- That the groundwater will continue to meet remediation goals into the future.

The exact scope and schedule for MNA sampling would be determined during remedial design. Monitoring at 10 wells for 18 years in the TRZ as well as a sidegradient well is proposed under this alternative. CVOC and geochemical parameter results would be evaluated annually for progress towards achieving RAOs and during the five-year reviews.

Under Alternative 2, institutional controls would be sought to restrict groundwater usage and well installation until RGs are met.

Alternative 3: Groundwater Extraction and Treatment, Monitored Natural Attenuation, and Institutional Controls

Capital Cost	$1,451,000
Present Worth O&M Cost	$2,740,000
Total Present Worth Cost	$4,240,000
Construction Time Frame	One year
Timeframe to meet RAOs	Fourteen years

Under Alternative 3, groundwater extraction and treatment would be conducted from the two wells that had contamination above the RGs in both sampling rounds of the RI, namely Maguayo 4 and 5. Extraction and treatment would continue until concentrations in these wells are restored to below RGs. Up to 14 years is anticipated to be needed to remove PCE under a pumping scenario. This estimate is based on the observed trend in Maguayo 5 during the years that this well was pumped for drinking water supply. In the remainder of the TRZ, natural attenuation would be monitored as described in Alternative 2.

This remedial alternative would consist of the following major components:

- Pre-design investigation and remedial design;

- Installation of pumps in Maguayo 4 and Maguayo 5;
- Treatment system installation and operation;
- Discharge of treated groundwater via reinjection;
- Operation and maintenance; and
- Monitored natural attenuation in that portion of the TRZ not actively addressed by the pumping of Maguayo 4 and 5.

Under Alternative 3, institutional controls would be sought to restrict groundwater usage and well installation until RGs are met.

COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

In selecting the remedy, EPA considered the factors set out in CERCLA Section 121, 42 U.S.C. § 9621, by conducting a detailed analysis of the viable remedial response measures pursuant to the NCP criteria, 40 CFR § 300.430(e)(9), and OSWER Directive 9355.3-01. The detailed analysis consists of an assessment of each of the remedial alternatives against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each response measure against the criteria.

Threshold Criteria *– The first two of the nine criteria are known as "threshold criteria" because they are the minimum requirements that each response measure must meet in order to be eligible for selection as a remedy.*

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

"Overall Protection of Human Health and the Environment" is a determination of whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

The HHRA and SLERA indicate that EPA's risk range was not exceeded as a result of potential exposure to the Site-related contaminants. However, PCE concentrations in groundwater did exceed the federal MCL for drinking water, and TCE was detected at its federal MCL.

The institutional controls in Alternatives 2 and 3 would prevent potential future human exposure to contaminated groundwater within the plume until remedial goals are met. Alternative 3 would use groundwater extraction to provide an extra level of protection to human health and the environment by preventing concentrations above MCLs from migrating to downgradient areas. Additionally, Alternative 3 implements active removal and treatment of groundwater that would slightly expedite the restoration of groundwater. Alternative 2 would utilize MNA to remediate all Site groundwater in a time-frame that would likely be slightly longer period compared to Alternative 3. Alternative 1 is not protective, as it does not include any actions.

COMPLIANCE WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)

CERCLA Section 121(d), 42 U.S.C. § 9621(d), and Section 300.430(f)(1)(ii)(B) of the NCP, 40 C.F.R. § 300.430(f)(1)(ii)(B), require that remedial actions at CERCLA sites at least attain legally

applicable or relevant and appropriate federal and state requirements, standards, criteria, and limitations, collectively referred to as "ARARs," unless such ARARs are waived under CERCLA Section 121(d)(4). Under the "Compliance with ARARs" criteria, each remedial alternative is evaluated to determine whether it will meet all ARARs or whether there is a basis for invoking a waiver.

Three classifications of requirements are defined by EPA in the ARAR determination process. ARARs are defined as chemical-, location-, or action-specific. An ARAR can be one or a combination of all three types of ARARs. Each alternative was evaluated to determine how ARARs would be met.

EPA and Puerto Rico have promulgated health-based, protective MCLs and water quality standards, respectively, which are enforceable standards for various drinking water contaminants (chemical-specific ARARs). Groundwater at the Site is classified as suitable for drinking water use (Class SG). Because the groundwater at the Site is a source of drinking water, the federal MCLs and PRWQS are ARARs. Alternative 1 would not take any active measures and thus would not comply with ARARs. Alternative 2 would rely upon natural dilution and dispersion processes to reduce concentrations in groundwater to chemical-specific ARARs (*i.e.*, federal MCLs and PRWQS); location- and action-specific ARARs are not applicable for Alternative 2 because no new construction would be completed, and no solid waste or discharges would be generated. Under Alternative 3, pumping would remove contamination that is above federal MCLs and PRWQS at Maguayo 4 and 5 and expedite the time-frame to reach chemical-specific ARARs. For Alternative 3, action-specific ARARs may be relevant because of the construction and operation of the groundwater extraction and treatment system. Through the operation of the treatment system, Alternative 3 would meet action-specific ARARs for discharge of treated groundwater to receiving waterbodies. Location-specific ARARs, such as whether the remedy may impact designated wetlands, would be addressed during remedial design and implemented during remedial construction and operation for Alternative 3.

Primary Balancing Criteria *- The next five criteria are primary balancing criteria.*

LONG-TERM EFFECTIVENESS AND PERMANENCE

Long-term effectiveness and permanence refer to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup levels have been met. This criterion includes the consideration of residual risk that will remain on-site following remediation and the adequacy and reliability of controls.

Alternative 1 would not be considered a permanent remedy because no action would be implemented to reduce the level of contamination or verify any naturally occurring reduction. Both Alternative 2 and 3 would provide long-term effectiveness and permanence, assuming a continuing source for this dilute plume is not present. Alternative 2 provides a method to monitor and evaluate the anticipated attenuation of contaminant concentrations over time as a result of natural processes. Alternative 3 would use groundwater extraction and treatment to reduce concentrations permanently and irreversibly in the wells presently above RGs as well as monitor that portion of the TRZ not actively addressed by pumping. There is no residual risk because, at present, the Site-specific HHRA and SLERA indicate no unacceptable risks from exposure to PCE.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME THROUGH TREATMENT

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

Alternative 1 would not treat, monitor, or evaluate the reduction of contaminant toxicity/mobility/volume through natural processes, because no remedial action would be conducted. Alternative 2 would passively monitor the reduction of toxicity and volume occurring through natural processes. Alternative 3 would actively reduce toxicity/mobility/volume through extraction and treatment of groundwater contaminated with PCE that is above its RG.

SHORT-TERM EFFECTIVENESS

Short-term effectiveness addresses the period needed to implement the remedy and any adverse impacts that may be posed to workers, the community, and the environment during construction and operation of the remedy until cleanup levels are achieved.

With respect to Alternative 1, there would be no adverse short-term impact to the community and environment, as no remedial action would occur. There would be some minor short-term impacts to the local community and workers for Alternative 2 during the frequent monitoring activities. Alternative 3 would have the most impacts on local community and workers as a consequence of the construction and operation of the treatment system, especially the conveyance pipes along public roads. Alternative 2 is estimated to achieve the RAOs within 18 years, and Alternative 3 is estimated to achieve the RAOs within 14 years.

IMPLEMENTABILITY

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

No problems are anticipated for the implementation of Alternative 1 because no action would be taken. Alternatives 2 and 3 both include imposition and enforcement of institutional controls to ensure protection of public health and the environment during the period of the remedial action. The main implementability concern is with Alternative 3. Because land immediately surrounding the groundwater extraction wells is privately owned or managed by the Puerto Rican government, and more specifically the non-liable Puerto Rico Industrial Development Company, an arrangement would need to be negotiated for access and use of the land to house the treatment facility and the injection wells. Additionally, approximately a mile of water conveyance piping would need to be installed to convey the extracted groundwater to the treatment system, buried along roads in a populated area.

COST

This criterion includes estimating capital and Operation and Maintenance (O&M) costs of each alternative, and the net present worth value of capital and O&M costs.

Detailed cost estimates for each alternative were developed for the FFS according to EPA's, *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study*. Detailed cost

estimates for the alternatives are included in Appendix B of the FFS and include the following:

- Capital costs
- Annual O&M costs
- Periodic costs
- Present value of capital and annual O&M costs

Present value costs for all alternatives were evaluated over their respective remedial timeframes using a seven percent discount rate.

The costs for these alternatives are summarized in following table:

Alternative	Capital Cost	Present Worth Operation and Maintenance Cost	Total Present Worth Cost
1	$0	$0	$0
2	$ 161,000	$ 699,000	$ 830,000
3	$ 1,592,000	$ 2,740,000	$ 4,240,000

Modifying Criteria - The final two criteria are modifying criteria that shall be considered in remedy selection.

COMMONWEALTH / SUPPORT AGENCY ACCEPTANCE

The Puerto Rico Department of Natural and Environmental Resources (PRDNER) concurs with the selected remedy on behalf of the Commonwealth. (Appendix III).

COMMUNITY ACCEPTANCE

All the alternatives were made available for the community to review and comment. The preferred alternative was presented to the community in the Proposed Plan. A public comment period (July 19, 2021 to August 18, 2021) was established to allow the community to review and comment on all the alternatives and the proposed alternative. EPA's responses to all public comments received during the comment period are presented in the Responsiveness Summary of this ROD (Appendix IV).

PRINCIPAL THREAT WASTE

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (40 CFR § 300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of source materials at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for the migration of contamination to groundwater, surface water, or air, or act as a source for direct exposure. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or will present a significant risk to human health or the environment should exposure occur. Contaminated groundwater generally is not considered to be a source material. Because this remedy addresses

contaminated groundwater and no source has been identified, no principal threat wastes are addressed in this selected remedy.

SELECTED REMEDY

EPA's selected remedy is Alternative 2: Monitored Natural Attenuation and Institutional Controls. The selected remedy includes the following components:

- Monitored Natural Attenuation and
- Institutional controls to restrict groundwater usage and well installation.

Under this alternative, a long-term program to monitor natural attenuation for groundwater within the TRZ would be instituted. No potential source of contamination was identified upgradient of the Maguayo wells area or the San Antonio 3 well during the RI. As such, it is unlikely that a continuing source of contamination is present that would overwhelm the natural attenuation capacity of the aquifer and lead to increasing concentrations in the Maguayo wells area or the San Antonio 3 well. Decreasing concentration trends detected during the monitoring under this alternative would verify that no continuing source of contamination is present. If concentration increases are identified during monitoring, EPA could reevaluate the MNA potential during five-year reviews. The exact scope and schedule for MNA would be determined during remedial design; however, eight rounds of data are recommended to prove that remediation goals were met and will continue to be met in the future. For cost estimating purposes, it was assumed that annual sampling would be conducted for 18 years. It is assumed that up to 11 wells would be sampled annually for VOCs and geochemical parameters. Sampling results would be evaluated annually for progress towards achieving RAOs and during the five-year reviews. Institutional controls would also be sought to restrict groundwater usage and well installation until RGs are met.

SUMMARY OF RATIONALE FOR THE SELECTED REMEDY

Alternative 2 is believed to provide the best balance of tradeoffs among the alternatives based on the information available to EPA at this time. As presented in this ROD, Alternative 2 has less short-term impact to the community and environment because no construction or long-term maintenance would be needed. While both Alternative 2 and Alternative 3 are implementable, Alternative 3 would be more difficult to implement and cause more disruption to the community during the extraction/treatment system construction and operation, which would require approximately a mile of water conveyance piping, buried along roads in a populated area. It would also require access for siting of remedial equipment. It is estimated that Alternative 2 will take approximately 18 years to achieve the RAOs, which is four years longer than the Alternative 3 pump and treat alternative, at significantly lower present worth costs.

EPA and PRDNER believe that the selected remedy would be protective of human health and the environment, comply with ARARs, and be cost-effective.

GREEN REMEDIATION

The environmental benefits of the selected remedy may be enhanced by giving consideration, during the design, to technologies and practices that are sustainable in accordance with EPA Region 2 Clean and Green Energy Policy. This will include consideration of green remediation technologies and practices.

STATUTORY DETERMINATIONS

CERCLA Section 121(b)(1), 42 U.S.C. § 9621(b)(1), mandates that a remedial action must be protective to human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. CERCLA Section 121(b)(1), 42 U.S.C. § 9621(b)(1), also establishes a preference for remedial actions that employ treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, or contaminants at a site. CERCLA Section 121(d), 42 U.S.C. § 9621(d), further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA Section 121(d)(4), 42 U.S.C. § 9621(d). For the reasons discussed below, EPA has determined that the selected remedy meets the requirements of CERCLA Section 121, 42 U.S.C. § 9621.

PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The selected remedy is expected to restore groundwater to drinking water standards and will protect human health in the short term through the use of institutional controls.

COMPLIANCE WITH ARARS

The selected remedy is expected to achieve chemical-specific ARARs and RGs for contaminated groundwater through a long-term program to monitor natural attenuation.

COST EFFECTIVENESS

A cost-effective remedy is one that has costs that are proportional to its overall effectiveness (see NCP Section 300.430(f)(1)(ii)(D)). Overall effectiveness is based on the evaluations of long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness. EPA evaluated the "overall effectiveness" of those alternatives that satisfied the threshold criteria (*i.e.*, were both protective of human health and the environment and ARAR-compliant). Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility, and volume though treatment; and short-term effectiveness). Overall effectiveness was then compared to those alternatives' costs to determine cost-effectiveness.

Each of the alternatives underwent a detailed cost analysis. In that analysis, capital and O&M costs were estimated and used to develop present-worth costs. In the present-worth cost analysis, O&M costs were calculated for the estimated life of each alternative. The total estimated present-worth cost for implementing the selected remedy is $830,000.

UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT (OR RESOURCE RECOVERY) TECHNOLOGIES TO MAXIMUM EXTENT PRACTICABLE

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner for the Site. Of those alternatives that are protective of human health and the environment and comply with ARARs (or provide a basis for invoking an ARAR waiver), EPA has determined that the selected remedy provides the best balance of trade-offs in terms of the five balancing criteria, while also considering the statutory preference for treatment as a principal element, the bias against off-site disposal without treatment, and state/support agency and community acceptance. Implementation of the selected remedy will eliminate exposures to contaminants in groundwater, thereby eliminating the risk to humans in the future.

PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

The selected remedy does not meet the statutory preference for treatment as a principal element.

FIVE YEAR REVIEW REQUIREMENTS

Because this remedy will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, but it will take more than five years to attain remedial action objectives and cleanup levels, policy reviews may be conducted within five years of construction completion for the Site to ensure that the remedy is, or will be, protective of human health and the environment.

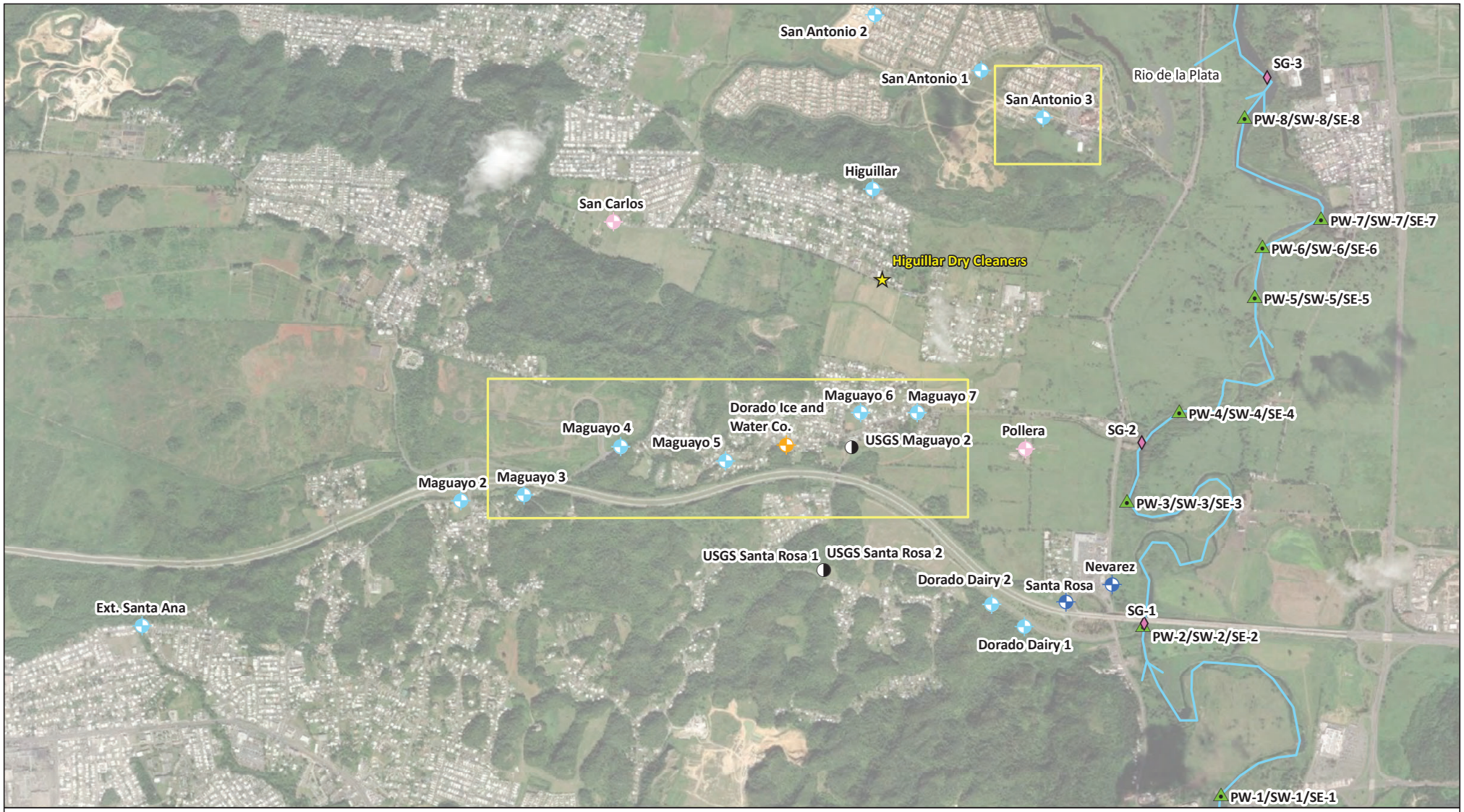
DOCUMENTATION OF SIGNIFICANT CHANGES FROM PREFERRED ALTERNATIVE OF PROPOSED PLAN

The Proposed Plan for the Site was released for public comment on July 19, 2021, and the public comment period ran from that date through August 18, 2021. The Proposed Plan identified the selected remedy as the preferred alternative for the Site.

No substantive written or oral comments were submitted during the public comment period; therefore, EPA has determined that no significant changes to the remedy, as it was originally identified in the Proposed Plan, were necessary. EPA's responses to all public comments received during the comment period are presented in the Responsiveness Summary of this ROD (Appendix IV).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

APPENDIX I - Figures & Tables



CDM Smith

Figure 1
Target Remediation Zones
Dorado Groundwater Contamination Site
Dorado, Puerto Rico

Table 1
Summary of Contaminants of Potential Concern and Medium-Specific Exposure Point Concentrations

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Contaminants of Potential Concern	Concentration Detected		Concentration Units	Frequency of Detection	Exposure Point Concentration (EPC)[1]	EPC Units	Statistical Measure
		Min	Max					
Tap Water	Tetrachloroethene	0.65	15	µg/L	33 / 35	5.35	µg/L	95% Gamma Adjusted KM-UCL (use when n<50)
Tap Water	Trichloroethene	0.046 J	5	µg/L	21 / 35	1.18	µg/L	95% Gamma Adjusted KM-UCL (use when n<50)

Scenario Timeframe: Current/Future
Medium: Surface water
Exposure Medium: Surface water

Exposure Point	Contaminants of Potential Concern	Concentration Detected		Concentration Units	Frequency of Detection	Exposure Point Concentration (EPC)[1]	EPC Units	Statistical Measure
		Min	Max					
Río de la Plata	Trichloroethene	0.1 J	0.27 J	µg/L	5 / 7	0.245	µg/L	95% KM (t) UCL

Footnotes:
(1) The exposure point concentration (EPC) is lower of maximum concentration and UCL. Mean and UCL concentrations are calculated using ProUCL version 5.1.02 for chemicals with at least 5 samples in a dataset and 4 detected values. UCL statistic was selected based on the "Suggested UCL to Use" in ProUCL version 5.1.02 output.

Definitions:
UCL= upper confidence limit
Max = maximum detected concentration
KM = Kaplan-Meier
µg/L = microgram per liter
J = qualifier for estimated value

Table 2
Selection of Exposure Pathways

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor (Age)	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Groundwater	Groundwater	Tap Water	Resident	Adult and Child (0-6 years old)	Ingestion	Quantitative	If treatment of water from active wells is interrupted or if former supply wells in the contaminated area are brought back to active status, residents may be exposed to groundwater via ingestion, dermal contact, and inhalation while bathing/showering.
						Dermal	Quantitative	
						Inhalation	Quantitative	
Current/Future	Surface Water	Surface Water	Río de la Plata	Recreational User	Adult	Ingestion	Qualitative	Nearby residents may contact contaminants in surface water during recreational use of the area. Recreational users in this area may include adolescents and adults. However adolescents generally have higher relative intake rates and lower body weight when compared to adults and therefore higher risks. Adolescent exposures are quantified in the risk assessment, while adult exposures are evaluated qualitatively.
						Dermal	Qualitative	
					Adolescent (12 to <18 years old)	Ingestion	Quantitative	Nearby residents may contact contaminants in surface water during recreational use of the area through wading and swimming. While swimming is less likely than wading, it would result in greater exposures and is quantified for adolescent recreational users in the risk assessment.
						Dermal	Quantitative	
Current/Future	Sediment	Sediment	Río de la Plata	Recreational User	Adult	Ingestion	Qualitative	Nearby residents may contact contaminants in sediment during recreational use of the area. Consistent with surface water exposures, adolescent exposures to sediment are expected to be higher than adult exposures.
						Dermal	Qualitative	
					Adolescent (12 to <18 years old)	Ingestion	Quantitative	
						Dermal	Quantitative	

Table 3
Non-Carcinogenic Toxicity Data Summary

Pathway: Ingestion/Dermal

Contaminants of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Absorp. Efficiency (Dermal)	Adjusted RfD (Dermal)	Adj. Dermal RfD Units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD Target Organ	Dates of RfD
Tetrachloroethene	Chronic	6.0E-03	mg/kg-day	1	6.0E-03	mg/kg-day	Nervous System/Liver/Kidney	1,000	IRIS	3/9/2020
Trichloroethene	Chronic	5.0E-04	mg/kg-day	1	5.0E-04	mg/kg-day	Heart/ Immune System/ Developmental/Kidney	10 to 1,000	IRIS	3/9/2020

Pathway: Inhalation

Contaminants of Potential Concern	Chronic/ Subchronic	Inhalation RfC	Inhalation RfC Units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD Target Organ	Dates of RfC
Tetrachloroethene	Chronic	4.0E-02	mg/m^3	CNS/Liver/Kidney	1,000	IRIS	3/9/2020
Trichloroethene	Chronic	2.0E-03	mg/m^3	Heart/Immune System/Liver	10 to 100	IRIS	3/9/2020

Footnotes:
Oral Absorption Efficiency for Dermal from Regional Screening Levels, November 2019: http://www.epa.gov/risk/risk-based-screening-table-generic-tables
Adjusted RfD for Dermal = Oral RfD x Oral Absorption Efficiency for Dermal
Date shown for IRIS is the date IRIS was searched. http://www.epa.gov/iris/

Definitions:
IRIS = Integrated Risk Information System
mg/kg-day = milligrams per kilogram per day
mg/m^3= milligram per cubic meter
CNS= Central Nervous System
RfC = reference concentration
RfD = reference dose

Table 4
Cancer Toxicity Data Summary

Pathway: Ingestion/ Dermal

Contaminants of Potential Concern	Oral Cancer Slope Factor	Units	Adjusted Cancer Slope Factor (for Dermal)	Slope Factor Units	Weight of Evidence/Cancer Guideline[1]	Source	Date
Tetrachloroethene	2.1E-03	$(mg/kg\text{-}day)^{-1}$	2.1E-03	$(mg/kg\text{-}day)^{-1}$	Likely to be carcinogenic to humans	IRIS	3/9/2020
Trichloroethene[2]	4.6E-02	$(mg/kg\text{-}day)^{-1}$	4.6E-02	$(mg/kg\text{-}day)^{-1}$	Carcinogenic to humans	IRIS	3/9/2020

Pathway: Inhalation

Contaminants of Potential Concern	Inhalation Unit Risk	Units	Inhalation Cancer Slope Factor	Slope Factor Units	Weight of Evidence/Cancer Guideline[1]	Source	Date
Tetrachloroethene	2.6E-07	$(\mu g/m^3)^{-1}$	NA	NA	Likely to be carcinogenic to humans	IRIS	3/9/2020
Trichloroethene[3]	4.1E-06	$(\mu g/m^3)^{-1}$	NA	NA	Carcinogenic to humans	IRIS	3/9/2020

Footnotes:
Oral Absorption Efficiency for Dermal from Regional Screening Levels, November 2019:http://www.epa.gov/risk/risk-based-screening-table-generic-tables
Oral slope factor (SF) for Dermal = Oral SF/Oral Absorption Efficiency for Dermal
Date shown for IRIS is the date IRIS was searched. http://www.epa.gov/iris/
(1) EPA Weight of Evidence Narrative (EPA 2005):
Carcinogenic to human
Likely to be carcinogenic to humans
Suggestive evidence of carcinogenic potential
Inadequate information to assess carcinogenic potential
Not likely to be carcinogenic to humans
(2) Trichloroethene (TCE) is considered carcinogenic by a mutagenic mode of action for induction of kidney tumors. The adult-based oral SF for kidney cancer is 9.3×10^{-3} per mg/kg/day
(3) TCE is considered carcinogenic by a mutagenic mode of action for induction of kidney tumors. The adult-based IUR for kidney cancer is 1×10^{-6} per $\mu g/m^3$.

Definitions:
IRIS = Integrated Risk Information System
NA = Not available
(mg/kg-day)-1 = per milligrams per kilogram per day
$(\mu g/m^3)^{-1}$ = per micrograms per cubic meter

Table 5
Risk Characterization Summary - Non-Carcinogens

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Lifetime

Medium	Exposure Medium	Exposure Point	Contaminants Of Potential Concern	Primary Target Organ(s)	Non-Carcinogenic Hazard Quotient			
					Ingestion	Dermal Contact	Inhalation	Exposure Routes Total
Groundwater	Groundwater	Tap Water	Tetrachloroethene	Nervous System/Liver/Kidney/CNS	4E-02	2E-02	8E-02	1E-01
Groundwater	Groundwater	Tap Water	Trichloroethene	Heart/Immune System/Developmental/Kidney/Liver	1E-01	2E-02	4E-01	5E-01
							Total Hazard Index (HI) Across All Media[1]=	**0.8**

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Adult/Lifetime

Medium	Exposure Medium	Exposure Point	Contaminants Of Potential Concern	Primary Target Organ(s)	Non-Carcinogenic Hazard Quotient			
					Ingestion	Dermal Contact	Inhalation	Exposure Routes Total
Groundwater	Groundwater	Tap Water	Tetrachloroethene	Nervous System/Liver/Kidney/CNS	3E-02	2E-02	1E-01	2E-01
Groundwater	Groundwater	Tap Water	Trichloroethene	Heart/Immune System/Developmental/Kidney/Liver	7E-02	1E-02	5E-01	6E-01
							Total Hazard Index (HI) Across All Media[1]=	**0.9**

Scenario Timeframe: Current/Future
Receptor Population: Recreational Users
Receptor Age: Adolescent (age 12 to <18 years)

Medium	Exposure Medium	Exposure Point	Contaminants Of Potential Concern	Primary Target Organ(s)	Non-Carcinogenic Hazard Quotient			
					Ingestion	Dermal Contact	Inhalation	Exposure Routes Total
Surface Water	Surface Water	Río de la Plata	Trichloroethene	Heart/ Immune System/ Developmental/Kidney	NA	5E-04	NA	5E-04
							Total Hazard Index (HI) Across All Media[1]=	**6E-04**

Footnotes:
(1) The HI represents the summed HQs for all Contaminants of Potential Concern at the site, not just those requiring remedial action which are shown in this table.

Definitions:
NA = not available

Table 6
Risk Characterization Summary - Carcinogens

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Child/Adult Lifetime

Medium	Exposure Medium	Exposure Point	Contaminants Of Potential Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Tap Water	Chloroform*	6E-06	1E-04	5E-07	1E-04
			Tetrachloroethene	1E-07	4E-07	8E-08	6E-07
			Trichloroethene	1E-06	2E-06	2E-07	3E-06
						Exposure Medium Total=	1E-04
						Total Excess Cancer Risk Across All Media[1]=	1E-04

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adolescent (age 12 to <18 years)

Medium	Exposure Medium	Exposure Point	Contaminants Of Potential Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Water	Surface Water	Río de la Plata	Chloroform*	NA	NA	2E-09	2E-09
			Trichloroethene	NA	NA	1E-09	1E-09
						Exposure Medium Total=	3E-09
						Total Excess Cancer Risk Across All Media[1]=	3E-09

Footnotes:
(1) The carcinogenic risk represents the summed carcinogenic for all Contaminants of Potential Concern at the site, not just those requiring remedial action which are shown in this table.
*Not site-related contaminant but included for overall clarity/transparency

Definitions:
NA = not available

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

APPENDIX II- Administrative Record Index

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

07/16/2021

REGION ID: 02

Site Name: DORADO GROUND WATER CONTAMINATION
CERCLIS ID: PRN000201872
OUID: 01
SSID: A25N
Action:

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
615865	07/16/2021	ADMINISTRATIVE RECORD INDEX FOR THE DORADO GROUND WATER CONTAMINATION SITE	2	Administrative Record Index		(US ENVIRONMENTAL PROTECTION AGENCY)
458738	01/20/2017	STATEMENT OF WORK REGARDING WORK ASSIGNMENT 072-RICO-A25N FOR REMEDIAL INVESTIGATION / FEASIBILITY STUDY OU1 FOR THE DORADO GROUND WATER CONTAMINATION SITE	40	Report	(CDM FEDERAL PROGRAMS CORPORATION)	(US ENVIRONMENTAL PROTECTION AGENCY)
624306	07/20/2018	FINAL WORK PLAN VOLUME 1 FOR THE DORADO GROUND WATER CONTAMINATION SITE	77	Work Plan		
624315	02/05/2019	FINAL QUALITY ASSURANCE PROJECT PLAN FOR THE DORADO GROUND WATER CONTAMINATION SITE	981	Work Plan		
624328	03/17/2020	HUMAN HEALTH RISK ASSESSMENT PATHWAY ANALYSIS REPORT SUBMITTAL RISK ASSESSMENT GUIDANCE FOR SUPERFUND PART D TABLE 1 AND 4 SERIES FOR THE DORADO GROUND WATER CONTAMINATION SITE	13	Report		
615861	07/30/2020	FINAL SCREENING LEVEL ECOLOGICAL RISK ASSESSMENT FOR THE DORADO GROUND WATER CONTAMINATION SITE	122	Report	SANTOS,LUIS (US ENVIRONMENTAL PROTECTION AGENCY)	VALENTINO,MICHAEL (CDM SMITH)
615859	08/13/2020	FINAL HUMAN HEALTH RISK ASSESSMENT FOR THE DORADO GROUND WATER CONTAMINATION SITE	120	Report	SANTOS,LUIS (US ENVIRONMENTAL PROTECTION AGENCY)	VALENTINO,MICHAEL (CDM SMITH)

615865

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

07/16/2021

REGION ID: 02

Site Name: DORADO GROUND WATER CONTAMINATION
CERCLIS ID: PRN000201872
OUID: 01
SSID: A25N
Action:

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
615863	09/29/2020	REMEDIAL INVESTIGATION REPORT FOR THE DORADO GROUND WATER CONTAMINATION SITE	3895	Report		(CDM SMITH)
616890	12/18/2020	COMMUNITY ENGAGEMENT PLAN FOR THE DORADO GROUND WATER CONTAMINATION SITE	46	Work Plan	SANTOS,LUIS (US ENVIRONMENTAL PROTECTION AGENCY)	VALENTINO,MICHAEL (CDM SMITH)
616888	12/21/2020	FINAL FOCUSED FEASIBILITY STUDY REPORT FOR THE DORADO GROUND WATER CONTAMINATION SITE	165	Report	SANTOS,LUIS (US ENVIRONMENTAL PROTECTION AGENCY)	VALENTINO,MICHAEL (CDM SMITH)
616560	05/28/2021	DEPARTMENT OF NATURAL AND ENVIRONMENTAL RESOURCES CONCURRENCE ON THE PROPOSED PLAN FOR THE DORADO GROUND WATER CONTAMINATION SITE	1	Letter	Rodriguez,Teresita (US ENVIRONMENTAL PROTECTION AGENCY)	(PUERTO RICO DEPARTMENT OF NATURAL AND ENVIRONMENTAL RESOURCES (DNER))
618496	07/08/2021	PUBLIC NOTICE: US EPA ANNOUNCES THE PROPOSED PLAN AND PUBLIC COMMENT PERIOD FOR THE DORADO GROUND WATER CONTAMINATION SITE	2	Publication		(US ENVIRONMENTAL PROTECTION AGENCY)
629929	07/14/2021	PROPOSED PLAN FOR THE DORADO GROUND WATER CONTAMINATION SITE	17	Publication		(US ENVIRONMENTAL PROTECTION AGENCY)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

APPENDIX III-
Puerto Rico Department of Natural and Environmental Resources' Concurrence Letter

GOVERNMENT OF PUERTO RICO
Department of Natural and Environmental Resources

September 9, 2021

VIA EMAIL: rodriguez.teresita@epa.gov

Ms. Teresita Rodríguez
Response and Remediation Branch Chief
ATT: Mr. Luis Santos, Remedial Project Manager
US Environmental Protection Agency (USEPA)
Caribbean Environmental Protection Division (CEPD)
City View Plaza II – Suite 7000
#48 Road 165 km 1.2
Guaynabo, PR 00968-8069

Dear Ms. Rodríguez:

RE: DORADO GROUNDWATER CONTAMINATION SITE, IN DORADO PUERTO RICO (PR) SUPERFUND SITE RECORD OF DECISION (ROD) CONCURRENCE LETTER.

The Department of Natural and Environmental Resources (DNER) has completed its review of the aforementioned document. This ROD includes the preferred remedial alternative presented in the USEPA Proposed Plan (PP) to address groundwater contamination at the Dorado Groundwater Contamination Superfund Site. The preferred alternative includes Monitored Natural Attenuation and Institutional Controls (Alternative #2).

All DNER's comments and concerns were addressed through several meetings and conference calls with USEPA and CDM Smith (USEPA contractor) representatives. The preferred alternative would be protective of human health and the environment, comply with ARARs, and be cost-effective. Therefore, DNER concurs with the ROD issued by the USEPA.

If you have any questions, please feel to contact Omar E. Santiago-Santiago, Environmental Compliance and Inspection Officer, DNER Superfund Program at 787-999-2200 extension 5915 or by e-mail omarsantiago@jca.pr.gov.

Cordially,

Melvin Menéndez Figueroa, Manager
Superfund Program
Environmental Emergencies Response Area

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

APPENDIX IV

Responsiveness Summary

A. Proposed Plan
B. Public Notice
C. Transcript of the Public Meeting

APPENDIX IV

RESPONSIVENESS SUMMARY
DORADO GROUNDWATER CONTAMINATION SITE
DORADO, PUERTO RICO

INTRODUCTION

This Responsiveness Summary provides a summary of the public's comments and concerns regarding the Dorado Groundwater Contamination Superfund Site (Site) Proposed Plan and the U.S. Environmental Protection Agency's (EPA) responses to those comments. At the time of the public comment period, EPA proposed a preferred alternative for remediating the contaminated groundwater associated with the Site. All comments summarized in this document have been considered in EPA's final decision for selection of a remedy for the Site.

BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

The Proposed Plan for the Site was released to the public on July 19, 2021. The public comment period ran from July 19, 2021 through August 18, 2021. EPA held a public meeting on August 5, 2021 to present the Proposed Plan and accept public comments. During the public comment period, EPA received oral comments from the public during the public meeting and additional written comments via email. This responsiveness summary document summarizes all public comments received during the August 5, 2021 public meeting and comments submitted to EPA via electronic mail during the public comment period. EPA's responses are provided below.

The Site includes public supply wells from Maguayo and Dorado Urbano drinking water supply systems. These groundwater well systems are operated as a public utility by the Puerto Rico Aqueduct and Sewer Authority (PRASA), and Puerto Rico Department of Health (PRDOH) regulates the water quality. There are two active water supply wells in the Maguayo Urbano Water System (Nevárez and Santa Rosa), which are regulated by PRDOH to ensure compliance with drinking water quality standards. The remaining wells in the system were taken offline due to the contamination and thus are inactive and unavailable to the general public consuming water from the drinking water system.

Representatives from PRASA and PRDOH were present at the August 5, 2021 public meeting to answer any questions from the audience.

PART 1: Oral Comments

Comments and/or questions were received at the public meeting. A summary of the significant oral comments provided at the public meeting, as well as EPA's responses to those comments, are provided below.

Comment #1: Several participants asked questions related to their residential drinking water and expressed concerns about the quality, pressure, and color of the tap water in their homes.

Response #1: The public supply wells that had detections at or above the maximum contaminant levels (MCLs) have been disconnected from the Maguayo and Dorado Urbano drinking water supply systems. The active public supply wells, Nevárez and Santa Rosa, are being monitored by PRASA and are in compliance with the PRDOH's drinking water quality standards and criteria.

