

1.1 MONITORING PLAN
Construction period

Environmental item	Item to be monitored	Monitoring site	Frequency	Method	Party in charge
Air quality	H ₂ S - CO ₂	Borinquen Hotel and 4 sites (north, south, east and west) on the well base boundary	During testing period (weeks-one month): every three month (quarterly) and permanent monitoring station	Field measurement	ICE

CALIDAD DEL AIRE - CAMPO GEOTERMICO BORINQUEN								
Descripcion_Sitio	CO2_Min	CO2_Prom	CO2_Max	CO2_MaxStd	H2S_Min	H2S_Prom	H2S_Max	H2S_MaxStd
CAÑAS DULCES	389	394	398	5000	0,000	0,001	0,001	0,010
CASA MAQUINAS BORINQUEN	328	348	373	5000	0,000	0,001	0,001	0,010
HOTEL BORINQUEN	328	359	374	5000	0,000	0,000	0,000	0,010
HOTEL BUENA VISTA	338	354	374	5000	0,000	0,000	0,001	0,010
PLB-02	329	347	372	5000	0,000	0,001	0,001	0,010
PLB-03	325	346	372	5000	0,000	0,000	0,001	0,010
PLB-05	328	344	366	5000	0,000	0,001	0,002	0,010
PLB-09	327	345	369	5000	0,000	0,000	0,000	0,010
POBLADO BUENA VISTA	328	351	383	5000	0,000	0,000	0,001	0,010

Environmental item	Item to be monitored	Monitoring site	Frequency	Method	Party in charge
Noise	Noise level	Borinquen Hotel, one site on the well base boundary (in the hotel direction), and 4 sites (north, south, east and west) in the vicinity of the power plant site.	During testing period (weeks-one month): once/week During power plant construction: monthly (with peak time for each construction job taken into account)	Field measurement	ICE

Attachment 2

RUIDO - CAMPO GEOTERMICO BORINQUEN					
Descripcion_Sitio	Ruido_Min	Ruido_Prom	Ruido_Max	Ruido_MaxStd	RuidoLog
CAÑAS DULCES	39	43	48	65	45
CASA MAQUINAS BORINQUEN	40	49	70	65	52
HOTEL BORINQUEN	33	38	53	65	40
HOTEL BUENA VISTA	33	38	54	65	41
PLB-02	33	42	70	65	45
PLB-03	32	38	53	65	40
PLB-05	52	63	76	65	67
PLB-09	32	40	65	65	42
POBLADO BUENA VISTA	34	36	39	65	38

Environmental item	Item to be monitored	Monitoring site	Frequency	Method	Party in charge
Water quality	1) pH, Electric conductivity (EC), Chlorides (Cl-)	Upper and lower streams of the Salitral rivers, upper and lower streams within the project area (AP) of the creek running.	1) During testing period: twice/testing period (weeks-one month)	Laboratory analysis of collected samples	ICE and External laboratory to hire by ICE

Attachment 2

Geothermal Field	CG-BRQ
Monitored variable	pH Lab.

Site	Max.	Min.	Avg.
CG-BRQ --- NACIENTE DOS QUEBRADAS	7,86	5,99	6,9
CG-BRQ --- NACIENTE NAVARIT	7,87	5,71	6,8
CG-BRQ --- QUEBRADA GATA	8,12	5,36	7,3
CG-BRQ --- QUEBRADA TENCHA (PBR11)	7,93	5,76	6,9
CG-BRQ --- RIO SALITRAL	8,34	6,04	7,5
CG-BRQ --- RIO TIZATE	8,39	6,72	7,8
CG-BRQ --- TERMAL LOS PEDERNALES	7,28	5,95	6,7
CG-BRQ --- TOMA AGUA LAS LILAS	7,01	5,9	6,7
CG-BRQ --- TOMA DE AGUA PLB-02	7,97	4,66	7,3
CG-BRQ --- TOMA DE AGUA PLB-05	8,21	5,8	7,1
CG-BRQ --- LAGUNA DE ALMACENAMIENTO	7,84	3,02	7,1
Total general	8,39	3,02	7,3

Geothermal Field	CG-BRQ
Monitored variable	Cond. (µS/cm)

