

STATEMENT OF WORK

FOR THE ENVIRONMENTAL REMEDATION PROGRAM AT THE BALIPEDIO COTTRAU FIRING RANGE



Version 4.0

July 2019

NATO Support & Procurement Agency
LB General & Cooperative
Services Programme

TABLE OF CONTENTS

1.	DEFINITIONS AND ACRONYMS	3
2.	BACKGROUND INFORMATION	5
2.1	Site location and current usage.....	5
3.	SCOPE OF WORK	6
4.	REFERENCES	7
5.	TECHNICAL REQUIREMENTS	10
	Central Area (G)	10
5.1	Integrated rainwater drainage system.....	10
5.2	Refurbishment of the backstop facilities.....	15
5.3	Refurbishment of the off-gas extraction system, “Teatrino”	16
	Punta la Castagna area (M)	17
5.4	Integrated rainwater drainage system.....	17
6.	PROJECT OVERVIEW AND PROJECT MANAGEMENT	19
6.1	Project Overview	19
6.2	Project Management.....	20
6.3	Master Schedule	20
6.4	Work to be performed and Phases	21
6.5	Controls	23
7.	IN-SERVICES MAINTENANCE	25
8.	TRAINING	26
9.	CONTRACTOR’S HUMAN RESOURCES AND QUALIFICATIONS	26
10.	QUALITY ASSURANCE	27
11.	HEALTH AND SAFETY	28
12.	ENVIRONMENTAL PROTECTION	29

1. DEFINITIONS AND ACRONYMS

AQAP	Allied Quality Assurance Publication
BOD	Biochemical Oxygen Demand
COD	Chemical Oxygen Demand
CQCR	Contractor's Quality Control Report
C&A	Commissioning and Acceptance
DDCP	Document and Drawing Control Program
ECP	Engineering Change Proposal
EMP	Environmental Management Plan
ERA	Environmental Risk Analysis
EPRP	Emergency Preparedness and Response Plan
EPP	Environmental Protection Plan
FRC	Firing Range Commander
IEP	Integrated Environmental Programme
ITANVY	Italian Navy
ISO	International Organization for Standardization
HSP	Health & Safety Plan
PER	Project Exception Report
PM	Project Manager

PMP	Preventive Maintenance Plan
PMR	Project Management Review
POC	Point of Contact
PPE	Personal Protective Equipment
PT	Preliminary Treatment
PTS	Preliminary Technical Study
QCP	Quality Control Plan
QM	Quality Manager
QP	Quality Plan
RFD	Request for Deviation
RSPL	Recommended Spares Provisioning List
RWTP	Rain Water Treatment Plant
SMP	Safety Management Plan
SOW	Statement of Work
SR	Sample Report
SS	Suspended Solids

2. BACKGROUND INFORMATION

The Italian Navy (ITANVY) has a requirement to perform an environmental remediation programme to assess and remediate some areas at the Balipedio Cottrau firing range in La Spezia. A brief remedial assessment was performed to compile and evaluate data and information necessary to support the Contractor to develop an Integrated Environmental Programme (IEP) in a manner that will render the site protective of staff health and the environment as required by law.

The requirements described in this document shall strictly comply with the applicable national laws and regulations, besides that the applicable national environmental standards, criteria and guidance.

2.1 Site location and current usage

The site is located at Balipedio Cottrau firing range on La Spezia province in Italy. The site is bounded by Punta Castagna area (M) and working areas (E) which acts as a natural harbour. Figure 1 shows the site location.



Figure 1 Map of the site boundary

G	Central zone
D	Pyrotechnic area
M	Fire at sea area
U	Office area
E/S	Entrance/SP 530

Currently, the site has operated for more than one hundred years as a naval experimental artillery range for a munition of a calibre between 7.62 mm to 127 mm and as well as being a special testing facility for high explosive products.

3. SCOPE OF WORK

This Statement of Work (SOW) details the IEP for the identified areas with environmental issues of concern. Two work areas have been deemed, Central area (G) and Punta la Castagna area (M).

a. The requirement on the Central area (G) are:

- The Contractor shall define and implement an integrated rainwater drainage system in the firing line zone (G).
- The Contractor shall refurbish three backstop facilities located in the central area (G).
- The Contractor shall replace the off-gas extraction system of the “Teatrino” building. The building is a “casemate” (detonation chamber), an armored structure used for explosive and propellant tests.

b. The requirement on the Punta la Castagna (M) area are:

- The Contractor shall define and implement an integrated rainwater drainage in the firing line area (M).
- The Contractor shall perform a geological study for the damaged hill located behind the firing line area.

3.1 The actions that shall be undertaken for the preparation and construction task as follows:

3.1.1 Prior to the beginning of construction works, all organizational arrangements and preparations for construction start-up process shall be completed. During implementation of construction works, the contractor shall observe all construction-related requirements prescribed by applicable National/Regional regulations.

3.1.2 The Contractor shall use materials that are fit for purpose.

3.1.3 The Contractor could use the existing electricity network. After installation of the designed power, re-connection shall be performed.

3.1.4 Site water supply to be provided using the existing water supply network to be agreed and approved by the Firing Range Commander (FRC).

3.1.5 Liaison with NSPA representative, military and local technical authorities of the base as well as with local civilian authorities in

order to confirm applicable regulations as listed in paragraph 4. The Contractor shall provide all required documentation in order to obtain all necessary permits, licenses, and other approvals from military or civilian authorities affected by the implementation of this SOW.

- 3.1.6 In accordance with L.D 42/2004, art. 146, the Contractor shall provide and submit a “landscape impact report” to the competent superintendence in order to start the requested activities.
- 3.1.7 The Contractor shall provide all necessary technical equipment to meet the requirements. The supply equipment shall be certified to conform to applicable standards.
- 3.1.8 The Contractor shall be responsible to manage, transport and dispose the debris, strains, etc. produced by the requested activities.