To learn more about your water quality, more information can be found online at https://www.acueductospr.com/informes-sobre-la-calidad-del-agua.

Additionally, citizens may provide information to EPA regarding concerns about their drinking water quality through the Safe Drinking Water Hotline by phone at 800-426-4791, via email at safewater@epa.gov, or online at https://www.epa.gov/ground-water-and-drinking-water/forms/contact-us-about-ground-water-and-drinking-water. Environmental violations may be reported to EPA online at https://echo.epa.gov/report-environmental-violations.

Comment #2: One participant asked about the impacts of the preferred alternative (Alternative 2) on residents in the Dorado community as well as the impact on agricultural, commercial, and industrial areas.

Response #2: The selected remedy (Alternative 2) will have minimal short-term impact to the community and environment due to the fact that no construction or long-term maintenance would be needed.

Comment #3: A participant raised a concern that the contamination might be connected to development and construction projects in Dorado.

Response #3: Since 2008, EPA has made multiple attempts to identify the source, or sources, of groundwater contamination in the general area of the Site. In 2008, EPA launched the Magüayo Site Discovery Initiative to identify possible hazardous waste sites or sources near the contaminated wells. Based on these efforts, EPA identified 21 facilities for further investigation. Through environmental database searches and reconnaissance activities, EPA also identified other industrial facilities near the groundwater contamination. In 2011 and 2013, EPA conducted preliminary assessment/site inspection sampling at the 21 facilities identified for further investigation and in 2015, EPA conducted site reassessment sampling at five of these facilities. The sampling efforts included collection of surface soil samples, subsurface soil samples, and groundwater samples, where encountered, from each facility. The sampling effort at one active dry-cleaning facility also included collection of soil gas samples. Analytical results documented the presence or apparent presence of chlorinated solvents at several facilities; however, there are no data clearly connecting any of the facilities to the supply well contamination. In addition, the varied nature of the underlying karst limestone aquifer makes it difficult to determine a source of contamination.

Comment #4: Several participants raised concerns about the public drinking supply wells that are currently being used and asked whether those wells are being sampled.

Response #4: The public supply wells that had detections at or above the maximum contaminant levels (MCLs) have been disconnected from the Maguayo and Dorado Urbano water supply systems. The active public supply wells, Nevárez and Santa Rosa, are being monitored and sampled by PRASA in compliance with PRDOH to ensure that drinking water standards are met. PRASA regularly publishes water quality reports, which can be found online at https://www.acueductospr.com/informes-sobre-la-calidad-del-agua.

Comment #5: A participant asked what is proposed in Alternative 3 and why Alternative 3 was not selected. Another participant added and stated that Alternative 3, which proposes active removal and treatment of groundwater that would expedite groundwater restoration, would make available in a short period of time the use of the resource for drinking water for the benefit of the communities, private and governmental sectors.

Response #5: Under Alternative 3, groundwater extraction and treatment would be conducted from the two wells that had contamination above the remediation level in both sampling rounds of the remedial investigation: Magüayo 4 and Magüayo 5. Under Alternative 3, it is expected that extraction and treatment would continue for up to 14 years. Alternative 3 will not significantly speed up groundwater restoration,

it will have greater short-term impacts, and implementability problems. Alternative 3 would be more difficult to implement and cause more disruption to the community during the extraction/treatment system construction and operation, which would require close to a mile of water conveyance piping, buried along roads in a populated area. It would also require access for siting of remedial equipment.

It is estimated that Alternative 2 will take approximately 18 years to achieve the RAOs, which is just a few years longer than the pump and treat alternative, at significantly lower present worth costs. Alternative 2 is believed to provide the best balance of tradeoffs among the alternatives based on the information available to EPA at this time. Alternative 2 has less short-term impact to the community and environment due to the fact that no construction or long-term maintenance would be needed.

Comment #6:
A participant asked that since the source of the contamination is unknown, what is the use of these chemicals and in what industries are they used.

Response #6: The groundwater contamination at the Site has not been attributed to any specific source. The primary contaminant in the groundwater is tetrachloroethylene or PCE. PCE is a nonflammable colorless liquid. Other names for tetrachloroethylene include perchloroethylene, perc, tetrachloroethene and perchlor. Most people can smell PCE when it is present in the air at a level of 1 part in 1 million parts of air (1 ppm) or more. PCE is used as a dry-cleaning agent and metal degreasing solvent. It is also used as a starting material (building block) for making other chemicals and is used in some consumer products. Because it is so widely used in many commercial and industrial applications, there are many potential sources.

Comment #7: Please clarify whether the contaminated wells were used for drinking water following Hurricane Maria.

Response #7: There are two active water supply wells in the Maguayo Urbano Water System (Nevárez and Santa Rosa) that were used as water supply wells after Hurricane Maria to supply water on an emergency response basis. Both of these wells are outside of the impacted area and have detections of PCE and TCE under the MCLs, thus the water was deemed to be consumable and in compliance with drinking water quality standards.

PART II: Written Comments

One written comment was received from the Mr. Carlos Lopez Rivera, Mayor of Dorado. The comment and response are summarized below. A copy of the submitted written comment letter is provided in an attachment to this Appendix IV.

Comment: After evaluating the Work Plan together with the associated documents and participating in the informative hearing last Thursday, August 5, 2021, the Autonomous Municipality of Dorado understands that it is appropriate for the EPA to consider Alternative #3 instead of Alternative #2. Alternative #3 proposes active removal and treatment of groundwater that would expedite groundwater restoration. Such cleanup would make available in a short period of time the use of the resource for drinking water for the benefit of the communities, private and governmental sectors.

Response: See Response #5 above.

ATTACHMENT A

PROPOSED PLAN

Superfund Program
U.S. Environmental Protection Agency
Region 2
Proposed Plan

Dorado Groundwater Contamination Site
Dorado, Puerto Rico

July 2021

EPA ANNOUNCES PROPOSED CLEANUP PLAN

This Proposed Plan describes the remedial alternatives developed for the Dorado Groundwater Contamination Superfund Site (site). The site is located in Dorado, Puerto Rico, and the U.S. Environmental Protection Agency (EPA) identifies in this Proposed Plan the preferred alternative for the site with the rationale for this preference. This document was developed by EPA, the lead agency for Site activities, in consultation with the Puerto Rico Department of Natural and Environmental Resources (DNER), the support agency. EPA is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act, 42 U.S.C. § 9617(a) (CERCLA, commonly known as Superfund), and Sections 300.430(f) and 300.435(c) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

The nature and extent of the contamination at the site and the remedial alternatives summarized in this document are described in detail in the Remedial Investigation (RI) and Focused Feasibility Study (FFS) reports.

EPA's preferred alternative for the site is Alternative 2: Monitored Natural Attenuation and Institutional Controls.

MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD
July 19, 2021 – August 18, 2021

PUBLIC MEETING
August 5, 2021 at 5:00 -7:00 pm
Teatro Juan Boria
Méndez Vigo St.
Dorado, PR

INFORMATION REPOSITORY
The Administrative Record file, which contains copies of the Proposed Plan and supporting documentation, is available at the following locations:

Dorado Municipal Library
Hours: Monday – Friday 9:00 am to 3:00 pm

U.S. Environmental Protection Agency
City View Plaza II- Suite 7000
#48 PR-165 Km. 1.2
Guaynabo, PR 00968-8069
(787) 977-5865
Hours: Monday – Friday 9:00 am to 5:00 pm
Office is closed due to the pandemic.

Puerto Rico Department of Natural & Environmental Resources
Environmental Emergencies and Superfund Area
Edificio de Agencias Ambientales Cruz A. Matos
Urbanización San José Industrial Park
1375 Avenida Ponce de León
San Juan, PR 00926-2604
(787) 999-2200 ext. 5900, 5901, 5915
Hours: Monday – Friday 9:00 am to 3:00 pm

U.S. EPA Records Center, Region 2
290 Broadway, 18th Floor
New York, New York 10007-1866
(212) 637-4308
Hours: Monday-Friday – 9:00 am to 5:00 pm
Office is closed due to the pandemic.

EPA website for the Dorado Ground Water Contamination site: https://www.epa.gov/superfund/dorado-ground-water-contamination

COMMUNITY ROLE IN SELECTION PROCESS

EPA relies on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, this Proposed Plan has been made available to the public for a 30-day public comment period, which begins with the issuance of this Proposed Plan and concludes on August 18, 2021.

EPA is providing information regarding the investigation and cleanup of the site to the public through a public meeting and the public repositories, which contain the administrative record file for this remedial decision. EPA encourages the public to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted there.

A public meeting will be held during the comment period to provide information regarding the site investigations, the alternatives considered, and the preferred alternative, as well as to receive public comments. Comments received at the public meeting, as well as written comments during the public comment period, will be documented in the Responsiveness Summary Section of the Record of Decision (ROD), the document that formalizes the selection of the remedy.

Written comments on this Proposed Plan should be addressed to:

Luis E. Santos
Remedial Project Manager
U.S. Environmental Protection Agency
City View Plaza II - Suite 7000
48 RD, 165 Km. 1.2
Guaynabo, PR 00968-8069
Telephone: (787) 977-5869
E-mail: santos.luis@epa.gov

SCOPE AND ROLE OF ACTION

EPA completed RI and FFS studies, the results of which are presented in this Proposed Plan. The preferred alternative presented here is expected to be the final action for the site.

SITE BACKGROUND

Site Description

The site consists of a groundwater contamination plume, which to date has not been attributed to any specific source. The plume is located within the municipality of Dorado in north-central Puerto Rico. The site includes public supply wells from Maguayo and Dorado Urbano water supply systems, which serve populations of 36,630 and 31,061 people, respectively. These groundwater systems are operated as a public utility by the Puerto Rico Aqueduct and Sewer Authority (PRASA). There are two active water supply wells in the Maguayo Urbano Water System (Nevárez and Santa Rosa). The remaining wells in the system were taken offline due to contamination. Wells in the Maguayo and Dorado Urbano systems have shown detections of volatile organic compounds (VOCs), primarily tetrachloroethylene (PCE) and trichloroethylene (TCE), since the 1980s. The United States Geological Survey (USGS) reported PCE and TCE detections for samples collected from the Maguayo and Dorado Urbano system wells from November 1984 to May 1985. On September 9, 2016, EPA listed the site on the National Priorities List because the groundwater contamination lies within a designated Wellhead Protection Area and based on the groundwater migration pathway score from the Hazardous Ranking System document.

The current and future land use at the site, includes residential, agricultural, commercial, and industrial properties. The site is located within the Río de la Plata drainage basin, which can be used for recreational activities such as swimming or wading. Río de la Plata is the most significant surface water body in the vicinity of the site and receives some groundwater discharge from the dilute Dorado plume.

Site History and Previous Investigations

Since 2008, EPA has made multiple attempts to identify the source or sources of groundwater contamination in the general area of the site. In 2008, EPA launched the Maguayo Site Discovery Initiative to identify possible hazardous waste sites near the contaminated wells. Based on these efforts, EPA identified 21 facilities for further investigation. Through environmental database searches and reconnaissance activities, EPA also identified other industrial facilities near the groundwater contamination.

In 2011 and 2013, EPA conducted preliminary assessment/site inspection sampling at the 21 facilities identified for further investigation and in 2015, EPA conducted site reassessment sampling at five of these facilities. The sampling efforts included collection of surface soil samples, subsurface soil samples, and groundwater samples, where encountered, from each facility. The sampling effort at one active dry-cleaning facility also included collection of soil gas samples. Analytical results documented the presence or apparent presence of chlorinated solvents at several facilities; however, there are no data to clearly connect any of the facilities to the supply well contamination. In addition, the varied nature of the underlying karst limestone aquifer makes it difficult to determine where contamination originates.

In September 2015, EPA collected groundwater samples from five active water supply wells and eight inactive water supply wells owned by PRASA and from one commercial production well operated by a water bottling plant. Chloroform, bromodichloromethane, cis-1,2-dichloroethene, PCE, and TCE were each detected in at least one groundwater sample.

Surface Features

The site is situated within the Northern Limestone Province of Puerto Rico. The Maguayo water system wells are mostly located within the flat areas between the mogotes along Routes PR-22 and PR-694. Wells of the Maguayo water system are located in the valley between El Coto and the hills north of the Higuillar well (the Cerros de Higuillar). In addition to the mogotes, other karst features including sinkholes are present within the site. The site is located in the Río de la Plata drainage basin, and the Río de la Plata is the most significant surface water body near the site.

Regional Geology and Hydrogeology

The unconsolidated deposits at the site are derived from the weathering of parent limestone. They consist of hard, stiff, often dry, sandy, and clayey silt and clay. The Aguada and Aymamón Limestone units are the bedrock units in the area of the site, with the less weathered Aymamón Limestone making up the mogotes in the area and the Aguada Limestone underlying the Aymamón Limestone. These units make up the Upper Aquifer, which is a drinking water aquifer. The Upper Aquifer is bound by a confining unit or the transition to saltwater.

Near the site, the USGS indicates that the Upper Aquifer is highly transmissive, with values ranging from 1,000 to over 10,000 square meters per day (m^2/day). Information provided in the *Well Information and Ground Water Population Apportionment* compiled by EPA (EPA 2016) indicates the public supply wells impacted by VOCs are completed in the Upper Aquifer. Flow rates reported for these wells range from 225 to 800 gallons per minute. Localized groundwater flow is primarily to the east; however, regional groundwater flow is primarily to the north. Discharge of the majority of the Upper Aquifer groundwater is expected to be the Atlantic Ocean to the north. Locally, some of the Upper Aquifer groundwater flows east toward the river and may then flow northward with the river toward the ocean. The shallowest portion of the Upper Aquifer may also discharge directly to the Río de la Plata.

Site Geology and Hydrogeology

The hydrogeologic model of the site is largely consistent with the regional geologic characterization. Site hydrogeologic units are described below:

- Blanket Sand Deposits – This unit consists primarily of reddish brown to yellowish brown silt and clay.
- The Aymamón Limestone is found at depths between 46 feet to 70 feet below ground surface at the site. The upper Aymamón Limestone has soft zones, sometimes filled with clay, and the deeper zone has solution features, including cavities and fracture zones.

The depth to groundwater varies across the site, but it occurs approximately 50 feet below ground surface at Maguayo 5.

Ecological Characterization

The ecological reconnaissance was conducted in an area of approximately 3 square miles surrounding a series of water supply wells throughout residential and commercial properties in the town of Dorado. However, other areas surveyed during the reconnaissance included large agricultural fields, drainage ditches, a large floodplain of the Río de la Plata east of PR-693, and magotes in the upland areas along PR-695 in the northwestern perimeter of the site. The Río de la Plata flows from the south along the eastern perimeter of the site and continues north for an additional 3 miles to the Atlantic Ocean. Upon review of the site area by DNER, several flora and fauna species with the potential to be found near the site were identified as endangered, threatened, or a critical element. The white-cheeked pintail (*Anas bahamensis*) is considered a locally threatened species and the Puerto Rican boa *Chilabothrus inornatus* is considered an endangered species. Species considered to be critical include the grasshopper sparrow (*Ammodramus savannarum*), cowhorn orchid (*Cyrtopodium punctatum*), and cold withe (*Tournefortia filiflora*).

Remedial Investigations (RI) Study Area Investigations

Environmental media investigated during the RI included soil, sediment, surface water, porewater and groundwater. In 2019, the following RI field activities were completed:

- Existing well evaluation
- Long-term groundwater monitoring
- Groundwater sampling
- Direct-push technology groundwater and soil sampling of the alluvial aquifer
- Porewater, surface water, and sediment sampling
- Stage 1 A cultural resources, monitoring well, and ecological surveys

Nature and Extent of Contamination

RI sample results were compared to site-specific screening criteria to evaluate contamination, with a focus on site-related contaminants detected in site groundwater, surface water, sediment, and porewater.

Selection of Site-Related Contaminants (SRCs)

PCE and TCE were selected as the SRCs based on review of past uses identified by historical data, the frequency and magnitude of detections in site media during the RI investigation, and exceedances of their respective screening criteria.

Analytical Results and Evaluation

Groundwater Analytical Results

Similar to the 2015 pre-remedial investigation, the RI data indicate the presence of a dilute Chlorinated VOC (CVOC) plume with no identified source. CVOCs were found at low levels in all 18 wells sampled. CVOC exceedances of screening criteria were limited to PCE detections in wells Maguayo 3, 4, 5, and 7 and USGS Maguayo 2 (Fig 1-1). PCE and other CVOC concentrations in these five wells, along with the concentrations detected in Maguayo 6, suggest a core of slightly elevated CVOC concentrations within a wider dilute plume when compared to the concentrations found in wells to the north (San Carlos, Higuillar, San Antonio 2, San Antonio 3) and south (USGS Santa Rosa 1, USGS Santa Rosa 2, Dorado Dairy 2, Santa Rosa,

Nevárez). This potential plume core migrates with groundwater flow toward the Río de la Plata, possibly discharging near the river sampling location SE-4. CVOC concentrations generally decrease as groundwater flows from west to east.

Except for one location (Higuillar Dry Cleaners), the results of the RI did not reveal any additional potential contaminant sources to investigate. The groundwater screening samples collected between Higuillar Dry Cleaners and the Maguayo wellfield did not include any detections above screening criteria. These findings, coupled with the widespread but mostly below maximum contaminant level detections of PCE, TCE, and other CVOCs, indicate that there is no identified source for the observed CVOC contaminants.

Like the occurrence of other CVOCs, low concentrations of chloroform, a trihalomethane, were widespread across the sampled supply wells during Rounds 1 and 2 RI sampling. No chloroform concentrations exceeded the screening criteria of 60 µg/L; however, a concentration of 47 µg/L was detected in the Maguayo 3 Round 2 sample and several locations consistently had concentrations between 10 and 20 µg/L. Higher concentrations of chloroform were generally but not always co-located with the highest PCE concentrations (*e.g.*, Maguayo 4, 5, and 7 and USGS Maguayo 2).

Chloroform detections could plausibly be from leaks in the distribution system of chlorinated water in the wellfield area. The Maguayo wells are part of the distribution line from the Puerto Rico North Coast Superaqueduct, whose water is chlorinated. Chlorination of drinking water leads to the formation of trihalomethanes, including chloroform.

Co-located surface water, sediment, and porewater samples were collected from eight locations in the Río de la Plata. No CVOCs or trihalomethanes were found above detection limits in sediment samples collected. CVOCs and trihalomethanes detected in both the surface water and porewater were all detected below their RI screening criteria.

Fate and Transport of Site Contaminants

The RI data indicate the presence of a dilute CVOC plume with no identified source. CVOCs were found at low levels in all 18 wells sampled. CVOC exceedances of screening criteria were limited to PCE detections in wells Maguayo 3, 4, 5, and 7 and USGS Maguayo 2, with a maximum PCE concentration of 15 µg/L in well Maguayo 4 and a similar concentration of PCE (13 µg/L) in Maguayo 5. The concentrations of PCE and other CVOCs in these five wells, suggest a slightly elevated concentration CVOC plume core within the wider dilute plume.

With widespread historical pumping, the highly transmissive aquifer, and a lack of identified sources despite multiple efforts at the site, it appears highly unlikely that a discrete source of contamination can be found.

Limited evidence was found for sustained destructive natural attenuation (either biotic or abiotic degradation) at the site. Aerobic conditions, fast-moving groundwater, and lack of organic carbon are not conducive to the growth of bacteria capable of dehalogenating PCE. However, the nondestructive mechanisms of dilution and dispersion actively serve to reduce groundwater concentrations.

SUMMARY OF SITE RISKS

As part of the RI and FS, a baseline risk assessment was conducted to estimate the current and future effects of contaminants on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects of releases of hazardous substances from a site if no actions to mitigate such releases are taken, under current and future groundwater and surface water uses. The baseline risk assessment includes a human health risk assessment (HHRA) and a Screening Level Ecological Risk Assessment (SLERA).

In the HHRA, cancer risk and noncancer health hazard estimates are based on current reasonable maximum exposure (RME) scenarios. The estimates were developed by taking into account

various health-protective estimates about the concentrations, frequency and duration of an individual's exposure to chemicals selected as contaminants of potential concerns (COPCs), as well as the toxicity of these contaminants.

Human Health Risk Assessment

A four-step human health risk assessment process was used for assessing site-related cancer risks and noncancer health hazards. The four-step process is comprised of Hazard Identification, Exposure Assessment, Toxicity Assessment, and Risk Characterization (see adjoining box "What is Risk and How is it Calculated").

The HHRA began with selecting contaminants of potential concern (COPCs) in various media (*i.e.*, groundwater, surface water, and sediment) that could potentially cause adverse effects in exposed populations. COPCs were selected by comparing the maximum detected concentrations of the chemicals identified with state and federal risk-based screening values. The screening of each COPC was conducted separately for each media of interest. Four COPCs including chloroform, PCE, TCE, and vinyl chloride were identified in groundwater and further evaluated in the HHRA. Chloroform and TCE were also retained as surface water COPCs and evaluated further in the risk assessment.

The exposure assessment identified potential human receptors based on a review of current and reasonably foreseeable future land use at the site, which includes residential, agricultural, commercial, and industrial properties. The site is located within the Río de la Plata drainage basin, which can be used for recreational activities such as swimming or wading. Río de la Plata is the most significant surface water body in the vicinity of the site and receives some groundwater discharge from the dilute Dorado plume. Based on the current zoning and land use, the HHRA evaluated residential and recreational exposure to site contamination.

Potential Exposure Pathways

The current and future land use scenarios evaluated in the HHRA included the following exposure pathways and populations:

- Recreational User (adolescent [12 to <18 years]): incidental ingestion and dermal contact while swimming in the Río de la Plata.
- Residents (child [0-6 years] and adults): incidental ingestion, dermal contact and inhalation of particulates and volatiles while bathing or showering released from groundwater if municipal supply water treatment is interrupted.

A complete summary of all exposure scenarios can be found in the baseline human health risk assessment.

Contaminant Exposure Evaluation Process

In this assessment, Exposure Point Concentrations (EPC) were estimated using either the maximum detected concentration of a contaminant or the 95% Upper-Confidence Limit (UCL) of the average concentration. Chronic daily intakes were calculated based on RME, which is the highest exposure reasonably anticipated to occur at the site. The RME is intended to estimate a conservative exposure scenario that is still within the range of possible exposures.

Summary of the Human Health Risk Characterization

In the risk assessment, two types of toxic health effects were evaluated for COPCs: cancer risk and noncancer hazard. Calculated cancer risk estimates for each receptor were compared to EPA's target risk range of $1x10^{-6}$ (one-in-one million) to $1x10^{-4}$ (one-in-ten thousand). The calculated noncancer hazard index (HI) estimates were compared to EPA's target threshold value of 1. The following sections provide an overview of the cancer risks and noncancer hazard associated with exposure to the following media at the site: groundwater and surface water.

Groundwater

Risks and hazards were evaluated for current and future exposure to sitewide groundwater, and the summary of hazards and risks associated with groundwater are listed in Table 1. The populations of interest included child and adult residents. Current and future residents may come into

WHAT IS RISK AND HOW IS IT CALCULATED?

Human Health Risk Assessment:
A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current- and future-land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the chemicals of potential concern (COPCs) at the site in various media (*i.e.*, soil, groundwater, surface water, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants in air, water, soil, etc. identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil and ingestion of and dermal contact with contaminated groundwater. Factors relating to the exposure assessment include, but are not limited to, the concentrations in specific media that people might be exposed to and the frequency and duration of that exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other non-cancer health hazards, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health hazards.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks for all COPCs. Exposures are evaluated based on the potential risk of developing cancer and the potential for non-cancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk;" or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions identified in the Exposure Assessment. Current Superfund regulations for exposures identify the range for determining whether remedial action is necessary as an individual excess lifetime cancer risk of 10^{-4} to 10^{-6}, corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk. For non-cancer health effects, a "hazard index" (HI) is calculated. The key concept for a non-cancer HI is that a threshold (measured as an HI of less than or equal to 1) exists below which non-cancer health hazards are not expected to occur. The goal of protection is 10^{-6} for cancer risk and an HI of 1 for a non-cancer health hazard. Chemicals that exceed a 10^{-4} cancer risk or an HI of 1 are typically those that will require remedial action at the site and are referred to as Chemicals of Concern or COCs in the final remedial decision or Record of Decision.

contact with contaminants in groundwater used as tap water. Under the RME scenario, the total cancer risk (1×10^{-4}) is at the upper end of EPA's acceptable cancer risk range. The total cancer risk is primarily due to inhalation of volatilized chloroform in groundwater while showering/bathing. Chloroform was not detected in groundwater at concentrations exceeding drinking water standards. The total noncancer HIs for children (0.8) and adults (0.9) are both below EPA's threshold value of 1.

Table 1. Summary of hazards and risks associated with groundwater

Receptor	Cancer Risk	Hazard Index
Resident- Child	1.0×10^{-4}	0.8
Resident- Adult		0.9

Surface Water

Cancer risks and noncancer hazards were evaluated for current and future recreational users from exposure to contaminants in surface water while swimming in the Río de la Plata. Under the RME scenario, the total cancer risk for adolescent (12 to less than 18 years old) recreational users (3×10^{-9}) is below EPA's cancer risk range. The total noncancer HI (0.0006) is below EPA's threshold of unity. A summary of hazards and risks associated with surface water are shown in Table 2.

Table 2. Summary of hazards and risks associated with surface water

Receptor	Cancer Risk	Hazard Index
Recreational User - Adolescent (12 to <18 yrs)	3.0×10^{-9}	0.0006

Risk Assessment Summary

In conclusion, estimated cancer risks for current/future residents and recreational users are equal to and below EPA's threshold, respectively. The estimated cancer risk for current/future residents is equal to the upper end of EPA's acceptable cancer risk range for the RME scenario, primarily due to the presence of chloroform in groundwater. The risk was primarily driven by inhalation of chloroform from groundwater used as tap water. Inhalation risks may be overestimated by the combination of assumptions used to model indoor air concentrations for the RME scenario and the nonlinear dose-response of chloroform. It should be noted that detected chloroform concentrations never exceeded the maximum contaminant level (MCL) of 80 ug/L. TCE was detected once at a concentration equal to the MCL of 5 µg/L, and PCE was slightly above the MCL of 5 µg/L in three out of 18 onsite wells.

The estimated total cancer risk for recreational users swimming at the Río de la Plata is well below EPA's risk range. For noncancer hazards, the total HIs for current/future residents and recreational users are all below EPA's threshold value of 1.

Based on the results of the human health risk assessment, it is EPA's current judgment that the preferred alternative identified in this Proposed Plan is necessary to protect public health or the environment from actual or threatened releases of hazardous substances into the environment.

Ecological Risk Assessment

A screening-level ecological risk assessment (SLERA) was conducted to evaluate the potential for ecological risks from the presence of contaminants in surface water, sediment, and sediment porewater. The SLERA focused on evaluating the potential for impacts to sensitive ecological receptors to site-related constituents of concern through exposure to surface water, sediment, and sediment porewater in the Río de la Plata. Surface water, sediment, and sediment porewater concentrations were compared to ecological screening values as an indicator of the potential for adverse effects to ecological receptors. A complete summary of all exposure scenarios can be found in the SLERA.

The conceptual site model (CSM) indicated that the majority of the Upper Aquifer groundwater is expected to discharge northward to the Atlantic Ocean, although locally, the shallowest portion of the Upper Aquifer discharges to the Río de la Plata. The maximum detected concentrations of contaminants in the groundwater have a potential to impact ecological receptors in the Río de la Plata. Baseline river flow near the site is approximately 30 to 40 cubic feet per second, and a high proportion of that surface water is assumed to have discharged from groundwater, primarily from upstream of the site. The CSM illustrates, for each exposure medium, the ecological receptors and exposure pathways that are evaluated in the SLERA.

There is suitable ecological habitat throughout the well areas of the site and along the Río de la Plata to support terrestrial and aquatic biota such as invertebrates, fish, amphibians, reptiles, birds, and mammals. Ecological receptors utilizing the site may be exposed to chemicals present in sediment and surface water. They may be exposed, depending on the exposure medium, via direct contact or incidental ingestion. Exposure of higher trophic-level receptors can also occur through food chain exposure (via ingestion of food items that may have become contaminated through exposure to site-related contaminants). The exposure pathways and exposure point concentrations in the specific media are discussed below**.**

Surface Water

None of the surface water sample results exceeded the Ecological Screening Levels (ESLs) for any contaminants. Therefore, there are no site-related Contaminants of Potential Ecological Concern (COPECs), and ecological risk from surface water is below EPA criteria.

Sediment

Only one compound, acetone, exceeded the sediment ESLs, while the rest of the detected compounds were below the ESLs. Acetone detected in sediment exceeded the ESL, but acetone was also detected in trip blanks and equipment blanks. Acetone was not detected in groundwater, sediment porewater, or in surface water. Acetone is a common laboratory contaminant, and it is likely that the sediment detections were artifacts. Therefore, it is assumed that the acetone detected was not site-related and ecological risk from sediment is below EPA criteria.

Sediment Porewater

None of the sediment porewater sample results exceeded surface water ESLs for any contaminants. Therefore, there are no site-related COPECs and ecological risk from sediment porewater is below EPA criteria.

Based on a comparison of maximum detected concentrations of contaminants in the site surface water, sediment, and sediment porewater to conservatively derived ESLs, the ecological risk at the site is below EPA criteria.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are specific goals to protect human health and the environment. These objectives are based on available information and standards, such as Applicable or Relevant and Appropriate Requirements (ARARs), To-Be-Considered (TBC) guidance and site-specific risk-based levels.

The HHRA concluded that the estimated total cancer risk from exposure of current or future residents to groundwater was equal to the upper end of EPA's acceptable risk range (1×10^{-4}). In addition, concentrations of PCE and TCE in groundwater are greater than the federal MCLs and Puerto Rico Water Quality Standards (PRWQS). As such, remedial action alternatives were developed to focus on preventing human exposure and restoring groundwater.

The Remedial Action Objectives (RAOs) for groundwater are to:

- Prevent current and future human exposure to groundwater with concentrations of PCE and TCE above drinking water standards.
- Restore groundwater at the site to its beneficial use (*i.e.*, drinking water) in a reasonable time frame.

Groundwater Preliminary Remediation Goals

Groundwater at the site is classified as suitable for drinking water use (SG). In addition, groundwater at the site has historically been used as a source of potable water supply in the Maguayo and Dorado Urbano systems; however, all the wells impacted by contamination above drinking water standards are currently inactive (only the Nevárez and Santa Rosa wells are currently active). To restore the groundwater at the site to its beneficial use, the National Primary Drinking Water Standards (federal MCLs) are relevant and appropriate requirements. The promulgated groundwater standards listed in the PRWQS Regulation are potentially applicable or relevant and appropriate requirements. Because the federal MCLs and PRWQS are the same for the contaminants of concern, the federal MCLs were used to derive preliminary remediation goals (PRGs) for groundwater, as shown below.

Preliminary Remediation Goals

The development of PRGs is a requirement of the NCP (40 CFR 300.430(e)(2)(i)). Identification and selection of the PRGs are typically based on RAOs, the current and anticipated future land uses, and ARARs. The PRGs are typically presented as chemical- and media-specific values that directly address the RAOs. These values are typically used as a preliminary value in the FS to guide evaluations of remedial alternatives.

Contaminants of Concern	National Primary Drinking Water Standards (Federal MCLs) (µg/L)	Preliminary Remediation Goals (µg/L)
Tetrachloroethene (PCE)	5.0	5.0
Trichloroethene (TCE)	5.0	5.0

Groundwater Remedial Action Alternatives

CERCLA § 121(b)(1), 42 U.S.C. § 9621(b)(1), mandates that remedial actions must be protective of human health and the environment, be cost-effective, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants at a site. CERCLA § 121(d), 42 U.S.C. § 9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants that at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA § 121(d)(4), 42 U.S.C. § 9621(d)(4).

The timeframes presented below for each alternative reflect only the time required to construct or implement the remedy and do not include the time required to design the remedy or procure contracts for design and construction. The cost estimates, which are based on available information, are order-of-magnitude engineering cost estimates that are expected to be within +50 to -30 percent of the actual cost of the project.

The following alternatives are considered in this Proposed Plan:

Alternative 1: No Action

Capital Cost	$ 0
Present Worth O&M Cost	$ 0
Total Present Worth Cost	$ 0
Construction Time Frame	N/A
Timeframe to meet RAOs	N/A

Alternative 1, the "no action" alternative, is required by the NCP to provide an environmental baseline against which impacts of the various remedial alternatives can be compared. Under this alternative, no action would be taken to remediate the contaminated groundwater or to monitor contaminant concentrations associated with risks to human health or the environment.

Alternative 2: Monitored Natural Attenuation and Institutional Controls

Capital Cost	$161,000
Present Worth O&M Cost	$669,000
Total Present Worth Cost	$830,000
Construction Time Frame	One year
Timeframe to meet RAOs	Eighteen years

Under Alternative 2, a long-term program to monitor natural attenuation for groundwater within the target remediation zone (TRZ) would be instituted. The TRZ encompasses all groundwater with historical concentrations of PCE or TCE above PRGs. This includes the area surrounding Maguayo 3, 4, 5, 7, and USGS Maguayo 2, as well as San Antonio 3 where TCE was detected equal to the PRG. Only Maguayo 4 and 5 exceeded PRGs in both rounds of the RI; other wells only exceeded in one of the two rounds. Vertically, the TRZ includes groundwater in both the blanket sand deposits and Aguada/Aymamón limestone. The approximate areal extent of the TRZ is shown in Figure 2-1. The RI data shows a large dilute plume, with concentrations slightly elevated above the PRG for PCE. No potential source of contamination, such as a business that used chlorinated solvents or the detection of chlorinated solvents waste in soil or groundwater, was identified. As such, it appears unlikely that a continuing source of contamination is present that would overwhelm the natural attenuation capacity of the subsurface

plume and lead to increasing concentrations in the Maguayo wells area or the San Antonio 3 well. Decreasing concentration trends detected during the monitoring under this alternative would verify that no continuing source of contamination is present. If concentration increases are identified during monitoring, EPA could reevaluate the alternative during five-year reviews. Solute transport modeling calculated 18 years as the conservative estimate to achieve PRGs. According to guidance in *Recommended Approach for Evaluating Completion of Groundwater Restoration Remedial Actions at a Groundwater Monitoring Well* (EPA 2014), eight rounds of data are recommended to prove the following:

- Remediation goals are met.
- Groundwater will continue to meet the remediation goal for PCE in the future.

The exact scope and schedule for MNA sampling would be determined during remedial design. Monitoring at 10 wells for 18 years in the TRZ and a sidegradient well is proposed under this alternative. VOC and geochemical parameter results would be evaluated annually for progress towards achieving RAOs and during the five-year reviews.

Under Alternative 2, institutional controls would restrict groundwater usage and well installation.

Alternative 3: Groundwater Extraction and Treatment, Monitored Natural Attenuation, and Institutional Controls

Capital Cost	$1,451,000
Present Worth O&M Cost	$2,740,000
Total Present Worth Cost	$4,240,000
Construction Time Frame	One year
Timeframe to meet RAOs	Fourteen

Under Alternative 3, groundwater extraction and treatment would be conducted from the two wells that had contamination above the PRGs in both sampling rounds of the RI: Maguayo 4 and Maguayo 5. Extraction and treatment would continue until concentrations in these wells are restored to below PRGs. Up to 14 years is anticipated to be needed to remove PCE under a pumping scenario. This estimate is based on the observed trend in Maguayo 5 during the years this well was pumped for drinking water supply. In the remainder of the TRZ, natural attenuation would be monitored as described in Alternative 2.

This remedial alternative would consist of the following major components:

- Pre-design investigation and remedial design
- Installation of pumps in Maguayo 4 and Maguayo 5
- Treatment system installation and operation
- Discharge of treated groundwater
- Operation and maintenance
- Monitored natural attenuation in the TRZ not actively pumped by Maguayo 4 and 5.

NINE EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES
Overall protection of human health and the environment determines whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
Compliance with ARARs evaluates whether the alternative would meet all of the applicable or relevant and appropriate requirements of federal and state environmental statutes and other requirements that pertain to the site, or provide grounds for invoking a waiver.
Long-term effectiveness and permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies an alternative may employ.
Short-term effectiveness considers the period of time needed to implement an alternative and the risks the alternative may pose to workers,

residents, and the environment during implementation.
Implementability is the technical and administrative feasibility of implementing the alternative, including the availability of materials and services.
Cost includes estimated capital and annual operation and maintenance costs, as well as present-worth costs. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
Commonwealth acceptance considers whether the Commonwealth (the support agency) concurs with, opposes, or has no comments on the preferred alternative.
Community acceptance will be assessed in the ROD and refers to the public's general response to the alternatives described in the Proposed Plan and the RI and FS reports. Comments received on the Proposed Plan are an important indicator of community acceptance.

EVALUATION OF REMEDIAL ALTERNATIVES

EPA's nine evaluation criteria address statutory requirements and considerations for remedial actions in accordance with the NCP. The following subsections describe the evaluation criteria used in the detailed analysis of remedial alternatives.

Overall Protection of Human Health and the Environment

The HHRA and SLERA indicate that EPA's acceptable risk range was not exceeded as a result of potential exposure to the site-related contaminants. However, PCE concentrations in groundwater did exceed the federal MCL for drinking water, and TCE was detected at its federal MCL.

The institutional controls in Alternatives 2 and 3 would prevent potential future human exposure to contaminated groundwater within the plume until remedial goals are met. Alternative 3 would use groundwater extraction to provide an extra level of protection to human health and the environment by preventing concentrations above MCLs from migrating to downgradient areas. Additionally, Alternative 3 implements active removal and treatment of groundwater that would expedite the restoration of groundwater. Alternative 2 would utilize MNA to remediate all site groundwater; while the time frame would likely be a few years longer compared to Alternative 3, the institutional controls would still provide overall protection. Alternative 1 is not protective, as it does not include any actions.