Site	Max.	Min.	Avg.
CG-BRQ --- NACIENTE DOS QUEBRADAS	210,9	97	154,9
CG-BRQ --- NACIENTE NAVARIT	245,4	148,9	183,7
CG-BRQ --- QUEBRADA GATA	348	115,4	214,2
CG-BRQ --- QUEBRADA TENCHA (PBR11)	263	74,5	138,2
CG-BRQ --- RIO SALITRAL	328	80,8	170,5
CG-BRQ --- RIO TIZATE	306,5	125,2	218,0
CG-BRQ --- TERMAL LOS PEDERNALES	238	138,7	165,8
CG-BRQ --- TOMA AGUA LAS LILAS	213	141,5	179,2
CG-BRQ --- TOMA DE AGUA PLB-02	432,3	70,6	118,6
CG-BRQ --- TOMA DE AGUA PLB-05	971	78,8	165,8
CG-BRQ --- LAGUNA DE ALMACENAMIENTO	885	92	275,3
Total general	971	70,6	175,7

Geothermal Field	CG-BRQ
Monitored variable	Cl- (ppm)

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Site	Max.	Min.	Avg.
CG-BRQ --- NACIENTE DOS QUEBRADAS	8	2,2	4,2
CG-BRQ --- NACIENTE NAVARIT	7,8	2	4,2
CG-BRQ --- QUEBRADA GATA	12,2	1,31	5,6
CG-BRQ --- QUEBRADA TENCHA (PBR11)	11,3	1,2	4,2
CG-BRQ --- RIO SALITRAL	27,94	1,35	6,4
CG-BRQ --- RIO TIZATE	16,1	2,2	8,6
CG-BRQ --- TERMAL LOS PEDERNALES	4,72	2,47	3,2
CG-BRQ --- TOMA AGUA LAS LILAS	11,5	3,79	5,5
CG-BRQ --- TOMA DE AGUA PLB-02	7,49	2,75	4,3
CG-BRQ --- TOMA DE AGUA PLB-05	13,1	1,42	4,4
CG-BRQ --- LAGUNA DE ALMACENAMIENTO	8,18	0,97	3,8
Total general	27,94	0,97	5,7

Water quality	2) Oils and grease,	Outlet of the settling basin (construction work effluents). Only in the presence of machinery in the project area (AP)	2) Oils and grease, every six months (semester) After 2 years, the continuation of monitoring will be reconsidered based on opinions of professional experts.)	Laboratory analysis of collected samples	ICE and External laboratory to hire by ICE

Site	Oils and grease (mg/L)	
	Standard 50 mg/L	Min Max
Q. Gata Abajo	<0,2	8
Q. Gata Arriba	<0,2	<1
Río Salitral Abajo	<0,2	4
Río Salitral Arriba	<0,2	<1
Río Tizate Abajo	<0,2	<1
Río Tizate Arriba	<0,2	<1
Tencha Abajo	<0,2	<1
Tencha Arriba	<0,2	<1
Toma PLB-02	<0,2	<1
Toma PLB-05	<0,2	<1

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Water quality	3) Hexavalent chrome (Cr+6), and Mercury (Hg) and COD	NOT APPLICABLE (NA)	NOT APPLICABLE (NA)	-----											
Water quality	4) Arsenic (As)	Only in drinking water intakes	every six months (semester) After 2 years, the continuation of monitoring will be reconsidered based on opinions of professional experts.)	Laboratory analysis of collected samples	ICE and External laboratory to hire by ICE										
		<table border="1"> <thead> <tr> <th>Site</th> <th colspan="2">Arsenic (mg/L)</th> </tr> <tr> <th>Standard 0,01 mg/L</th> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>Plantel Curubandé</td> <td><1</td> <td><2</td> </tr> </tbody> </table>		Site	Arsenic (mg/L)		Standard 0,01 mg/L	Min	Max	Plantel Curubandé	<1	<2			
Site	Arsenic (mg/L)														
Standard 0,01 mg/L	Min	Max													
Plantel Curubandé	<1	<2													
Environmental item	Item to be monitored	Monitoring site	Frequency	Method	Party in charge										
Soil	Complete analysis - Cadmium (Cd), Lead (Pb), As, Cr ⁺⁶ , Hg, etc.	Four points in the vicinity of a representative geothermal field	One year before construction starts, and once five years after operation starts	Laboratory analysis of collected samples	ICE										
		Four points in the vicinity of the power plant site	One year before construction starts, and once five years after operation starts												
Not applicable for this period. Monitoring in 2023.															
Environmental item	Item to be monitored	Monitoring site	Frequency	Method	Party in charge										