4. REFERENCES

The following is a non-exhaustive list of documents, which, in their most current version/revision, are relevant in whole or in part to the object of this SOW. They will constitute requirements when there is a national or international legal requirement for compliance.

The Contractor shall be responsible for ensuring that all services and equipment supplied as part of the contract, comply as minimum with all national and international applicable legal requirements.

Environmental legal requirements:

- Legislative Decree n° 152 of 3 April 2006 “Norms Concerning the Environment”, commonly called “Single Environmental Text”, regroups a single legislative text the environmental laws previously contained in several decrees.
 - Soil and Water Protection and Management – third part of L.D 152 of 3 April 2006
 - Waste Management – quarter part of L.D 152 of 3 April 2006
 - Air and Emissions – fifth part of L.D 152 of 3 April 2006
 - Title V under section 4 is for clean-up activities for contaminated sites
- Annex B of Legislative Decree n° 62 of 18 April 2005 on waste packaging.
- DPR 203/88 has sanctioned a body in charge of the authorization and control of emissions – the Regions, (which has often delegated such competence to the provinces).
- Legislative Decree n° 426/98 “Environmental remediation for contaminated sites” applied to the province of La Spezia.

- Law 394/9 to protect the natural patrimony of Italy. The Law is instituted by a special regional law, and have an autonomous management institution and an “own territory” plan.
- DM of 22 October 2009 - Italian MoD, waste management procedures directly destined for military defense and national security.
- Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA) guidelines - <http://www.isprambiente.gov.it/it>
- Legislative Decree n° 42 of 22 January 2004, article 146 – areas of landscape interest.
- The financial law 2007 establishes the final destination of unpolluted and polluted material after removal - “Materials from dredging or reclamation, if not originally dangerous, or after treatment for pollutants removal, may be discharged into the Confined Disposal Facility (CDF)” “If materials exceed the established values for pollutants, the reclamation of CDF area is required”

Health and Safety requirements:

- Legislative Decree n°81 April 2008, provide health and safety at work.
- Legislative Decree n° 272 of 27 July 1999, provide health and safety procedures for maritime areas.
- Legislative Decree n°334 of 17 August 1999 – As a complement to the directive 98/62/CE, control procedures designed to prevent the accidents with determined dangerous substances.
- D.P.R. n° 177 of 14 September 2011, – Regulations for the qualification of the companies and autonomous workers operating in environments with suspect pollution, as per the art. 6, comma 8, letter g), of the L. n° 81 of 09 April 2008.
- DPR n° 151 of 01 August 2011, the fire prevention regulations.

Construction requirements:

- Applicable Eurocodes – European standards, which provide a common, approach for the design of buildings and other civil engineering works and construction products.
- “Istituto italiano per il diritto delle costruzioni e degli appalti” (Italian Society for Construction Law – ISCL) – guidelines.
- Italian Civil Code, law 1150/1942 and Presidential Decree 380/2001.
- Applicable “Italian National Unification” standards – UNI EN is used for the Italian edition of European standards.

- 4.1 The Contractor shall comply with all internal procedures and regulations in force at the Balipedio Cottrau site.
- 4.2 The Contractor shall apply the same standards listed here upon his sub-Contractors, if any.

5. TECHNICAL REQUIREMENTS

Central Area (G)

5.1 Integrated rainwater drainage system

The rainwater drainage system shall be a process of collecting and draining rainwater that falls on a catchment surface (concrete slab) for subsequent treatment or/and disposal.

- 5.1.1 The Contractor shall collect all necessary data to facilitate the project preparation process. All organizational arrangements and preparation for construction, start-up process shall be completed, prior to the beginning of construction works.
- 5.1.2 The data requirements shall include the meteorological statistics and hydrological statistics.
- 5.1.3 The Contractor shall implement statutory water quality objectives introduced by L.D. 152/2006.
- 5.1.4 The Contractor shall observe all construction-related requirements prescribed by Government Agencies.
- 5.1.5 The **Preliminary Technical Study (Phase I)** shall include but not limited the following design criteria:
- 5.1.6 The **slab reinforced concrete** shall be designed according the EUROCODES and Italian national standards.
 - 5.1.6.1 A soil survey for an estimated flat surface 60x40m.
 - 5.1.6.2 The ground upon which collecting pipes are to be laid and should have sufficient stability to support the pipe without excessive or no uniform settlement.
 - 5.1.6.3 If the underlying soil is soft or spongy, or subject to excessive consolidation under load, adequate support shall be obtained by excavating and removing the unstable soil and replacing it with satisfactory materials.
 - 5.1.6.4 Replacement works of the existing reinforced concrete soil covering an estimated surface 30x40 m.
 - 5.1.6.5 The depth of excavation will depend upon the technical characteristics of soil.
 - 5.1.6.6 Define the location of the existing underground network (i.e. medium voltage distribution, pipes, etc.). A drawing shall be provided.

- 5.1.6.7 In accordance with the “Eurocode – *Basis of structural design*”, the working life of the whole system shall be at least 50 years.
- 5.1.6.8 Due to shooting activity, the slab shall be calculated to absorb the vibration produced by the tests.
- 5.1.6.9 The cement shall have strength at least 32.5 N/mm². The cement shall be high early strength Ⓢ with at least 28th days compressive strength.
- 5.1.6.10 The minimum strength class C28/35.
- 5.1.6.11 The maximum Water/Concrete ratio shall be ≤ 0.60.
- 5.1.6.12 The minimum cement (Kg/m³) shall be between 150 Kg/m³ and 320 Kg/m³, for max. aggregate size of 31.5 mm.
- 5.1.6.13 The slump class shall be S4.
- 5.1.6.14 The exposure classification shall be designed based on the site environmental conditions (dry environment, permanently wet conditions, high level of salinity, etc.)
- 5.1.6.15 The resistance to tears shall comply with the UNI EN 124 standards.
- 5.1.6.16 The Contractor shall justify and provide the technical specification of the selected type of concrete.
- 5.1.6.17 The concrete slab shall have thickened edges to support vehicles weigh up to 80 tons.
- 5.1.6.18 The slab shall be reinforced concrete. The Contractor shall design the reinforced concrete configuration based on the above technical requirements and the national norms.
- 5.1.6.19 The slab shall be reinforced by electro-welded mesh with B450A steel. The Contractor shall provide a certification issued by the “Servizio Tecnico Centrale della Presidenza del Consiglio Superiore dei LL.PP”.
- 5.1.6.20 A surface treatment shall be applied based on the site conditions. The minimum thickness requested is 5 ± 2 cm. The product (resin) shall avoid any degradation of reinforced slab and any leakage to the soil.