Compliance with ARARs

Three classifications of requirements are defined by EPA in the ARAR determination process. ARARs are defined as chemical-, location-, or action-specific. An ARAR can be one or a combination of all three types of ARARs. Each alternative was evaluated to determine how ARARs would be met.

Alternative 1 would not take any active measures to evaluate future compliance with applicable or relevant and appropriate requirements (ARARs). Alternative 2 would rely upon natural dilution and dispersion processes to reduce concentrations in groundwater to chemical-specific ARARs (*i.e.*, federal MCLs); location- and action-specific ARARs are not applicable for Alternative 2 because no new construction would be completed, and no solid waste or discharges would be generated. Under Alternative 3, pumping would remove contamination above federal MCLs at Maguayo 4 and 5 and expedite the time frame to reach chemical-specific ARARs. Location- and action-specific ARARs are relevant because of the construction and operation of the groundwater extraction and treatment system, as well as the discharge of treated groundwater; compliance with these ARARs is feasible and can be addressed during remedial design and implemented during remedial construction and operation.

Long-Term Effectiveness and Permanence

Alternative 1 would not be considered a permanent remedy since no action would be implemented to reduce the level of contamination or verify any naturally occurring reduction. Both Alternative 2 and Alternative 3 would provide long-term effectiveness and permanence, assuming a continuing source for this dilute plume is not present. Alternative 2 provides a method to monitor and evaluate the attenuation of contaminant concentrations over time due to natural processes. Alternative 3 would use groundwater extraction and treatment to reduce concentrations permanently and irreversibly in the wells presently above PRGs. There is no residual risk because, at present, the site-specific HHRA and SLERA indicate no unacceptable risks from exposure to PCE. Alternatives 2 and 3 would have reliable and adequate controls.

Reduction of Toxicity, Mobility, or Volume through Treatment

Alternative 1 would not monitor and evaluate the reduction of contaminant toxicity/mobility/volume (T/M/V) through natural processes, since no remedial action would be conducted. Alternative 2 would reduce toxicity and volume through natural processes. Alternative 3 would reduce T/M/V through extraction and treatment of groundwater contaminated with PCE above its PRG.

Short-Term Effectiveness

With respect to Alternative 1, there would be no short-term impact to the community and environment, as no remedial action would occur. There would be some minor short-term impacts to the local community and workers for Alternative 2. Alternative 3 would have more impacts on local community and workers due to the construction of the system, especially the conveyance pipes along public roads. Alternative 2 was estimated to achieve the RAOs within 18 years, and Alternative 3 was estimated to achieve the RAOs within 14 years.

Implementability

No problems are anticipated for the implementation of Alternative 1 since no action would be taken. Alternatives 2 and 3 would both require enforcement of institutional controls to ensure protection of public health and the environment during the remedial action. The main implementability concern is with Alternative 3. Since land immediately surrounding the groundwater extraction wells is privately owned or managed by the Puerto Rican government, land for the groundwater treatment and injection system would likely need to be leased. The land for the potential location of the treatment system is owned by the Puerto Rico Industrial Development Company (PRIDCO). Though the land is not currently used for PRIDCO operations, a lease would need to be negotiated for the land to house the treatment facility and the injection wells. Additionally, close to a mile of water conveyance piping would be needed to connect the extraction wells and the treatment system, buried along roads in a populated area.

Cost

Detailed cost estimates for each alternative were developed for the FFS according to *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study* (EPA 2000). Detailed cost estimates for the alternatives are included in Appendix B of the FS and include the following:

- Capital costs
- Annual Operation and Maintenance (O&M) costs
- Periodic costs
- Present value of capital and annual O&M costs

Present value costs for all alternatives were evaluated over their respective remedial timeframes using a seven percent discount rate.

The costs for these alternatives are summarized in following table:

Alt	Capital Cost / $	Present Worth O&M Cost / $	Total Present Worth Cost / $
1	0	0	0
2	$ 161,000	$ 669,000	$ 830,000
3	$ 1,592,000	$ 2,740,000	$ 4,240,000

Commonwealth/Support Agency Acceptance

DNER concurs with the preferred alternative.

Community Acceptance

Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the Responsiveness Summary section of the ROD for this site. The ROD is the document that formalizes the selection of the remedy for a site.

PREFERRED ALTERNATIVE

EPA's preferred alternative is Alternative 2: Monitored Natural Attenuation and Institutional Controls. Under this alternative, a long-term program to monitor natural attenuation for groundwater within the TRZ would be instituted. No potential source of contamination was identified upgradient of the Maguayo wells area or the San Antonio 3 well during the RI. As such, it appears unlikely that a continuing source of contamination is present that would overwhelm the natural attenuation capacity of the subsurface plume and lead to increasing concentrations in the Maguayo wells area or the San Antonio 3 well. Decreasing concentration trends detected during the monitoring under this alternative would verify that no continuing source of contamination is present. If concentration increases are identified during monitoring, EPA could reevaluate the alternative during five-year reviews. The exact scope and schedule for MNA would be determined during remedial design; however, eight rounds of data are recommended to prove that remediation goals were met and will continue to be met in the future. For cost estimating purposes, it was assumed that annual sampling would be conducted for 18 years. It is assumed that up to 11 wells would be sampled annually for VOCs and geochemical parameters. Sampling results would be evaluated annually for progress towards achieving RAOs and during the five-year reviews.

Basis for Remedy Preference

The preferred alternative is believed to provide the best balance of tradeoffs among the alternatives based on the information available to EPA at this time. As presented in this proposed plan, the preferred alternative has less short-term impact to the community and environment due to the fact that no construction or long-term maintenance would be needed. While both alternatives are implementable, Alternative 3 would be more difficult to implement and cause more disruption to the community during the extraction/treatment system construction and operation, which would require close to a mile of water conveyance piping, buried along roads in a populated area. It would also require access for siting of remedial equipment. It is estimated that the preferred alternative will take approximately 18 years to achieve the RAOs, which is just a few years longer than the pump and treat alternative, at significantly lower present worth costs.

EPA and DNER believe that the preferred alternative would be protective of human health and the environment, comply with ARARs, and be cost-effective.

The environmental benefits of the preferred alternative may be enhanced by consideration, during the design, of technologies and practices that are sustainable in accordance with EPA Region 2's Clean and Green Energy Policy.[1] This

[1] https://www.epa.gov/greenercleanups/epa-region-2-clean-and-green-policy

would include consideration of green remediation technologies and practices.

EPA will assess the modifying criteria of community acceptance in the ROD following the close of the public comment period.

COMMUNITY PARTICIPATION

EPA and DNER provide information regarding the cleanup of the site to the public through meetings, the Administrative Record file for the site, and announcements published in the local newspaper. EPA and DNER encourage the public to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted there.

EPA, in consultation with DNER, will select the final remedy for the site after reviewing and considering all information submitted during a 30-day public comment period. EPA, in consultation with DNER, may modify the preferred alternative or select another action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all alternatives presented in this document.

The dates for the public comment period; the date, location, and time of the public meeting; and the locations of the Administrative Record files are provided on the front page of this Proposed Plan.

For further information on the Dorado Groundwater Contamination Superfund Site, please contact:

Luis Santos
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787-977-5824
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Brenda Reyes
Community Liaison
787-977-5869
reyes.brenda@epa.gov

Written comments on this Proposed Plan should be submitted on or before August 18, 2021 to Mr. Luis Santos at the address or email below.

U.S. Environmental Protection Agency
City View Plaza II - Suite 7000
48 RD, 165 Km. 1.2
Guaynabo, PR 00968-8069
santos.luis@epa.gov

The public liaison for EPA's Region 2 is:

George H. Zachos
Regional Public Liaison
Toll-free (888) 283-7626
(732) 321-6621

U.S. EPA Region 2
2890 Woodbridge Avenue, MS-211
Edison, New Jersey 08837-3679

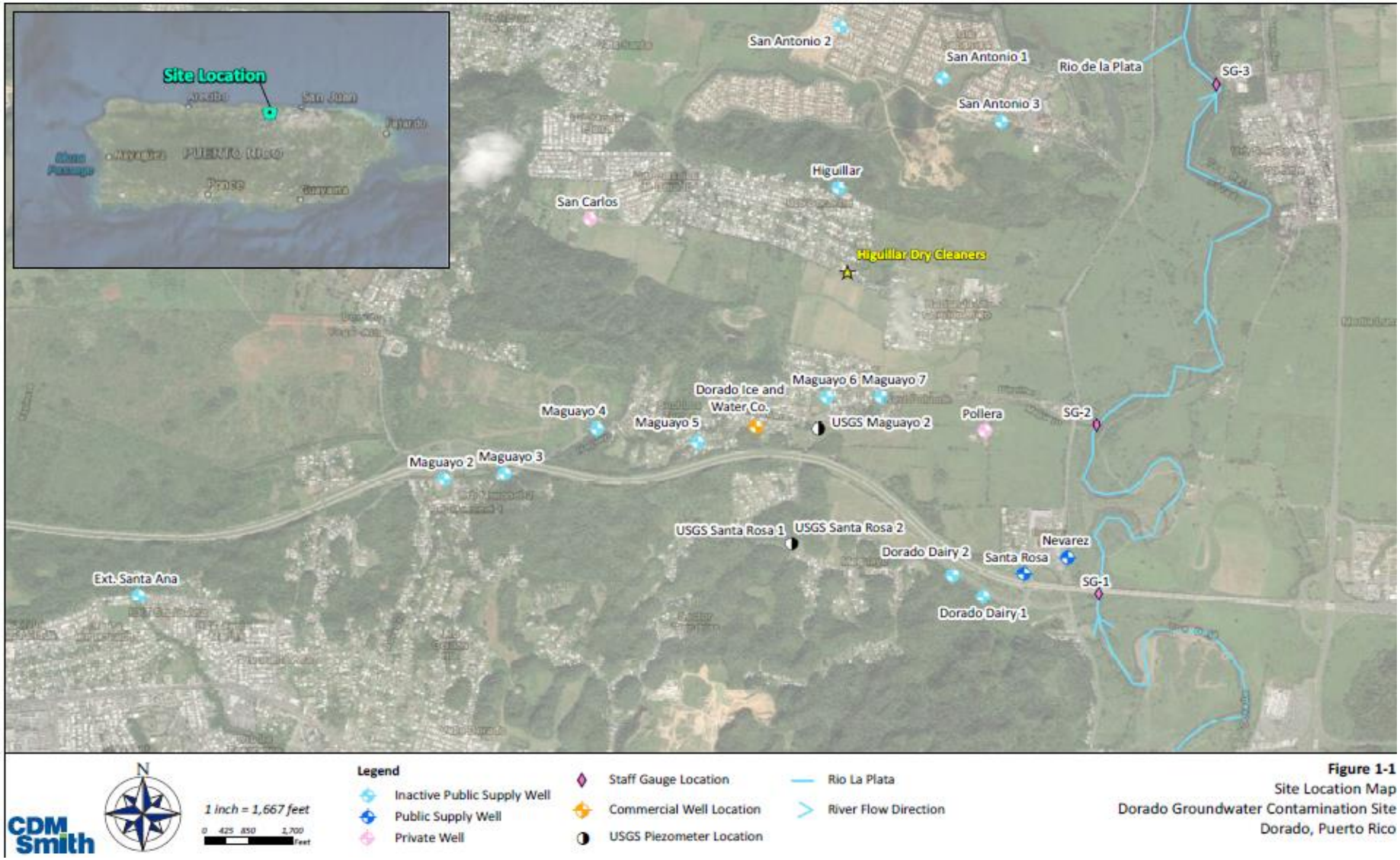

Figure 1-1
Site Location Map
Dorado Groundwater Contamination Site
Dorado, Puerto Rico

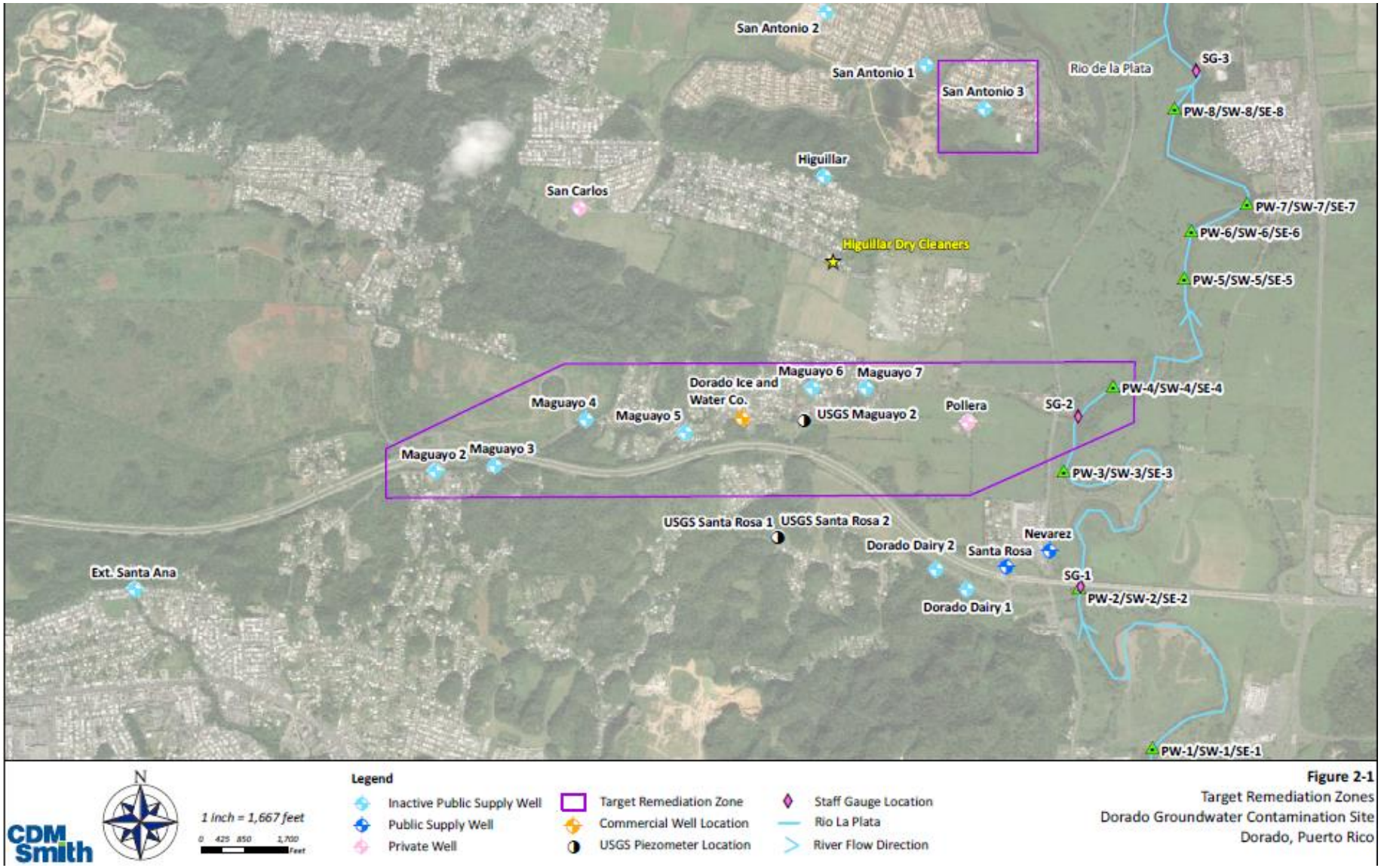

Figure 2-1
Target Remediation Zones
Dorado Groundwater Contamination Site
Dorado, Puerto Rico

Programa de Superfondo
Agencia de Protección Ambiental de EE.UU.
Región 2
Hoja de Datos

Lugar de Contaminación de Aguas Subterráneas de Dorado
Dorado, Puerto Rico

Julio 2021

LA EPA ANUNCIA UNA PROPUESTA DE PLAN DE LIMPIEZA

Este Plan Propuesto describe las alternativas correctivas desarrolladas para el Lugar de Superfondo de Contaminación de Aguas Subterráneas de Dorado (el Lugar). El Lugar está ubicado en Dorado, Puerto Rico y la Agencia de Protección Ambiental (EPA, por sus siglas en Inglés) identifica en este Plan Propuesto la alternativa preferida para el Lugar con la justificación de esta preferencia. Este documento fue desarrollado por la EPA, la agencia líder para las actividades del Lugar, en consulta con la agencia estatal de apoyo, el Departamento de Recursos Naturales y Ambientales de Puerto Rico (DRNA). La EPA está emitiendo este Plan Propuesto como parte de sus responsabilidades de participación pública bajo la Sección 117(a) de la Ley de Respuesta Ambiental Comprensiva, Ley de Compensación y Responsabilidad, 42 U.S.C. § 9617(a) (CERCLA, comúnmente conocida como el programa de Superfondo), y las Secciones 300.430(f) y 300.435(c) del Plan de Contingencia Nacional por la Contaminación de Petróleo y Sustancias Peligrosas (National Contingency Plan, NCP, por sus siglas en inglés).

La naturaleza y el alcance de la contaminación en el Lugar y las alternativas de remediación resumidas en este documento se describen detalladamente en los informes de Investigación de Remediación (RI, por sus siglas en inglés) y del Estudio de Viabilidad Enfocado (FFS, por sus siglas en inglés).

ANOTE EN SU CALENDARIO

PERIODO DE COMENTARIOS PÚBLICOS
19 de julio de 2021 – 18 de agosto de 2021

REUNIÓN PÚBLICA
5 de agosto de 2021 de 5:00 a 7:00 pm
Teatro Juan Boria
Calle Méndez Vigo
Dorado, PR

REPOSITORIO DE INFORMACIÓN
El Expediente Administrativo, el cual contiene copias del Plan Propuesto y documentos relacionados, está disponible en las siguientes localizaciones:

Biblioteca Municipal de Dorado
Horario: lunes - viernes de 9:00 am a 3:00 pm

Agencia de Protección Ambiental de EE. UU.
City View Plaza II- Suite 7000
#48 PR-165 Km. 1.2
Guaynabo, PR 00968-8069
(787) 977-5865
Horario: lunes – viernes de 9:00 am a 5:00 pm
Oficina cerrada debido a la pandemia.

Departamento de Recursos Naturales y Ambientales de Puerto Rico
Área de Emergencias Ambientales y Superfondo
Edificio de Agencias Ambientales Cruz A. Matos
Urbanización San José Industrial Park
1375 Avenida Ponce de León
San Juan, PR 00926-2604
(787) 999-2200 ext. 5900, 5901, 5915
Horario: lunes – viernes de 9:00 am a 3:00 pm

Centro de Expedientes U.S. EPA, Región 2
290 Broadway, 18th Floor
New York, New York 10007-1866
(212) 637-4308
Horario: lunes - viernes de 9:00 am a 5:00 pm
Oficina cerrada debido a la pandemia.

Sitio web de la EPA para el Dorado Ground Water Contamination site: https://www.epa.gov/superfund/dorado-ground-water-contamination

609893

La alternativa preferida por la EPA para el Lugar es la Alternativa 2: Atenuación Natural Monitorizada y Controles Institucionales.

ROL DE LA COMUNIDAD EN EL PROCESO DE SELECCIÓN

La EPA depende del insumo del público para garantizar que las preocupaciones de la comunidad sean consideradas a la hora de seleccionar una alternativa de remediación efectiva para cada lugar de Superfondo. A tales fines, este Plan Propuesto se ha puesto a disposición del público para un período de comentarios públicos de 30 días, que comienza con la emisión de este Plan Propuesto y concluye el 18 de agosto de 2021.

La EPA está proporcionando información sobre la investigación y la limpieza del Lugar al público a través de una reunión pública y de los repositorios públicos, que contienen el expediente administrativo de esta decisión de remediación. La EPA anima al público a obtener un conocimiento más exhaustivo del Lugar y las actividades de Superfondo que se han llevado a cabo en él.

Se celebrará una reunión pública durante el periodo de comentarios para proveer información sobre las investigaciones del Lugar, las alternativas consideradas y la alternativa preferida, así como para recibir comentarios del público. Los comentarios recibidos en la reunión pública, así como los comentarios escritos durante el periodo de comentarios públicos, se documentarán en la sección de "Resumen de Respuesta" del Registro de Decisión (ROD, por sus siglas en inglés), el documento que formaliza la selección de la remediación.

Los comentarios escritos sobre este Plan Propuesto deberán dirigirse a:

Luis E. Santos
Gerente de Proyectos Remediales
Agencia de Protección Ambiental de EE.UU.
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E-mail: santos.luis@epa.gov

ALCANCE Y ROL DE LA ACCIÓN A TOMAR

La EPA completó los estudios de RI y FFS, cuyos resultados se presentan en este Plan Propuesto. Se espera que la alternativa preferida presentada aquí sea la acción final para el Lugar.

ANTECEDENTES DEL LUGAR

Descripción del Lugar

El Lugar consiste en un penacho de contaminación de aguas subterráneas, que hasta la fecha no se ha atribuido a ninguna fuente específica. El penacho está ubicado en el municipio de Dorado, en el centro-norte de Puerto Rico. El lugar incluye pozos de suministro público de los sistemas de abastecimiento de agua de Maguayo y Dorado Urbano, que sirven a poblaciones de 36,630 y 31,061 personas, respectivamente. Estos sistemas de agua subterránea son operados como servicio público por la Autoridad de Acueductos y Alcantarillados de Puerto Rico (PRASA, por sus siglas en inglés). Hay dos pozos de suministro de agua activos en el Sistema de Agua Maguayo Urbano (Nevárez y Santa Rosa). El resto de los pozos del sistema fueron desconectados debido a contaminación. Los pozos en los sistemas Maguayo y Dorado Urbano han mostrado detecciones de compuestos orgánicos volátiles (VOCs, por sus siglas en inglés), principalmente tetracloroetileno (PCE, por sus siglas en inglés) y tricloroetileno (TCE, por sus siglas en inglés), desde la década de 1980. El Servicio Geológico de los Estados Unidos (USGS, por sus siglas en inglés) reportó detecciones de PCE y TCE para muestras recolectadas en los pozos del sistema Maguayo y Dorado Urbano desde noviembre de 1984 hasta mayo de 1985. El 9 de septiembre de 2016, la EPA incluyó el Lugar en la Lista Nacional de Prioridades debido a que la contaminación de las

aguas subterráneas se encuentra dentro de un Área de Protección de Pozo designada y basándose en la puntuación de la vía de migración de las aguas subterráneas del documento del Sistema de Clasificación de Peligros.

El uso actual y futuro del terreno en el Lugar, incluye propiedades residenciales, agrícolas, comerciales e industriales. El Lugar se encuentra dentro de la cuenca de drenaje del Río de la Plata, que puede utilizarse para actividades recreativas como la natación o el vadeo. El Río de la Plata es el cuerpo de agua superficial más importante en las cercanías del Lugar y recibe algunas descargas de agua subterránea del penacho diluido de Dorado.

Historia del Lugar e Investigaciones Previas

Desde 2008, la EPA ha realizado múltiples intentos para identificar la fuente o fuentes de contaminación de las aguas subterráneas en la zona general del Lugar. En 2008, la EPA puso en marcha la Iniciativa de Descubrimiento del Lugar de Maguayo para identificar posibles ubicaciones de residuos peligrosos cerca de los pozos contaminados. Basado en estos esfuerzos, la EPA identificó 21 instalaciones para su investigación posterior. Mediante búsquedas en bases de datos medioambientales y actividades de reconocimiento, la EPA también identificó otras instalaciones industriales cercanas a la contaminación de las aguas subterráneas.

En 2011 y 2013, la EPA llevó a cabo un muestreo de evaluación preliminar/inspección de lugar en las 21 instalaciones identificadas para una mayor investigación y, en 2015, la EPA realizó un muestreo de reevaluación de lugar en cinco de estas instalaciones. Los esfuerzos de muestreo incluyeron la recogida de muestras de suelo superficial, muestras de suelo subsuperficial y muestras de aguas subterráneas, donde pudo encontrarse, de cada instalación. El esfuerzo de muestreo en una instalación de limpieza en seco activa también incluyó la recogida de muestras de gas del suelo. Los resultados analíticos documentaron la presencia o aparente presencia de disolventes clorados en varias instalaciones; sin embargo, no hay datos que permitan relacionar claramente ninguna de las instalaciones con la contaminación del pozo de suministro. Adicionalmente, la variada naturaleza del acuífero calcáreo kárstico subyacente dificulta la determinación del origen de la contaminación.

En septiembre de 2015, la EPA recogió muestras de agua subterránea de cinco pozos de suministro de agua activos y ocho pozos de suministro de agua inactivos propiedad de PRASA y de un pozo de producción comercial operado por una planta embotelladora de agua. Se detectó cloroformo, bromodiclorometano, cis-1,2-dicloroeteno, PCE y TCE en al menos una muestra de agua subterránea cada uno.

Características de la Superficie

El Lugar está situado dentro de la Provincia del Carso Norteño de Puerto Rico. Los pozos del sistema de agua de Maguayo están ubicados en su mayoría dentro de las áreas planas entre los mogotes a lo largo de las rutas PR-22 y PR-694. Los pozos del sistema de agua de Maguayo se encuentran en el valle entre El Coto y las colinas al norte del pozo de Higuillar (los Cerros de Higuillar). Además de los mogotes, hay otros rasgos kársticos, incluyendo sumideros, dentro del Lugar. El Lugar se encuentra en la cuenca de drenaje del Río de la Plata, y el Río de la Plata es el cuerpo de agua superficial más importante cerca del Lugar.

Geología e Hidrogeología Regional

Los depósitos no consolidados del Lugar proceden de la meteorización de la piedra caliza madre. Consisten en limos arcillosos y arcillas duras, rígidas y a menudo secas y arenosas. Las unidades de caliza de Aguada y Aymamón son las unidades de roca madre en la zona del Lugar, con la caliza Aymamón menos meteorizada formando los mogotes de la zona y la caliza de Aguada subyacente a la caliza Aymamón. Estas unidades conforman el Acuífero Superior, que es un acuífero de agua potable. El Acuífero Superior

está limitado por una unidad de confinamiento o por la transición a agua salada.

Cerca del Lugar, el USGS indica que el Acuífero Superior es altamente transmisivo, con valores que van de 1,000 a más de 10,000 metros cuadrados por día (m2/día). La información proporcionada en la "*Well Information and Ground Water Population Apportionment"* recopilada por la EPA (EPA 2016) indica que los pozos de abastecimiento público impactados por los VOCs se completan en el Acuífero Superior. Las tasas de flujo reportadas para estos pozos varían de 225 a 800 galones por minuto. El flujo de agua subterránea local se dirige principalmente al este; sin embargo, el flujo de agua subterránea regional se dirige principalmente al norte. Se espera que la descarga de la mayor parte de las aguas subterráneas del acuífero superior sea en el Océano Atlántico, al norte. Localmente, algunas de las aguas subterráneas del acuífero superior fluyen hacia el este, hacia el río, y luego pueden fluir hacia el norte con el río hacia el océano. La parte más superficial del Acuífero Superior también puede descargar directamente en el Río de la Plata.

Geología e Hidrogeología del Lugar

El modelo hidrogeológico del Lugar coincide en gran medida con la caracterización geológica regional. Las unidades hidrogeológicas del Lugar se describen a continuación:

- Depósitos de manto de arena - Esta unidad consiste principalmente en limo y arcilla de color marrón rojizo a marrón amarillento.
- La caliza de Aymamón se encuentra a profundidades de entre 46 pies y 70 pies bajo la superficie del suelo en el Lugar. La parte superior de la caliza de Aymamón tiene zonas blandas, a veces rellenas de arcilla, y la zona más profunda tiene características de solución, incluyendo cavidades y zonas de fractura.

La profundidad de las aguas subterráneas varía a través del Lugar, pero se encuentra aproximadamente a 50 pies por debajo de la superficie del suelo en Maguayo 5.

Caracterización Ecológica

El reconocimiento ecológico se llevó a cabo en un área de aproximadamente 3 millas cuadradas alrededor de una serie de pozos de suministro de agua a través de propiedades residenciales y comerciales en el pueblo de Dorado. Sin embargo, otras áreas inspeccionadas durante el reconocimiento incluyeron grandes campos agrícolas, zanjas de drenaje, una gran llanura de inundación del Río de la Plata al este de la PR-693, y mogotes en las áreas de terreno alto a lo largo de la PR-695 en el perímetro noroeste del Lugar. El Río de la Plata fluye desde el sur a lo largo del perímetro este del Lugar y continúa hacia el norte por 3 millas adicionales hasta el Océano Atlántico. Tras la revisión del área del Lugar por parte del DRNA, se identificaron varias especies de flora y fauna con potencial de encontrarse cerca del Lugar como en peligro de extinción, amenazadas o como elemento crítico. El pato gargantillo (Anas bahamensis) se considera una especie amenazada a nivel local y la boa puertorriqueña *Chilabothrus inornatus* se considera una especie en peligro. Entre las especies consideradas críticas se encuentran el gorrión chicharra (Ammodramus savannarum), la orquídea cañuela (Cyrtopodium punctatum) y la nigua (Tournefortia filiflora).

Investigaciones de Remediación del Área de Estudio

Los medios ambientales investigados durante la RI incluyeron el suelo, los sedimentos, las aguas superficiales, las aguas de poro y las aguas subterráneas. En 2019, se completaron las siguientes actividades de campo de la RI:

- Evaluación de los pozos existentes
- Monitoreo de aguas subterráneas a largo plazo
- Muestreo de aguas subterráneas
- Muestreo de aguas subterráneas y del suelo del acuífero aluvial con tecnología de empuje directo

- Muestreo de aguas de poros, aguas superficiales y sedimentos
- Etapa 1 A: recursos culturales, pozos de monitoreo y estudios ecológicos

Naturaleza y Alcance de la Contaminación

Los resultados de las muestras de la RI se compararon con los criterios de cernimiento específicos del Lugar para evaluar la contaminación, centrándose en los contaminantes relacionados al Lugar detectados en las aguas subterráneas, las aguas superficiales, los sedimentos y las aguas de poros del mismo.

Selección de Contaminantes Relacionados al Lugar (SRCs, por sus siglas en inglés)

El PCE y el TCE se seleccionaron como los SRCs basándose en la revisión de los usos anteriores identificados por los datos históricos, la frecuencia y la magnitud de las detecciones en los medios del Lugar durante la investigación de RI, y la superación de sus respectivos criterios de cernimiento.

Resultados Analíticos y Evaluación

Resultados Analíticos de Aguas Subterráneas

Al igual que en la investigación previa a la remediación de 2015, los datos de la RI indican la presencia de un penacho diluido de VOCs clorados (CVOCs, por sus siglas en inglés) sin fuente identificada. Se encontraron niveles bajos de CVOCs en los 18 pozos muestreados. La superación de los criterios de cernimiento de CVOCs se limitó a las detecciones de PCE en los pozos Maguayo 3, 4, 5 y 7 y USGS Maguayo 2 (Fig 1-1). Las concentraciones de PCE y otros CVOC en estos cinco pozos, junto con las concentraciones detectadas en Maguayo 6, sugieren un núcleo de concentraciones de CVOC ligeramente elevadas dentro de un penacho diluido más amplio en comparación con las concentraciones encontradas en los pozos al norte (San Carlos, Higuillar, San Antonio 2, San Antonio 3) y al sur (USGS Santa Rosa 1, USGS Santa Rosa 2, Dorado Dairy 2, Santa Rosa, Nevárez). Este potencial núcleo de penacho migra con el flujo de agua subterránea hacia el Río de la Plata, posiblemente descargando cerca de la ubicación de muestreo del río SE-4. Las concentraciones de CVOC generalmente disminuyen a medida que el agua subterránea fluye de oeste a este

A excepción de una ubicación (Higuillar Dry Cleaners), los resultados de la RI no revelaron ninguna fuente potencial de contaminantes adicional para investigar. Las muestras de evaluación de aguas subterráneas recogidas entre Higuillar Dry Cleaners y el campo de pozos de Maguayo no incluían ninguna detección por encima de los criterios de cernimiento. Estos hallazgos, junto con las detecciones generalizadas, pero en su mayoría por debajo del nivel máximo de contaminantes de PCE, TCE y otros CVOCs, indican que no hay una fuente identificada para los contaminantes CVOC observados.

Al igual que la ocurrencia de otros CVOCs, las bajas concentraciones de cloroformo, un trihalometano, fueron generalizadas en los pozos de suministro muestreados durante las Rondas 1 y 2 del muestreo de RI. Ninguna concentración de cloroformo superó los criterios de cernimiento de 60 µg/L; sin embargo, se detectó una concentración de 47 µg/L en la muestra de la Ronda 2 de Maguayo 3 y varias ubicaciones tuvieron constantemente concentraciones entre 10 y 20 µg/L. Las concentraciones más altas de cloroformo fueron generalmente, pero no siempre, co-localizadas con las concentraciones más altas de PCE (por ejemplo, Maguayo 4, 5 y 7 y USGS Maguayo 2).

Las detecciones de cloroformo podrían proceder de fugas en el sistema de distribución de agua clorada en la zona de los pozos. Los pozos de Maguayo forman parte de la línea de distribución del Superacueducto de la costa norte de Puerto Rico, cuya agua está clorada. La cloración del agua potable da lugar a la formación de trihalometanos, incluyendo el cloroformo.

Se recogieron muestras de agua superficial, sedimentos y agua de poros en ocho lugares del

Río de la Plata. No se encontraron CVOCs ni trihalometanos por encima de los límites de detección en las muestras de sedimento recogidas. Los CVOCs y los trihalometanos detectados tanto en el agua superficial como en el agua de poros se detectaron todos por debajo de sus criterios de cernimiento de RI.

Destino Final y Transporte de Contaminantes del Lugar

Los datos de la RI indican la presencia de un penacho diluido de CVOC sin fuente identificada. Se encontraron CVOCs en niveles bajos en los 18 pozos muestreados. Los excesos de CVOC de los criterios de cernimiento se limitaron a las detecciones de PCE en los pozos Maguayo 3, 4, 5 y 7 y USGS Maguayo 2, con una concentración máxima de PCE de 15 µg/L en el pozo Maguayo 4 y una concentración similar de PCE (13 µg/L) en Maguayo 5. Las concentraciones de PCE y otros CVOCs en estos cinco pozos, sugieren un núcleo de penacho de CVOCs de concentración ligeramente elevada dentro del penacho diluido más amplio.

Con el bombeo histórico generalizado, el acuífero altamente transmisivo y la falta de fuentes identificadas a pesar de los múltiples esfuerzos realizados en el lugar, parece muy poco probable que se pueda encontrar una fuente discreta de contaminación.

Se encontró evidencia limitada de una atenuación natural destructiva sostenida (ya sea degradación biótica o abiótica) en el lugar. Las condiciones aeróbicas, el rápido movimiento de las aguas subterráneas y la falta de carbono orgánico no favorecen el crecimiento de bacterias capaces de deshalogenar el PCE. Sin embargo, los mecanismos no destructivos de dilución y dispersión sirven activamente para reducir las concentraciones de las aguas subterráneas.

RESUMEN DE RIESGOS

Como parte de la RI y la FS, se realizó una evaluación de riesgos de referencia para estimar los efectos actuales y futuros de los contaminantes sobre la salud humana y el medio ambiente. Una evaluación de riesgos de referencia es un análisis de los posibles efectos adversos para la salud humana y los efectos ecológicos de las emisiones de sustancias peligrosas de un lugar si no se toman medidas para mitigar dichas emisiones, en el marco de los usos actuales y futuros de las aguas subterráneas y superficiales. La evaluación de riesgos de referencia incluye una evaluación de riesgos para la salud humana (HHRA, por sus siglas en inglés) y una evaluación de nivel de cernimiento de riesgos ecológicos (SLERA, por sus siglas en inglés).

En la HHRA, los estimados de riesgo de cáncer y de los peligros no cancerígenos para la salud se basan en los actuales escenarios de exposición máxima razonable (RME, por sus siglas en inglés). Los estimados se desarrollaron teniendo en cuenta diversos estimados de protección de la salud sobre las concentraciones, la frecuencia y la duración de la exposición de un individuo a las sustancias químicas seleccionadas como contaminantes de interés potencial (COPCs, por sus siglas en inglés), así como la toxicidad de estos contaminantes.

Evaluación de Riesgo para la Salud Humana

Se utilizó un proceso de evaluación del riesgo para la salud humana en cuatro pasos para evaluar los riesgos de cáncer y los peligros para la salud no relacionados con el cáncer relacionados con el Lugar. El proceso de cuatro pasos se compone de la identificación del peligro, la evaluación de la exposición, la evaluación de la toxicidad y la caracterización del riesgo (véase el cuadro adjunto "Qué es el riesgo y cómo se calcula").

El HHRA comenzó con la selección de contaminantes de preocupación potencial (COPCs) en varios medios (es decir, aguas subterráneas, aguas superficiales y sedimentos) que podrían causar efectos adversos en las poblaciones expuestas. Los COPCs se seleccionaron comparando las concentraciones máximas detectadas de las sustancias químicas identificadas con los valores de cernimiento estatales y federales basados en el riesgo. La evaluación de cada COPC se realizó por separado

para cada medio de interés. Se identificaron cuatro COPC en las aguas subterráneas, incluyendo el cloroformo, el PCE, el TCE y el cloruro de vinilo, y se evaluaron más a fondo en el HHRA. El cloroformo y el TCE también se mantuvieron como COPC de aguas superficiales y se evaluaron más a fondo en la evaluación de riesgos.