Attachment 2

Fauna and flora	Plants and animals (birds, amphibians, reptiles, and mammals)	Area in the vicinity of wells and power plant site, the project site side of the national park, and gallery forest along the Salitral river	Monthly (with rainy and dry seasons, breeding seasons, etc. taken into account)	Visual observation records and photographs	ICE
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Results of monitoring and state of conservation of species. April, May and June 2023.

Group	State of conservation		
	CITES	IUCN	MINAE N° 40548-Regulations
Amphibian			
<i>Agalychnis callidryas</i>	II		RP
<i>Cochranella granulosa</i>			
<i>Craugastor fitzingeri</i>			
<i>Diasporus diastema</i>			
<i>Hypopachus variolosus</i>			
<i>Incilius luetkenii</i>			RP
<i>Leptodactylus poecilochilus</i>			
<i>Lithobates warszewitschii</i>			
<i>Pristimantis ridens</i>			
<i>Rhinella horribilis</i>			
Birds			
<i>Amazilia tzacatl</i>	II		RP
<i>Amazona albifrons</i>	II		RP
<i>Antrostomus carolinensis</i>			
<i>Archilochus colubris</i>	II		RP
<i>Arremonops rufivirgatus</i>			
<i>Attila spadiceus</i>			
<i>Basileuterus rufifrons</i>			
<i>Brotogeris jugularis</i>	II		RP
<i>Buteo plagiatus</i>	II		RP
<i>Calocitta formosa</i>			
<i>Campephilus guatemalensis</i>			
<i>Campylopterus hemileucurus</i>	II		RP
<i>Campylorhynchus rufinucha</i>			
<i>Cantorchilus modestus</i>			
<i>Cathartes aura</i>			
<i>Catharus ustulatus</i>			
<i>Chiroxiphia linearis</i>			
<i>Chlorostilbon canivetii</i>	II		RP
<i>Ciccaba nigrolineata</i>	II		RP
<i>Ciccaba virgata</i>	II		RP
<i>Coragyps atratus</i>			
<i>Crax rubra</i>	III	VU	RP

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<i>Crotophaga sulcirostris</i>			
<i>Crypturellus cinnamomeus</i>			
<i>Cyanerpes cyaneus</i>			
<i>Dendrocincla homochroa</i>			
<i>Dendrocolaptes sanctithomae</i>			
<i>Empidonax flaviventris</i>			
<i>Eucometis penicillata</i>			
<i>Eumomota superciliosa</i>			
<i>Euphonia hirundinacea</i>			
<i>Euphonia luteicapilla</i>			
<i>Eupsittula canicularis</i>	II		RP
<i>Eurypyga helias</i>			
<i>Falco ruficularis</i>	II		RP
<i>galbula ruficauda</i>			
<i>Geothlypis poliocephala</i>			
<i>Habia fuscicauda</i>			
<i>Henicorhina leucosticta</i>			
<i>Herpetotheres cachinnans</i>	II		RP
<i>Hylocharis eliciae</i>	II		RP
<i>Henicorhina leucophrys</i>			
<i>Henicorhina leucosticta</i>			
<i>Herpetotheres cachinnans</i>	II		RP
<i>Hylocharis eliciae</i>	II		RP
<i>Hylocichla mustelina</i>		NT	
<i>Hylomanes momotula</i>			RP
<i>Icterus galbula</i>			
<i>Leiothlypis peregrina</i>			
<i>Lepidocolaptes souleyetii</i>			
<i>Leptotila cassini</i>			
<i>Leptotila verreauxi</i>			
<i>Megarynchus pitangua</i>			
<i>Melanerpes hoffmannii</i>			
<i>Mionectes oleagineus</i>			
<i>Mniotilta varia</i>			
<i>Momotus lessonii</i>			
<i>Morococcyx erythropygus</i>			
<i>Myiarchus crinitus</i>			
<i>Myiarchus tuberculifer</i>			