5.1.6.21 The Contractor shall provide a professional civil engineer, who shall be the responsible to approve the selected working method and, shall perform the final structural tests. The Contractor shall provide the evidence.

5.1.7 The **drainage system** shall include and not limited the following design criteria:

5.1.7.1 The Contractor shall describe how the system will process the rainwater/wastewater and its disposal specifying the components of the system.

5.1.7.2 The rainwater drainage system shall be designed in such a manner that water will not pond on the central area, flow at random over fill slopes and the storm water or sewage will not overflow.

5.1.7.3 The Contractor shall implement a controlled overflow system.

5.1.7.4 The Contractor shall design a slab with gradients and drainage channels as figure 2 illustrated.

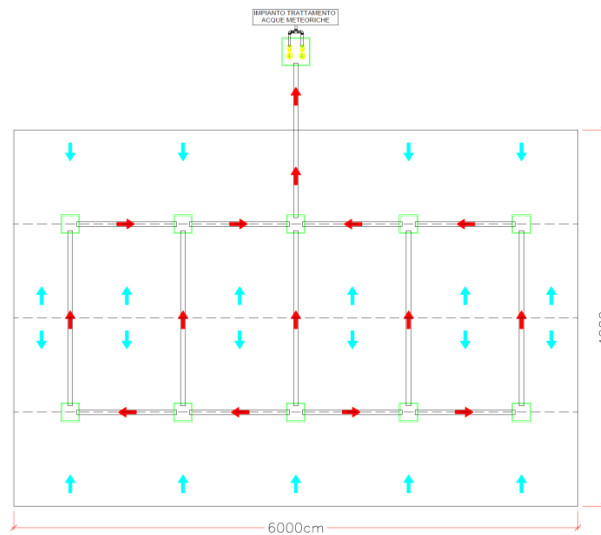


Figure 2 Collecting scheme

5.1.7.5 The drainage network shall cover the entire services area, giving priority to the gravity flow water system.

5.1.7.6 The Contractor shall perform calculations and drawings, as requested, in order to achieve the final flow concept.

- 5.1.7.7 To ensure efficient removal of collected water the Contractor shall design the spillways accordingly. The grate opening size shall be design in such a manner that avoid passage of any debris might obstruct the system.
- 5.1.7.8 The Contractor shall include a plan layout design for the drainage system.
- 5.1.7.9 The Contractor shall perform a hydraulic design study of all collectors and components. The design shall consider the self-cleaning criteria.
- 5.1.7.10 The Contractor shall ensure an adequate hydraulic condition to maintain the system active during dry weather periods (sedimentation of suspended solids, risk of formation of hydrogen sulphide, odours, etc.)
- 5.1.7.11 The PVC pipes shall have an optimal dimension to ensure the proper functioning of the integrated system.
- 5.1.7.12 The maximum length of the PVC pipes shall be designed upon construction mandates such as the design flows, the hydraulic conditions and the charge/discharge sources.
- 5.1.7.13 No temporary/permanent facility must be built over drainage pipes.
- 5.1.7.14 The culverts shall be spheroidal cast iron and with square shaped.
- 5.1.7.15 The components shall have a syphon to prevent odour disturbances, if necessary.
- 5.1.7.16 The collection channels shall be measured based on the assumption that a Rain Water Treatment Plant (RWTP) will be installed hereinafter.
- 5.1.7.17 The maximum area per each collecting elements shall ensure the suitable evacuation of rainwater.
- 5.1.7.18 The discharge shall be established in an area with good dilution and dispersion conditions.
- 5.1.8 The **lift station** shall include and not limited the following design criteria:
- 5.1.8.1 The Contractor shall install a rainwater lift station to accumulate the meteoric water.

- 5.1.8.2 The lift station shall be designed in accordance with the mandates of the L.D. 152/2006, art.113.
- 5.1.8.3 The lift station shall be designed in such a manner that rainwater could be pumped to a water treatment plant.
- 5.1.8.4 The pump capacity, type and configuration shall be designed upon the volume to be collected and pumped.
- 5.1.8.5 The Contractor shall conduct chemical and physical tests to assess the water quality, when is required.
- 5.1.8.6 The final volume (m³) shall be measured based on the estimated acreage available, approx. 2400 m² and the current precipitation conditions.
- 5.1.8.7 The station shall perform reliable and uninterruptible operations.
- 5.1.8.8 The design shall allow for easy operation and maintenance of the installed equipment.
- 5.1.8.9 The design shall avoid septic conditions and excessive release of odours in the collection system and at the lift station.
- 5.1.8.10 The lift station shall be designed in a manner to avoid flooding of the station and the surrounding areas.
- 5.1.8.11 The Contractor shall develop a water quality-monitoring plan where their recommendations about the sampling frequency, the sources, the compliance triggers, the planning, and the reporting process shall be defined.
- 5.1.8.12 The Preliminary and Final Design Concept shall be aligned with the technical requirements stated in the Balpedio's Permanent Environmental Monitoring Plan (PEMP) provided by the FRC.

5.2 Refurbishment of the backstop facilities

The Contractor shall refurbish three backstop facilities located on the firing line area, see in figure 3 the red square named “Gallerie”. The backstop for firing is located into a hill as being an indoor range. The backstop is a sand-made kinetic energy brake capable of stopping the projectiles fired on the range by containing or redirecting bullets to the backstop.