La evaluación de la exposición identificó posibles receptores humanos basado en una revisión del uso actual y razonablemente previsible del terreno en el Lugar, que incluye propiedades residenciales, agrícolas, comerciales e industriales. El Lugar se encuentra dentro de la cuenca de drenaje del Río de la Plata, que puede utilizarse para actividades recreativas como la natación o el vadeo. El Río de la Plata es el cuerpo de agua superficial más importante en las cercanías del Lugar y recibe algunas descargas de agua subterránea del penacho diluido de Dorado. Basándose en la zonificación y el uso actual del suelo, el HHRA evaluó la exposición residencial y recreativa a la contaminación del Lugar.

Vías de Exposición Potenciales

Los escenarios de uso del terreno actuales y futuros evaluados en el HHRA incluían las siguientes vías de exposición y poblaciones:

- Usuario recreativo (adolescente [12 a <18 años]): ingestión incidental y contacto dérmico al nadar en el Río de la Plata.
- Residentes (niños [0-6 años] y adultos): ingestión incidental, contacto dérmico e inhalación de partículas y volátiles durante el baño o la ducha liberados de las aguas subterráneas si se interrumpe el tratamiento del agua de suministro municipal.

Un resumen completo de todos los escenarios de exposición puede encontrarse en la evaluación de riesgos base para la salud humana.

Proceso de Evaluación de la Exposición a Contaminantes

En esta evaluación, las concentraciones del punto de exposición (EPC, por sus siglas en inglés) se estimaron utilizando la concentración máxima detectada de un contaminante o el límite de confianza superior (UCL, por sus siglas en inglés) del 95% de la concentración promedio. Las ingestas crónicas diarias se calcularon sobre la base de la RME, que es la exposición más alta que se prevé razonablemente en el lugar. El RME pretende estimar un escenario de exposición conservador que todavía está dentro del rango de exposiciones posibles.

Resumen de la Caracterización del Riesgo para la Salud Humana

En la evaluación de riesgos, se evaluaron dos tipos de efectos tóxicos para la salud de los COPCs: el riesgo de cáncer y el peligro no cancerígeno. Las estimaciones de riesgo de cáncer calculadas para cada receptor se compararon con el rango de riesgo objetivo de la EPA de $1x10^{-6}$ (uno en un millón) a $1x10^{-4}$ (uno en diez mil). Las estimaciones del índice de peligro no cancerígeno (HI, por sus siglas en inglés) calculado se compararon con el valor límite objetivo de la EPA de 1. Las siguientes secciones ofrecen una visión general de los riesgos de cáncer y del peligro no cancerígeno asociados a la exposición a los siguientes medios en el Lugar: aguas subterráneas y superficiales.

Aguas Subterráneas

Se evaluaron los riesgos y peligros de la exposición actual y futura a las aguas subterráneas del Lugar, y el resumen de los peligros y riesgos asociados a las aguas subterráneas se recoge en la Tabla 1. Las poblaciones de interés incluyeron a niños y adultos residentes. Los residentes actuales y futuros pueden entrar en contacto con los contaminantes de las aguas subterráneas utilizadas como agua de grifo. En el escenario RME, el riesgo total de cáncer (1×10^{-4}) está en el extremo superior del rango de riesgo de cáncer aceptable de la EPA. El riesgo total de cáncer se debe principalmente a la inhalación del cloroformo volatilizado en las aguas subterráneas al ducharse o bañarse. No se detectó cloroformo en las aguas subterráneas en concentraciones que superaran las normas de agua potable. Los IH totales no cancerígenos para niños (0.8) y adultos (0.9) están ambos por debajo del valor límite de la EPA de 1.

¿QUÉ ES UN RIESGO Y CÓMO SE CALCULA?

Evaluación de Riesgo a la Salud Humana:
Una evaluación de referencia de los riesgos para la salud humana del Superfondo es un análisis de los posibles efectos adversos para la salud causados por las emisiones de sustancias peligrosas de un Lugar en ausencia de cualquier acción para controlar o mitigar estos bajo los usos actuales y futuros de la tierra. Se utiliza un proceso de cuatro pasos para evaluar los riesgos para la salud humana relacionados con el Lugar para escenarios de exposición máxima razonable.

Identificación de peligros: En este paso, se identifican las sustancias químicas potencialmente preocupantes (COPCs) en el Lugar en varios medios (es decir, suelo, aguas subterráneas, aguas superficiales y aire) basándose en factores como la toxicidad, la frecuencia de aparición y el destino y transporte de los contaminantes en el medio ambiente, las concentraciones de los contaminantes en medios específicos, la movilidad, la persistencia y la bioacumulación.

Evaluación de la exposición: En este paso se evalúan las diferentes vías de exposición a través de las cuales las personas podrían estar expuestas a los contaminantes en el aire, el agua, el suelo, etc. identificados en el paso anterior. Ejemplos de vías de exposición son la ingestión incidental y el contacto dérmico con el suelo contaminado y la ingestión y el contacto dérmico con las aguas subterráneas contaminadas. Los factores relacionados con la evaluación de la exposición incluyen, entre otros, las concentraciones en medios específicos a las que las personas podrían estar expuestas y la frecuencia y duración de esa exposición. Utilizando estos factores, se calcula un escenario de "exposición máxima razonable", que representa el nivel más alto de exposición humana que podría esperarse razonablemente.

Evaluación de la toxicidad: En este paso se determinan los tipos de efectos adversos para la salud asociados a las exposiciones químicas y la relación entre la magnitud de la exposición y la gravedad de los efectos adversos. Los posibles efectos sobre la salud son específicos de cada sustancia química y pueden incluir el riesgo de desarrollar cáncer a lo largo de la vida u otros peligros para la salud no relacionados con el cáncer, como cambios en las funciones normales de los órganos del cuerpo (por ejemplo, cambios en la eficacia del sistema inmunológico). Algunas sustancias químicas son capaces de causar tanto cáncer como otros peligros para la salud no relacionados con el cáncer.

Caracterización del riesgo: Este paso resume y combina los resultados de las evaluaciones de exposición y toxicidad para proporcionar una evaluación cuantitativa de los riesgos del lugar para todos los COPCs. Las exposiciones se evalúan basándose en el riesgo potencial de desarrollar cáncer y el potencial de peligros para la salud no relacionados con el cáncer. La probabilidad de que un individuo desarrolle cáncer se expresa como una probabilidad. Por ejemplo, un riesgo de cáncer de 10 4 significa un "riesgo de cáncer excesivo de uno en diez mil"; o se puede ver un cáncer adicional en una población de 10,000 personas como resultado de la exposición a los contaminantes del Lugar bajo las condiciones identificadas en la evaluación de la exposición. La normativa actual del Superfondo para las exposiciones identifica una gama para determinar si es necesaria una acción correctora como un exceso de riesgo individual de cáncer a lo largo de la vida de 10 4 a 10 6, lo que corresponde a un exceso de riesgo de cáncer de uno en diez mil a uno en un millón. Para los efectos no cancerígenos en la salud, se calcula un "índice de peligro" (HI, por sus siglas en inglés). El concepto clave de un HI no cancerígeno es que existe un límite (medido como un HI menor o igual a 1) por debajo del cual no se espera que se produzcan riesgos para la salud no cancerígenos. El objetivo de protección es de 10-6 para el riesgo de cáncer y un HI de 1 para un peligro para la salud no relacionado con el cáncer. Las sustancias químicas que superan un riesgo de cáncer de 10-4 o un HI de 1 suelen ser las que requerirán medidas correctoras en el Lugar y se denominan Sustancias Químicas Preocupantes o COC (por sus siglas en inglés) en la decisión de remediación final o Registro de Decisión.

Tabla 1. Resumen de los peligros y riesgos asociados a las aguas subterráneas

Receptor	Riesgo de Cancer	Índice de Peligro
Residente- Niño	1.0×10^{-4}	0.8
Residente- Adulto		0.9

Agua Superficial

Se evaluaron los riesgos de cáncer y los peligros no relacionados con el cáncer para los usuarios recreativos actuales y futuros por la exposición a contaminantes en el agua superficial mientras nadan en el Río de la Plata. Bajo el escenario RME, el riesgo total de cáncer para los usuarios recreativos adolescentes (de 12 a menos de 18 años) (3×10^{-9}) está por debajo del rango de riesgo de cáncer de la EPA. El HI total no cancerígeno (0.0006) está por debajo del límite de unidad de la EPA. En la Tabla 2 se muestra un resumen de los peligros y riesgos asociados a las aguas superficiales.

Tabla 2. Resumen de los peligros y riesgos asociados a las aguas superficiales

Receptor	Riesgo de Cáncer	Índice de Peligro
Usuario Recreativo - Adolescente (de 12 a <18 años)	3.0×10^{-9}	0.0006

Resumen de la Evaluación de Riesgo

En conclusión, los riesgos de cáncer estimados para los residentes actuales/futuros y los usuarios recreativos son iguales e inferiores al límite de la EPA, respectivamente. El riesgo de cáncer estimado para los residentes actuales/futuros es igual al extremo superior del rango de riesgo de cáncer aceptable de la EPA para el escenario RME, principalmente debido a la presencia de cloroformo en las aguas subterráneas. El riesgo se debe principalmente a la inhalación de cloroformo procedente de las aguas subterráneas utilizadas

como agua del grifo. Los riesgos de inhalación pueden estar sobreestimados por la combinación de presunciones utilizadas para modelar las concentraciones en el aire interior para el escenario RME y la respuesta no lineal de la dosis de cloroformo. Cabe señalar que las concentraciones de cloroformo detectadas nunca superaron el nivel máximo de contaminantes (MCL, por sus siglas en inglés) de 80 ug/L. El TCE se detectó una vez en una concentración igual al MCL de 5 µg/L, y el PCE estaba ligeramente por encima del MCL de 5 µg/L en tres de los 18 pozos del Lugar.

El riesgo total de cáncer estimado para los usuarios recreativos que nadan en el Río de la Plata está muy por debajo del rango de riesgo de la EPA. En cuanto a los riesgos no cancerígenos, los HI totales para los residentes actuales y futuros y los usuarios recreativos están todos por debajo del valor límite de la EPA de 1.

Basándose en los resultados de la evaluación de riesgos para la salud humana, la EPA considera actualmente que la alternativa preferida identificada en este Plan Propuesto es necesaria para proteger la salud pública o el medio ambiente de las emisiones reales o amenazadas de sustancias peligrosas en el medio ambiente.

Evaluación del Riesgo Ecológico

Se llevó a cabo una Evaluación de Riesgos Ecológicos a Nivel de Cernimiento (SLERA, por sus siglas en inglés) para evaluar el potencial de riesgos ecológicos por la presencia de contaminantes en el agua superficial, el sedimento y el agua de poro del sedimento. El SLERA se centró en la evaluación del potencial de impacto de los receptores ecológicos sensibles a los constituyentes de interés relacionados con el Lugar a través de la exposición al agua superficial, sedimento y agua de poro del sedimento en el Río de la Plata. Las concentraciones de agua superficial, sedimento y agua de poro del sedimento se compararon con los valores de cernimiento ecológico como indicador del potencial de efectos adversos para los receptores ecológicos. En el SLERA se puede encontrar un resumen completo de todos los escenarios de exposición.

El modelo conceptual del lugar (MCS, por sus siglas en inglés) indicó que se espera que la mayor parte de las aguas subterráneas del Acuífero Superior descarguen hacia el norte en el Océano Atlántico, aunque localmente, la parte más superficial del Acuífero Superior descarga en el Río de la Plata. Las concentraciones máximas detectadas de contaminantes en el agua subterránea tienen un potencial de impacto sobre los receptores ecológicos en el Río de la Plata. El flujo fluvial de referencia cerca del Lugar es de aproximadamente 30 a 40 pies cúbicos por segundo, y se supone que una alta proporción de esa agua superficial se ha descargado desde el agua subterránea, principalmente desde aguas arriba del Lugar. El MCS ilustra, para cada medio de exposición, los receptores ecológicos y las vías de exposición que se evalúan en el SLERA.

Existe un hábitat ecológico adecuado a través de las áreas de pozos del Lugar y a lo largo del Río de la Plata para sustentar la biota terrestre y acuática, como invertebrados, peces, anfibios, reptiles, aves y mamíferos. Los receptores ecológicos que utilizan el Lugar pueden estar expuestos a las sustancias químicas presentes en los sedimentos y en las aguas superficiales. Pueden estar expuestos, dependiendo del medio de exposición, por contacto directo o por ingestión accidental. La exposición de los receptores de nivel trófico superior también puede producirse a través de la exposición en la cadena alimentaria (a través de la ingestión de alimentos que pueden haberse contaminado a través de la exposición a contaminantes relacionados con el Lugar). A continuación, se analizan las vías de exposición y las concentraciones de los puntos de exposición en los medios específicos.

Aguas Superficiales

Ninguno de los resultados de las muestras de aguas superficiales superó los niveles de cernimiento ecológico (ESL, por sus siglas en inglés) para ningún contaminante. Por lo tanto, no

hay Contaminantes de Posible Preocupación Ecológica (COPECs) relacionados con el Lugar, y el riesgo ecológico de las aguas superficiales está por debajo de los criterios de la EPA.

Sedimentos

Sólo un compuesto, la acetona, superó los ESL de los sedimentos, mientras que el resto de los compuestos detectados estaban por debajo de los ESL. La acetona detectada en los sedimentos superó el ESL, pero también se detectó acetona en los blancos de viaje y en los blancos de equipo. No se detectó acetona en las aguas subterráneas, en el agua de poros de los sedimentos ni en las aguas superficiales. La acetona es un contaminante común de laboratorio, y es probable que las detecciones en los sedimentos fueran artefactos. Por lo tanto, se asume que la acetona detectada no estaba relacionada con el Lugar y el riesgo ecológico de los sedimentos está por debajo de los criterios de la EPA.

Agua de Poro del Sedimento

Ninguno de los resultados de las muestras de agua de poro de los sedimentos superó los ESL de las aguas superficiales para ningún contaminante. Por lo tanto, no hay COPECs relacionados con el Lugar y el riesgo ecológico del agua de poros de los sedimentos está por debajo de los criterios de la EPA.

Basándose en una comparación de las concentraciones máximas detectadas de contaminantes en las aguas superficiales, los sedimentos y el agua de poros de los sedimentos con los ESL derivados de forma conservadora, el riesgo ecológico en el Lugar está por debajo de los criterios de la EPA.

OBJETIVOS DE LA ACCIÓN DE REMEDIACIÓN

Los objetivos de la acción de remediación (RAO, por sus siglas en inglés) son metas específicas para proteger la salud humana y el medio ambiente. Estos objetivos se basan en la información y las normas disponibles, como los Requisitos Aplicables o Relevantes y Apropiados (ARARs, por sus siglas en inglés), las orientaciones para ser consideradas (TBC, por sus siglas en inglés) y los niveles basados en el riesgo específicos del lugar.

La HHRA concluyó que el riesgo total de cáncer estimado por la exposición de los residentes actuales o futuros a las aguas subterráneas era igual al extremo superior del rango de riesgo aceptable de la EPA (1×10^{-4}). Además, las concentraciones de PCE y TCE en las aguas subterráneas son mayores que los MCL federales y las Normas de Calidad del Agua de Puerto Rico (PRWQS, por sus siglas en inglés). Por lo tanto, se desarrollaron alternativas de acción correctiva para centrarse en la prevención de la exposición humana y la restauración de las aguas subterráneas.

Los objetivos de la acción de remediación (RAOs) para las aguas subterráneas son:

- Evitar la exposición humana actual y futura a aguas subterráneas con concentraciones de PCE y TCE superiores a las normas de agua potable.
- Restablecer el uso beneficioso de las aguas subterráneas del Lugar (es decir, como agua potable) en un plazo razonable.

Objetivos Preliminares de Remediación de las Aguas Subterráneas

El agua subterránea en el Lugar está clasificada como apta para el uso de agua potable (SG, por sus siglas en inglés). Además, el agua subterránea en el Lugar se ha utilizado históricamente como fuente de suministro de agua potable en los sistemas Maguayo y Dorado Urbano; sin embargo, todos los pozos impactados por la contaminación por encima de las normas de agua potable están actualmente inactivos (sólo los pozos Nevárez y Santa Rosa están actualmente activos). Para restaurar el agua subterránea en el Lugar a su uso benéfico, los Estándares Nacionales Primarios de Agua Potable (MCLs federales) son requisitos relevantes y apropiados. Las normas promulgadas para las aguas subterráneas enumeradas en el Reglamento

PRWQS son requisitos potencialmente aplicables o pertinentes y apropiados. Dado que los MCL federales y las PRWQS son los mismos para los contaminantes de interés, se utilizaron los MCL federales para derivar los objetivos preliminares de remediación (PRG, por sus siglas en inglés) para las aguas subterráneas, como se muestra a continuación.

Objetivos Preliminares de Remediación

El desarrollo de los PRG es un requisito del NCP (40 CFR 300.430(e)(2)(i)). La identificación y selección de las PRG se basa normalmente en los RAO, los usos actuales y futuros previstos del terreno y los ARAR. Los PRG se presentan normalmente como valores específicos de los productos químicos y medios que abordan directamente a los RAO. Estos valores se suelen utilizar como valor preliminar en el FS para orientar las evaluaciones de las alternativas de remediación.

Contaminantes de Interés	Normas Nacionales de Agua Potable Primaria (MCLs Federales) (µg/L)	Objetivos Preliminares de Remediación (µg/L)
Tetracloroeteno (PCE)	5.0	5.0
Tricloroeteno (TCE)	5.0	5.0

Alternativas de Acción de Remediación para Aguas Subterráneas

El artículo 121(b)(1) de la CERCLA, 42 U.S.C. § 9621(b)(1), establece que las medidas de remediación deben proteger la salud humana y el medio ambiente, ser costo-efectivas y utilizar soluciones permanentes y tecnologías de tratamiento alternativas y alternativas de recuperación de recursos en la mayor medida posible. El artículo 121(b)(1) también establece una preferencia por las acciones de recuperación que empleen, como elemento principal, un tratamiento para reducir de forma permanente y significativa el volumen, la toxicidad o la movilidad de las sustancias peligrosas, los contaminantes y los agentes contaminantes de un lugar. El artículo 121(d) de la CERCLA, 42 U.S.C. § 9621(d), especifica además que una acción de remediación debe alcanzar un nivel o norma de control de las sustancias peligrosas, los contaminantes y las sustancias nocivas que, como mínimo, alcance los ARAR en virtud de la legislación federal y estatal, a menos que pueda justificarse una exención conforme con el artículo 121(d)(4) de la CERCLA, 42 U.S.C. § 9621(d)(4).

Los plazos que se presentan a continuación para cada alternativa reflejan únicamente el tiempo necesario para construir o aplicar la remediación y no incluyen el tiempo necesario para diseñar la solución o conseguir contratos para el diseño y la construcción. Los estimados de costos, que se basan en la información disponible, son estimados de costos de ingeniería de orden de magnitud que se espera que estén dentro de +50 a -30% del costo real del proyecto.

En esta Plan Propuesto se contemplan las siguientes alternativas:

Alternativa 1: Ninguna Acción

Costo del Capital	$ 0
Valor Actual de Costos de O&M	$ 0
Costo Total Actual	$ 0
Plazo de Construcción	N/A
Plazo para cumplir los RAO	N/A

La alternativa 1, la de "ninguna acción", es la requerida por el NCP para proporcionar una línea de base ambiental con la que se puedan comparar los impactos de las distintas alternativas de remediación. En esta alternativa, no se tomaría ninguna medida para remediar las aguas subterráneas contaminadas ni para controlar las concentraciones de contaminantes asociadas a los riesgos para la salud humana o el medio ambiente.

Alternativa 2: Atenuación Natural Monitorizada y Controles Institucionales

Costo del Capital	$161,000
Valor Actual de Costos de O&M	$669,000
Costo Total Actual	$830,000
Plazo de Construcción	Un año
Plazo para cumplir los RAO	Dieciocho años

En la alternativa 2, se instituiría un programa a largo plazo para controlar la atenuación natural de las aguas subterráneas dentro de la zona de remediación objetivo (TRZ, por sus siglas en inglés). La TRZ abarca todas las aguas subterráneas con concentraciones históricas de PCE o TCE por encima de las PRG. Esto incluye el área que rodea a Maguayo 3, 4, 5, 7 y USGS Maguayo 2, así como San Antonio 3 donde se detectó TCE igual a la PRG. Sólo Maguayo 4 y 5 excedieron las PRGs en ambas rondas de la RI; otros pozos sólo excedieron en una de las dos rondas. Verticalmente, la TRZ incluye el agua subterránea tanto en los depósitos de manto de arena como en la caliza de Aguada/Aymamón. La extensión de área aproximada de la ZRT se muestra en la Figura 2-1. Los datos de la RI muestran un gran penacho diluido, con concentraciones ligeramente elevadas por encima de la PRG para PCE. No se identificó ninguna fuente potencial de contaminación, como una empresa que utilizara disolventes clorados o la detección de residuos de disolventes clorados en el suelo o las aguas subterráneas. Por lo tanto, parece poco probable que exista una fuente continua de contaminación que sobrepase la capacidad de atenuación natural del penacho del subsuelo y conduzca a un aumento de las concentraciones en el área de los pozos de Maguayo o en el pozo San Antonio 3. Las tendencias de concentración decrecientes detectadas durante el monitoreo bajo esta alternativa verificarían que no existe una fuente continua de contaminación. Si se identifican aumentos de concentración durante el monitoreo, la EPA podría reevaluar la alternativa durante las revisiones quinquenales. El modelo de transporte de solutos calculó 18 años como la estimación conservadora para alcanzar las PRG. De acuerdo con las orientaciones de Enfoque Recomendado para Evaluar la Finalización de las Acciones de Remediación de Aguas Subterráneas en un Pozo de Monitoreo de Aguas Subterráneas (EPA 2014), se recomiendan ocho rondas de datos para demostrar lo siguiente:

- Que se cumplan los objetivos de remediación.
- Que las aguas subterráneas sigan cumpliendo el objetivo de remediación para el PCE en el futuro.

El alcance y el itinerario exactos del muestreo de la Atenuación Natural Monitorizada (MNA, por sus siglas en inglés) se determinarían durante el diseño de la remediación. En esta alternativa se propone la monitorización de 10 pozos durante 18 años en la TRZ y un pozo lateral. Los resultados de los VOC y de los parámetros geoquímicos se evaluarían anualmente para comprobar el progreso hacia la consecución de los RAOs y durante las revisiones quinquenales.

Bajo la alternativa 2, los controles institucionales restringirían el uso de las aguas subterráneas y la instalación de pozos.

Alternativa 3: Extracción y tratamiento de aguas subterráneas, atenuación natural monitorizada y controles institucionales

Costo del Capital	$1,451,000
Valor Actual de Costos de O&M	$2,740,000
Costo Total Actual	$4,240,000
Plazo de Construcción	Un año
Plazo para cumplir los RAO	Catorce

Bajo la alternativa 3, la extracción y el tratamiento de las aguas subterráneas se realizarían en los dos pozos que presentaron una contaminación superior a las PRG en ambas rondas de muestreo de la RI: Maguayo 4 y Maguayo 5. La extracción y el tratamiento continuarían hasta que las concentraciones en estos pozos se restablezcan por debajo de las PRG. Se prevé que se

necesitarán hasta 14 años para eliminar el PCE en un escenario de bombeo. Esta estimación se basa en la tendencia observada en Maguayo 5 durante los años en que este pozo fue bombeado para el suministro de agua potable. En el resto de la TRZ, la atenuación natural sería monitoreada como se describe en la Alternativa 2.

Esta alternativa de remediación constaría de los siguientes componentes principales:

- Investigación de pre-diseño y diseño de remediación
- Instalación de bombas en Maguayo 4 y Maguayo 5
- Instalación y funcionamiento del sistema de tratamiento
- Descarga de las aguas subterráneas tratadas
- Operación y mantenimiento
- Atenuación natural monitoreada en la TRZ no bombeada activamente por Maguayo 4 y 5.

NUEVE CRITERIOS DE EVALUACIÓN DE LAS ALTERNATIVAS DE REMEDIACIÓN DEL SUPERFONDO
La protección general de la salud humana y el medio ambiente determina si una alternativa elimina, reduce o controla las amenazas para la salud pública y el medio ambiente mediante controles institucionales, controles de ingeniería o tratamiento.
El cumplimiento de los ARARs evalúa si la alternativa cumpliría con todos los requisitos aplicables o relevantes y apropiados de los estatutos ambientales federales y estatales y otros requisitos que pertenecen al Lugar, o proporcionan motivos para invocar una exención.
La eficacia y permanencia a largo plazo considera la capacidad de una alternativa para mantener la protección de la salud humana y el medio ambiente a lo largo del tiempo.
La reducción de la toxicidad, la movilidad o el volumen mediante el tratamiento es el rendimiento previsto de las tecnologías de tratamiento que puede emplear una alternativa.
La eficacia a corto plazo tiene en cuenta el período de tiempo necesario para aplicar una alternativa y los riesgos que ésta puede suponer para los trabajadores, los residentes y el medio ambiente durante su aplicación**.**
La aplicabilidad es la viabilidad técnica y administrativa de la aplicación de la alternativa, incluida la disponibilidad de materiales y servicios.
El costo incluye los costos estimados de capital y de funcionamiento y mantenimiento anual, así como los costos de valor actual. El costo del valor actual es el coste total de una alternativa a lo largo del tiempo en términos de valor en dólares de hoy. Se espera que las estimaciones de costes sean precisas dentro de un rango de +50 a -30%.
La aceptación del Estado Libre Asociado considera si el Estado Libre Asociado (la agencia de apoyo) está de acuerdo, se opone o no tiene comentarios sobre la alternativa preferida.
La aceptación de la comunidad se evaluará en el ROD y se refiere a la respuesta general del público a las alternativas descritas en el Plan Propuesto y en los informes de RI y FS. Los comentarios recibidos sobre el plan propuesto son un importante indicador de la aceptación de la comunidad.

EVALUACION DE ALTERNTIVAS DE REMEDIACIÓN

Los nueve criterios de evaluación de la EPA abordan los requisitos legales y las consideraciones relativas a las medidas de remediación de acuerdo con el NCP. Las siguientes subsecciones describen los criterios de evaluación utilizados en el análisis detallado de las alternativas de remediación.

Protección General de la Salud Humana y el Medio Ambiente

El HHRA y el SLERA indican que no se superó la gama de riesgo aceptable de la EPA como resultado de la posible exposición a los contaminantes relacionados con el Lugar. Sin embargo, las concentraciones de PCE en las aguas subterráneas superaron el MCL federal para el agua potable, y el TCE se detectó en su MCL federal.

Los controles institucionales de las alternativas 2 y 3 evitarían la posible exposición humana futura a las aguas subterráneas contaminadas dentro del penacho hasta que se alcancen los objetivos de reparación. La alternativa 3 utilizaría la extracción de aguas subterráneas para proporcionar un nivel adicional de protección a la salud humana y al medio ambiente, evitando que las concentraciones por encima de los MCL migren a las zonas situadas pendiente abajo. Además, la alternativa 3 implementa la extracción y el tratamiento activos de las aguas subterráneas, lo que aceleraría la restauración de las aguas subterráneas. La alternativa 2 utilizaría la MNA para remediar todas las aguas subterráneas del Lugar; aunque el plazo probablemente sería unos años más largo en comparación con la alternativa 3, los controles institucionales seguirían proporcionando una protección general. La alternativa 1 no es protectora, ya que no incluye ninguna acción.

Cumplimiento con ARARs

La EPA define tres clasificaciones de requisitos en el proceso de determinación de los ARAR. Los ARAR se definen como específicos de la sustancia química, del lugar o de la acción. Un ARAR puede ser uno o una combinación de los tres tipos de ARAR. Se evaluó cada alternativa para determinar cómo se cumplirían los ARAR.

La alternativa 1 no adoptaría ninguna medida activa para evaluar el cumplimiento futuro de los requisitos aplicables o pertinentes y apropiados (ARAR). La alternativa 2 se basaría en los procesos de dilución y dispersión naturales para reducir las concentraciones en las aguas subterráneas a los ARAR específicos de las sustancias químicas (es decir, los MCL federales); los ARAR específicos de la ubicación y la acción no son aplicables para la alternativa 2 porque no se realizaría ninguna construcción nueva y no se generarían residuos sólidos ni descargas. En la alternativa 3, el bombeo eliminaría la contaminación por encima de los MCL federales en Maguayo 4 y 5 y aceleraría el plazo para alcanzar los ARAR específicos de las sustancias químicas. Los ARAR específicos de la ubicación y la acción son relevantes debido a la construcción y operación del sistema de extracción y tratamiento de aguas subterráneas, así como la descarga de aguas subterráneas tratadas; el cumplimiento de estos ARARs es factible y puede ser abordado durante el diseño de remediación e implementado durante la construcción y operación de remediación.

Eficacia y Permanencia a Largo Plazo

La alternativa 1 no se consideraría una solución permanente, ya que no se aplicaría ninguna medida para reducir el nivel de contaminación ni se verificaría ninguna reducción natural. Tanto la alternativa 2 como la 3 proporcionarían eficacia y permanencia a largo plazo, suponiendo que no exista una fuente continua para este penacho diluido. La alternativa 2 proporciona un método para monitorear y evaluar la atenuación de las concentraciones de contaminantes a lo largo del tiempo debido a los procesos naturales. La alternativa 3 utilizaría la extracción y el tratamiento de las aguas subterráneas para reducir las concentraciones de forma permanente e irreversible en los pozos que actualmente están por encima de las PRG. No hay riesgo residual porque, en la actualidad, el HHRA y el SLERA específicos del Lugar no indican riesgos inaceptables por la exposición al PCE. Las alternativas 2 y 3 tendrían controles fiables y adecuados.

Reducción de la Toxicidad, la Movilidad o el Volumen Mediante Tratamiento

La alternativa 1 no monitorearía ni evaluaría la reducción de la toxicidad/movilidad/volumen de los contaminantes (T/M/V) a través de procesos naturales, ya que no se llevaría a cabo ninguna acción correctora. La alternativa 2 reduciría la toxicidad y el volumen a través de procesos naturales. La alternativa 3 reduciría la T/M/V mediante la extracción y el tratamiento de las aguas subterráneas contaminadas con PCE por encima de su PRG.

Eficacia a Corto Plazo

Con respecto a la alternativa 1, no habría ningún impacto a corto plazo para la comunidad y el medio ambiente, ya que no se llevaría a cabo ninguna acción de remediación. En el caso de la alternativa 2, habría algunos impactos menores a corto plazo para la comunidad local y los trabajadores. La alternativa 3 tendría más impactos sobre la comunidad local y los trabajadores debido a la construcción del sistema, especialmente las tuberías de transporte a lo largo de las vías públicas. Se calcula que la Alternativa 2 alcanzará los RAO's en 18 años y que la variante 3 los alcanzará en 14 años.

Implementabilidad

No se prevén problemas para la aplicación de la alternativa 1, ya que no se llevaría a cabo ninguna acción. Las alternativas 2 y 3 requerirían la aplicación de controles institucionales para garantizar la protección de la salud pública y el medio ambiente durante la acción de remediación. La principal preocupación de implementabilidad es de la alternativa 3. Dado que los terrenos que rodean inmediatamente a los pozos de extracción de aguas subterráneas son de propiedad privada o están gestionados por el gobierno de Puerto Rico, es probable que sea necesario arrendar los terrenos para el sistema de tratamiento e inyección de aguas subterráneas. El terreno para la posible ubicación del sistema de tratamiento es propiedad de la Compañía de Desarrollo Industrial de Puerto Rico (PRIDCO, por sus siglas en inglés). Aunque el terreno no se utiliza actualmente para las operaciones de la PRIDCO, habría que negociar un contrato de arrendamiento del terreno para albergar la instalación de tratamiento y los pozos de inyección. Además, se necesitaría cerca de un kilómetro y medio de tuberías de transporte de agua para conectar los pozos de extracción y el sistema de tratamiento, enterrados a lo largo de carreteras en una zona poblada.

Costo

Los estimados detallados de los costos de cada alternativa se elaboraron para la FFS de acuerdo con la *Guía para el Desarrollo y la Documentación de Estimados de Costos Durante el Estudio de Viabilidad* (EPA 2000). Los estimados de costos detallados para las alternativas se incluyen en el Apéndice B del FS y son las siguientes:

- Costos de capital
- Costos de Operación y Mantenimiento Anual (O&M)
- Costos periódicos
- Valor actual del capital y costos de O&M anuales

Los costos del valor actual de todas las alternativas se evaluaron a lo largo de sus respectivos plazos de remediación utilizando una tasa de descuento del 7%.

Los costos de estas alternativas se resumen en la siguiente tabla:

Alt	Costo del Capital/ $	Valor Actual de Costos de O&M / $	Costo Total Actual / $
1	0	0	0
2	$ 161,000	$ 669,000	$ 830,000
3	$ 1,592,000	$ 2,740,000	$ 4,240,000

Aceptación del Estado Libre Asociado/Agencia de Apoyo

DRNA está de acuerdo con la alternativa preferida.

Aceptación de la Comunidad

La aceptación por parte de la comunidad de la alternativa preferida se evaluará una vez finalizado el periodo de comentarios públicos y se describirá en la sección de resumen de respuestas del ROD para este Lugar. El ROD es el documento que formaliza la selección de la solución para un lugar.

ALTERNATIVA PREFERIDA

La alternativa preferida por la EPA es la Alternativa 2: Atenuación Natural Monitorizada y Controles Institucionales. Bajo esta alternativa, se instituiría un programa a largo plazo para monitorear la atenuación natural del agua subterránea dentro de la TRZ. No se identificó ninguna fuente potencial de contaminación pendiente arriba del área de los pozos de Maguayo o del pozo San Antonio 3 durante la RI. Por lo tanto, parece poco probable que exista una fuente continua de contaminación que pueda superar la capacidad de atenuación natural de la pluma subterránea y conducir a un aumento de las concentraciones en el área de los pozos de Maguayo o el pozo San Antonio 3. Las tendencias de concentración decrecientes detectadas durante el monitoreo bajo esta alternativa verificarían que no existe una fuente continua de contaminación. Si se identifican aumentos de concentración durante el monitoreo, la EPA podría reevaluar la alternativa durante las revisiones quinquenales. El alcance y el itinerario exactos de la MNA se determinarían durante el diseño de la rehabilitación; sin embargo, se recomiendan ocho rondas de datos para demostrar que los objetivos de la rehabilitación se cumplieron y se seguirán cumpliendo en el futuro. A efectos de estimación de costos, se asumió que se realizaría un muestreo anual durante 18 años. Se supone que se muestrearán anualmente hasta 11 pozos para detectar VOCs y parámetros geoquímicos. Los resultados del muestreo se evaluarían anualmente para comprobar el progreso hacia la consecución de los RAOs y durante las revisiones quinquenales.

Justificación de Preferencia de Remediación

Se cree que la alternativa preferida ofrece el mejor equilibrio entre las alternativas, basándose en la información de que dispone la EPA en este momento. Tal como se presenta en este plan propuesto, la alternativa preferida tiene un menor impacto a corto plazo para la comunidad y el medio ambiente debido a que no se necesitaría ninguna construcción ni mantenimiento a largo plazo. Aunque ambas alternativas son aplicables, la alternativa 3 sería más difícil de aplicar y causaría más trastornos a la comunidad durante la construcción y el funcionamiento del sistema de extracción/tratamiento, que requeriría cerca de una milla de tuberías de conducción de agua, enterradas a lo largo de carreteras en una zona poblada. También requeriría un acceso para el lugar del equipo de tratamiento. Se calcula que la alternativa preferida tardará aproximadamente 18 años en alcanzar los objetivos de reducción de emisiones, lo que supone unos pocos años más que la alternativa de bombeo y tratamiento, con unos costos actuales significativamente inferiores.

La EPA y el DRNA creen que la alternativa preferida protegería la salud humana y el medio ambiente, cumpliría con los ARAR y sería costo-efectiva.

Los beneficios ambientales de la alternativa preferida pueden mejorarse si se tienen en cuenta, durante el diseño, las tecnologías y prácticas sostenibles de acuerdo con la Política de Energía Limpia y Verde de la Región 2 de la EPA. Esto incluiría la consideración de tecnologías y prácticas de remediación ecológicas.

La EPA evaluará los criterios de modificación de la aceptación de la comunidad en el ROD tras el cierre del periodo de comentarios públicos.

PARTICIPACIÓN COMUNITARIA

La EPA y el DRNA proporcionan información sobre la limpieza del Lugar al público a través de reuniones, el archivo de Registros Administrativos para el Lugar y anuncios publicados en el periódico local. La EPA y el DRNA alientan al público a obtener una comprensión más completa del Lugar y de las actividades del Superfondo que se han llevado a cabo en él.

La EPA, en consulta con el DRNA, seleccionará el remedio final para el Lugar después de revisar y considerar toda la información presentada durante un período de comentarios públicos de 30 días. La EPA, en consulta con el DRNA, puede modificar la alternativa preferida o seleccionar otra acción presentada en este Plan Propuesto en base a nueva información o comentarios públicos. Por lo tanto, se anima al público a revisar y comentar todas las alternativas presentadas en este documento.

Las fechas del periodo de comentarios públicos, la fecha, el lugar y la hora de la reunión pública, así como la ubicación de los archivos de los expedientes administrativos figuran en la primera página de este Plan Propuesto.

Para más información sobre el Lugar del Superfondo de la Contaminación de las Aguas Subterráneas de Dorado, por favor, contacte a:

Luis Santos
Remedial Project Manager
787-977-5824
santos.luis@epa.gov

Brenda Reyes
Community Liaison
787-977-5869
reyes.brenda@epa.gov

Los comentarios por escrito sobre esta Plan Propuesto deben presentarse antes del 18 de agosto de 2021 al Sr. Luis Santos en la dirección o el correo electrónico siguientes.