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<i>Myiarchus tyrannulus</i>			
<i>Myiodynastes luteiventris</i>			
<i>Myiothlypis fulvicauda</i>			
<i>Myiozetetes similis</i>			
<i>Nyctibius jamaicensis</i>			
<i>Nyctidromus albicollis</i>			
<i>Pachysylvia decurtatus</i>			
<i>Passerina caerulea</i>			
<i>Patagioenas flavirostris</i>			
<i>Parkesia noveboracensis</i>			
<i>Passerina caerulea</i>			
<i>Patagioenas flavirostris</i>			
<i>Penelope purpurascens</i>	III		RP
<i>Peucaea ruficauda</i>			
<i>Phaethornis guy</i>	II		RP
<i>Phaethornis longirostris</i>	II		RP
<i>Phaethornis striigularis</i>	II		RP
<i>Piaya cayana</i>			
<i>Pitangus sulphuratus</i>			
<i>Polioptila albiloris</i>			
<i>Polioptila plumbea</i>			
<i>Psarocolius montezuma</i>			
<i>Pseudastur albicollis</i>	II		RP
<i>Psilorhinus morio</i>			
<i>Pteroglossus torquatus</i>			
<i>Ramphastos sulfuratus</i>	II		RP
<i>Ramphocaenus melanurus</i>			
<i>Serpophaga cinerea</i>			
<i>Setophaga petechia</i>			
<i>Sittasomus griseicapillus</i>			
<i>Streptoprocne zonaris</i>			
<i>Thryophilus pleurostictus</i>			
<i>Thryophilus rufalbus</i>			
<i>Tityra semifasciata</i>			
<i>Tolmomyias sulphurescens</i>			
<i>Trogon melanocephalus</i>			
<i>Turdus grayi</i>			
<i>Tyrannus melancholicus</i>			

Attachment 2

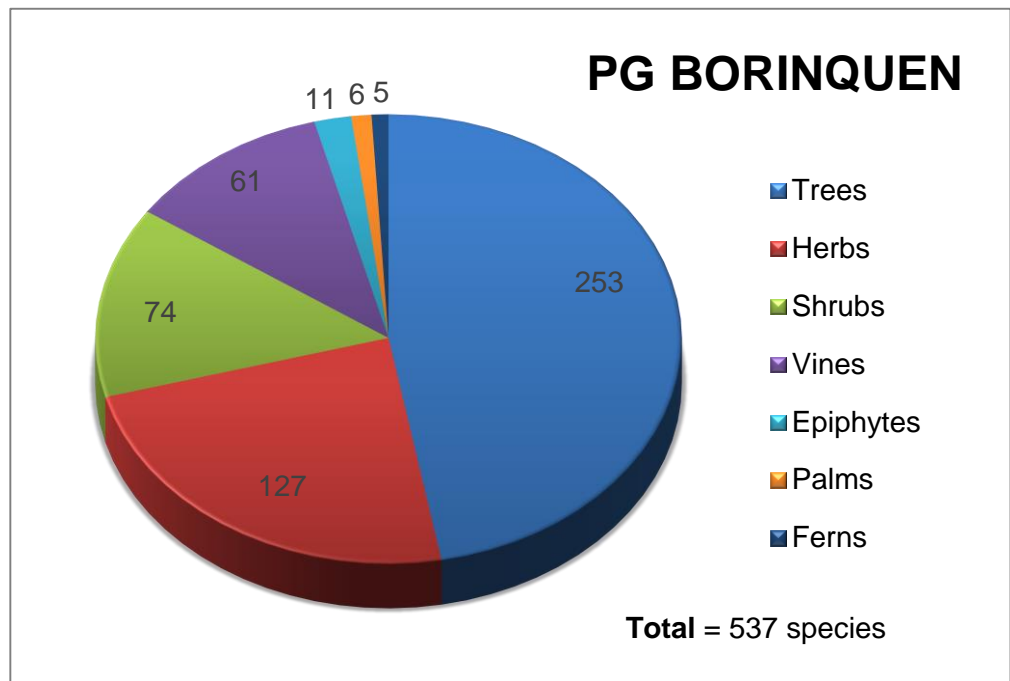
<i>Vireo flavifrons</i>			
<i>Vireo olivaceus</i>			
<i>Volatinia jacarina</i>			
<i>Zenaida asiatica</i>			
Mammals (Visual, Sherman, Mist nets and Camera trap)			
<i>Alouatta palliata</i>	I		EN
<i>Artibeus jamaicensis</i>			RP
<i>Ateles geoffroyi</i>	I	EN	EN
<i>Carollia perspicillata</i>			
<i>Carollia sowelli</i>			
<i>Carollia subrufa</i>			
<i>Cuniculus paca</i>	III		
<i>Dasyprocta punctata</i>	III		
<i>Glossophaga commissarisi</i>			
<i>Nasua narica</i>	III		
<i>Odocoileus virginianus</i>	III		
<i>Ototylomys phyllotis</i>			
<i>Platyrrhinus helleri</i>			
<i>Rhogeessa bickhami</i>			
<i>Puma concolor</i>	I		EN
<i>Sciurus variegatoides</i>			
<i>Tapirus bairdii</i>	I	EN	EN
<i>Vampyriscus nymphaea</i>			RP
<i>Conepatus semistriatus</i>			
<i>Didelphis marsupialis</i>			
<i>Didelphis virginiana</i>			
<i>Eira barbara</i>			
<i>Leopardus pardalis</i>	I		EN
<i>Pecari tajacu</i>	II		RP
<i>Sylvilagus floridanus</i>			
<i>Dasypus novemcinctus</i>			
<i>Panthera onca</i>	I	NT	PE