Figure 3 Backstop facilities

- 5.2.1 The Contractor shall perform/prepare investigations, surveys, plans, studies and reports, as necessary to meet the performance objectives.
- 5.2.2 The Contractor shall comply with the zoning regulations, building codes, soil conservation regulations and other information pertaining to legal requirements.
- 5.2.3 The design/refurbishment criteria shall be based on the planned use of the facility. The Contractor shall provide a PTS encompassing at least the characteristics such as resistance to abrasion, resistance to penetration, surface hardness, thickness, etc.
- 5.2.4 The type of exterior wall constructions is masonry. The used materials were brick, building stone and concrete.
- 5.2.5 The Contractor shall clean the backstop facilities before the interventions. The method selected shall depend on the frequency of use and the availability thereof.
- 5.2.6 The refurbishment shall maintain the structural design as the original. Basics such as air turbulence effect, ventilation flow, etc., shall be integrated in the PTS.

5.2.7 The floor, walls and ceiling shall be refurbished. The floor shall be reinforced with concrete.

5.2.8 A new armor plating shall be installed, where is required.

Note: The technical properties shall be provided during the Bidding Conference at Balipedio Cottrau Firing Range by the POC and its values included in the final SOW

5.2.9 The floor, walls and ceiling shall be able to contain the sound in addition to the projectile fired, and shall be impenetrable. The backstop shall contain the more restrictive sound producing by the artillery used by the FRC.

Note: The list of the artillery model will submitted during the Bidding Conference and its values included in the final SOW prior to contract signature.

5.2.10 The Contractor shall ensure that the floor have a nonporous surface.

5.2.11 The wall shall be refurbished with reinforced concrete. The entrance shall be refurbished with bricks, as the originals.

5.2.12 The Contractor shall redesign the ventilation system in order to avoid exceeding the acceptable limits of airborne dangerous substances.

5.2.13 The ventilation system shall comply with the environmental mandates prescribed by the competent public authorities.

5.3 Refurbishment of the off-gas extraction system, “Teatrino”

The Contractor shall replace and install a new off-gas extraction system in the “Teatrino”, a cylindrical detonation chamber located on the Central area. The surface is 320 m² and have a volume of 1600 m³. The structure is armored steel.



- 5.3.1 The Contractor shall prepare the working area, cleaning, removing the shrubs, etc., before starting the intervention.
- 5.3.2 The Contractor shall dismantle the current off gas extraction system, classify and dispose the materials in accordance with the quarter part of L.D. 152/2006.
- 5.3.3 The off gas system shall be tailored/simplified depending upon energetic material to explode and the applicable regulations.
- 5.3.4 The off gas system shall be designed for treating at least 10.000 m³/h off gasses at a maximum temperature of 80 °C.
- 5.3.5 The system shall be placed out of the detonation volumes (outside of the armored structure).
- 5.3.6 The off gasses produced (CO, H₂, etc.) by the detonation shall be oxidized or scrubbed.
- 5.3.7 A holding tank and carbon and/or sulfur-impregnated carbon filter(s) shall be installed. The filters shall be designed in accordance with the system functionality.
- 5.3.8 The off-gas system shall reduce secondary waste and no dioxin generation.
- 5.3.9 The secondary waste shall be removed by HEPA filter or Charcoal filter.
- 5.3.10 The off gas system shall remove any harmful particulate liable to be released to the atmosphere. The system shall have the option to monitor the air quality in the exhaust gas outlet.
- 5.3.11 All the pipelines shall be fire-resilient and absorb the shock wave and explosion heat from detonation.
- 5.3.12 The structure of the system shall comply with the national Italian decree, D.M. 17/01/2018. The sheet metal construction shall be at least AISI 304.

Punta la Castagna area (M)

5.4 Integrated rainwater drainage system

- 5.4.1 The Contractor shall install a second integrated rainwater drainage system in the area shown in figure 4. The technical requirements shall be the same as stated in paragraph 5.1.

- 5.4.2 The meteoric water shall be discharged into the lift station mentioned in paragraph 5.1.9. The lift station shall be designed according to both draining systems volumes.
- 5.4.3 This working environment will require special attention due to the proximity to the Mediterranean Sea, which was designated as Marine protected area.
- 5.4.4 The working areas shall be set out in such a form to evade any type of activity, which could attempt to harm the environment.



Figure 4 Punta La Castagna area (M)

5.5 Geological survey

The Contractor shall perform a geological study for the damaged hill located behind the firing line area, the yellow square shows the size of the study. The geological information obtained from the survey will assist to assess the potential mitigation actions to restore thereof.



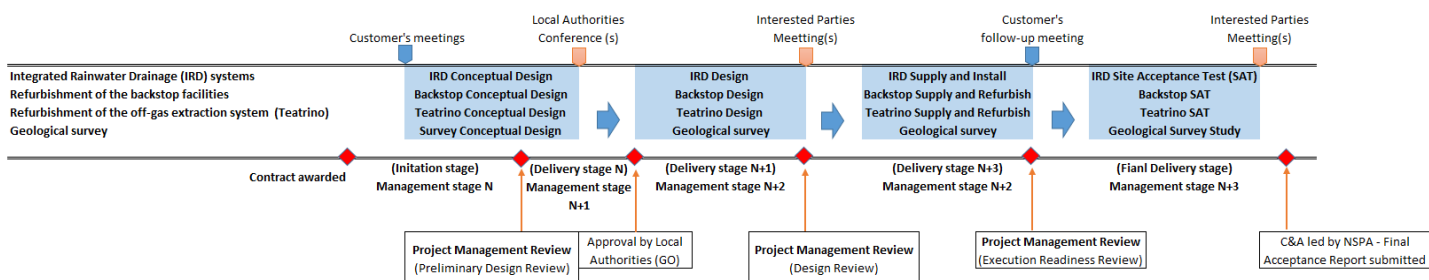
- 5.5.1 The Contractor shall provide a professional geologist.