Agencia de Protección Ambiental de EE.UU.
City View Plaza II - Suite 7000
48 RD, 165 Km. 1.2
Guaynabo, PR 00968-8069
santos.luis@epa.gov

El enlace con el público de la Región 2 de la EPA es:

George H. Zachos
Enlace Público Regional
Libre de tarifas (888) 283-7626
(732) 321-6621

U.S. EPA Region 2
2890 Woodbridge Avenue, MS-211
Edison, New Jersey 08837-3679

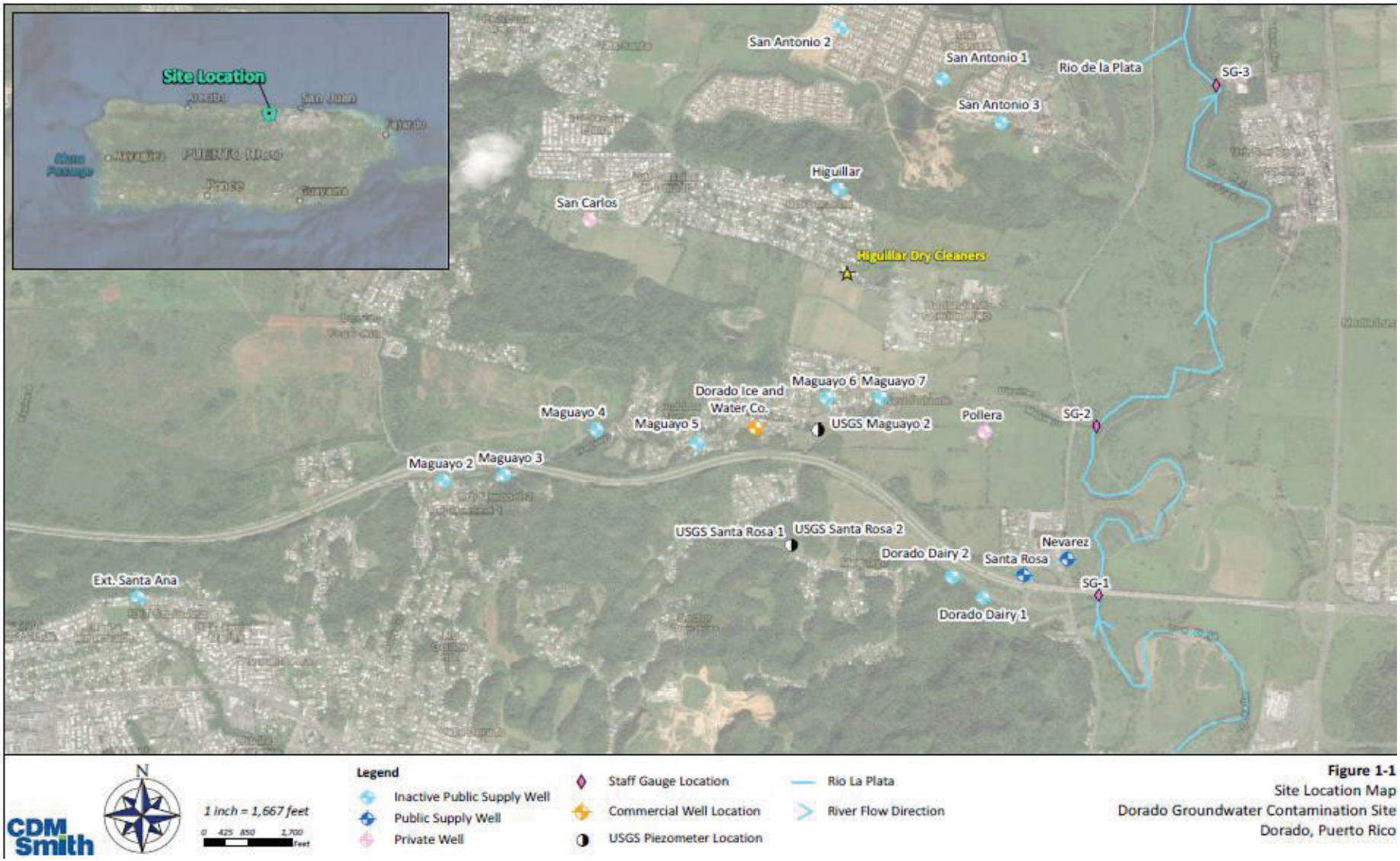

Figure 1-1
Site Location Map
Dorado Groundwater Contamination Site
Dorado, Puerto Rico

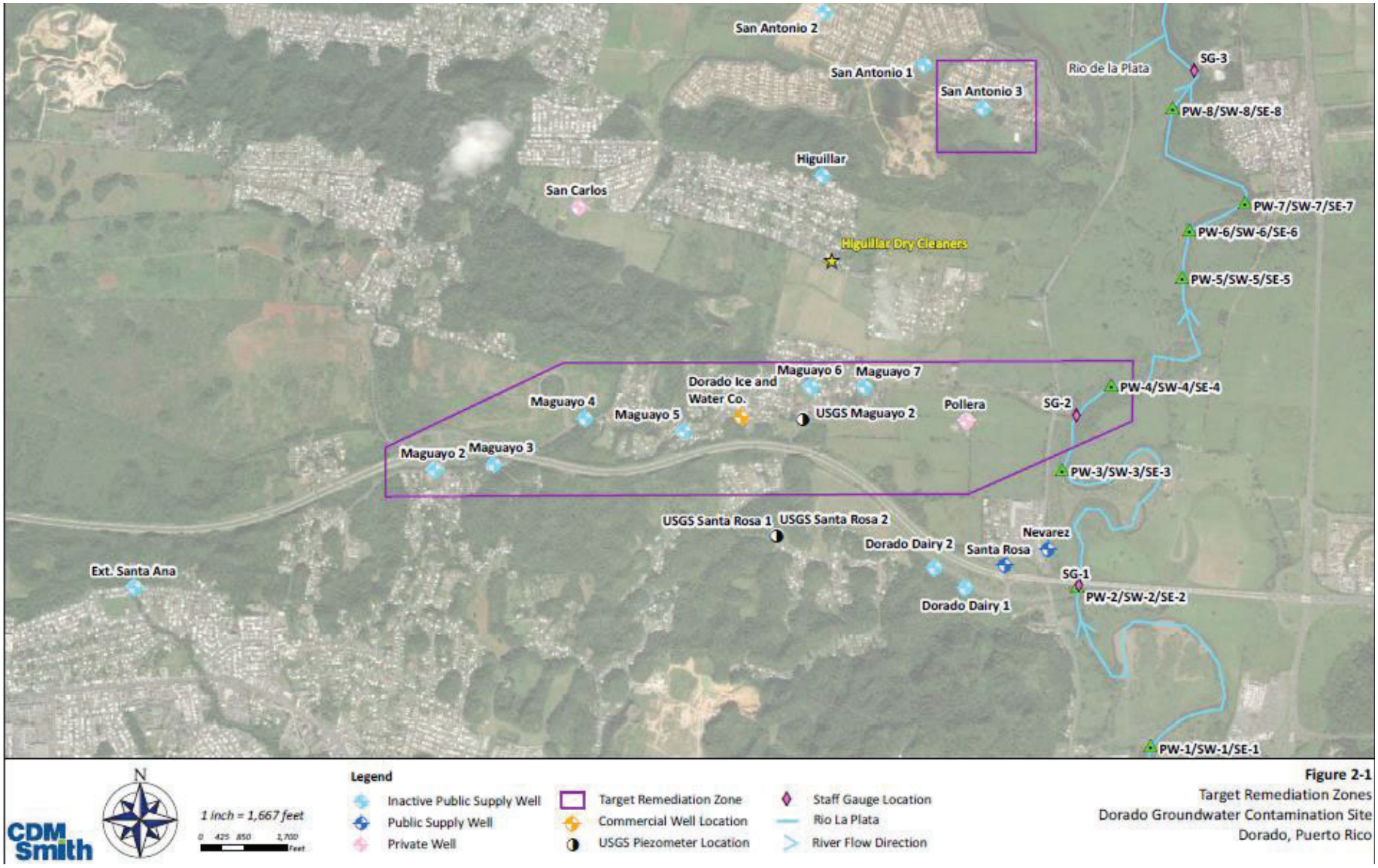

Figure 2-1
Target Remediation Zones
Dorado Groundwater Contamination Site
Dorado, Puerto Rico

CERTIFICATE OF TRANSLATOR

I, Aledawi Figueroa, hereby certify that I translated the attached document from English into Spanish and that, to the best of my ability, it is a true and correct translation. I further certify that I am competent in both Spanish and English to render and certify such translation. Should there be a misinterpretation in the translation, the original document in English will prevail.

I also certify that I have no interest in the outcome of this matter and I have no relationship to any degree of consanguinity with the parties involved in it.

In Isabela, Puerto Rico, July 15, 2021.

Aledawi Figueroa Martínez
Smile Again Learning Center, Corp.
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widy.figueroa@smileagainpr.com
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ATTACHMENT B

PUBLIC NOTICE

La Agencia Federal de Protección Ambiental
Anuncia el Plan Propuesto y Periodo de Comentario Público para el
Lugar de Superfondo de Dorado (Investigación de Aguas Subterráneas)
Dorado, Puerto Rico

La Agencia Federal de Protección Ambiental (EPA, por sus siglas en inglés) en colaboración con el Departamento de Recursos Naturales y Ambientales de Puerto Rico (DRNA), anuncia el comienzo de un período de treinta (30) días de comentario público sobre el Plan Propuesto para la remediación del lugar conocido como el Lugar de Superfondo de Dorado o Lugar de Investigación de Aguas Subterráneas en Dorado, localizado en el Municipio de Dorado, Puerto Rico.

La alternativa preferida por la EPA en el Plan Propuesto es la Alternativa 2, que consiste en: (1) el monitoreo de pozos contaminados clausurados; (2) el mantenimiento de los sistemas de tratamiento de los pozos de suministro existentes; y (3) el establecimiento de controles institucionales. El Plan Propuesto describe las alternativas recomendadas y las razones para estas recomendaciones. Antes de seleccionar un remedio final, la EPA va a considerar los comentarios escritos y/o verbales recibidos durante este período de comentario público. Todos los comentarios (escritos y/o verbales) deberán ser recibidos en o antes del 19 de agosto de 2021. La EPA luego proveerá un resumen de todos los comentarios recibidos y sus respuestas en el Récord de Decisión para este Lugar de Superfondo.

A tales fines, la EPA llevará a cabo una reunión pública el jueves, 5 de agosto de 2021, de 5:00 pm a 7:00 pm en el Teatro Juan Boria ubicado en la Calle Méndez Vigo del Municipio de Dorado, Puerto Rico. El propósito de esta reunión es informarle a la comunidad sobre los hallazgos, conclusiones y recomendaciones de la investigación realizada en el Lugar de Superfondo para la remediación del agua subterránea en Dorado. Además, se discutirá la alternativa de remediación recomendada. Durante esta reunión pública, la EPA contestará preguntas o comentarios que los participantes tengan sobre la investigación realizada y la alternativa preferida en el Plan Propuesto.

Las copias del Plan Propuesto y otros documentos relacionados a este Lugar de Superfondo están disponibles en los siguientes repositorios de información:

Biblioteca Municipal de Dorado
The Jane Stern
Dorado, Puerto Rico 00739
Teléfono: (787) 796-3675
Horario: Lunes – Viernes, 9:00 am a 12:00 pm y 1:00 pm a 4:45 pm

Departamento de Recursos Naturales y Ambientales
Programa de Respuestas de Emergencias y Superfondo
Edificio de Agencias Ambientales Cruz A. Matos
Urbanización San José Industrial Park
1375 Avenida Ponce de León
San Juan, PR 00926-2604
Teléfono: (787) 999-2200 (extensiones 5900, 5901 y 5150)
Horario: Lunes – Viernes, 9:00 am a 3:00 pm
Por cita previa

Agencia Federal de Protección Ambiental, Región 2
División de Protección Ambiental del Caribe
City View Plaza II- Suite 7000
48 RD, 165 Km. 1.2
Guaynabo, PR 00968-8069
Teléfono: 787-977-5865, 787-977-5824
Horario: Lunes - Viernes, 9:00 am a 4:30 pm
Por cita previa

U.S. Environmental Protection Agency, Region 2
290 Broadway, 18th floor
New York, New York 10007-1866
Superfund Record Center
Teléfono: (212) 637-4308
Horario: Lunes -Viernes, 9:00 am a 3:30 pm
Por cita previa

Para más información, favor llamar al Sr. Luis Santos, Gerente de Proyectos de la EPA, al (787) 977-5865 o 787-977-5824.

Los comentarios escritos al Plan Propuesto deben ser enviados a:

Luis Santos
Gerente de Proyectos
Agencia Federal de Protección Ambiental, Región 2
División de Protección Ambiental del Caribe
City View Plaza II- Suite 7000
48 RD, 165 Km. 1.2
Guaynabo, PR 00968-8069
Email: santos.luis@epa.gov
(*Exhortamos a la ciudadanía a enviar sus comentarios por correo electrónico*)

Para obtener información adicional sobre el Lugar de Superfondo de Dorado, también puede visitar la página electrónica: https://cumulis.epa.gov/supercpad/cursites/csitinfo.cfm?id=0201872

ATTACHMENT C

PUBLIC MEETING TRANSCRIPT

VISTA PÚBLICA
PLANTA DE ALCANTARILLADO SANITARIO DE DORADO
Fecha: 10 de agosto de 2021
Hora: 5:00pm-7:00pm

Se abre record a las 5:20pm

Brenda Reyes:

Ahora sí. Buenas tardes, mi nombre es Brenda Reyes Tomassini, soy oficial de Asuntos Públicos de la Agencia Federal de Protección Ambiental, la EPA, por sus siglas en inglés. I want to welcome you all to our public meeting for the Dorado Superfund Site, o Lugar de Superfondo de Dorado, de los pozos de Dorado. En la tarde de hoy vamos a llevar a cabo una reunión pública para presentar el Plan Propuesto. Today we are presenting the Proposed Plan for the Dorado Superfund Site. I'm going to go both English and Spanish. I have people here that speak both. Yeah, you speak Spanish, I know. But we have some materials in English as well. Agradecemos muchísimo al alcalde de Dorado, Honorable Carlos López, y a la administración municipal, por habernos facilitado el lugar para llevar a cabo la reunión pública en la tarde de hoy y todo el trabajo que el equipo ha puesto para que esta reunión se lleve a cabo. Es nuestra segunda reunión pública en tiempo de COVID. Les pedimos que mantengan el debido distanciamiento. (Nota de transcriptora: Alguien le habla a Brenda fuera de micrófono y ella contesta "Ok, los conectamos al sistema, pero it doesn't work that way"). Bueno, aparte de eso, quisiera ir sobre algunas reglas. Sobre una serie de asuntos muy importantes durante la tarde de hoy para lograr la participación más efectiva. Esta reunión está siendo grabada, se hace una transcripción, por ende, todo comentario que hagan durante la sesión de preguntas y respuestas, le voy a pedir que se identifiquen, como me acabo de identificar yo, con

nombre, apellido, y si ustedes quieren decir si son residentes y el sector donde viven. Pero es muy importante que ustedes identifiquen nombre y apellido cuando se dirijan a hacer la pregunta. Pueden hacer las preguntas una vez mi compañero Luis Santos termine la presentación. We will have a Questions and Answers session after Luis, my coworker, he's the remedial project manager, Mr. Luis Santos, finishes de presentation. You will have to say your name and where you live, if you want, if you're a resident o you represent a community or if you're a consultant. But it is very important that you do so because we are recording this presentation and we have a transcription of the Public Meeting. Tenemos representantes de varias agencias del Estado Libre Asociado. Tenemos aquí al Departamento de Salud, tenemos al Departamento de Recursos Naturales. También vamos a tener representantes del municipio de Dorado y ¿se me escapa alguien más? No. Muy importante, cuando hagan la pregunta, si ustedes pueden articularla de una forma sencilla, lo voy a agradecer. Si ustedes quisieran hacer la pregunta y no la quieren hacer en el público, yo tengo aquí estos "index cards" y estas tarjetitas donde ustedes pueden venir, coger una, hacen la pregunta, me la dejan aquí y yo hago la pregunta. Obviamente, pues si quieren hacerla anónima, yo voy a tener que decir para el récord que es una pregunta anónima. Aparte de eso, ¿se me queda algo más, Luis? Tenemos al alcalde que debe venir por ahí en los próximos minutos y la señora Carmen Guerrero, directora de la División del Caribe de la EPA. Our Director of the Caribbean Environmental Protection Division, Carmen Guerrero, will be here. She will be joining us in a few minutes. She's coming from Fajardo. She's driving from Fajardo, so I told her we would save a seat for her. During this public meeting she will be here to answer questions as well. Over the Teams Meeting we have some experts from our

Regional Office that will be joining us. They can answer questions as well. Tenemos compañeros de la Región 2 que están aquí en la reunión virtual a través de la plataforma Teams. Mi compañera Kathlynn Flynn habla español, así que ella puede contestarles en español. Los demás compañeros pueden contestar las preguntas en inglés. Si necesitan interpretación puedo hacer la interpretación. Obviamente, no soy intérprete certificada, pero hago mucho este tipo de trabajo, así que lo podría estar haciendo. Kathlynn está aquí. Gracias, Kathlynn por estar con nosotros hoy. Habla perfecto español. (Nota de transcriptora: Kathlynn dice algo en la computadora pero no se escucha en el sonido, por lo que Brenda le dice: "Can you say it again?" Aún no se escucha por lo que Brenda dice "Well there seems to be a problem with the sound but, anyways, Kathlynn is here. She will be on the conference". We also have Luis Rivera. Luis are you here? Luis are you here? Ok, we had invited somebody from ATSDR, from the Agency of Toxic Substances and Disease Registry, CDC, so I think we're ready to go. Gracias a todos por estar aquí y como les dije, importante, cuando comencemos la sesión de preguntas no se les puede olvidar decir el nombre porque Smile Again, nuestro contratista, está haciendo la transcripción. Hay documentos que están disponibles en el website de la EPA bajo la página de Superfondo de Dorado. Luis lo va a proveer. Aquí hay mapas. Aquí yo tengo conmigo la hoja informativa, está en inglés. Pero la pueden mirar si alguien quiere ojearla, bienvenido. Así que muy buenas tardes y muchísimas gracias. Y les dejo aquí con el gerente de proyecto, el Sr. Luis Santos.

Luis Santos:

Gracias Brenda. Buenas tardes, mi nombre es Luis Santos. Trabajo para la Agencia Federal de Protección Ambiental, por sus siglas en inglés EPA. Soy el gerente de proyecto. El proyecto lo tomé desde el 2016, cuando fue nominado el lugar para entrar a la Lista Nacional de Prioridad. Y eso lo vamos a estar hablando en el proceso. Antes de empezar de lleno con las actividades, quiero hacer mención de que esta es la primera actividad que la agencia hace en público. El año pasado, durante el 2020, se hizo otro Récord de Decisión y todo se hizo virtual dado a la cuestión de la pandemia. Nos hemos preocupado de que durante este conversatorio nadie salga contaminado. Por lo tanto, es importante que sigan las medidas generales de protocolo para evitar contaminar o que me contaminen. Yo no estoy usando una máscara porque ustedes están protegidos, pero en cuanto tenga que hablar con uno de ustedes, me voy a proteger también y los protejo de mí. Todo esto me lleva a que realmente, lamentablemente, esto es esto serio. Son muchos los que han muerto y nos compadecemos de ello. Son muchos los que están sufriendo y nos compadecemos de ello. Y no queremos ser parte de las estadísticas. Dicho eso, pues podemos empezar de lleno con la presentación.

Nota de la transcriptora:

Se pasa a la presentación en pantalla. Se pasa a la laminilla 2.

Luis Santos:

¿Qué vamos a hacer? El objetivo de este estudio es definir la naturaleza y la extensión de la contaminación del agua subterránea, el suelo y utilizamos también el agua superficial. O sea que vamos a coger el suelo, agua superficial que llega a través del

agua subterránea, y además, vamos a evaluar estos resultados para riesgo. ¿Riesgo a qué? A la salud y al medio ambiente. Próximo.

Nota de la transcriptora:

Se pasa a la laminilla 3

Luis Santos:

La área, para ubicarnos, Dorado versus Puerto Rico. En la columna de la izquierda arriba está la isla. En la parte de arriba, donde está lo verde, ahí está el pueblo de Dorado y entonces nos vamos al área de Dorado que comprende. O sea, nosotros lo definimos desde el punto de vista los pozos de agua subterránea que hay en la zona. Nosotros hicimos un censo de todos los pozos en la zona para incluirlos en el estudio. Eso no quiere decir que porque yo te muestreé tu pozo, tu pozo está contaminado, ni es un Superfund Site. Simple y sencillamente está en el área y amerita que yo lo muestree. ¿Para qué? Para poder definir magnitud y extensión de la contaminación, simplemente. O sea, todos los pozos. La mayoría de los pozos que nos traen al estudio están clausurados desde los años...desde el siglo pasado. Desde la última década del siglo pasado. O sea que, la mayoría de ellos tienen de 20 a 25 años cerrados ¿Por qué se cerraron? Porque no cumplían con los estándares de calidad federales. Esa agua la vende Acueductos. Esa agua es regulada por el Departamento de Salud, bajo los estándares de calidad de agua estatales y federales. Y esos pozos no cumplían con esos estándares. Por lo tanto, se cerraron. Pero yo los estoy muestreando porque yo lo que quiero saber es debajo del terreno de Dorado, dónde está la contaminación y de qué

consiste la contaminación. Hay dos pozos que es Santa Rosa y Nevárez, que sí forman parte del soporte de la red de agua potable. Pero esos pozos bajo el Departamento de Salud y bajo quien nos vende el agua, que es Acueductos, esos pozos se están regulando. El agua que sale por el grifo de su casa cumple con los estándares de calidad de agua federales estatales, independientemente que yo esté muestreando esos dos pozos como parte de mi estudio. ¿Entendimos? No quiero, no quiero confusión. Porque yo esté muestreando a Santa Rosa y a Nevárez, no es que están vedados para el uso. Simple y sencillamente están en el lugar y quiero muestrearlos, para saber magnitud y extensión. Próximo.

Nota de la transcriptora:

Se pasa a la laminilla 4.

Luis Santos:

Aquí. Lo que quiero señalar es lo que es el proceso de Superfondo. El proceso de Superfondo empieza con descubrir el lugar. Nada más que haya una duda, una duda de que el lugar puede ser un riesgo a la salud o al medio ambiente, ya entra como un lugar a considerar. De ahí se le hace un "Preliminar Assessment" que lo que se busca es ir a toda la data existente y levantarla. Si esa data me sigue confirmando que existe un potencial del problema de salud y el medio ambiente, entonces sigue el proceso. Si no, se queda allí. Se pasa por un modelo matemático que es el CERCLIST. Es un modelo matemático que es estándar, que coge todos los ambientes que están de concernimiento en ese lugar. Y entonces se añade una puntuación que va a un 100 por ciento. Después

que la tabulación final sobrepase 29 por ciento es un candidato a entrar a la Lista Nacional de Prioridad de Lugares Contaminados de la Nación. No es que va a entrar, pero es un candidato. De allí se hace un "site inspection". ¿Qué se hace? Se busca toda la data que hay. Y si hay pozos, si hay un terreno, se muestrea y eso va añadiendo puntuación para entonces llevarlo a lo final que es la Lista Nacional de Prioridad. Este caso que se nos trae a colación se entró a la Lista Nacional de Prioridad en el 2016. Desde ese momento, al entrar a la Lista Nacional de Prioridad, nos vamos a la tabla de abajo. La tabla de abajo me lleva al segundo encasillado. El segundo encasillado tengo que comenzó, si fue enlistado en el 16 comenzó el estudio remedial y el estudio de viabilidad. Eso empezó en el 17. El reporte final está para septiembre 29 del 2020 y es parte del récord administrativo. En el récord administrativo aparece ese estudio, el estudio de riesgo a la humanidad, el estudio de riesgo a la salud, al medio ambiente, aparece el estudio de viabilidad para ver con estos resultados qué vamos a hacer. Cómo vamos a resolver el problema; que va desde no hacer nada, hasta invertir la cantidad que fuera necesaria para restablecer el recurso. Entonces estamos aquí. Mire, señor, esto no está escrito en piedra. Lo que estamos presentando es la alternativa que la EPA sugiere y que el Estado como parte de lo que sigue el Congreso, debe consentir. Trabajamos mano a mano. El proyecto es de jurisdicción federal. El gobierno estatal trabaja con nosotros desde cero, todo el tiempo, todo el tiempo, todo el tiempo. Y toda decisión que se toma, ellos la avalan y si tienen alguna duda, la refutan y llegamos a una reconciliación y es lo que se presenta. Y después que yo con el Estado logro esa reconciliación, hago un Plan Propuesto, que es lo que está aquí. Que es el plan que está aquí. Que es el que yo vengo a presentar. Tienen 30 días para comentarlo. Aquí va a

haber la oportunidad de dudas y respuestas. Todo lo que aquí se hable está siendo grabado para fines de transcribirlo textualmente, para fines de contestarlo y que sea parte del récord de decisión. Para esto es que estamos aquí. Próximo.

Nota de la transcriptora:

Se pasa a la laminilla 5.

Luis Santos:

Ahí vuelvo a señalar que en la línea que está en el centro, que está sobre el Expreso 22, esa línea es donde está la mayor concentración de detección de sustancias peligrosas, de sustancias. En esa línea. Todos los pozos que están en esa zona no están usándose. Y si hubiera alguno en uso, está cumpliendo con los estándares de la Agencia Federal de Protección Ambiental, porque está tratando el agua. La está sirviendo tratada. Nosotros nos preocupamos que durante el estudio de nosotros, en esos lugares, si había alguno, se muestreaba en la toma y se muestreaba en la salida después del tratamiento. Y certifica que sí, el agua que está sirviendo, el caso que fuere, está cumpliendo con los estándares federales y está cumpliendo con el Estado, con el Departamento de Salud. Porque esta persona, esta entidad, tiene que someter los informes a Salud. Lo que nosotros hicimos fue que al tenerla como parte del estudio, muestreamos antes y después. Y confirmamos lo que la industria está sometiendo al Departamento de Salud. Que sí que está cumpliendo y que es apta para ser utilizada. Próximo.

Nota de la transcriptora:

Se pasa a la laminilla 6.

Luis Santos:

Aquí estamos mostrando cómo llega el agua a la a la capa subterránea, que es la que yo estoy estudiando. Yo estoy estudiando esta zona que dice "zona no saturada". Es donde yo estoy estudiando. Es donde están los pozos que muestreamos. Ahí llega por el efecto de la lluvia o por efecto de que se mueva en el acuífero. Tanto ahí en la parte vertical como horizontal. Y eso más o menos es para darte una idea de dónde fue que yo estoy muestreando. Estoy muestreando en la zona no saturada. Próximo.

Nota de la transcriptora:

Se pasa a la laminilla 7.

Luis Santos:

¿Cómo llega al Río La Plata? Yo muestreo también el Río La Plata. Porque esta agua que está en el subsuelo, que podría tener detecciones de contaminantes, eventualmente va a moverse y va a llegar al Río La Plata y es importante yo saber si el Río La Plata recibe algún tipo de contaminación. O sea, si tiene algún tipo de detección de lo que ya yo sí encontré en las zonas no saturadas. Y es para tener una idea de por qué. Entonces el estudio mío lleva; yo muestreo terreno, para ver cómo migró, cómo fue la fuente que

llegó allí. Muestreé el agua no saturada para saber cantidad y magnitud de los contaminantes y muestreé el Río la Plata a ver si había alguna detección. Próximo.

Nota de la transcriptora:

Se pasa a la laminilla número 8.

Luis Santos:

Es lo mismo, es para que vean cómo los pozos desde la superficie bajan y hay pozos desde 50 hasta 150 pies de profundidad. Cada pozo es característico y es diferente. Y todos los pozos se muestrearon y donde se encontró la detección así mismo se estableció, "se encontró detección a tal profundidad". Próximo.

Nota de la transcriptora:

Se pasa a la laminilla número 9.

Luis Santos:

¿Cuáles son los contaminantes que están, que nos preocupan? Es Tetracloroetileno y Tricloroetileno, que también se conocen como PCE y TCE. Fueron los que realmente nos preocupan las detecciones. Próximo.

Nota de la transcriptora:

Se pasa a la laminilla número 10.

Luis Santos:

Los resultados de riesgo nos dicen que en el pozo... Los únicos dos pozos... ¡Buenas!

Nota de la transcriptora:

Llega el alcalde de Dorado a la reunión.

Luis Santos:

Saludos, alcalde. ¿Quiere?

Hon. Carlos López Rivera:

Bendito, disculpen la interrupción que ya empezó la presentación. Un saludo fraternal para todos los presentes. Mi agradecimiento a los funcionarios de la EPA. La señora Guerrero posiblemente va a estar con nosotros. Realmente nosotros llevábamos ya bastantes años dándole seguimiento a esta situación y agradecemos que la EPA siempre mantenga la información científica y en forma responsable con relación a la atención de esta situación creada por un derrame que ocurrió ya hace bastante tiempo por una compañía, lo cual se reclamó que había que de alguna manera compensar esa situación. No obstante, es bien importante y agradecemos la comparecencia de todos ustedes que pueden ayudar a informar en una forma certera de que los conciudadanos Doradeños no están consumiendo agua de esos acuíferos. Actualmente nosotros consumimos agua

del sistema de la Autoridad de Acueductos y Alcantarillados, del Superacueducto. No obstante, tanto la autoridad como EPA, que le corresponde hacer esas funciones, han estado monitoreando y tabulando cómo ha ido llevándose a cabo esta situación. Por eso es que es importante estas vistas, para que nosotros podamos tener la información de primera mano y en forma científica. Y es bien importante, y yo le agradezco y reitero la comparecencia de cada uno de ustedes, de que se puedan informar a través de la información que se va a brindar en el día de hoy y en las próximas que van a ocurrir, según así lo determine la agencia federal que tiene a cargo el monitoreo de esta situación y la puesta del plan de acción y de atención de la situación. Al llevarle la información correcta a nuestros conciudadanos, le podemos informar adecuadamente, sin alterar el hecho de que puedan, como quizás algunas personas de momento, en desconocimiento por no tener la información de primera mano, pues pensaron que ciertamente nuestros conciudadanos estaban consumiendo agua contaminada. Lo cual por la información que nos certifica las agencias, tanto de la Autoridad como la agencia federal, pues no es así y obviamente no lo podemos permitir que sea así. Pero esto es bien importante, no solamente por la salud, porque ahí también está la salud obviamente física de nuestros conciudadanos, que no hay nada que vaya sobre eso. Pero también, como ustedes saben, Dorado goza de un prestigio y de una preferencia por su calidad de vida, donde muchos ciudadanos de Puerto Rico e internacional escogen a Dorado como el lugar preferido para invertir y gozar de la calidad de vida de nuestro pueblo. Si se lleva una información incorrecta, esto puede repercutir en pérdidas de empleo, en desvaloración de las casas y en otras problemáticas que pueden tener efectos negativos verdaderamente. No va a haber nada que pueda llevar a la EPA, porque ustedes conocen

la verticalidad y la profesionalidad de esta agencia. En el caso de nosotros del municipio, llevamos décadas juntos de la mano dando la batalla para que se cumpla, independientemente de que no estamos consumiendo el preciado líquido de esos acuíferos. Inclusive aquí ha habido proyectos que en un momento dado se fueron a dar y pretendían utilizar como fuente de recursos esos acuíferos y nos opusimos tenazmente, porque iban a, como dicen, a absorber o a halar más todavía lo que llaman los científicos ambientales, el plumacho de contaminación a nuestra zona en aquel entonces. Obviamente, naturalmente eso se va moviendo y para eso es la orientación. Los científicos ambientales son ellos, no soy yo. Pero a mí me compete, por un lado, agradecer la comparecencia de las personas que veo aquí, que son de diversas comunidades, de diferentes sectores, porque eso va a ayudar, y a legisladores que están presentes también, que le agradecemos su comparecencia, va a ayudar a tener una información valiosa, certera y científica para que cuando quizás alguien pueda especular con información que no es científica y certera, pues se pueda responsablemente reaccionar. Porque no solamente depende de la vida física de nuestros conciudadanos, sino nuestra economía y nuestra calidad de vida depende de que la información correcta se lleve. No obstante, nunca vamos a claudicar a nada que atente contra la calidad física y la calidad de vida de nuestro pueblo, y por eso siempre hemos estado disponible.

Nota de la transcriptora:

La Sra. Carmen Guerrero entra en este momento a la reunión.

Hon. Carlos López Rivera:

Acaba de llegar la directora estatal, nuestra amiga Guerrero. Le pedimos que pase acá al frente para darle la bienvenida. Vamos a darle un fuerte aplauso porque nos sentimos bien orgullosos de sus funciones. Nos conocemos desde el Departamento de Recursos Naturales y en proyectos que hemos trabajado en lo que denominamos Playa Grande del Paraíso, conjuntamente con la protección del tinglar, con la Organización Chelonia y otras cosas que hemos trabajado juntos en el transcurso profesional de nuestras vidas al servicio de nuestro pueblo. Creo que he sido explícito en explicar lo que quería hacer, además de darles la bienvenida a todos ustedes y a los funcionarios. Pero creo preciso, ya que la directora llegó, tener el privilegio y el honor de darle la oportunidad de que también ella haga lo propio de darle un saludo a todos y cada uno de ustedes. Directora, bienvenida a Dorado, paraíso de Puerto Rico, donde la vida es bella. Gracias.

Carmen Guerrero:

Así mismo es. Muchísimas gracias alcalde por la bienvenida y a la misma vez por sus palabras que acababa de compartir con todos los residentes y comunidades de Dorado. Muy buenas tardes, mi nombre es Carmen Guerrero, Directora de la División del Caribe de la Agencia Federal de Protección Ambiental. Ante todo le quiero pedir excusas por no haber llegado más temprano es que estaba dando una presentación, una conferencia en Fajardo y terminó a las 4:15 y traté de ganarle al tapón de las tardes, pero se me hizo imposible. Pero aproveché y corté por el área de la carretera 165, al frente de la reserva natural que pudimos designar juntos. La verdad es que ¡qué lugar hermoso! Las playa que hoy día son las más importantes para anidaje del tinglar en todo Puerto Rico. Para nosotros es bien importante que ustedes estén aquí. En verdad me encanta ver la casa

llena, ver este salón lleno de residentes, comunidades, comerciantes y personas interesadas en este tema. Es un tema que la EPA lleva trabajando por muchísimo tiempo. Mano a mano con el municipio, con el Departamento de Salud que tenemos aquí al colega Javier Torres, a la misma vez con la Autoridad de Acueductos y Alcantarillados y con el Departamento de Recursos Naturales y Ambientales. Es un esfuerzo colaborativo que se lleva dando desde la década de los 80. Se cerraron estos pozos hace muchísimos años, como muy bien Luis estaba explicando hace unos minutos. Específicamente esos pozos se cierran en la década de los 90 y las comunidades no han estado bebiendo agua de estos pozos ni han estado expuestos a estas aguas. Y eso es bien importante como parte del mensaje. Los procesos de limpieza de lugares Superfondo, como son los pozos estos en las comunidades de Maguayo, en Dorado urbano. Específicamente estos procesos toman muchos años y parte de lo que estamos ahora todos participando es dándoles un informe de cómo ha ido ese proceso de evaluación, las alternativas remediativas que se han identificado para poder atender esa contaminación y el compromiso de nuestra agencia en colaboración con otras agencias locales como Salud, Recursos Naturales y la Autoridad de Acueductos y Alcantarillados, de hacer monitoreo a largo plazo y mantener esta conversación y este contacto con ustedes para a largo plazo continuar dándoles informes de progreso de cómo va la atención y la reducción de los niveles de contaminación en esos pozos. Pero las palabras del alcalde fueron bien importantes en la esencia de que este proceso toma mucho tiempo y que ahora mismo pueden tener la certeza de que las comunidades no se están abasteciendo de estos pozos. Estos pozos fueron clausurados, cerrados hace muchos años; de 20 a 25 años y ahora la fuente que utiliza la Autoridad de Acueducto y Alcantarillado no viene de ahí es

a través del Superacueducto que viene desde Arecibo. Así que ese es el mensaje principal. Pero sí dentro de la obligación que tiene la EPA, dentro del proceso de limpieza de lugares Superfondo, es integrarlos a todos ustedes, recibir sus preocupaciones, y ese es el propósito principal que tenemos en esta reunión. Explicarle cuáles son las alternativas que nosotros escogimos y ver que ustedes piensan de ellas. Y tenemos un proceso y se explica el detalle de cada una de ellas y el insumo de ustedes es lo que toma en consideración tanto la EPA como el Departamento de Recursos Naturales para ver cuál va a ser la selección, el futuro del plan de trabajo y el plan propuesto para limpiar esta área de contaminación. Nuestra prioridad siempre es la protección de la salud pública y del medio ambiente. Y que sepan que ese siempre va a ser nuestro norte y queremos trabajar mano a mano con ustedes para esto. Así que muchísimas gracias, alcalde. Siempre usted nos ha dado la mano en poder utilizar las facilidades del municipio. Su equipo de trabajo siempre nos da mucho apoyo en asegurar que las comunidades saben de estos eventos. Así que les queremos dar las gracias por su apoyo continuo siempre.