I=Appendix I CITES, II=Appendix II CITES, III=Appendix III CITES, IUCN= The International Union for Conservation of Nature, CITES=The Convention on International Trade in Endangered Species of Wild Fauna and Flora, NT= Near Threatened, EN= endangered species, RP= species with reduced or threatened populations, VU= Vulnerable.

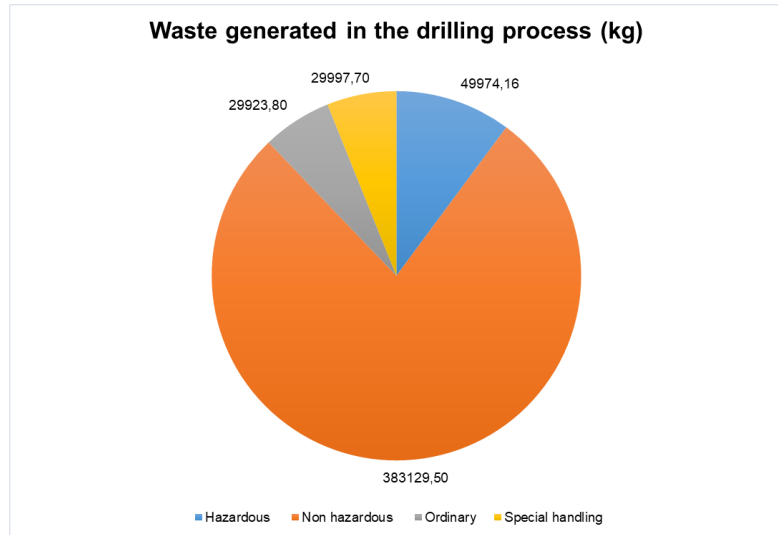
Wild animals monitoring. June 2023.



Distribution of flora species by habits registered in the Borinquen Geothermal Field. March 2014 – March 2023.



Environmental item	Item to be monitored	Monitoring site	Frequency	Method	Party in charge
Waste*	Generated amount	Power plant construction site	Monthly	Total of generated amount (weight or volume)	Construction contractor



From the year 2019 to 2023

*Appropriate waste management including disposal of sludge will be implemented in accordance with Law for the Integrated Management of Residues (Law 8839), and in reference to Resolution No. 1948-2008-SETENA17 (page26).