- 5.5.2 The Contactor shall carry out a methodical study of the surface and subsurface with the aim of creating geological maps in the studying area.
- 5.5.3 The Contractor shall perform a documentary analysis to identify if any ISPRA's guidelines and/or Regional plans may apply.
- 5.5.4 The Contractor shall bring all the required equipment and resource to perform the study as requested in this SOW.
- 5.5.5 The survey shall include but not limited as follows:
 - 5.5.5.1 Geological mapping;
 - 5.5.5.2 Structural mapping to indicate the location of the main rocks and the faults;
 - 5.5.5.3 Surficial mapping for the location of soils;
 - 5.5.5.4 Survey of topographic features;
 - 5.5.5.5 Formation of topographic maps;
 - 5.5.5.6 Survey to identify changes in landscapes, erosion patterns, and river channels;
- 5.5.6 The geological maps shall provide scientific understanding of natural resources conditions and site-related constraints.
- 5.5.7 The Contractor shall provide comprehensive relevant data describing the geological datasets in order to provide the basis for being implemented, as required.
- 5.5.8 The Contractor shall develop a technical assessment report where the survey's results, an environmental assessment and a mitigation action plan shall be included.
- 5.5.9 This report shall be developed and interpreted, as a preliminary phase to perform the restoration's activity.

6. PROJECT OVERVIEW AND PROJECT MANAGEMENT

6.1 Project Overview

The requirements above listed shall be managed and structured as a project. The projected timeline with the key Project phases, activities and milestones is presented below:



The major milestones of the project that are included in the payment plan are:

ANNEX I	Milestones	Zones
1.2	Final Design Concept	Drainage System at Central area
2.2	Final Technical Study	Refurbishment of the backstop facilities
3.2	Final Design Concept	Refurbishment of the off-gas extraction system
4.2	Geological Survey Plan	Geological survey
-	Preparatory work	SOW paragraph 6.4.1
-	Construction works	SOW paragraph 6.4.2
8	Commissioning and Acceptance Test	SOW paragraph 6.6
9.1	Documentation	SOW paragraph 6.7
12	Training	SOW paragraph 9

6.2 Project Management

- 6.2.1 The Contractor shall record all relevant changes and clarifications. These changes and clarifications must be addressed and approved by NSPA. In case that the changes represents a deviation to the scope of this Statement of Work, the Contractor will proceed as stated in the Part 21 of the Terms and Conditions that refers to Notification of Changes.
- 6.2.2 The Contractor shall prepare, star-up, organize, operate and close the project.
- 6.2.3 The Contractor shall maintain all management documents and implement the necessary protocols.
- 6.2.4 The Contractor shall control and monitor the project progress and to deploy the financial and staff resources effectively.
- 6.2.5 The Contractor shall develop and maintain the quality and environmental plans, schedules and milestones.
- 6.2.6 The Contractor shall maintain communications across the government agencies and take overall responsibility for organization of project meetings.

6.3 Master Schedule

- 6.3.1 The ANNEX I lists the periodic reports and deliverable schedule, for this SOW. This Contract Data Requirement List (CDRL) shall be delivered, as stated therein.

- 6.3.2 The work shall start in accordance with ANNEX I. If there is a condition that prevents this, it must be identified and presented to NSPA in a reasonable amount of time in advance of any delay.
 - 6.3.3 During the Kick-off meeting, the FRC will communicate the availability of the backstop facilities. Based on actual events, the facilities will be available mid-June and Mid-September. In August, the Firing Range is off duty.
 - 6.3.4 **Completion date** of works shall be no later than **280 calendar days after contract award**.
 - 6.3.5 Within 30 days after Contract Award, the Contractor shall deliver and maintain through the execution of the contract, a Project Master Schedule (PMS) for the delivery of all activities in this contract.
 - 6.3.6 Within 30 days of reception, NSPA shall approve the mandated deliverables or provide requirements for change or clarification. The Contractor shall implement the changes required by NSPA for final agreement.
 - 6.3.7 The PMS shall indicate as a minimum the following elements: planned and completion dates, duration and dependencies for all project events; phases and intermediate milestones in the project (including technical and management reviews).
 - 6.3.8 Additionally, if at any point during the execution of this contract, NSPA or the Contractor deems necessary an extraordinary review, this shall be called by the requesting party
- 6.4 **Work to be performed and Phases**
- 6.4.1 The **Preparatory Works (Phase I)** shall include but not limited the following activities:
 - 6.4.1.1 The Contractor shall be responsible for mobilizing his personnel, equipment, and facilities. The working areas will be defined by the FRC.
 - 6.4.1.2 From the beginning of this phase of work, the Contractor shall have the project manager or deputy project manager permanently present in place.
 - 6.4.1.3 The Contractor shall have the required capability to perform the full volume of design work, surveys and to start preparatory works excavation/foundation works at the site in accordance with the agreed delivery schedule.

- 6.4.1.4 The PTS shall be approved by the competent public authorities. However, before starting construction activities the Italian legislation requires submission of the Construction permit request form based on Italian Construction Law. This procedure requires approximately 30 days and it is a legal prerequisite to start the construction activities. The contractor has the responsibility to evaluate this period and incorporate all risks associated with this approval into the project schedule.
- 6.4.1.5 The contractor shall be responsible for the demobilization of all personnel, equipment, and facilities off the construction site. If the contractor requires assistance with the disposal of certain items, such requests must be coordinated with the FRC in advance.
- 6.4.1.6 The site shall be left in like condition prior to the commencement of construction.
- 6.4.2 The **Construction Works (Phase II)** shall include but not limited the following activities:
 - 6.4.2.1 N/A.
 - 6.4.2.2 The Contractor shall not remove, cut, deface or destroy land resources, including trees, shrubs and landforms without permission from the Environmental Manager and the FRC.
 - 6.4.2.3 The Contractor shall mitigate the impacts of the following environmental conditions throughout all phases of construction by developing and implementing best practices:
 - 6.4.2.3.1 A temporary increase in particulate and gaseous air pollution levels as a result of dust generated by construction activity and by vehicle emissions from equipment;
 - 6.4.2.3.2 Increases in solid waste at the site;
 - 6.4.2.3.3 Temporary erosion, scarring of land surfaces and loss of vegetation in areas that are excavated or otherwise disturbed to carry out future developments.
 - 6.4.2.4 The Contractor shall take charge of all material supplies, transportation, labour, ancillary materials,

haulage, removal of excess material, relocation and transportation of existing materials, excavations and construction, temporary shoring, safety measures and executing timely construction so as to deliver the finished work fully capable of performing their intended function.