Hon. Carlos López Rivera:

Las gracias van de parte de nosotros. No voy a tomar más tiempo porque lo importante para la convocatoria de hoy se va a estar presentando, pero es justo reconocer que hemos tenido que buscar auxilio en la Agencia Federal para problemas también, no de agua potable, sino de aguas usadas, y actualmente hemos podido lograr que se haga una inversión de 32 millones de dólares para corregir unas deficiencias que habían en el sistema sanitario también que creaba contaminación en la zona, por los desbordes, y

que actualmente ya se subastó, ya se comenzó la construcción y en el término de dos años y medio se va a poder sacar de lo que se denomina como arresto, a la planta de aguas usadas de Dorado. Esto es producto de un trabajo colaborativo que hemos venido haciendo y con líderes comunitarios, especialmente de la comunidad de Quintas de Dorado. Que hay que reconocer el compromiso de la agencia en trabajar en unión a la comunidad y a los a los gobiernos locales. Pues sin más preámbulo, yo le devuelvo el micrófono al compañero siguiendo el protocolo. No sé si va a añadir algo.

Carmen Guerrero:

Déjame añadir algo más. Gracias, alcalde. Un aplauso al alcalde. Yo, por último, quería agradecer a mi equipo de trabajo. Tengo aquí con nosotros a dos veteranos en este tema Luis Santos y Brenda Reyes, que por tantos años han trabajado el tema de Superfondo. A través de la línea y gracias a la tecnología, tenemos al subdirector de la División, José Font, a la directora del Branch de Remediación y Emergencias, Tere Rodríguez, y varios colegas que son evaluadores de riesgo que se están conectando con nosotros a través de las redes desde Nueva York. Así que gracias a ellos también por decir presente y ayudar a informarles a ustedes, que es la prioridad de este esfuerzo, de esta reunión. Gracias, Luis.

Luis Santos:

Gracias a ustedes. Recapitulando lo que ellos dicen, lo que acaban de compartir y lo que yo le traía. Tenemos el recurso de agua del acuífero. Recurso de agua del acuífero que no está en uso. ¿Por qué? Porque se detectaron unas sustancias desde hace más de 25

años e hicieron necesario retirarlos de uso. Tenemos el terreno, porque el terreno probablemente es la vía por donde llegó ese contaminante, esa sustancia, al agua subterránea. Y tenemos el agua superficial, que era la que habíamos mencionado en la pasada presentación. Resumiendo esta, (Nota de la transcriptora: se refiere a la laminilla número 10) del universo de pozos que utilizamos, que fueron parte del estudio, sólo Nevárez y Santa Rosa están en uso y son parte del sistema de agua potable. En ellos hay detecciones, pero las detecciones son tan bajas que no representan un riesgo a la salud y al medio ambiente. Los demás, en el terreno no se encontró contaminación tampoco en el agua superficial, y los demás están cerrados desde hace más de 20 años.

Nota de la transcriptora:

Se pasa a la laminilla número 11.

Luis Santos:

Ok, aquí lo que quiero señalar es que nosotros hicimos dos actividades de muestreo. Se hizo una en mayo, de abril a mayo del 2019. Y en esta resumimos. Lo que está en rojo arriba, en la tablita que está arriba, tenemos en rojo lo que es Tetracloroetileno, lo que está en azul abajo es Tricloroetileno. En esa línea imaginaria que yo le había mencionado, que estaban los pozos de Maguayo, pues ahí tenemos que podemos ver unos tonos amarillo claro. En esos tonos amarillo claro las concentraciones, o las detecciones, están por debajo de los estándares de calidad de agua. Los únicos que tienen sobre los estándares son los dos anaranjados que están más abajo. ¿Los pueden lograr ver? ¿No? Estos dos son los anaranjados. Todos estos son amarillos. El río va

con los contornos azules. Ok usted está vámonos al expreso. Este es el expreso. El río estaría aquí. Los valores se ven en este muestreo de abril y mayo.

Nota de la transcriptora:

Se pasa a la laminilla número 13.

Luis Santos:

En el otro muestreo que fue la segunda etapa, fue para agosto del 2019 mantiene los mismos resultados más o menos. O sea, que independientemente que yo tengo detecciones en toda la zona, sólo los que están en el color anaranjado son los que sobrepasan los estándares de calidad de agua, que son 5 kilogramos por litro. Pero independientemente de eso, están cerrados. No estoy consumiendo agua de allí.

Nota de la transcriptora:

Se pasa a la laminilla número 13.

Luis Santos:

Lo que quiero señalar aquí es que en el contorno violeta, ahí yo tengo todos los pozos que de una u otra manera tienen o resultados o detecciones sobre los estándares de calidad de agua, y/o detecciones que están cerca de ese número, que son de interés, para yo poder tomar una decisión de qué voy a hacer con ese recurso. El recurso está, el recurso no se está usando. Podría utilizarse. Eso depende cuales son las propuestas

que vengan. Pero con la información que tenemos le podemos decir a cualquiera que venga a utilizarlo "tú puedes o no puedes, o tienes que utilizarlo siguiendo estos procedimientos de tal manera que aseguramos la salud y el medio ambiente" y que el agua que llega a la residencia o a la industria, o a la empresa que quiera habilitarlo, tiene que cumplir con los estándares de calidad de agua. Próximo.

Nota de la transcriptora:

Se pasa a la laminilla número 14.

Luis Santos:

En todo estudio de nosotros vamos desde no hacer nada, hasta las posibles alternativas. El no hacer nada es una alternativa, pero no fue la que seleccionamos. La segunda fue la que seleccionamos, que la voy a explicar en la próxima, que es la que está señalada. Y la tercera cumple con los objetivos, pero no fue la que consideramos que era la apropiada para este momento histórico. No es que no sea necesario en el futuro o dependiendo cómo se comporte el acuífero, o qué actividades se pretendan mantener en la zona. Para las actividades de la zona de hoy la número 2 es la que realmente es la más recomendable. Pasamos.

Nota de la transcriptora:

Se pasa a la laminilla número 15.

Luis Santos:

La alternativa sería, seguir monitoreando estos pozos que estaban en el recuadro. Darle mantenimiento a los sistemas que ya están existentes. O sea, los que están en la zona, si están usándose, pues hay que asegurarse de que sigan dándole el mantenimiento para que sigan cumpliendo con los estándares de calidad de agua y establecer controles institucionales. Con controles institucionales me refiero a que cuando viene una facilidad, viene un industria, viene una entidad, a pedir permiso para el uso de ese recurso, yo le voy a poner unas restricciones. O te digo que no, o te digo que sí. Si te digo que sí te digo "tienes que cumplir con esto, esto y esto". Y el cumplimiento lo que me lleva es a que la salud, el agua que se recibe, que se usa, que llegue a las personas, y cualquier impacto al medio ambiente sea salvaguardado. Que es la función principal.

Nota de la transcriptora:

Se pasa a la laminilla número 16.

Luis Santos:

He tratado de hacer una presentación lo más sencilla posible, no es que el estudio sea sencillo, simple y sencillamente para efectos de presentación traté de hacerla sencilla. Y lo que quiero que se lleven en este momento es que aun cuando lo que está saliendo por el grifo de su casa no fue contemplado en este estudio, aquí hay personas que están interesadas en saber qué es lo que pasa con eso que sale por el grifo y yo tengo personas en la audiencia que nos pueden aclarar, para la tranquilidad de las personas que tengan

dudas. El agua que le está llegando a ustedes no tiene detecciones y las aguas que fueron estudiadas actualmente no se están usando, no se están sirviendo. Esos pozos no están en uso.

Brenda Reyes:

Bueno, una vez finalizada la presentación del compañero Luis Santos, les quiero recordar varios asuntos antes de pasar a la sesión de preguntas y respuestas. Una de éstas es que nos encontramos en un período de comentario público. ¿Qué significa eso? Que ustedes pueden comentar sobre el Plan Propuesto. Ese período de comentario público culmina el 18 de agosto a la medianoche. Los comentarios de ustedes lo pueden enviar por escrito. La dirección está en la página del caso de Superfondo de Dorado. Pero también nos lo pueden enviar por correo electrónico al compañero santos.luis@epa.gov Aquí está. Y a reyes.brenda@epa.gov si no lo consiguen a él o le rebota. Sugiero que nos copien a ambos. Los documentos están en la biblioteca pública de Dorado. También hay un lugar en la página web. Como les dije es www.epa.gov/superfund/dorado-ground-water-contamination. Usted escribe Dorado Groundwater Contamination Superfund así en el buscador en Google y le va a llevar. Así que eso es bien importante que se lleven esa información. Si no miren, yo tengo la hoja aquí, que pueden tomar una foto. También tenemos los documentos disponibles para revisión en la oficina de la EPA. La oficina está cerrada. Por esa razón, pues en este caso particular hacemos hincapié en la Biblioteca Municipal de Dorado o que los busquen de forma electrónica. Igual si necesitan ayuda, una llamadita, un email y con mucho gusto Luis y yo estamos aquí. Bien importante, si alguno de ustedes, alguna comunidad en particular, y sé que tenemos aquí una

legisladora municipal, que se nos acercó, si alguno de ustedes quiere alguna reunión, quieren que llevemos esta presentación a su comunidad, dentro de este período de comentario público, ustedes quieren reunirse con nosotros, Luis y yo estamos en la mejor disposición de sentarnos con ustedes, en su lugar, en su comunidad, sabemos que hay unas restricciones por el asunto del COVID, pero siempre en la mejor disposición de aclarar las dudas para que ustedes se vayan, no solamente de aquí hoy, si no, si quedara algo adicional, lo podamos contestar. Así que, con eso, le doy paso a la sesión de preguntas y respuestas. Importante, se identifican en este micrófono. Nosotros acá contestamos. Tenemos los compañeros de otras agencias también aquí disponibles. No dominen el tiempo, por favor. Porque es bien importante ser conciso en la forma en la que preguntan. Pueden hacer fila, mantengan su distanciamiento. Recuerden nombre primero. Muy importante, nombre.

María de los Ángeles:

Hola a todos. Mi nombre es María de los Ángeles. Me acabo de mudar acá a Dorado. Entonces yo quería hablar con ustedes porque principalmente la semana pasada, esto es lo que estaba saliendo de mi bañera y de mi cocina. (Nota de transcriptora: María de los Ángeles presenta 2 frascos con agua). Entonces los traje los dos. Uno se los voy a obsequiar a ustedes, porque yo, independientemente, I'm going to do testing on this one. So, I brought this so everybody knows. This is what was coming out of my tub last week and my kitchen. I also have video of this. So, I'm going to give one of this to the EPA, so you can hold on to it and test it. And I'm going to do an independent testing. Because all that you're saying, I understand that the water....Entiendo que el agua que se toma no

fue incluida en este estudio y me gustaría aprender más porque creo que para nosotros también poder combatir el COVID, ¿verdad? el agua no puede estar así. Y menos de una casa. Hablé con muchos de los vecinos y muchas de las casas de ellos me dicen que esto pasa todo el tiempo, pero nadie dice nada.

Nota de la transcriptora:

Una señora del público pregunta "¿Dónde es tu comunidad?"

María de los Ángeles:

No lo puedo decir por mi seguridad, pero yo si tuviera el mapa ahí, le puedo decir de donde nosotros recibimos el agua. Porque de verdad que quiero saber más al respecto.

Brenda Reyes:

¿Esa es la que sale del grifo?

María de los Ángeles:

Del grifo.

Brenda Reyes:

Ok, perfecto. Pues, Carmen, si quieres contestar esta pregunta. También aquí tenemos al compañero Javier Torres del Departamento de Salud. ¿Aquí hay algún representante

de la Autoridad de Acueductos y Alcantarillados? Usted se suple de agua de la Autoridad de Acueductos y Alcantarillados y me gustaría entonces si la Autoridad de Acueductos y Alcantarillados pudiese contestar esta pregunta. Porque esto no tiene que ver con el área de estudio y con lo que estamos aquí hoy, pero quiero que la pregunta se conteste.

María de los Ángeles:

Si es muy importante. ¿A quién le obsequió esto? (Nota de la transcriptora: Se refiere al frasco de agua)

Brenda Reyes:

Lo puedes dejar aquí.

Edgardo Bermúdez:

Edgardo Bermúdez, por parte de la Autoridad de Acueductos y tenemos a los demás compañeros que nos acompañan en el fondo del salón. Definitivo que esa no es la calidad de agua que nosotros debemos estar sirviéndole a nuestro pueblo. Eso no es aceptable. De hecho, sería conveniente que nos deje saber dónde es que ella reside porque nosotros tenemos un sistema que diariamente se está monitoreando la calidad del agua, se le hace análisis y se confirma de que esté en cumplimiento. Por eso en este momento es sumamente importante nosotros conocer la fuente de dónde ella tomó esa agua. En el área de Dorado el sistema actualmente se suple desde el Superacueducto. Y el Superacueducto es el mismo agua que está repartiendo, son

aproximadamente 100 millones de galones que se van repartiendo en toda la costa norte hasta llegar al área metropolitana con 60 millones de galones. Me interesaría sobremanera poder identificar la fuente.

Carmen Guerrero:

Y en ese sentido, pues, no queremos que la ciudadana tenga que identificar la comunidad, pero que sí en un aparte, o en calidad de anonimato podemos trabajar para recibir esa información. Obviamente, hay unos altos niveles de turbidez en el agua. Definitivamente, como dijo el compañero, no cumple con los requisitos, o sea que hay que evaluarlo, pero que es importante saber la frecuencia que está ocurriendo esto. Como nos dijo, pues sus vecinos informan que esto pasa con mucha frecuencia y a la misma vez saber de dónde es. Pero lo podemos hablar en un aparte o lo puede enviar. Y esto se lo decimos a la ciudadanía. Nosotros también recibimos querellas ciudadana a través de e-mail, a través de distintos sistemas de servidores que tiene la agencia. Hay otro que se llama "Reporta una Violación" y se hace por internet, y puede ser totalmente anónimo, para recibir este tipo de querella ciudadana con situaciones como esta. Así que yo sé del compromiso de los compañeros de la Autoridad. Tenemos aquí al Departamento de Salud y nosotros y vamos a estar investigando lo que pueda estar ocurriendo en ese caso.

Edgardo Bermúdez:

Hablamos al final. Gracias.

Brenda Reyes:

Gracias. Bueno, próxima pregunta. Recuerde decir su nombre.

Guillermo Fernández:

Mi nombre es Guillermo Fernández. Soy presidente de una organización sin fines de lucro comunitaria, comunidad San Carlos Incorporada. Realmente a mí me preocupa mucho, igual que a todos los que estamos aquí presente, la situación de la impureza del agua. A mí me gustaría irme con una respuesta concreta de qué es lo que piensan hacer con los pozos contaminados. Porque la verdad que no la tengo ahora.

Brenda Reyes:

Bueno, estamos aquí para la reunión pública, presentar el Plan Propuesto. ¿Usted ha visto el Plan Propuesto?

Guillermo Fernández:

No, no lo he visto.

Brenda Reyes:

Bueno pues, le invito a que vea el Plan Propuesto. Si quiere, yo me siento y le copio ahora dónde está el documento disponible. Como indiqué, está disponible en la Biblioteca Municipal de Dorado. Estamos aquí para contestar las preguntas. Si usted revisa el Plan Propuesto y tiene preguntas también, luego de eso, con gusto se puede

comunicar con nosotros. Luis y yo nos podemos sentar a contestar esas preguntas. Pero quizás la parte más importante sería que usted viera el Plan Propuesto. Porque la presentación lo resume. El compañero lo resumió aquí. Pero lo más importante sería que usted pudiese ver el Plan Propuesto. Luis.

Luis Santos:

Básicamente, el plan no propone extraer agua, limpiarla y devolverla. Eso no es lo que es. Esa fue una de las alternativas que se analizó. Pero no es la que se adapta al día de hoy. El plan lo que propone, es monitorear, seguir monitoreando estos pozos que dieron estas detecciones. Ver cómo es su comportamiento. Si siguen bajando, como históricamente ha pasado, o si de momento hay un pico que empieza a alarmar la situación. Y de ser así , evaluar y cambiar la alternativa. Porque una vez ahora mismo tenemos un Plan Propuesto que lo podemos terminar en un Récord de Decisión para septiembre 30. Pero, cambian las circunstancias a la luz de este monitoreo, viendo la atenuación natural que se ha estado reportando en la zona durante los últimos 15 o 20 años. La cantidad que había en los resultados hace diez años, hace 15, hace 20, era mucho mayor. La naturaleza ha hecho su efecto. Por lo tanto, lo que te proponemos es seguir monitoreando la acción de la naturaleza. Ver si en ese proceso de monitoreo detectamos que hay algo que se sale de los parámetros. Y, de todos modos, esa acción de la naturaleza no es solo así, sí hay controles institucionales, los cuales se escribirían en el documento, en el Record de Decisión, donde se le dice "si hay alguna entidad que desea activar uno de estos pozos, puede ser que se le diga que no, pero si se le dijera que sí, en base a los resultados que se han recopilado y se siguen

recopilando, pues usted tiene que hacer esto, esto y esto para poder utilizar esa agua." Actualmente no se está usando. Es un recurso que está allí disponible, pero no se está usando. Y él mismo se ha ido limpiando.

Guillermo Fernández:

A mí me gustaría también señalar que en ocasiones en mi casa, por ejemplo, tú abres el grifo, la llave, y las aguas salen blancas. Un color blanco que no es natural en el agua. Alguien me dijo a mí que eso era por exceso de cloro en el agua. A mí me gustaría que, como aquí están los representantes de Acueductos y Alcantarillados, que explicaran, por ejemplo, a qué se debe que las aguas salgan así blancas. Como si tuvieran leche.

Juan Carlos Pérez:

Bueno, buenas tardes, mi nombre es Juan Carlos Pérez, soy el Subdirector de Cumplimiento Ambiental para la Autoridad de Acueductos y Alcantarillados. Habría que ver particularmente el caso, pero tradicionalmente y normalmente cuando ocurre ese caballero, el comportamiento del agua blancuzca no es por exceso de cloro. El cloro es un parámetro que también se monitorea tanto en la salida de la planta como los diferentes puntos de distribución. Normalmente, a lo que se debe ese color blancuzco, es a microburbujas de aire. La prueba más más sencilla es utilizar un vaso de cristal o un envase transparente y va a ver como ese color blancuzco se va desapareciendo y son microburbujas de aire. No obstante, obviamente, sería interesante ver el caso en particular donde está ocurriendo para descartar cualquier situación. Pero

tradicionalmente, es ese el comportamiento y eso es microburbujas de aire. Porque de alguna forma pudiese estar - para dar un ejemplo - las plumas de las casas que tienen los difusores lo que hacen es eso. Por eso es que esa agua se ve más blanca que el agua. Si uno abre la manguera de la casa, esa agua sale transparente porque no tienen ese proceso de difusión de aire. Pero es típicamente eso. Buenas tardes.

Brenda Reyes:

Próxima pregunta.

Lic. José Luis Fernández Pagán:

El licenciado José Luis Fernández Pagán. Yo vengo en carácter personal, pero también soy del Partido Independentista Puertorriqueño. Una de las grandes preocupaciones, y no tengo ningún problema con decir en donde yo vivo, es en la Urbanización Los Montes. Ahí está Guarisco y está Espinosa. Está la cementera. Número uno, una de las cosas que tenemos es eso, que el agua sale blanca y eso es constante. Otra de las cosas que tenemos y es, claro está el Proyecto este de la EPA para la cuestión de control de calidad de agua, que me gustaría ver entonces el proyecto. Pero también me llama mucho la atención el efecto que estamos teniendo de presión de agua. Ya que están los compañeros de Acueductos, esto es constante aquí en Dorado. En Dorado somos una población de 36,000 habitantes y constantemente se nos va el agua. Últimamente se va más frecuentemente y cada uno de nosotros lo estamos experimentando. Una de las cosas que se nos ha dicho es que la cementera utiliza un pozo y ese pozo nos quita presión de agua. Porque como ellos necesitan

constantemente agua para el proceso de la San Juan Cement, procesos de su producto. Y entonces están utilizando del pozo de Maguayo. En esta semana se ha ido el agua. En este mes se ha ido 3 o 4 veces. Y no solamente en Espinosa, es en Maví, es aquí mismo en el pueblo. Eso sin hablar tampoco de la parte de la corriente eléctrica, que también en cada una de las estaciones de Acueductos pues se quedan. La última vez que se nos fue el agua, se ha ubicado que ha habido avería en el área de Higuillar, que se han roto alcantarillados y también se nos ha dicho que se suplen de una planta eléctrica para bombear agua. Porque en el área que nosotros vivimos, es donde estaba Safari Park y ese es un área alta, y entonces para nosotros recibir agua, si no hay una bomba que nos de presión no llega. Tú sabes lo que es tú estar en una casa de dos niveles, los baños están arriba para bañarse y tú tener que irte dos o tres días sin bañarte. Aún con la cisterna, porque también tú sabes que si estás usando la cisterna, no hay presión de agua. Esto es una cosa que es inconcebible. Aquí en esta población de Dorado, que es una población que hay muchas, muchas personas de más de 50 años. Es algo que hay que darle prioridad. Y yo entiendo que tanto los compañeros de Acueductos como también la EPA, que agradecemos que haga estos estudios, a lo mejor uno de esos pozos se puede dedicar a la cementera y lo liberan a nosotros para poder utilizarlo. Como bien dice el Sr. Luis Santos que hay pozos y si hay empresas que necesitan utilizar esos pozos, pues miren que los utilicen estas empresas. O sea, libérenlos o díganle que utilicen estos pozos acá y vamos a dejar estas otras reservas de agua que tenemos para la comunidad. Gracias

Brenda Reyes:

Tomamos su comentario. Queda para el record aquí en la transcripción y sobre los asuntos con Acueductos pues, licenciado, le sugiero que dialogue con ellos aquí aparte.

Yamira Colón:

Buenas noches a todos y a todas. Tengo mil preguntas y crucifiqué el estudio. Yamira Colón, legisladora municipal, y también residente de aquí del pueblo en Dorado. Tengo miles de preguntas, pero por respeto a los compañeros y el tiempo apremia. Voy a hacer dos preguntitas por aquí y es que en esta área donde ustedes han estado realizando los estudios incluye lo que es propiedades residenciales, agrícolas, comerciales e industriales. ¿Cómo la alternativa que ustedes favorecen la número 2, pudiera repercutir...? ¿Qué consecuencias pudiera tener a los residentes, a lo cuerpos agrícolas, comerciales e industriales del área? Si alguna.

Luis Santos:

La misma que está en el momento. Porque ellos no están utilizando ese recurso y están sobreviviendo y están recibiendo agua ninguna. Al contrario, si el estudio, si los monitoreos, revelan que las condiciones mejoran, entonces habría una opción mayor de un recurso de agua usable. Pero al día de hoy nada.

Carmen Guerrero:

O sea que los residentes que están cerca del área no deben tener ninguna preocupación de que va a pasar nada porque ustedes estén hacen 18 años trabajando con esto.

Luis Santos:

Como siguen viviendo van a seguir viviendo. Nada va a pasar. Al contrario, sí se podría mejorar. Conociendo las características del agua en la zona y monitoreándola ya como parte estructurada, podemos definir cuándo esa agua puede estar lista para ser consumida. Y que puede inyectarse al sistema individual o colectivo.

Yamira Colón:

Perfecto. Y la segunda pregunta es del estudio no se desprende la consecuencia o el factor que genera esto. No hay una prerrogativa que diga que estos contaminantes que se han encontrado, estas sustancias, se identifican por algo, no se puede identificar.

Luis Santos:

No.

Yamira Colón:

A mí me preocupa porque en Dorado ha estado últimamente, un desarrollo bastante avanzado. Construcciones, a veces, no necesariamente con planificación estratégica. Hay unas construcciones desmedidas. Usted sabe que nosotros, y aquí también sale,

nosotros somos parte del Carso Norteño, de la zona cársica de Puerto Rico, donde hay acuífero y donde es el primer productor de agua en Puerto Rico. Así es que a mí me preocupa que esas construcciones, porque como usted también dijo, ahí en la gráfica, en esa línea por ahí de la autopista número 22, se han hecho demasiadas construcciones, que eso eventualmente me gustaría, en otro estudio futuro, o en los análisis que van a estar haciendo, que se pueda detectar - yo sé que es difícil, porque ustedes mismos lo dicen aquí, que no han podido identificar sobre qué, pero me preocupa ese quizás desarrollo desmedido que quizás un desarrollador compra aquí 90 cuerdas de terreno y empiezan a cortar los mogotes del Carso Norteño y que eso tenga repercusiones después en nuestras aguas. Así es que quería saber si creen que en algún momento se puede identificar cuál es el factor de esos contaminantes.

Luis Santos:

Bueno. En los estudios que se hicieron durante el período del 2017 y se completaron en el informe del 2020, la fuente no se identificó. Y se trató. Y antes de eso se hizo lo que nosotros llamamos un estudio de posibles responsables y se hizo una lista de más de 30. Se fue uno por uno, uno por uno, levantando actividad, años, consecuencias, y lamentablemente, ninguno arrojaba una contundencia para decir éste fue. Eso no quita que al traer esto a colación pública alguien tenga una información que a nosotros no llegó, la trae y el staff legal y el staff técnico, que no es el que estamos estudiando, sino el que se dedica a analizar posibles responsables, pueda agarrarse y quizás lograrlo. Pero lamentablemente, esta situación se remonta al siglo pasado. A los finales del siglo pasado. O sea, que mal tasados, son 30 años. O sea que, es posible que esa fuente y

ahora tráela al día de hoy lo más que puedo hacer es decir cómo está y cómo voy a usar lo que está para el uso mejor, para salvaguardar la salud y el medio ambiente. Es lo que yo puedo decir en este momento. No puedo decir más nada.

Yamira Colón:

Pues muchísimas gracias. Voy a tomar la palabra por si acaso necesitamos una reunión adicional y cualquier cosa que estemos pendientes, porque estamos en las comunidades, que yo tenga conocimiento propio de que algo así pase voy a ir rápido a donde ustedes para alertarlos. Así que muchas gracias por la oportunidad.

Brenda Reyes:

Sí, como te dije, nos puedes solicitar la reunión vía correo electrónico. Así pues, le dejamos saber a Carmen dónde vamos a estar y qué vamos a estar haciendo. Bien importante también recopilar en esa reunión las preocupaciones de ustedes. Recuerda que el periodo de comentario público es hasta el 18 de agosto, que de darse una reunión sugiero que sea los próximos días, hacia la semana que viene.

Luis Santos:

Ya yo tuve una conversación con ella antes de empezar la presentación y yo la exhorté a que todos esos comentarios que ella tiene del Plan Propuesto los plasme en un escrito y nos los envíe. Porque todas las dudas que están allí se van a considerar.

Carmen Guerrero:

La pregunta de la fuente es bien importante. Yo creo que Luis la explicó muy bien. O sea, se investigaron decenas de lugares y no se dio con una posible fuente de estos contaminantes al área del acuífero superior. Sí, es importante saber que dentro de este monitoreo a largo plazo, dentro de la alternativa 2 que se seleccionó, se va a poder ver si continúa esa atenuación natural que está ocurriendo, que es que los niveles de contaminación están bajando, en todos estos pozos. Ahora, si vemos un aumento, eso también nos va a ayudar a identificar, la fuente que está por aquí todavía. Pero como lo que se ha visto en estos últimos años es que continúa la reducción, y ese acuífero es un acuífero que el agua se mueve bien rápido, hacia el este y hacia el norte, pues, naturalmente el sistema del acuífero está limpiando el área y está diluyendo esos niveles a llevarlos a que en algunos de los pozos ya no se detectan niveles que están en incumplimiento con los estándares de calidad de agua. Pero esa es la importancia que por los próximos 18 años vamos a continuar monitoreando esta área a largo plazo.

Luis Santos:

Sí, porque la data que hay es de estudios anteriores. El estudio de nosotros lo que tiene son dos eventos. Es muy poco para tu decir tendencia, pero sí nos puede sugerir eso junto con lo demás data que había. Pero una vez seleccionada la alternativa, hay que hacer un diseño para muestrear o trimestral, o 2 veces al año, o los primeros 5 años cada tres meses, luego se pasa a dos veces al año. A medida que vienen los resultados, pues entonces o miramos a 3 meses o nos vamos anual. Pero va a haber la data para saber el comportamiento. Lo que tenemos no nos permite comportamiento,

nos da una idea. Y esa alternativa no es a ciegas. Es porque estamos analizando todo el muestreo que hay, toda la data que hay, que no es de nosotros, pero es buena para analizar. Y los dos eventos, que son pocos pero complementan el proceso de pensamiento, de diseño. Es decir, esto es lo que nos conviene a hoy. Recuerden que estamos hablando hoy 2021. Yo no puedo decir lo que nos va a convenir en el 2022. Pero si hago ese diseño estructurado, yo sí te puedo decir "mira lo que estábamos, es cierto. No, no estábamos en cierto. Vamos a modificarlo". Y es activo, es dinámico, el cambio. Estos procesos de Superfondo se toma un récord de decisión, sí. En base a la data mejor que hay. Pero eso no quita que se haga enmiendas, como ya yo he tenido que hacer enmiendas en mis proyectos. Se decidió una solución en un proyecto que yo tenía en Juncos, hubo una data nueva, se hizo una enmienda y no pasa nada. ¿Por qué? Porque aquí lo que estamos buscando es la salud y el medio ambiente. Somos dinámicos. No somos cerrados, no somos piedra.

Brenda Reyes:

La próxima pregunta. Recuerde identificarse.

Santos González:

Santos González, Dorado del Mar. Basado en la información que hemos recopilado hoy, los dos pozos de Nevárez y Santa Rosa se están usando en estos momentos. Eso es lo que entiendo. Creo que debe promoverse de alguna forma que ustedes son unos expertos en esto, unos filtros para eliminar los clorinados, que básicamente bajo el flujo de desarrollo del agua que se va a aumentar...

Brenda Reyes:

Péguese un poquito al micrófono. Si se puede pegar un poquito al micrófono para beneficio de la transcripción.

Santos González:

¿Por qué, no se oye?

Brenda Reyes:

Sí

Santos González:

Basado en el desarrollo de Dorado, la población crece todos los días. Estos dos pozos que tenemos ahora mismo, que se están usando, necesitan tener algún tipo de filtro, porque eventualmente el flujo va a aumentar y va a traer con esto contaminantes que están escondidos en algunos otros sitios. Por lo tanto, yo creo que la EPA tiene las herramientas necesarias para promover los filtros a estos dos pozos que tenemos usando ahora mismo.

Luis Santos:

Gracias. Antes de irse, deme su nombre.

Santos González:

Santos González Dorado del Mar.

Carmen Guerrero:

Queríamos verificar si Acueductos o Salud quería también añadir a esa pregunta. Estos dos pozos al que se refiere Don Santos, específicamente, están en cumplimiento y se permite su uso. Están aguas arriba en ese acuífero, gradiente arriba, así que no están influenciados por ese plumacho de contaminación que está en el área de Maguayo. No sé si horita se puede ver el mapa. En el mapa pueden ver que donde está ese plumacho de contaminación de estos solventes están al norte de los dos pozos al cual hacían referencia, que es Nevárez y... No sé si Acueductos. ¿Estamos en la línea que es o hay algo más que quieran añadir Salud o Acueductos sobre estos dos pozos? Algunos recordarán que durante el huracán María se estaba utilizando agua de estos pozos y eso generó confusión de si esto estaba relacionado con el lugar Superfondo y se pudo aclarar de que son pozos distintos. Y yo creo que es importante volver a aclarar.

Luis Santos:

Antes de que el compañero nos enriquezca la conversación. (Nota de la transcriptora: Luis señala hacia el mapa en la proyección) Es bueno señalar que abajo yo tengo uno que es lila, pero allá arriba yo tengo uno que también es lila, que ese se llama San

Fernando, San Antonio. El contaminante que predomina en aquél es diferente al contaminante, aunque son los dos contaminantes "of concern", el que yo tengo arriba en el San Antonio es el Tricloroetileno. Que es TCE, y el que tengo abajo es el Tetracloroetileno que es PCE. O sea que estamos hablando de un sistema complejo donde, independientemente, estamos hablando del mismo contaminante en cuestión. En unos lugares hay una tendencia, lo que indica lo que me podría indicar de que son dos fuentes diferentes y bajo lo que se está proponiendo, yo me podría asegurar de qué fuente es y cómo se comporta. Porque vuelvo y digo, lo que tenemos es dos eventos de muestreo que no es suficiente. Pero junto con lo que había antes, pues nos da la idea para poder saber por dónde empezar.

Hon. Carlos López Rivera:

Edgardo Bermúdez, director del área de cumplimiento de la Autoridad de Acueductos. Como dijo la Sra. Guerrero, es básicamente, voy a repetir lo mismo. Tanto el pozo Santa Rosa como el pozo Nevárez son los únicos dos pozos que estamos utilizando en el área. Ellos están fuera del plumacho de contaminación que ha sido detectado. En adición, para tranquilidad de los residentes, esos pozos también son muestreados. Sobre todo, Santa Rosa es un punto de llenadero, no sé si han visto que tenemos una jirafa, que para nosotros poder utilizar esa jirafa tenemos que hacerle una serie de muestreos químicos que son sometidos al Departamento de Salud, que es lo que nos garantiza la calidad del agua que estamos viendo. Gracias.

Marisa Reyes:

Buenas tardes, gracias por la presentación, Marisa Reyes. Quería preguntar, que no se menciona en la presentación, probablemente está en el plan y lo revisaré más adelante. No he tenido tiempo para leerlo. Quisiera saber si se van a muestrear todos los pozos que están actualmente, que se hicieron el muestreo, o solamente van a tener un muestreo de los de la franja violeta, del cuadrado, especialmente por ese asunto de que el agua se mueve y viaja a través de toda las zonas. Saber si van a mantener un monitoreo amplio o segmentado. Y la otra pregunta es que no se mencionó cuál es la alternativa 3 y me gustaría saber también cuál es la alternativa 3. Gracias.

Luis Santos:

Los que van a estar en el plan de monitoreo y verificación de atenuación, son los que están en el cuadro lila. Los demás podrían ser muestreados dependiendo cuáles fueron los resultados que se van obteniendo en eso. Vamos a la fuente, vamos al que está en peor condición. Los demás hay detecciones, pero son detecciones bajas. Son detecciones que realmente no ameritan el recurso de incluirlo. Nos mantenemos en los dos recuadros. En término, ¿cuál fue la otra pregunta?

Marisa Reyes:

La alternativa 3.

Luis Santos:

La alternativa 3 básicamente es extraer, tratar e inyectar para eliminar esos orgánicos volátiles del agua.

Persona del público:

¿Esa no sería la mejor opción?

Luis Santos:

Bueno, si yo le dijera a usted que los valores que yo estoy obteniendo allí son de 200, yo les digo que sí. Pero los valores que yo tengo allí, el más que se me aleja del estándar de calidad de agua, es de 5 a 15. Si tú me dices que son 200, yo digo, usted tiene razón, la que yo estoy sugiriendo no es la alternativa. Pero como se mantienen los valores alrededor del estándar de calidad de agua, pues deme la oportunidad de bregar con esa a ver si me resulta. Si no resulta, vuelvo y digo, esto es dinámico, no resuelto. Vamos a enmendarlo. Pero sí.

Guillermo Fernández:

Nuevamente, discúlpeme. ¿Ese pozo de Nevárez que menciona, es el que está al final de Maguayo, allá arriba llegando allá al expreso?

Luis Santos:

Sí, frente a Krisy Kreme.

Guillermo Fernández:

Para María ese pozo ya estaba contaminado.

Luis Santos:

Tiene detecciones.

Guillermo Fernández:

¿No está contaminado?

Luis Santos:

Tiene detecciones. Pero las detecciones no sobrepasan los estándares de calidad de agua.

Guillermo Fernández:

En ese momento, la gente estaba buscando agua desesperadamente y se usó el agua de ese pozo, aun habiendo un letrero que decía que estaba contaminado.

Luis Santos:

¿Quién puso ese letrero? No, desconozco. Pero los resultados de nosotros dicen que hay detecciones y las detenciones son tan bajas que no afecta la calidad del agua. El

estudio está. Los muestreos se hicieron y ese es la del resultado. Quién puso el rótulo, pues desconozco.

Orlando García:

Sí, muy buenas tardes. El nombre mío es Orlando García. Soy residente del Barrio Maguayo. Prácticamente uno o dos fueron contestadas por los de Acueductos, que era el agua blanca cuando se va. También estamos sufriendo, al igual que el Lcdo. De los Montes, que se va el agua constante y se va por 5, 6, 7, 8 horas y sin aviso alguno. Y entonces se afecta uno, claro está. Pero también al igual que la de ella cuando se va el agua viene así, de ese color. Y otra cosa, el agua tiene un mal olor cuando sale del grifo y cuando uno se va a bañar pica. Le da un picor en el cuerpo. Entonces, le estaba también diciendo una pregunta a los de Acueductos. Y es que en el barrio de nosotros las tuberías son antiguas, y yo tengo 53 años, y yo nunca he visto que han cambiado la tuberías. Son de Cast Iron. Yo digo que si tiene que ver, o tiene relación, esa tubería que ya botan particulitas o algo, con el picor que le da uno en el cuerpo. Pero básicamente esa es la preocupación.

Brenda Reyes:

Gracias. Bueno, nos quedan 10 minutos. Le sugiero que entonces las últimas preguntas se hagan ahora. Y entonces, una vez culminemos aquí; nosotros tenemos que entregar las facilidades del municipio de Dorado. Así que, nos podríamos mover al área de afuera. Así que gracias a todos de antemano por estar aquí. Dígame usted.

Emmanuel López:

Bueno, buenas noches. Emmanuel López del Barrio Maguayo. Una de las preguntas es que aunque no se sabe la fuente de dónde provienen esos químicos, ¿dónde se utilizan esos químicos? ¿Para qué se utilizan? Etc..

Luis Santos:

Mal tasado, “laundry”. Mal tasado, porque puede venir de un montón de industrias que en un momento dado, para el tiempo de hace 30 años, eran más activas que ahora. Y ahora no están en circulación. Pero si fuera hoy, hoy en el 2021, yo te diría que es de un "laundry". Una lavandería.