6.4.2.5 The concrete works shall be performed using concrete pumps. The concrete shall be supplied using mixing units.

6.4.2.6 The foundation shall be performed using mobile crane, if necessary. The working area shall be marked using "Dangerous Zone" signs.

6.4.2.7 Mounting of electric equipment where is required.

6.4.2.8 The Contractor shall install a water supply main pipe and external sewerage network.

6.4.2.9 Note that during the construction of reinforced concrete foundations, the outputs of utilities shall be coordinated.

6.4.2.10 The sand layer shall be periodically compressed.

6.4.2.11 Upon completion of the works, the Contractor shall implement on site final testing program operations for the whole scope of the project. The final on site tests shall serve as a proof of works fulfilling the design specifications and it has to be carried out with the involvement of the assigned representatives of the user and client.

6.4.2.12 The Contractor shall propose and implement a Commissioning and Acceptance Program for the construction work allowing a thorough testing of the work performed and an orderly handover of the project components at completion.

6.5 Controls

6.5.1 The Contractor shall maintain a Risk Log identifying, as a minimum, the cause, probability and impact (in scope, schedule and cost) of each risk. Risk reviews shall be part of Project Management Review (PMR) meetings.

6.5.2 The Contractor shall submit a Project Exception Report (PER) which may include an Engineering Change Proposal (ECP)

and/or Request for Deviation (RFD) for any deviations from the SOW, providing the adequate correction action, when applicable.

- 6.5.3 The Contractor shall attend PMR with NSPA. Further PMR shall be scheduled according to Project Master Schedule unless agreed differently by both parties.
- 6.5.4 The PMR will be co-chaired by the Contractor and NSPA. The Contractor shall ensure that the Contractor Project Manager and support staff shall attend.
- 6.5.5 The Document and Drawing Control Program (DDCP) shall provide consistency from stage to stage and shall ensure that all design certifications, maintenance documents, operator's manuals, warranties and other infrastructure related documents can be filed, tracked, and cross-referred to drawings that can themselves be filed and tracked.
- 6.5.6 The Contractor shall record the minutes of all formal meetings. Meeting minutes shall be provided to NSPA.
- 6.5.7 The Contractor shall deliver a final copy of the minutes to NSPA within 1 week of receipt of the NSPA's comments. The Contractor shall not consider the minutes as the basis for changes to the terms and conditions or SOW in the Absence of a formal Contract Amendment.
- 6.5.8 The Contractor in executing his quality control responsibilities shall implement three-phase inspections on-site. The three-phases are Preliminary Design Review (PDR), Design Review and Follow-up Inspections/Meetings. These meetings are intended to prevent non-conformances from occurring.
- 6.5.9 The Contractor shall organize the inspections stated in paragraph 6.5.8, which shall be attended by NSPA, Customer and competent public authorities (if necessary) at the Balipedio Cottrau facility.
- 6.5.10 The Contractor shall conduct a weekly Quality Management Control Meeting. There, issues of the ongoing will be discussed and decided. At a minimum, participants shall be the Contractor's Site Manager, Quality Manager, Health & Safety Manager and Environmental Manager.
- 6.5.11 The Contractor shall perform a pre-final inspection and develop their "punch list" of all deficiencies noted. The Contractor shall perform follow-up inspections to assure that all deficiencies

have been corrected before notifying the NSPA that all is ready for the Commissioning and Acceptance (C&A) test.

6.6 **Acceptance Test**

6.6.1 The ITANVY and NSPA shall conduct the C&A test.

6.6.2 The Contractor shall provide a detailed C&A Program and submit it to NSPA for review and approval, as stated in paragraph 6.1.

6.6.3 The deficiencies noted in the “punch list” shall be corrected before the C&A event.

6.6.4 In case of test, failure or NSPA raised issues with respect to test results, the Contractor and NSPA will agree on appropriate corrective/recovery actions. The Contractor shall be responsible to put in place all the actions agreed to be compliant with the required performance results at no additional cost for NSPA. After implementation of the corrective actions agreed and repetition of the corresponding tests, the Contractor shall submit a new Acceptance Test Report to NSPA.

6.6.5 The Contractor shall provide full technical assistance, equipment and materials necessary to perform the C&A.

6.6.6 The Contractor shall issue a duly signed Certificate of Conformity (CoC), to certify the supplied equipment conform to the requirements of this SOW.

6.7 **Documentation**

6.7.1 The Contractor shall provide the final documentation package within 30 days after final handing over of works approved by NSPA.

6.7.2 The deliverables shall be in Italian and English languages. The documentation addressed to local authorities and organizations shall be only in the Italian language.

6.7.3 The Contractor shall submit a soft copy (PDF) and three (3) paper copies.

7. **IN-SERVICES MAINTENANCE**

7.1 The contractor shall provide all the necessary information so that the ITANVY can perform the maintenance during the complete life cycle of

installations. This includes but might not be limited to: Maintenance Plan, Maintenance and Repair Manuals and Testing Procedures.

7.2 The contractor shall provide a Preventive Maintenance Plan (PMP), for whole package. The PMP shall include all preventive maintenance routine, periodic inspections, cleaning procedures, operated conditions, etc.

7.3 The Contractor shall prepare a Recommended Spares Provisioning List (RSPL) for approval. The Contractor shall recommend the quantity of spares to be stocked for a one-year operational period.

8. TRAINING

8.1 The Contractor shall provide initial training for user personnel for utilities and other equipment installed in the framework of this SOW.

8.2 The Contractor shall provide a Training Plan which describes all training courses to be conducted and their purpose, duration and related schedule.

8.3 An outline of the training plan shall be submitted with the proposal and the final Training Plan shall be submitted 6 months after contract award.

9. CONTRACTOR'S HUMAN RESOURCES AND QUALIFICATIONS

9.1 The Contractor shall be responsible for providing qualified workers to perform services as requested within this SOW.

9.2 The Contractor shall provide an Organization Chart listed all key personnel from the main contractor, sub-contractor and experts who are involved in this project.

9.3 This project will be subject to review by NSPA at any time. NSPA will assign a Project Officer who will manage and monitor the project on a day-to-day basis, using the controls defined in this SOW.

9.4 The Contractor shall provide leadership and coordination through the nominated Project Manager (PM), who will be the main POC for this project.

9.5 The Contractor shall assign a Quality Manager (QM) to perform and coordinate quality checks within the scope of the services.

- 9.6 The Contractor shall assign an Environmental and Health & Safety Managers who shall be actively involved in oversight and evaluation of working conditions.
- 9.7 At no time shall shortfalls in personnel affect the provision of expected services. If a shortfall is foreseen, the Contractor shall inform NSPA and propose mitigation measures, which may be subject to a Contract Amendment.
- 9.8 The Contractor shall appoint a Site Manager who shall manage the construction supervisions.
- 9.9 The SMO shall not allow at least the following deviations:
- 9.9.1 Unauthorized deviations by persons participating in the construction from the approved construction plan;
 - 9.9.2 Infringements of the regulatory enactments regulating construction;
 - 9.9.3 Unauthorized deviations from the technology for the performance of work specified in the construction plan and in the projected schedule for carrying out the work.
- 9.10 The experts requested in above paragraphs shall read, understand, speak and write in English and in Italian.

10. QUALITY MANAGEMENT

- 10.1 The Contractor shall establish, document, implement, assess and improve an effective Quality Management System in accordance with the Allied Quality Assurance Publication (AQAP) 2110, Edition D, which includes the requirements of ISO 9001 as necessary to satisfy this SOW.
- 10.2 The QP shall describe the activities, standards, tools and processes necessary to achieve quality in the delivery of this SOW.
- 10.3 The QP shall be structured as defined the AQAP 2105, Edition C.
- 10.4 The Contractor shall deliver the QP within 30 days after the contract award to NSPA for approval. The QP shall include at least all the points listed above, and shall be line with the outline QP provided within the Technical Proposal.
- 10.5 NSPA shall be entitled to audit any aspect of the Quality Plan (QP) by accessing to facilities where the contracted activities are being performed.

- 10.6 The Contractor shall perform and document all quality control throughout duration of, construction, installation, and testing and commissioning. The Contractor shall therefore establish a full time, qualified Quality Manager.
- 10.7 Details of all procedures and compliance documents shall be submitted to NSPA for evaluation before execution stage is commenced.
- 10.8 The Contractor shall make available equipment and supplies to the NSPA in order to carry out his duties associated with measuring and validating works performed. This shall include experienced survey assistance when measurements are taken.
- 10.9 The Contractor shall flow down the contractual requirements to external providers.

11. HEALTH AND SAFETY

- 11.1 The Contractor shall develop a Health & Safety Plan (HSP) respecting Italian National and EU Standards, as close as appropriate and be solely responsible for risk assessments and managing health and safety issues associated with this project. This plan shall contain at least the following elements:
 - 11.1.1 Define the applicable health and safety regulations related to this SOW;
 - 11.1.2 Health and Safety Responsibilities;
 - 11.1.3 Personal Protective Equipment (PPE) plan;
 - 11.1.4 Site-Specific Safety Plans;
 - 11.1.5 Safety Meetings and Trainings to ensure that the Employees are trained to recognize jobsite hazards and the procedures to follow to minimize these hazards;
 - 11.1.6 Safety Inspections plan;
 - 11.1.7 Emergency Action Plan (Emergency Action, Evacuation and Fire Prevention);
 - 11.1.8 Incident/Property Damage procedures;
 - 11.1.9 Accident Prevention and Reporting Procedures;
- 11.2 The HSP shall be signed and dated by the Contractor and be available for the length of the project. Work shall not start until the initial plan

has been approved by NSPA and if required, by the competent public authority.

- 11.3 During the phase I, the danger zones shall be determined and marked by according signs and warning plates defined in the HSP.
- 11.4 The HSP shall be updated as required in order to address any changing conditions and be readily available at all times for inspection.
- 11.5 The Contractor shall conduct a weekly Safety Meeting to discuss new and ongoing safety issues. The weekly report shall be available at all times for inspection.

12. ENVIRONMENTAL PROTECTION

- 12.1 The Contractor shall implement all the necessary procedures and methodologies to protect the environment from contamination, pollution or other adverse impacts resulting from its services. The contractor's environmental protection measures shall be, as a minimum, in accordance with national, regional and local laws and regulations.
- 12.2 The Contractor shall provide a copy of its ISO 14001 accreditation or equivalent certificates.
- 12.3 The Contractor shall provide a copy of its Environmental Policy, which shall be relevant to the scope of this SOW.
- 12.4 The Contractor shall provide the latest Environmental Audit Report by a third party auditor.
- 12.5 The Contractor shall provide an Environmental Protection Plan (EPP) for the control, prevention, management, containment, clean up, and disposal of hazardous substance. The EPP shall comprise but not limited the following information:
 - 12.5.1 Identification of the environmental protection standards and specification that applies to this SOW, in line with paragraph 4.
 - 12.5.2 Development of the process controls in line with paragraph 6.5. Environmental inspections shall be performed to ensure that work proceeds according to this SOW.
 - 12.5.3 Environmental Risk Analysis (ERA). The Environmental expert shall record all environmental significant aspect (risk) from ERA on the plans and procedures in the form included as an exhibit in this subsection. See in ANNEX II a sample of an ERA template.