Nota de la transcriptora:

Alguien habla fuera del micrófono y no se escucha.

Brenda Reyes:

Tendría que utilizar el micrófono. Yo les voy a agradecer. Miren, nosotros estamos haciendo la transcripción. Queremos hacer el trabajo más fácil para Smile Again. Es bien importante que las conversaciones se den dentro del micrófono. Si quieres volver a tomar aquí un lugar, fantástico, con eso no hay ningún problema. ¿Contestada la pregunta?

Emmanuel López:

Sí, muchas gracias.

Tomas:

Si mi nombre es Tomas. Con el desarrollo que lleva Dorado. ¿De dónde ustedes entienden que a largo plazo va a venir el agua para suplir todas estas residencia y otros negocios que se están creando? Porque la directora habló del agua del Superacueducto, el señor Santos añadió los pozos de Nevárez y Santa Rosa, pero todos los que vivimos aquí sabemos el desarrollo que lleva Dorado.

Brenda Reyes:

Sí, esa pregunta la tendría que contestar la Autoridad de Acueductos y Alcantarillados, de dónde va a salir el agua para suplir necesidades futuras. Nosotros aquí en el día de hoy estamos contestando preguntas relacionadas al lugar de Superfondo, de pozos de Dorado. Y yo creo que eso de desarrollo pues tendría que dialogarlo con los compañeros. Se sale del tema.

Tomas:

La otra pregunta es entonces, si el Sr. Santos y la joven, la directora, vivieran en Dorado, ¿qué precauciones tomarían durante los próximos 18 años, que es la alternativa 2, para asegurarnos la salud de la familia? Gracias.

Brenda Reyes:

Sí, la fuente de agua del Superacueducto.

Luis Santos:

Yo ahora mismo se me acabó la botellita. Fui, la llené y estoy tomando.

Carmen Guerrero:

Es importante que sepan que los pozos están clausurados. No se están utilizando para suplir agua potable a los residentes de Dorado. O sea, que ese es el mensaje principal. El agua está siendo suplida a través del sistema de distribución de Acueductos, que en su mayoría viene del Superacueducto. Sé que dependiendo de situaciones operacionales, a veces la fuente cambia, pero en esencia es del Superacueducto. Ustedes están bebiendo agua que viene de las montañas de Adjuntas, de toda esa zonas y llega al embalse Dos Bocas y de ahí entonces llega desde allá hasta acá.

Jorge Latorre:

Buenas noches a todos. Mi nombre es Jorge Latorre. Mi pregunta va dirigida a lo que está puesto en el plan bajo la alternativa 2. Que si me puede aclarar brevemente. Bajo la alternativa 2, pues dice que los controles institucionales restringirán el uso de las aguas subterráneas en las instalaciones de los pozos.

Luis Santos:

No se permitiría hincar un pozo nuevo, bajo la data que hay hasta hoy. Con la data que se levante del plan estructurado del diseño habría alguna posibilidad. Pero hasta hoy no se permitiría hincar un pozo. Y de querer usar alguno de los pozos que están hincados hay que hacerle los debidos tratamientos para asegurarse que el agua que se sirva sea de la calidad necesaria y dentro de los estándares de calidad de agua.

Marisa Reyes:

Marisa Reyes nuevamente, ¿y eso estaría restringido únicamente a la franja violeta o igual amplio al municipio?

Luis Santos:

Es a la franja violeta, porque en la franja violeta es que están las detecciones que están sobre los estándares de calidad de agua. En las otras, pues hay detección, pero no son lo suficientemente justificables para yo decirte no te voy a dar permiso. Pero eso está en recursos naturales, dar el permiso o no, en base a la data que nosotros tenemos. EPA nos dice dale o no le des permiso. Ahí está la data.

María de los Ángeles:

Tengo una pregunta. Son tres preguntas breves. ¿Cuántos pozos hay en general? Ah, María de los Ángeles. ¿Cuántos pozos hay en total?

Luis Santos:

Estudiados son alrededor de 25..

María de los Ángeles:

25 pozos estudiados. Y no estudiados, ¿cuántos son?

Luis Santos:

Lo que yo hice, lo que hicimos fue que hicimos un censo y todos los que identificamos los estudiamos. Si se nos escapó alguno desconozco.

María de los Ángeles:

Está bien. Entonces, quiero saber cómo yo puedo añadir valor a este estudio como ciudadana. Como persona que tiene inclinación tecnológica también. Porque si esto yo lo puedo ver en un "board", y yo le puedo poner luces, ¿cuántos en total hubiera? ¿Cuántos pozos? Vamos a decir 50 luces. ¿Son 50 pozos o 25?

Luis Santos:

No yo le diría que están entre los 20 y 25.

María de los Ángeles:

Entonces usted está hablando de la data que recibe. How are you measuring your data? How are you extracting your data? O sea, que saca la data ¿y a que sube?

¿Sube a un software, sube a Excel?. ¿Cómo se analiza la data y quién los estudia? Porque si yo me pudiera imaginar esto como un board. Si le enseño a un niño y le digo aquí hay 50 pozos, ¿cómo podemos resolver 25 de estos 50? Vamos a ser creativos. Entonces si uno dice, en estos 10 pozos, hay vamos a poner albóndigas, en estos 10 pozos hay sandwiches y en estos 10 pozos hay papitas. ¿Qué es lo que hay que hacer en la iniciativa para poder resolver que los sandwiches, las albóndigas y las papitas... - perdonen que se lo explique de esta manera, pero es para poder imaginar una solución, porque siempre hablamos del problema y yo como ciudadana quiero imaginar una solución y no lo puedo hacer si no sé cuántos pozos hay. Entiendo que hay 25 en el estudio, pero en total, ¿cuánto hay? ¿Cómo estamos sacando o extrayendo la data? ¿Cómo se analiza? Y ¿cómo podemos visualizarla? Para que el público en general lo pueda ver.

Luis Santos:

Cada pozo es un hijo diferente, que tiene sus propias características y fue analizado independientemente. Los resultados se tabulan en conjunto y por la zona. Pero cada pozo es un niño diferente.

María de los Ángeles:

Entiendo.

Luis Santos:

Se analizó y se estudió como un niño diferente.

María de los Ángeles:

Ok, entendido. Entonces ¿esa data viene de Acueductos o es data independiente?

Luis Santos:

No, esa data viene de una data que levantó la EPA. La EPA levantó esa data. EPA utilizó datas previas, no para el estudio, sino para validar cómo iba a diseñar el estudio que hicimos nosotros. Así que no utiliza en su estudio más allá de como "background", como referencia todo lo que había en los últimos 30 años. Se analizó para diseñar el estudio de EPA.

María de los Ángeles:

Ok. Ah, entiendo ahora lo que me está diciendo. Entonces yo como ciudadana, ¿cómo puedo añadir? Vamos a poner que hay 5 software Engineers que pueden resolver esto y visualizarlo. ¿Eso es parte de nosotros poder during the comment season... Before it closes in the 16th, if we have software engineers, that they know how to solve this issue, and they want to help solve this issue for the entire community, because we want to solve it. How do we do that?

Luis Santos:

Ok. Te dije que eran niños diferentes. Pero esos niños por las características, yo los agrupé por familias y los evalué en la familia de los que están en el cuadro lila, que son los que me preocupan y los que tengo que tomar acción inmediata.

María de los Ángeles:

Ok, ok, entiendo, entiendo. Entonces ¿sometemos el plan a ustedes comunitario?

Luis Santos:

No. Yo hice mi plan, yo sometí mi plan, yo lo pasé por riesgo, yo diseñé el remedio y yo estoy aquí discutiéndolo con ustedes.

María de los Ángeles:

Ok, entiendo.

Luis Santos:

Ustedes comentan

María de los Ángeles:

Ok. We comment. ok

Luis Santos:

Ustedes comentan. Esos comentarios impactarían el récord de decisión que la agencia va a firmar en septiembre 30 del 2021.

María de los Ángeles:

Entonces ¿la agencia también puede explicar qué tipo de tecnologías están usando para poder rectificar esto?

María de los Ángeles:

I just want to know what software engineering. Can we have a giant board that's lit up que dice "hoy este well está rojo, este hoy está verde".

Carmen Guerrero:

Yo creo que en parte, o sea no necesariamente es un software engineer. Se recoge la información a través de unos contratistas, información que buscó la EPA . Entonces se hace el muestreo en todos esos distintos pozos y esa data, los resultados que se hacen en un laboratorio, se recopilan y se ponen en una tabla, que es lo que está en el informe que ustedes tienen. Eso se continuará haciendo hacia futuro. Me encantó el término que utiliza Luis, que los pozos son unos hijos, pero cada hijo también tiene su padre y su madre, y específicamente hay unos dueños de esos pozos. Muchos de los pozos, los dueños son la Autoridad de Acueductos y Alcantarillados. Así que ellos también hacen su monitoreo en su momento. De ahí es que se empiezan a identificar estos niveles de contaminación. Acueductos tiene que hacer un monitoreo constante y

le da esos resultados al Departamento de Salud, que es la agencia que tiene la primacía, o sea, quien dirige todo el programa de calidad de agua potable en Puerto Rico y obviamente ellos comparten esa data con la EPA. Hay otros pozos que tienen otros padres y madres, que es el US Geological Survey. Esos datos también se recopilaron y de ahí tenemos información. Ese mapa que tienes ahí y que está en los documentos anejados como parte del plan, incluyen todos los pozos que hay en esta zona, ya sean de la Autoridad, del USGS y también hay unos comerciales, que era lo que horita explica Luis, que el Departamento de Recursos Naturales es quien da franquicias de agua. Que es el permiso para tener un pozo. Ese pozo puede ser industrial, puede ser residencial, puede ser agrícola y obviamente de la Autoridad. Y esos también se analizaron. Así que en ese mapa, que obviamente aquí en la pantalla, tan lejos, no se ve bien, pero recoge donde están ubicados todos los pozos que hay en toda esta zona y los que se identificaron estos problemas fueron entonces esos que están en la franja violeta donde se identificó esa plumacho de contaminación.

María de los Ángeles:

Cómo el ciudadano puede - si queremos, yo quiero ayudar a resolver esto. ¿Cómo podemos hacer un "citizens' task force" para poder resolver esto? Porque entienden lo que ustedes están haciendo. La ciencia es bien difícil. Pero también si nosotros podemos aportar nuestro poquitito a poquito, hace una diferencia enorme. Si uno pone a los niños, "let's go get some water samples" y uno les enseña a ellos por qué es tan importante preservar nuestra agua. Pero todos somos parte. Esto afecta a Dorado, esto afecta a todo el mundo, a Vega Baja a Toa Alta, a todos. Quiero saber por lo menos a

quién tengo que preguntarle. ¿Cómo puedo extraer la información de Acueductos, con la información de ustedes, y ponerlo visible en un tabulador que sea de colores? Si es rojo, este es el pozo que está sufriendo hoy. Si es verde, este se está mejorando. Porque si lo visualizamos, entonces podemos ver también nosotros mismos el impacto de nuestras acciones y la conciencia, están cambiando el mismo agua local. Si no lo vemos, no podemos cambiarlo. ¿Cómo podemos ayudar?

Carmen Guerrero:

Sí. Obviamente le damos la bienvenida a todo interés de la ciudadanía de ser parte del proceso también de ayudar a mejorar este problema. Aquí una de las cosas es que la información está. Que quizás parte del mensaje es cómo se simplifica esa información para la ciudadanía y con mucho gusto podemos trabajar con eso. La parte de poder hacer el monitoreo con estudiantes, con la comunidad, sé que es algo más complejo que habría que hablar porque hay unas coordinaciones que se tienen que hacer para poder entrar al pozo, utilizar unos equipos especializados, llevarlos al laboratorio, pero si poder explicar visualmente de una forma sencilla, "estos son los pozos en el 2021, cómo están en el 2022, en el 23," y que la comunidad y los residentes y la juventud, todos los que quieran formar parte de este esfuerzo, entiendan bien lo que está ocurriendo.

María de los Ángeles:

Sí, especialmente como usted, la escuché, lo que dijo cuando llegó de los tinglares y las playas, la importancia. Y leí en el reporte que tenemos la flora y la fauna ahí peligra

y hay bastantes en peligro de extinción. Eso a mí me importa porque eso es Puerto Rico y yo quiero salvar a Puerto Rico si yo puedo.

Carmen Guerrero:

Y hay unos esfuerzos que se hacen, quizás para integrar a la ciudadanía son más fáciles que los pozos, que es monitoreo de calidad de agua superficial. Y hay una actividad anual con la ciudadanía, que es el día de monitoreo de calidad de agua, que intercambiemos contactos, porque ese día lo coordina el Programa del Estuario de la Bahía de San Juan y colabora con un sinnúmero de entidades a través de todo Puerto Rico. Y quizás esa muestra de toma de agua puede ser en el Río La Plata, y se le puede explicar a la Junta, la conexión del Río La Plata con el acuífero. Se puede hacer una actividad educativa alrededor de eso. Y eso es más fácil para poder coordinar.

María de los Ángeles:

Muy buena idea. Aprecio la presencia de ustedes. Gracias.

Brenda Reyes:

Bueno, creo que la parte más importante es estar aquí, estar comentando y ser parte de los comentarios que recibimos en este caso específicamente de Dorado. El programa de Superfondo, lo que busca, y es mi modelo favorito de trabajo con las comunidades, porque busca el insumo de las comunidades. Son pasadas las 7 de la

noche, damos por terminada la jornada en el día de hoy. Smile Again está con nosotros hasta las 7 de la noche. ¿Tienes una sola pregunta? Rápidamente.

Gerardo Ruiz:

Buenas noches a todos, me llamo Gerardo Ruiz, soy de Trujillo Alto. Se supone que el agua esté monitoreada regularmente, se le hagan pruebas. ¿Estas pruebas están disponibles para el público? ¿En algún lugar en internet o en algún lugar?

Brenda Reyes:

Los compañeros del Departamento de Salud pueden comentarlo. Usted recibe un informe de calidad de agua en su casa. Todas las personas que nos suplimos de la Autoridad de Acueductos y Alcantarillados recibimos un informe anual. En mi casa en Guaynabo, yo lo recibo en julio. Y yo lo leo fielmente y lo guardo por un año. Te habla de turbidez, te va a hablar de Enterococcus, si había presente, eventos de distintos químicos que pudieron haber estado en el agua. Es bien importante leer ese informe de calidad de agua. Si estás en Acueductos, y recibe Acueductos, es un papel bien grande que recibes todos los años. Está disponible con tu zipcode y con tu zona. Eres de Trujillo Alto pero está disponible para todos los puertorriqueños y el que es de Dorado, pues en Dorado también con el zipcode.

Gerardo Ruiz:

¿Y en Guaynabo en qué mes del año es?

Brenda Reyes:

Perdón, el mío es 00966.

Gerardo Ruiz:

No, en qué mes del año es que te dan el de Guaynabo?

Brenda Reyes:

¿En qué mes? A mí me llega en julio. Siempre en julio o agosto. Juan Carlos, tú tienes.

Juan Carlos Pérez:

Toda la ciudadanía lo recibe entre mayo y junio.

Brenda Reyes:

Muy bien. Contestada la pregunta. Gracias a todos. Widy, gracias. Buenas noches.

Gracias al municipio de Dorado por haber, tan amablemente, prestado esta facilidad.

Buenas noches.

Juan Carlos Pérez:

Rapidito, Juan Carlos Pérez, de la Autoridad de Acueductos. También copia de cada uno de esos informes, se encuentra en la página de Internet de la Autoridad. Lo buscan bajo su área de residencia por el zipcode y aparece. Buenas noches.

Edgardo Bermúdez:

El último detalle, en caso de que se detecte algo en los muestreos, que esté fuera de los parámetros establecidos por ley. La agencia tiene que hacer una notificación avisándole las áreas que están afectadas por ese evento.

CERTIFICADO DE TRANSCRIPTORA

Yo, Aledawi Figueroa Martínez, transcriptora de Smile Again Learning Center, Corp. CERTIFICO:

Que la que antecede constituye la transcripción fiel y exacta de la grabación realizada durante la reunión celebrada en el sitio y la fecha que se indican en la página uno de esta transcripción.

Certifico además que no tengo interés en el resultado de este asunto y que no tengo parentesco en ningún grado de consanguinidad con las partes involucradas en él.

En Isabela, Puerto Rico, a 24 de agosto de 2021.

_____

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PUBLIC HEARING
DORADO WASTEWATER TREATMENT PLANT
Date: August 10, 2021
Time: 5:00 PM-7:00 PM

Proceedings start at 5:20 p.m.

Brenda Reyes:

Well then. Good afternoon, my name is Brenda Reyes Tomassini, I'm a Public Affairs Officer with the Federal Environmental Protection Agency, the EPA. [The next sentence was originally spoken in English] I want to welcome you all to our public meeting for the Dorado Superfund Site of the Dorado wells. This afternoon we are holding a public meeting to present the Proposed Plan. Today we are presenting the Proposed Plan for the Dorado Superfund Site. [The next four sentences were originally spoken in English] I'm going to go both English and Spanish. I have people here that speak both. Yeah, you speak Spanish, I know. But we have some materials in English as well. We are very grateful to the Mayor of Dorado, Honorable Carlos López, and the city administration, for providing us with the venue to hold the public meeting this afternoon and all the work that the team has put in to make this meeting possible. This is our second public meeting during COVID times. We ask that you keep appropriate distancing. (Transcriber's note: Someone speaks to Brenda off mic, and she replies "Ok, we connected them to the system, [in English] but it doesn't work that way"). Well, aside from that, I would like to go over some rules on a few very important issues during this afternoon to achieve a more effective participation. This meeting is being recorded, a transcript is being made, therefore, any comments that you make during the question-and-answer session, I am going to ask you to identify yourselves, as I just did, with your first name, last name, and

if you want to say whether you are a resident and the sector where you live. But it is very important that you identify yourself, with your first and last name when you ask the question. You may ask the questions once my colleague Luis Santos finishes his presentation. [The next three sentences were originally spoken in English] We will have a Questions and Answers session after Luis, my coworker, he's the remedial project manager, Mr. Luis Santos, finishes the presentation. You will have to say your name and where you live, if you want, if you're a resident or you represent a community, or if you're a consultant. But it is very important that you do so because we are recording this presentation and we have a transcription of the Public Meeting. We have representatives from several Commonwealth agencies. We have the Department of Health; we have the Department of Natural Resources. We are also going to have representatives from the municipality of Dorado and, am I missing anyone else? No. Very important, when you ask the question, if you can articulate it in a simple way, I would appreciate it. If you would like to ask the question and you don't want to ask it in public, I have here these index cards and these little cards where you can come, take one, write the question, leave it here and I will ask the question. Obviously, if you want to ask it anonymously, I will have to say for the record that it is an anonymous question. Other than that, is there anything else, Luis? We have the mayor who should be coming by in the next few minutes and Mrs. Carmen Guerrero, director of the Caribbean Division of the EPA. [The next six sentences were originally spoken in English] Our Director of the Caribbean Environmental Protection Division, Carmen Guerrero, will be here. She will be joining us in a few minutes. She's coming from Fajardo. She's driving from Fajardo, so I told her we would save a seat for her. During this public meeting she will be here to answer questions as well. Over the

Teams Meeting we have some experts from our Regional Office that will be joining us. They can answer questions as well. We have colleagues from Region 2 who are here at the virtual meeting through the Teams platform. My colleague Kathlynn Flynn speaks Spanish, so she can answer you in Spanish. The other colleagues can answer the questions in English. If you need interpretation, I can interpret for you. Obviously, I'm not a certified interpreter, but I do a lot of this kind of work, so I can do it today. Kathlynn is here. Thank you, Kathlynn, for being with us today. She speaks perfect Spanish. (Transcriber's note: Kathlynn says something through the computer, but the sound doesn't come through, so Brenda says, [in English] "Can you say it again?" It still doesn't come through so Brenda says, [in English] "Well there seems to be a problem with the sound but, anyways, Kathlynn is here. She will be on the conference".) [The next four sentences were originally spoken in English] We also have Luis Rivera. Luis, are you here? Luis, are you here? Ok, we had invited somebody from ATSDR, from the Agency of Toxic Substances and Disease Registry, CDC, so I think we're ready to go. Thank you all for being here and, as I said, important, when we start the questions session you can't forget to say the name because Smile Again, our contractor, is doing the transcript. There are documents that are available on the EPA website under the Dorado Superfund page. Luis is going to provide it. We have maps here. Here I have the information sheet with me, it's in English. But you can look at it, if anybody wants to browse through it, you are welcome to do so. So good afternoon and thank you very much. And I leave you here with the project manager, Mr. Luis Santos.

Luis Santos:

Thank you, Brenda. Good afternoon, my name is Luis Santos. I work for the Federal Environmental Protection Agency, EPA. I am the project manager. I took the project since 2016, when the site was nominated to enter the National Priority List. And we're going to be talking about that in the process. Before we get right into the activities, I want to mention that this is the first activity that the agency has done in person. Last year, during 2020, there was another Record of Decision, and it was all done virtually because of the pandemic issue. We want to make sure that no one gets exposed during this discussion. Therefore, it is important that you follow the general protocol measures to avoid contaminating or being contaminated. I am not wearing a mask because you are protected, but as soon as I have to talk to one of you, I am going to protect myself as well and protect you from me. All this leads me to the fact that, unfortunately, this really is serious. There are many who have died, and we sympathize with that. There are many who are suffering, and we sympathize with that. And we don't want to be part of the statistics. So, with that said, we can get right into the presentation.

Transcriber's note:

We move to the on-screen presentation. We move to slide 2.

Luis Santos:

What are we going to do? The objective of this study is to define the nature and extent of contamination of groundwater, soil, and we are also using surface water. So, we are going to take the soil, surface water that comes through the groundwater, and we are also going to evaluate these results for risk. Risk to what? To health and the environment. Next.

Transcriber's note:

We move to slide 3

Luis Santos:

The area, for reference, Dorado versus Puerto Rico. In the left column at the top is the island. In the upper part, where it's green, we have the municipality of Dorado and then we go to the area of Dorado that it comprises. In other words, we define it from the point of view of the groundwater wells in the area. We conducted a census of all the wells in the area to include them in the study. This does not mean that just because I took samples from your well, your well is contaminated, nor is it a Superfund Site. It simply means that it is in the area, and it deserves to be sampled by me. What for? To be able to define the magnitude and extent of the contamination, to put it simply. That is, all the wells. Most of the wells brought into the study have been closed since... since the last century. Since the last decade of the last century. In other words, most of them have been closed for 20 to 25 years. Why were they closed? Because they did not meet federal quality standards. That water is sold by Acueductos (Puerto Rico Aqueducts and Sewers Authority, or PRASA). That water is regulated by the Department of Health, under state and federal water quality standards. And those wells did not meet those standards. Therefore, they were shut down. But I am sampling them because what I want to know is underneath the Dorado ground, where the contamination is and what the contamination consists of. There are two wells, Santa Rosa and Nevárez, which are part of the support of the drinking water network. But those wells are being regulated by the Health Department and by whoever sells us the water, which is Aqueductos. The water that comes out of your faucet at your house meets federal and state water quality standards, regardless of whether I

am sampling those two wells as part of my study. Do we understand? I don't want... I don't want any confusion. Just because I am sampling Santa Rosa and Nevárez, it does not mean they are off-limits for use. They are simply at the site, and I want to sample them, to know magnitude and extent. Next.

Transcriber's note:

We move to slide 4.

Luis Santos:

Here. What I want to point out is what the Superfund process is. The Superfund process begins with discovering the site. As long as there is any doubt, an uncertainty about whether the site could be a health or environmental risk, it becomes a site to be taken into consideration. From there, a Preliminary Assessment is made, where we look for and gather all the existing data. If that data continues to confirm that there is a potential health and environmental problem, then the process continues. If not, it stops there. It goes through a mathematical model which is CERCLIST. It is a mathematical model that is standard, that takes all the environments that are of concern at that site. And then it adds a score that goes to 100 percent. As long as the final tabulation exceeds 29 percent, it's a candidate to go on the Nation's National Priority List of Contaminated Sites. Not that it will enter, but it is a candidate for it. From there, a site inspection is carried out. What does that entail? We look for all the available data. And if there are wells, if there is a property, it is sampled and that will add to the score and then it will be taken to the National Priority List. This case that is brought to our attention entered the National Priority List in 2016. Since that time, upon entering the National Priority List, we go to the table below. The table below takes me to the second inset. The second inset, I have here that it started,

if it was listed in '16, the remedial study and the feasibility study started... That started in '17. The final report is set as September 29, 2020, and it is part of the administrative record. This study appears in the administrative record, as well as the study of risk to humanity, the study of risk to health, to the environment, the feasibility study, to see with these results what we are going to do. How we are going to solve the problem, which goes from doing nothing, to investing the necessary amount to restore the resource. And now we are here. Look, sir, this is not written in stone. What we are presenting is the alternative that the EPA suggests and that the State as part of what Congress follows, must consent to. We work hand in hand. The project is federal jurisdiction. The state government works with us from the start, always, always, always. And every decision that is made, they endorse it and if they have any doubts, they refute it and we come to an agreement and that is what is presented. And after the State and I achieve that agreement, I make a Proposed Plan, which is what we have here. That is the plan we have here. That is what I am here to present. You have 30 days to comment on it. There will be an opportunity for questions and answers here. Everything that is said here is being recorded for the purpose of transcribing it verbatim, for the purpose of answering it and for it to be part of the record of decision. This is what we are here for. Next.

Transcriber's note:

We move to slide 5.

Luis Santos:

There I point out again that in the center line, which is on Expreso 22, that line is where the highest concentration of detection of hazardous substances, of substances, is. On that line. All the wells that are in that area are not in use. And if there were any in use,

they are complying with the standards of the Federal Environmental Protection Agency, because they are treating the water. It is being supplied already treated. During our study, we were concerned with taking samples, in those sites, if there were any, at the intake and at the outlet after treatment. And it certifies that yes, the water that is being supplied, whatever the case may be, is complying with federal standards and is complying with the State, with the Department of Health. Because this person, this entity, must submit the reports to the Health Department. What we did was that by having it as part of the study, we sampled before and after. And we confirmed what the industry is submitting to the Department of Health. That it is indeed complying and that it is fit for use. Next.

Transcriber's note:

We move to slide 6.

Luis Santos:

Here we are showing how the water reaches the subterranean layer, which is the one I am studying. I am studying this zone that says, "unsaturated zone". This is where I am studying. It is where the wells we are sampling are. That is where it arrives due to the effect of rain or due to the effect of movement in the aquifer. Both in the vertical and horizontal parts. And this is to give you, more or less, an idea of where I'm sampling. I'm sampling in the unsaturated zone. Next.

Transcriber's note:

We move to slide 7.

Luis Santos:

How does it get to La Plata River? I also sample the La Plata River. Because this water that is in the subsoil, which could have detections of contaminants, will eventually move

and reach the La Plata River and it is important for me to know if the La Plata River receives some type of contamination. In other words, if it has any type of detection of what I have already found in the unsaturated zones. And this is to have an idea of why. So, my study comprises; I sample the ground, to see how it migrated, how was the source that got there. I sampled the unsaturated water to know the quantity and magnitude of the contaminants and I sampled the La Plata River to see if there was any detection. Next.

Transcriber's note:

We move to slide number 8.

Luis Santos:

It's the same thing, this is so you can see how the wells from the surface go down and there are wells from 50 to 150 feet deep. Each well is characteristic and is different. And all the wells were sampled and where detection was found, so it was declared, "detection was found at such depth". Next.

Transcriber's note:

We move to slide number 9.

Luis Santos:

What contaminants are there, that we are concerned about? They are Tetrachloroethylene and Trichloroethylene, which are also known as PCE and TCE. These are the ones that really concerned us in the detections. Next.

Transcriber's note:

We move to slide number 10**.**

Luis Santos:

The risk results are telling us that in the well.... The only two wells... Hello!

Transcriber's note:

The mayor of Dorado arrives at the meeting.

Luis Santos:

Greetings, Mayor, would you like to...?

Hon. Carlos López Rivera:

Oh my, excuse the interruption now that the presentation has already begun. A warm greeting to all present. My thanks to the EPA officials. Mrs. Guerrero will probably be with us. We have been following up on this situation for many years and we are grateful that the EPA always maintains scientific information in a responsible manner in relation to the attention given to this situation, created by a spill that occurred quite some time ago by a company, for which it was stated that some sort of remediation was necessary. However, it is very important, and we appreciate the presence of all of you who can help to inform in an accurate way that fellow Doradeños are not consuming water from these aquifers. We currently consume water from the Aqueduct and Sewer Authority system, from the Superaqueduct. However, both the Authority and the EPA, which is responsible for these functions, have been monitoring and tabulating how this situation has been developing. That is why these hearings are important, so that we can have the information firsthand and in a scientific manner. And it is very important, and I thank you and reiterate the attendance of each one of you, that you can be informed through the information that will be provided today and in the next ones that will occur, as determined by the federal agency in charge of monitoring this situation and implementing the plan of action and attention to the situation. By bringing the correct information to our fellow citizens, we can inform them adequately, without dismissing the fact that some may, as some people did

at first in ignorance to firsthand information, think that our fellow citizens were indeed consuming contaminated water. Which, according to the information certified by the agencies, both the Authority and the federal agency, is not the case and obviously we cannot allow it to be so. But this is very important, not only for health reasons, because obviously there is the physical health of our fellow citizens, and there is nothing that goes above that. But also, as you know, Dorado enjoys a prestige and a preference for its quality of life, where many citizens of Puerto Rico and international visitors choose Dorado as their preferred place to invest and enjoy the quality of life of our municipality. If incorrect information is conveyed, this can have repercussions in job losses, in the devaluation of houses and other problems that can have truly negative effects. There will be nothing that can top the EPA, because you know the verticality and professionalism of this agency. In the case of our municipality, we have been fighting hand in hand for decades for compliance, regardless of the fact that we are not consuming the precious liquid from these aquifers. There have even been projects that at a given moment were going to be implemented and that intended to use those aquifers as a source for resources and we opposed them tenaciously, because they were going to, as they say, absorb or pull even more from what the environmental scientists call the pollution plume to our area at that time. Obviously, it starts moving naturally and that is what this meeting is for. They are the environmental scientists, not me. But it is up to me, on the one hand, to acknowledge the attendance of those that I see here, who are from different communities, from different sectors, because this will help, and to the legislators who are also present, and we thank them for their attendance, it will help to have valuable, accurate and scientific information so that when perhaps someone speculates with

information that is not scientific or accurate, we can react responsibly. Because not only does the physical life of our fellow citizens depend on it, but our economy and our quality of life depends on the correct information being conveyed. However, we will never give in to anything that threatens the physical quality and the quality of life of our people, and that is why we have always been available.

Transcriber's note:

Carmen Guerrero enters the meeting at this time**.**

Hon. Carlos Lopez Rivera:

The state director, our friend Guerrero, has just arrived. We ask her to come to the front to welcome her. We are going to give her a round of applause because we are very proud of her functions. We know each other from the Department of Natural Resources and in projects that we have worked on in what we call Playa Grande del Paraíso, together with the protection of the leatherback sea turtle, with the Chelonia Organization and other things that we have worked on together in the professional course of our lives in the service of our people. I think I have been explicit in explaining what I wanted to do, besides welcoming all of you and the officials. But I think it is necessary, since the director has arrived, to have the privilege and the honor to give her the opportunity to do the same to greet each and every one of you. Director, welcome to Dorado, paradise of Puerto Rico, where life is beautiful. Thank you.

Carmen Guerrero:

That's right. Thank you very much Mayor for the welcome and at the same time for the words that you just shared with all the residents and communities of Dorado. Good afternoon, my name is Carmen Guerrero, Director of the Caribbean Division of the

Federal Environmental Protection Agency. First of all, I want to apologize for not being here earlier, I was giving a presentation, a conference in Fajardo and it ended at 4:15 and I tried to beat the afternoon rush, but it was impossible. But I took advantage and cut through the area of highway 165, in front of the nature reserve that we were able to designate together. Truly, what a beautiful place! The beaches that today are the most important nesting beaches for the leatherback sea turtle in all of Puerto Rico. It is very important for us that you are here. I really love to see a full house, to see this room full of residents, communities, businesspeople, and people interested in this issue. It is an issue that the EPA has been working on for a long time. Hand in hand with the municipality, with the Health Department, where we have colleague Javier Torres, and at the same time with the Aqueduct and Sewer Authority and the Department of Natural and Environmental Resources. It is a collaborative effort that has been going on since the 1980s. These wells were closed many years ago, as Luis was explaining a few minutes ago. Specifically, these wells were closed in the 90's and the communities have not been drinking water from these wells nor have they been exposed to these waters. And that is very important as part of the message. The cleaning processes of Superfund sites, such as the wells in the communities of Maguayo, in Dorado Urbano. Specifically, these processes take many years and part of what we are all participating in now is giving you a report on how this evaluation process has progressed, the remediation alternatives that have been identified to address this contamination and the commitment of our agency in collaboration with other local agencies such as the Department of Health, Natural Resources and the Aqueduct and Sewer Authority, to do long-term monitoring and maintain this conversation and this contact with you to continue giving you long-term

progress reports on how the attention and reduction of the contamination levels in these wells is going. But the mayor's words were very important in the essence that this process takes a long time and that right now you can be certain that the communities are not being supplied by these wells. These wells were closed many years ago; 20 to 25 years ago and now the source that the Aqueduct and Sewer Authority uses does not come from there, it is through the Superaqueduct that comes from Arecibo. So, that is the main message. But yes, within the obligation that the EPA has, within the process of cleaning up Superfund sites, is to integrate all of you, to listen to your concerns, and that is the main purpose of this meeting. To explain to you what are the alternatives that we chose and to see what you think about them. And we have a process, and we explain the details of each one of them and your input is what is taken into consideration by both the EPA and the Department of Natural Resources to see what is going to be the selection, the future of the work plan and the proposed plan to clean up this area of contamination. Our priority is always the protection of public health and the environment. And know that this is always going to be our north and we want to work hand in hand with you for this. So, thank you very much, Mayor. You have always given us a hand in being able to use the facilities of the municipality. Your work team always gives us a lot of support in making sure that the communities know about these events. So, we want to thank you for your continued support always.

Hon. Carlos López Rivera:

Thank you on our behalf. I am not going to take more time because what is important for today's meeting will be presented, but it is fair to acknowledge that we have had to seek help from the Federal Agency for problems, not of drinking water, but of used water, and

currently we have been able to obtain an investment of 32 million dollars to correct some deficiencies in the sanitary system that also created contamination in the area, due to overflows, and that currently has already gone through the bidding process, construction has already begun and in the term of two and a half years it will be possible to remove the Dorado wastewater plant from what is known as detention. This is the result of a collaborative work we have been doing and with community leaders, especially from the community of Quintas in Dorado. We must recognize the agency's commitment to work together with the community and local governments. Well, without further ado, I give the microphone back to my colleague following protocol. I don't know if you are going to add anything.

Carmen Guerrero:

Let me add something else. Thank you, Mayor. Let's give it up for the mayor. Lastly, I would like to thank my work team. I have here with us two veterans on this issue, Luis Santos and Brenda Reyes, who for so many years have worked on the Superfund issue. On videocall and thanks to technology, we have the Deputy Director of the Division, José Font, the Director of the Remediation and Emergencies Branch, Tere Rodríguez, and several colleagues who are risk assessors who are connecting with us through the internet from New York. So, thanks to them as well for saying present and helping us to inform you, which is the priority of this effort, of this meeting. Thank you, Luis.

Luis Santos:

Thank you. Recapping on what they are saying, what they just shared and what I was presenting to you. We have the aquifer water resource. Water resource of the aquifer that is not in use. Why? Because some substances were detected more than 25 years ago

and made it necessary to remove them from use. We have the ground, because the ground is probably the route by which this pollutant, this substance, reached the groundwater. And we have the surface water, which was the one we mentioned in the last presentation. Summarizing this, (Transcriber's note: he is referring to slide number 10) of the universe of wells that we used, that were part of the study, only Nevárez and Santa Rosa are in use and are part of the drinking water system. There are detections in them, but the detections are so low that they do not represent a risk to health or the environment. For the rest, no contamination was found in ground nor in the surface waters and the others have been closed for more than 20 years.

Transcriber's note:

We move to slide number 11.

Luis Santos:

Okay, here what I want to point out is that we did two sampling activities. One was done in May, from April to May 2019. And in this one we summarize. What is in red above, in the little table above, we have Tetrachloroethylene in red and below, in blue, is Trichloroethylene. In that imaginary line that I had mentioned, were the Maguayo wells are, we can see some light-yellow tones. In those light-yellow tones, the concentrations, or the detections, are below the water quality standards. The only ones that are above the standards are the two orange ones below. Can you see them? No? These two are the orange ones. These are all yellow. The river goes with the blue outlines. Okay, you are... let's go to the highway. This is the highway. The river would be here. The values are seen in this April and May sampling.

Transcriber's note:

We move to slide number 13.

Luis Santos:

In the other sampling, which was the second stage in August 2019, it maintains the same results, more or less. In other words, although I have detections in the whole area, only those in the orange color exceed the water quality standards, which are 5 kilograms per liter. But regardless of that, they are closed. I am not consuming water from there.

Transcriber's note:

We move to slide number 13.

Luis Santos:

What I want to point out here is that in the purple contour, I have there all the wells that in one way or another have either results or detections over the water quality standards, and/or detections that are close to that number, that are of interest, so that I can make a decision on what to do with that resource. The resource is there, the resource is not being used. It could be used. That depends on what proposals come in. But with the information that we have we can tell anybody that comes to use it "you can, or you can't, or you have to use it following these procedures in such a way that we ensure health and the environment" and that the water that comes to the residence or to the industry, or to the company that wants to enable it, must comply with the water quality standards. Next.

Transcriber's note:

We move to slide number 14.

Luis Santos:

In every one of our studies, we go from doing nothing, to possible alternatives. Doing nothing is an alternative, but it was not the one we selected. The second was the one we selected, which I will explain in the next one, which is the one that is indicated. And the third one meets the objectives, but it was not the one we considered appropriate for this historical moment. It's not that it will not be necessary in the future or depending on how the aquifer behaves, or what activities are intended to be maintained in the area. For the activities in the area today, number 2 is really the one that is the most advisable. Next.

Transcriber's note:

We move to slide number 15.

Luis Santos:

The alternative would be to continue monitoring these wells that were in the box. Give maintenance to the systems that are already in place. In other words, the ones that are in the area, if they are being used, we must make sure that they continue to be maintained so that they continue to comply with the water quality standards and establish institutional controls. By institutional controls I mean that when a facility comes, an industry comes, an entity comes, to ask permission for the use of that resource, I am going to set some restrictions. Either I say no, or I say yes. If I say yes, I will tell you "you have to comply with this, this and this". And what compliance means to me is that health, the water that is received, that is used, that reaches the people, and any impact on the environment is safeguarded. That is the main function.

Transcriber's note:

We move to slide number 16.

Luis Santos:

I have tried to make as simple a presentation as possible; not that the study is simple. In other words, I tried to make it simple for presentation purposes. And what I want you to take away at this moment is that even though what is coming out of the faucet of your house was not contemplated in this study, there are people here who are interested in knowing what is happening with what is coming out of the faucet and I have people in the audience who can clarify it for the peace of mind of the people who have doubts. The water that is coming to you has no detections and the waters that were studied are not currently being used, they are not being supplied. Those wells are not in use.

Brenda Reyes:

Well, now that the presentation by Luis Santos is over, I would like to remind you of several issues before moving on to the question-and-answer session. One is that we are in a public comment period. What does that mean? It means that you can comment on the Proposed Plan. That public comment period ends on August 18 at midnight. Your comments can be submitted in writing. The address is on the Dorado Superfund case page. But you can also email it to us at santos.luis@epa.gov. Here it is. And to reyes.brenda@epa.gov if you can't contact him or it bounces back. I suggest you copy both of us. The documents are at the Dorado public library. There is also a place on the website. As I told you it is www.epa.gov/superfund/dorado-ground-water-contamination. You type Dorado Groundwater Contamination Superfund like that into the search engine on Google and it will take you there. So that's very important that you get that information. Otherwise, look, I have the sheet here, which you can take a picture of. We also have the documents available for review at the EPA office. The office is closed. For that reason,

well, in this particular case we emphasize the Dorado Municipal Library or to look for them electronically. Likewise, if you need help, a quick phone call or an email and Luis and I will be happy to help you. Very important, if any of you, any community in particular, and I know we have a municipal legislator here, who approached us, if any of you want a meeting, if any of you want us to take this presentation to your community, within this public comment period, you want to meet with us, Luis and I are in the best disposition to sit down with you, in your place, in your community, we know that there are some restrictions due to the COVID issue, but we are always in the best disposition to clarify the doubts, not only from here today, but if there is anything else, we can answer it. So, with that, I give way to the question-and-answer session. It's important that you identify yourselves at this microphone. We answer over here. We have colleagues from other agencies also available here. Do not take over the session, please. Because it is very important to be concise in the way you ask questions. You can line up, keep your distance. Remember, name first. Very important, name.

María de los Ángeles:

Hello everyone. My name is María de los Ángeles. I just moved here to Dorado. So, I wanted to talk to you because, mainly last week, this is what was coming out of my bathtub and my kitchen. (Transcriber's note: María de los Ángeles presents 2 jars of water). So, I brought them both. One I'm going to give them to you, because I, independently, [The next seven sentences were originally spoken in English] I'm going to do testing on this one. So, I brought this so everybody knows. This is what was coming out of my tub last week and my kitchen. I also have video of this. So, I'm going to give one of this to the EPA, so you can hold on to it and test it. And I'm going to do an

independent testing. Because all that you're saying, I understand that the water... I understand that the drinking water was not included in this study, and I'd like to learn more because I think for us to also be able to combat COVID, right? The water can't be like that. Especially not from a house. I talked to many of the neighbors and many of their houses tell me that this happens all the time, but nobody says anything.

Transcriber's note:

A lady in the audience asks, "Where is your community?"

María de los Ángeles:

I can't say for my safety, but if I had the map there, I could tell you where we get our water from. Because I really want to know more about it.

Brenda Reyes:

Is that the one that comes out of the faucet?

María de los Ángeles:

From the faucet.

Brenda Reyes:

Ok, perfect. Well, Carmen, if you want to answer this question. Also, we have here our colleague Javier Torres from the Health Department, is there a representative here from the Aqueduct and Sewer Authority? You are supplied with water from the Aqueduct and Sewer Authority, and I would like then if the Aqueduct and Sewer Authority could answer this question. Because this has nothing to do with the study area and what we are here for today, but I want the question answered.

María de los Ángeles:

Yes, it's very important. Who do I give this to? (Transcriber's note: She is referring to the water bottle).

Brenda Reyes:

You can leave it here.

Edgardo Bermúdez:

Edgardo Bermúdez, on behalf of the Aqueduct Authority, and we have the other colleagues who are with us at the back of the room. This is definitely not the quality of water that we should be supplying our people. That is not acceptable. In fact, it would be convenient to let us know where she resides because we have a system that monitors the quality of the water on a daily basis, it is analyzed, and it is confirmed that it is in compliance. That is why at this time it is extremely important for us to know the source from where she took that water. In the Dorado area the system is currently supplied from the Superaqueduct. And the Superaqueduct is the same water that is being distributed, it is approximately 100 million gallons that are distributed throughout the northern coast until it reaches the metropolitan area with 60 million gallons. I would be very interested in identifying the source.

Carmen Guerrero:

And in that sense, well, we don't want the citizen to have to identify the community, but that separately, or in an anonymous capacity we can work to receive that information. Obviously, there are some high levels of turbidity in the water. Definitely, as the colleague said, it does not meet the requirements, that is to say, we have to evaluate it, but it is important to know the frequency that this is occurring. As you said, since your

neighbors report that this happens very frequently and at the same time figuring out where it is from. But we can talk about it separately or you can send the information. And we tell this to all the citizens. We also receive citizen complaints through e-mail, through different server systems that the agency has. There is another one called "Report a Violation" and it is done through the Internet, and it can be totally anonymous, to receive this type of citizen complaint with situations like this. So, I know about the commitment of the Authority's colleagues. We have the Health Department here and us and we are going to be investigating what may be happening in that case.

Edgardo Bermúdez:

We will talk at the end. Thank you.

Brenda Reyes:

Thank you. Okay, next question. Remember to say your name.

Guillermo Fernández:

My name is Guillermo Fernández. I am president of a non-profit community organization, San Carlos Incorporated community. I am really concerned, as are all of us who are present here, about the situation of the impure water. I would like to leave with a concrete answer as to what they are planning to do with the contaminated wells. Because the truth is that I do not have it now.

Brenda Reyes:

Well, we are here for the public meeting, to present the Proposed Plan. Have you seen the Proposed Plan?

Guillermo Fernandez:

No, I have not seen it.

Brenda Reyes:

Well then, I invite you to see the Proposed Plan. If you want, I will sit down now and write down for you where the document is available. As I indicated, it is available at the Dorado Municipal Library. We are here to answer questions. If you review the Proposed Plan and have questions as well, after that, you are welcome to contact us. Luis and I can sit down and answer those questions. But perhaps the most important part would be for you to look at the Proposed Plan. Because the presentation summarizes it. Our colleague summarized it here. But the most important thing would be for you to be able to see the Proposed Plan. Luis.

Luis Santos:

Basically, the plan does not propose to extract water, clean it, and return it. That's not what it is. That was one of the alternatives that was analyzed. But it is not the one that fits today. What the plan proposes is to monitor, to continue monitoring these wells that gave these detections. To see how they behave. If they continue to go down, as has historically happened, or if there is a peak that causes alarm about the situation. And if so, evaluate and change the alternative. Because right now we have a Proposed Plan that we can finish in a Record of Decision by September 30. But circumstances change in light of this monitoring, seeing the natural attenuation that has been reported in the area for the last 15 or 20 years. The amount that was shown in the results ten years ago, 15 years ago, 20 years ago, was much higher. Nature has had its effect. So, what we are proposing to you is to continue to monitor the action of nature. See if in that monitoring process we detect that there is something that is out of the parameters. And anyway, that action of nature, it's not just that; yes, there are institutional controls, which

would be written in the document, in the Record of Decision, where you are told "if there is any entity that wants to activate one of these wells, it might be told no, but if it were told yes, based on the results that have been collected and are still being collected, well you have to do this, this and this in order to be able to use that water." It's currently not being used. It's a resource that's there available, but it's not being used. And it has been cleaning itself.

Guillermo Fernández:

I would also like to point out that sometimes in my house, for example, you open the tap, the faucet, and the water comes out white. A white color that is not natural in the water. Someone told me that this was due to an excess of chlorine in the water. I would like that, since the representatives of Aqueduct and Sewers are here, they could explain, for example, why the water comes out white like that. As if it had milk in it.

Juan Carlos Pérez:

Well, good afternoon, my name is Juan Carlos Pérez, I am the Deputy Director of Environmental Compliance for the Aqueduct and Sewer Authority. We would have to look at the particular case, but traditionally and normally when that occurs, sir, the behavior of the whitish water is not due to excess chlorine. Chlorine is a parameter that is also monitored both at the plant outlet and at the different distribution points. Normally, the whitish color is due to air microbubbles. The simplest test is to use a glass beaker, or a transparent container and you will see how this whitish color disappears and these are air micro bubbles. However, obviously, it would be interesting to see the particular case where it is occurring to rule out any situation. But traditionally, that is the behavior and that is micro air bubbles. Because somehow it could be - to give an

example - faucets in the houses that have diffusers, they do that. That's why that water looks whiter than water. If you turn on the hose at your house, that water comes out clear because they don't have that air diffusion process. But that's typically what it is. Good afternoon.

Brenda Reyes:

Next question.

Mr. José Luis Fernández Pagán:

Lic. José Luis Fernández Pagán. I come in a personal capacity, but I am also from the Puerto Rican Independent Party. One of the great concerns, and I have no problem with saying where I live, is in Urbanización Los Montes. Aguarisco and Espinosa are there. There's the cement plant. Number one, one of the things we have is that the water comes out white and that is constant. Another thing we have is, of course, the EPA project for water quality control, which I would like to see this project. But I am also very interested in the effect that we are having on water pressure, since the colleagues from Aqueductos are here. This is constant here in Dorado. In Dorado, we are a population of 36,000 inhabitants and we are constantly without water service. Lately it has been going out more frequently and each one of us is experiencing it. One of the things we have been told is that the cement plant uses a well and that well takes away our water pressure. Because they constantly need water for the San Juan Cement process, their product process. So, they are using the Maguayo well. This week the water service was out. In this month it has gone out 3 or 4 times. And not only in Espinosa, but is also happens in Maví, it is right here in town. Not to mention the electric current, which also stays in each of the Aqueduct stations. The last time we lost water service, it had been

reported that there have been breakdowns in the area of Gillán, that the sewers have broken, and we have also been told that they are supplied by an electric plant to pump water. Because in the area where we live, where Safari Park was, that is an elevated area, and so for us to receive water, if there is no pump to give us pressure it does not get to us. You know what it is like to be in a two-story house, the bathrooms are upstairs to bathe, and you must go two or three days without bathing. Even with the cistern, because you also know that if you are using a cistern, there is no water pressure. This is something that is inconceivable. Here in this municipality of Dorado, which is a town where there are many, many people over 50 years old. It is something that must be given priority. And I understand that both the colleagues from Aqueducts as well as the EPA, which we appreciate that they are doing these studies, maybe one of these wells can be used for the cement plant and they will release the other to us so that we can use it. As Mr. Luis Santos rightly says that there are wells and if there are companies that need to use those wells, then let these companies use them. In other words, release them or tell them to use these wells here and we will leave these other water reserves that we have for the community. Thank you.

Brenda Reyes:

We receive your comment. It remains for the record here in the transcript, and on the issues with Aqueducts, well, I suggest that you talk to them separately here.

Yamira Colón:

Good evening to all of you. I have a thousand questions and I crucified the study. Yamira Colón, municipal legislator, and also a resident here in Dorado. I have a thousand questions, but out of respect for my colleagues and time is short, I am going

to ask two little questions here and that is that in this area where you have been conducting the studies, it includes residential, agricultural, commercial, and industrial properties. How could the alternative that you favor, number 2, have repercussions...? What consequences could it have on the residents, on the agricultural, commercial, and industrial segments in the area? If any.

Luis Santos:

The same as it is at the moment. Because they are not using that resource and they are surviving, and they are receiving no water. On the contrary, if the study, if the monitoring reveals that conditions improve, then there would be a greater option of a usable water resource. But as of today, nothing.

Carmen Guerrero:

So, the residents that are near the area should not have any concern that anything is going to happen because you have been working with this for 18 years.

Luis Santos:

They will continue to live how they are living now. Nothing is going to happen. On the contrary, it could be improved. Knowing the characteristics of the water in the area and monitoring it as a structured part, we can determine when that water can be ready to be consumed. And so, it could be injected into the individual or collective system.

Yamira Colón:

Perfect. And the second question is the study does not show the consequences or the factors that cause this. There is no prerogative that says that these contaminants that have been found, these substances, are identified by something, could not be identified.

Luis Santos:

No.

Yamira Colón:

I am concerned because in Dorado there has been quite an advanced development lately. Construction, at times, not necessarily with strategic planning. There is excessive construction. You know that we are part of the Carso Norteño, of the karst zone of Puerto Rico, where there is an aquifer, and it is the first water producer in Puerto Rico. So I am concerned about those constructions, because as you also said, there in the graph, in that line over there of highway number 22, there have been too many constructions, that eventually I would like, in another future study, or in the analysis that they are going to be doing, for it to be detected - I know it is difficult, because you yourselves say it here, that you have not been able to identify what, but I am concerned about this, perhaps, excessive development that a developer could buy 90 acres of land here and begin to cut the "mogotes" of the Carso Norteño and that this may have repercussions later in our waters. So, I wanted to know if you think that at some point you can identify what the factor of those pollutants is.

Luis Santos:

Well. In the studies that were done during the 2017 period and completed in the 2020 report, the source was not identified. And they tried. And before that, what we call a study of possible responsible parties was done and a list of more than 30 was made. We went one by one, one by one, lifting activity, years, consequences, and unfortunately, none of them was conclusive enough to say, "this is the one". This does not mean that, by bringing this to the public, someone could have information that did

not reach us, brings it and the legal staff and the technical staff, which is not the one we are studying, but the one that is tasked with analyzing possible perpetrators, could take hold of it and perhaps achieve it. But unfortunately, this situation goes back to the last century. To the end of the last century. In other words, rough estimate, it is 30 years. So, it is possible that this source... and now bringing it to the present day, the most I can do is to say how it is and how I am going to use what is there for the best use, to safeguard health and the environment. That's what I can say at this point. I can say no more.

Yamira Colón:

Well, thank you very much. I am going to take your word in case we need an additional meeting and anything that we are aware of, because we are in the communities, that I receive knowledge that something like this happens, I am going to go quickly to you and alert you. So, thank you very much for the opportunity.

Brenda Reyes:

Yes, as I told you, you can request a meeting via email. That way we let Carmen know where we are going to be and what we are going to be doing. It is also very important to gather your concerns at that meeting. Remember that the public comment period is until August 18, that if there is to be a meeting, I suggest it should be in the next few days, around next week.

Luis Santos:

I already had a conversation with her before starting the presentation and I urged her to put all those comments that she has about the Proposed Plan in writing and send them to us. Because all the doubts there are going to be considered.

Carmen Guerrero:

The question of the source is very important. I believe that Luis explained it very well. That is to say, dozens of places were investigated, and no possible source of these contaminants was found in the area of the upper aquifer. Yes, it is important to know that within this long-term monitoring, within the alternative 2 that was selected, we will be able to see if this natural attenuation that is occurring continues, which is that the contamination levels are decreasing, in all these wells. Now, if we see an increase, that will also help us to identify the source that is still around here. But as what has been seen in recent years is that the reduction continues, and this is an aquifer where water moves very fast, to the east and to the north, well, naturally the aquifer system is cleaning the area and is diluting those levels so that in some of the wells we can no longer detect levels that are not complying with the water quality standards. But that is the importance that for the next 18 years we are going to continue monitoring this area in the long term.

Luis Santos:

Yes, because the data we have is from previous studies. Our study has two events. It is too little for you to say “trend”, but it can suggest that together with the other data that was available. But once the alternative is selected, we must make a design to sample quarterly, or twice a year, or the first 5 years every three months, then we move to twice a year. As the results come in, then we either look every 3 months or we go annually. But there will be data to know the behavior. What we have does not give us behavior, it gives us an idea. And this alternative is not blind. Because we are analyzing all the sampling that there is, all the data that there is, which is not ours, but it is good to

analyze. And the two events, which are few, but they complement the thinking process, the design process. In other words, this is what suits us today. Remember that we are talking about 2021 today. I cannot say what will be convenient for us in 2022. But if I make that structured design, I can tell you "look at what we were seeing, it is true". Or "no, we were not right". We are going to modify it. And it's an active, dynamic change. In these Superfund processes we take a record of decision, yes. Based on the best data out there. But that does not mean that amendments are not made, as I have already had to make amendments in my projects. A solution was decided in a project I had in Juncos, there was new data, an amendment was made, and nothing happened. Why? Because what we are looking for here is health and the environment. We are dynamic. We are not closed-minded, we are not stone.

Brenda Reyes:

Next question. Remember to identify yourself.

Santos González:

Santos González, Dorado del Mar. Based on the information we have gathered today, the two wells in Nevárez and Santa Rosa are being used right now. That is my understanding. I think that it should be promoted in some way, that you are experts in this, some filters to eliminate the chlorinates, that basically under the water development flow that is going to be increased....

Brenda Reyes:

Move closer to the microphone a little bit. If you can move little bit closer to the microphone for the benefit of the transcription.

Santos González:

Why, can't you hear me?

Brenda Reyes:

Yes

Santos González:

Based on the development of Dorado, the population is growing every day. These two wells that we have right now, that are being used, need to have some type of filter, because eventually the flow is going to increase, and it is going to bring with it contaminants that are hidden in some other places. So, I believe that the EPA has the necessary tools to propose filters for these two wells that we have using right now.

Luis Santos:

Thank you. Before you leave, give me your name.

Santos González:

Santos González Dorado del Mar.

Carmen Guerrero:

We wanted to verify if Aqueducts or the Department of Health wanted to also add to that question. These two wells that Mr. Santos is referring to, specifically, are in compliance and are allowed to be used. They are upstream in that aquifer, up gradient, so they are not influenced by that contamination plume that is in the Maguayo area. I don't know if you can see the map now. In the map you can see that where that plume of contamination of these solvents is, it is north of the two wells to which you referred, which is Nevárez and.... I don't know about Aqueducts. Are we on the correct line here or is there anything else you want to add, Department of Health or Aqueducts, about

these two wells? Some may recall that during Hurricane María water was being used from these wells and that generated confusion as to whether this was related to the Superfund site, and it was able to be clarified that they are different wells. And I think it is important to clarify again.

Luis Santos:

Before the colleague enriches the conversation. (Transcriber's note: Luis points to the map in the projection) It is important to point out that below I have one that is lilac, but up there I have one that is also lilac, which is called San Fernando, San Antonio. The pollutant that predominates in that one is different from the pollutant, although they are both pollutants of concern, the one I have above in the San Antonio is Trichloroethylene. That is TCE, and the one I have below is Tetrachloroethylene, which is PCE. So, we are talking about a complex system where, independently, we are talking about the same pollutant in question. In some places there is a trend, which could indicate to me that they are two different sources and under what is being proposed, I could make sure which source it is and how it behaves. Because I repeat, what we have is two sampling events which is not enough. But together with what we had before, it gives us the idea to know where to start.

Edgardo Bermúdez:

Edgardo Bermúdez, director of the compliance area of the Aqueduct Authority. As Mrs. Guerrero said, it is basically... I am going to repeat the same thing. Both the Santa Rosa well and the Nevárez well are the only two wells that we are using in the area. They are out of the contamination plume that has been detected. In addition, for the residents' peace of mind, those wells are also sampled. Above all, Santa Rosa is a filling point, I

do not know if you have seen that we have a boom lift, and in order for us to use it we have to do a series of chemical samplings that are submitted to the Health Department, which is what guarantees the quality of the water that we are seeing. Thank you.

Marisa Reyes:

Good afternoon, thank you for the presentation, Marisa Reyes. I wanted to ask, it's not mentioned in the presentation, it's probably in the plan and I'll review it later. I haven't had time to read it. I would like to know if they are going to sample all the wells that are currently, that were sampled, or are they only going to have sampling of the ones in the purple strip, in the square, especially because of that issue that the water moves and travels through all the zones. To know if they are going to keep a broad or segmented monitoring. And the other question is that there was no mention of what is alternative 3 and I would like to know what is alternative 3.

Luis Santos:

The ones that will be in the monitoring and attenuation verification plan are those in the lilac box. The others could be sampled depending on the results that are being obtained there. We go to the source; we go to the one that is in the worst condition. The others have detections, but they are low detections. They are detections that do not really merit the effort to include them. We are staying in the two boxes. What was the other question?

Marisa Reyes:

Alternative 3.

Luis Santos:

Alternative 3 basically is extract, treat, and inject to remove those volatile organics from the water.

Audience member:

Wouldn't that be the best option?

Luis Santos:

Well, if I were to tell you that the values that I am getting there are 200, I would tell you yes. But out of the values that I have there, the furthest from the water quality standard, is 5 to 15. If you tell me that it is 200, I say, you are right, what I'm suggesting is not the alternative. But since the values are maintained around the water quality standard, then give me the opportunity to deal with that alternative and see if it works. If it doesn't work, I come back and say, this is dynamic, not solved. We're going to amend it. But yes.

Guillermo Fernández:

Again, excuse me, the Nevárez well you mention, is that the one at the end of Maguayo, up there reaching the highway?

Luis Santos:

Yes, in front of Krispy Kreme.

Guillermo Fernández:

When María hit that well was already contaminated.

Luis Santos:

It has detections.

Guillermo Fernández:

It’s not contaminated?

Luis Santos:

It has detections. But the detections do not exceed water quality standards.

Guillermo Fernández:

At that time, people were desperately looking for water and water from that well was used, even though there was a sign that said it was contaminated.

Luis Santos:

Who put up that sign? No, I don't know about that. But our results say that there are detections, and the detections are so low that it does not affect the quality of the water. The study is there. The samplings were made and that is the result. Who put the sign there, I don't know.

Orlando García:

Yes, good afternoon. My name is Orlando García. I am a resident of Barrio Maguayo. Practically one or two were answered by those from Aqueducts, which were the white water, when there's no water. We are also suffering, just like Mr. De los Montes, that the water service is interrupted constantly, and it goes away for 5, 6, 7, 8 hours and without any notice. And that affects us, of course. But also, just like her case, when the water service goes away it comes back that way, that color. And another thing, the water has a bad smell when it comes out of the tap and when you go to take a bath it stings. It makes your body itch. So, I was also asking a question to the Aqueducts people. In our neighborhood the pipes are old, and I am 53 years old, and I have never seen the pipes changed. They are made of cast iron. I say it has something to do with it, that pipe is already leaking particles or something, with the itching that you get in your body. But basically, that is the concern.

Brenda Reyes:

Thank you. Well, we have 10 minutes left. I suggest that the last questions be asked now. And then, once we finish here; we have to turn over the facilities of the municipality of Dorado. So, we could move to the outside area. So, thank you all in advance for being here. Yes?

Emmanuel López:

Well, good evening. Emmanuel López from Barrio Maguayo. One of the questions is that although you don't know the source of where these chemicals come from, where are these chemicals used? What are they used for? Etc.

Luis Santos:

As a guess, a laundry. A guess, because it can come from a lot of industries that at one point in time, around that time 30 years ago, were more active than they are now. And now they are not in circulation. But if it were today, today in 2021, I would tell you it's from a laundry.

Transcriber's note:

Someone speaks away from the microphone, and they can’t be heard.

Brenda Reyes:

You would have to use the microphone. I will appreciate it. Look, we are doing the transcription. We want to make the job easier for Smile Again. It's very important that the conversations happen through the microphone. If you want to take a turn here again, fantastic, no problem with that. Was the question answered?

Emmanuel López:

Yes, thank you very much.

Tomás:

Yes, my name is Tomás. With the development that Dorado is undergoing, where do you expect that the water is going to come from to supply all these residences and other businesses that are being created, in the long term? Because the director talked about the water from the Superaqueduct, Mr. Santos added the Nevárez and Santa Rosa wells, but all of us who live here know the development that Dorado is undergoing.

Brenda Reyes:

Yes, that question would have to be answered by the Aqueduct and Sewer Authority, where will the water come from to supply future needs. We here today are answering questions related to the Superfund site, the Dorado wells. And I believe that that development issue would be better discussed with our colleagues. It moves away from the subject.

Tomas:

The other question is then, if Mr.Santos and the young lady, the director, were to live in Dorado, what precautions would they take for the next 18 years, which is alternative 2, to ensure the health of the family? Thank you.

Brenda Reyes:

Yes, the water source from the Superaqueduct.

Luis Santos:

Just now I finished my little water bottle. I went and filled it up and I am drinking it.

Carmen Guerrero:

It is important for you to know that the wells are closed. They are not being used to supply drinking water to the residents of Dorado. So that is the main message. The

water is being supplied through the Aqueduct distribution system, most of which comes from the Superaqueduct. I know that depending on operational situations, sometimes the source changes, but in essence it is from the Superaqueduct. You are drinking water that comes from the mountains of Adjuntas, from all those areas and it comes to the Dos Bocas reservoir and from there then it comes here.

Jorge Latorre:

Good evening, everybody. My name is Jorge Latorre. My question is directed to what is included in the plan under alternative 2, and if you could clarify it briefly. Under alternative 2, it says that the institutional controls will restrict the use of groundwater in the well installations.

Luis Santos:

A new well would not be permitted to be dug, based on the data available to date. With the data from the structured design plan there could be some possibility. But up to now a new well would not be allowed to be dug. And if you want to use any of the wells that are already excavated, you must do the necessary treatments to make sure that the water supplied is of the necessary quality and within the water quality standards.

Marisa Reyes:

Marisa Reyes again, and would that be restricted only to the purple strip or as broad as the municipality?

Luis Santos:

It's restricted to the purple band, because in the purple band is where the detections that are above the water quality standards are. In the others, there are detections, but they are not sufficiently justifiable for me to tell you that I am not going to give you a

permit. But that is up to the Department of Natural Resources to give the permit or not, based on the data we have. EPA tells us to give or not to give permission. The data is there.

María de los Ángeles:

I have a question. They are three brief questions. How many wells are there in general? Oh, María de los Ángeles. How many wells are there in total?

Luis Santos:

Studied, there are about 25...

María de los Ángeles:

25 studied wells. And not studied, how many are they?

Luis Santos:

What I did, what we did was that we did a census and all the ones that were identified we studied. I don't know that we missed any.

María de los Ángeles:

Okay. So, I want to know how I can add value to this study as a citizen. As a technologically inclined person as well. Because if I can look at this on a board, and I can put lights on it, how many would there be in total? How many wells? Let's say 50 lights, is it 50 wells or 25?

Luis Santos:

No, I would tell you that they are between 20 and 25.

María de los Ángeles:

So, you are talking about the data you are receiving. [The next two sentences were originally spoken in English] How are you measuring your data? How are you extracting

your data? In other words, you extract the data and where do you upload it? Do you upload it to a software, do you upload it to Excel? How do you analyze the data and who studies it? Because if I could imagine this as a board. If I teach a child and say here are 50 wells, how can we solve 25 out of these 50 wells? Let's be creative. So if you say, in these 10 wells, we are going to put meatballs, in these 10 wells there are sandwiches and in these 10 wells there are fries, what do you have to do out of the gate to be able to solve that the sandwiches, the meatballs and the fries...? - forgive me for explaining it this way, but it's so we are able to imagine a solution, because we always talk about the problem and I as a citizen want to imagine a solution and I cannot do it if I do not know how many wells there are. I understand there are 25 in the study, but in total, how many are there? How are we pulling or extracting the data? How do we analyze it? And how can we visualize it? So that the general public can see it.

Luis Santos:

Each well is a different child, that has its own characteristics and was analyzed independently. The results are tabulated as a whole and by area. But each well is a different child.

María de los Ángeles:

I understand.

Luis Santos:

It was analyzed and studied as a different child.

María de los Ángeles:

Okay, understood. So, does that data come from Aqueducts or is it independent data?

Luis Santos:

No, that data comes from a data that EPA collected. EPA collected that data. EPA used previous data, not for the study, but to validate how they were going to design the study that we did. So, it does not use it in its study other than as background, as a reference, everything that was available in the last 30 years. It was analyzed to design the EPA study.

María de los Ángeles:

Okay. Oh, now I understand what you are telling me. So, I as a citizen, how can I assist? Let's say that there are 5 software Engineers that can solve this and visualize it. Is that part of what we can do during the comment season.... [The next sentences were originally spoken in English] Before it closes in the 16th, if we have software engineers, that know how to solve this issue, and they want to help solve this issue for the entire community, because we want to solve it. How do we do that?

Luis Santos:

Okay. I told you they were different children. But those children by characteristics, I grouped them by families and evaluated them in the family of those in the purple box, which are the ones I am concerned about and the ones with which I have to take immediate action.

María de los Ángeles:

Okay, okay, I understand, I understand. So, we submit the community plan to you?

Luis Santos:

No. I made my plan, I submitted my plan, I put it through risk, I designed the remedy, and I am here discussing it with you.

María de los Ángeles:

Ok, I understand.

Luis Santos:

You comment.

María de los Ángeles:

Ok. We comment. ok.

Luis Santos:

You comment. Those comments would impact the record of decision that the agency is going to sign on September 30, 2021.

María de los Ángeles:

So, can the agency also explain what kind of technologies they are using to rectify this?

María de los Ángeles:

[The next sentences were originally spoken in English and Spanish] I just want to know what software engineering. Can we have a giant board that's lit up that says, "today this well is red, today this one is green".

Carmen Guerrero:

I think that in part, I mean it is not necessarily a software engineer. The information is collected through contractors, information sought by the EPA. Then the sampling is done in all those different wells and that data, the results that are done in a laboratory, are compiled and put in a table, which is what is in the report that you have. That will continue to be done going forward. I loved the term that Luis used, that the wells are children, but each child also has its father and mother, and specifically there are some owners of those wells. Many of the wells are owned by the Aqueduct and Sewer

Authority. So, they also do their own monitoring. That's where these contamination levels began to be identified. Aqueducts must do constant monitoring and gives those results to the Department of Health, which is the agency that has the primacy, that is, who directs the entire drinking water quality program in Puerto Rico and obviously they share that data with the EPA. There are other wells that have other fathers and mothers, which is the US Geological Survey. That data was also compiled and that's where we have information from. That map that you have there and that's in the documents attached as part of the plan, includes all the wells that are in this area, whether they belong to the Authority, the USGS and there are also some commercial wells, which is what Luis explained earlier, that the Department of Natural Resources is the one that grants water franchises. That is the permit to have a well. That well can be industrial, it can be residential, it can be agricultural and, obviously, belong to the Authority. And those were also analyzed. So, on that map, which obviously here on the screen, so far away, you can't see it well, but it compiles where all the wells in this zone are located and the ones where these problems were identified are those in the purple strip where that contamination plume was identified.

María de los Ángeles:

How can the citizen - if we want to, I want to help solve this. How can we form a citizens' task force to be able to solve this? Because they understand what you are doing. The science is very difficult. But if we can also contribute our grain of sand, it makes a huge difference. If you get the kids, “[in English] let's go get some water samples" and you teach them why it's so important to preserve our water. But we are all part of it. This affects Dorado, this affects everybody, Vega Baja to Toa Alta, everybody. I want to

know at least who to ask. How can I extract the information from Aqueducts, with your information, and put it visible in a tabulator that is colored? If it is red, this is the well that is suffering today. If it's green, this one is getting better. Because if we visualize it, then we can also see for ourselves the impact of our actions and awareness, they are changing our local water. If we don't see it, we can't change it. How can we help?

Carmen Guerrero:

Yes, obviously we welcome any interest from the public to be part of the process to help improve this problem as well. One of the things here is that the information is there. That maybe part of the message is how that information is simplified for the citizens and we can gladly work with that. The part of being able to do the monitoring with students, with the community, I know that it is something more complex that we would have to talk about because there are some coordination that has to be done to be able to enter the well, use some specialized equipment, take them to the laboratory, but if we can explain visually in a simple way, "these are the wells in 2021, how they are in 2022, in 23," and that the community and the residents and the youth, all those who want to be part of this effort, understand well what is happening.

María de los Ángeles:

Yes, especially as you, I heard you, what you said when you came in about the leatherback sea turtles and the beaches, the importance. And I read in the report that the flora and fauna there is in danger, and many are seriously endangered. That matters to me because that's Puerto Rico and I want to save Puerto Rico if I can.

Carmen Guerrero:

And there are some efforts that are made, perhaps to integrate the citizens that may be easier than wells, which is surface water quality monitoring. And there is an annual activity with the citizens, which is the water quality monitoring day. Let's exchange contacts, because that day is coordinated by the San Juan Bay Estuary Program and collaborates with countless entities throughout Puerto Rico. And perhaps that water sampling can be in the La Plata River, and the connection of the La Plata River with the aquifer can be explained to the Board. An educational activity can be done around that. And that is easier to coordinate.

María de los Ángeles:

Very good idea. I appreciate your involvement. Thank you.

Brenda Reyes:

Well, I think the most important part is to be here, to be commenting and to be part of the comments that we receive, specifically from Dorado, in this case. The Superfund program, what it looks for -and it is my favorite model for working with the communities- because it looks for input from the communities. It's after 7:00 p.m., so we're calling it a day for today. Smile Again is with us until 7:00 p.m. Do you have a single question? Quickly.

Gerardo Ruiz:

Good evening everyone, my name is Gerardo Ruiz, I am from Trujillo Alto. Supposedly the water is monitored regularly, tested. Are these tests results available to the public, somewhere on the internet or somewhere?

Brenda Reyes:

The folks at the Health Department can comment on it. You receive a water quality report at your home. All of us who are supplied by the Aqueduct and Sewer Authority receive an annual report. At my house in Guaynabo, I receive it in July. And I read it faithfully and keep it for a year. It tells you about turbidity, it will tell you about Enterococcus, if it was present, events of different chemicals that could have been in the water. It is very important to read that water quality report. If you are with Aqueducts, and you get service from Aqueducts, it is a big piece of paper that you receive every year. It is available with your zip code and your zone. You are from Trujillo Alto, but it is available for all Puerto Ricans and the one from Dorado, well with Dorado's zip code as well.

Gerardo Ruiz:

And what month of the year is it for Guaynabo?

Brenda Reyes:

Sorry, mine is 00966.

Gerardo Ruiz:

No, what month of the year is it that you get the one for Guaynabo?

Brenda Reyes:

What month? I get it in July. Always in July or August. Juan Carlos, you have...

Juan Carlos Pérez:

All citizens receive it between May and June.

Brenda Reyes:

Very good. The question is answered. Thank you all. Widy, thank you. Good evening. Thanks to the municipality of Dorado for so graciously lending us this facility. Good evening.

Juan Carlos Pérez:

Quickly, Juan Carlos Pérez, from the Aqueduct Authority. A copy of each one of these reports is also available on the Authority's Web page. Look for it under your residence area by zip code and you'll find it. Good evening.

Edgardo Bermúdez:

One last detail, in case something is detected in the samplings, which is outside the parameters established by law, the agency must make a notification advising you of the areas that are affected by that event.

CERTIFICATE OF TRANSLATOR

I, Aledawi Figueroa, hereby certify that I translated the attached document from Spanish into English and that, to the best of my ability, it is a true and correct translation. I further certify that I am competent in both Spanish and English to render and certify such translation. Should there be a misinterpretation in the translation, the original document in Spanish will prevail.

I also certify that I have no interest in the outcome of this matter and I have no relationship to any degree of consanguinity with the parties involved in it.

In Isabela, Puerto Rico, August 31, 2021.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2

APPENDIX V- List of ARARs

Chemical-specific ARARs, TBCs, Other Criteria, and Guidance
Dorado Groundwater Contamination Site
Dorado, Puerto Rico

Regulatory Level	Name	Requirement Synopsis
Federal	EPA Regional Screening Levels for Chemical Contaminants at Superfund Sites	EPA Regional Screening Levels establish risk-based screening levels for the protection of human health.
Federal	National Primary Drinking Water Standards, Maximum Contaminant Levels (MCLs) 40 Code of Federal Regulations (CFR) Part 141	The National Primary Drinking Water Standards are legally enforceable standards that apply to public drinking water systems. MCLs reflect the technical and economic feasibility of removing contaminants from the water supply, and are set as close to drinking water quality goals as possible.
Commonwealth of Puerto Rico	Puerto Rico Water Quality Standards (PRWQS) Regulation, as amended, April 2019 R-09-04-02 Rule 1303.1 (Groundwater)	Water quality standards that are in effect for Clean Water Act purposes with the goal of enhancing, maintaining, and preserving the quality of the waters of Puerto Rico compatible with the social and economic needs of Puerto Rico. PRWQS and use classifications are promulgated for the protection of the uses assigned to coastal, surface, estuarine, wetlands, and groundwaters of Puerto Rico.

ARARs – Applicable or Relevant and Appropriate Requirements
TBCs – To Be Considered Criteria