12.5.4 Storage, Containment and Disposal plan.

12.5.4.1 The debris, rubbish, and other waste materials resulting from demolition and construction operations from the site shall be collected, transported with appropriate vehicles and disposed off site to areas that are approved for disposal.

12.5.4.2 The Contractor shall provide the equipment and material to contain, store and transport the classified waste.

12.5.4.3 A Storage plan including the waste flow layout.

12.5.4.4 Codification of the waste in accordance with the European Waste Catalogue and the European Hazardous Waste list.

12.5.4.5 Ensure that the collected waste is transferred to a facility for the purpose of a recovery or disposal activity, shall have a waste licence, waste facility permit and certificate of registration.

12.5.5 Emergency Preparedness and Response Plan (EPRP). The Contractor shall establish and implement a procedure(s) to identify potential emergency situations and potential accidents resulting from this SOW. The EPRP shall cover but not limited the following steps:

12.5.5.1 Identification of the specific potential accident related to this SOW.

12.5.5.2 Prevention measurements related to the identified accidents.

12.5.5.3 Emergency Plan.

12.5.6 The Contractor shall conduct a coordinated array of environmental inspections and test that will verify that work processes and results conform to the EPP, contract requirements and the Italian law in terms of environmental protection.

ANNEX I: Periodic reports and deliverable schedule.

The Contractor shall provide the following reports and deliverables during the Contract's performance:

Num.	DELIVERABLE	Affect the paragraph X of the	DELIVERY / FREQUENCY	DESCRIPTION (SOW requirements)	SUBMIT TO
1	Technical Proposal -- Drainage System at Central area	5.1/5.4	Within the Technical Proposal	Based on paragraphs 5.1 and 5.4, the Contractor shall provide a technical proposal in order to support NSPA to conduct its technical evaluation. The rainwater drainage system shall describe as stated in paragraph 5.1.6.	NSPA
1.1	Preliminary Technical Study	5.1.6	Within 60 days after contract award	Provides an outline for the manner in which the Contractor will develop and set up the requested an Integrated rainwater drainage system. The study will be submitted to the competent public authorities.	NSPA
1.2	Final Design Concept	5.1/5.4	Within 90 days after the Preliminary Technical Study submitted (Num. 1.1)	The report shall contain all modifications no matter how minor as well as, the Authorities' prescriptions. All interested parties should approve the Final Design Concept.	NSPA
2	Technical Proposal – Refurbishment of the backstop facilities	5.2	Within the Technical Proposal	Based on paragraph 5.2, the Contractor shall provide a technical proposal in order to support NSPA to conduct its technical evaluation.	NSPA
2.1	Preliminary Technical Study	5.2	Within 60 days after contract award	Provides an outline for the manner in which the Contractor will manage and perform the refurbish requirements. The study will be submitted to the competent public authorities.	NSPA
2.2	Final Technical Study	5.2	Within 90 days after the Preliminary Technical Study submitted (Num. 2.1)	The report shall contain all modifications no matter how minor as well as, the Authorities' prescriptions. All interested parties should approve the Final Technical Study.	NSPA

3	Technical Proposal – Refurbishment of the off-gas extraction system	5.3	Within the Technical Proposal	Based on paragraph 5.3, the Contractor shall provide a technical proposal in order to support NSPA to conduct its technical evaluation.	NSPA
3.1	Preliminary Technical Study	5.3	Within 60 days after contract award	Provides an outline for the manner in which the Contractor will manage and perform the refurbish requirements.	NSPA
3.2	Final Design Concept	5.3	Within 90 days after the Preliminary Technical Study submitted (Num. 3.1)	The report shall contain all modifications no matter how minor as well as, the Authorities’ prescriptions. All interested parties should approve the Final Design Concept.	NSPA
4	Technical Proposal – Geological survey	5.5	Within the Technical Proposal	Based on paragraph 5.5, the Contractor shall provide a technical proposal in order to support NSPA to conduct its technical evaluation phase of the International Competitive Bidding (ICB).	NSPA
4.1	Geological Survey Plan	5.5	Within 60 days after contract award	The Contractor shall provide a work plan, which shall describe the survey management. The work plan could be submitted for authorities’ consideration as requested by “ <i>Superintendencia Paisajistica</i> ”.	NSPA
4.2	Geological Survey Report	5.5	Within 30 days before closed contract	The Geological Survey Report shall integrate as well the paragraph 5.5.5 requirements.	NSPA
5	Project Master Schedule (PMS)	6.3	Within 30 days after contract award	The Contractor shall establish a realistic PMS and a firm completion date for all activities of this SOW.	NSPA
5.1	Preliminary PMS	6.3	Within the Technical Proposal	Based on paragraph 6, the Contractor shall provide a preliminary PMS	NSPA

5.2	Monthly PMS	6.3	Monthly – By close of business on the 10 th day of each month	The Contractor shall update the PMS on a day-to-day basis.	NSPA, FRC
6	Phase I - Preparatory Works	6.4	Within 30 days after contract award	As a legal prerequisite to start the construction activities, the construction permits shall be submitted and approved. The contractor shall evaluate this period and report all risks associated with this approval into the project schedule.	NSPA, FRC
6.1	Phase I - Preliminary Preparatory works Plan	6.4	Within the Technical Proposal	The Contractor shall provide a preliminary preparatory works plan where shall be identified and described all preparatory phases.	NSPA
7	Preliminary Control Plan	6.5	Within the Technical Proposal	The Contractor shall provide its working methods to conduct the Controls stated in paragraph 6.5.	NSPA
7.1	Risk Log spreadsheet	6.5.1	Monthly – By close of business on the 10 th day of each month	The Contractor shall develop and update a Risk Log on a day-to-day basis.	NSPA, FRC
7.2	Project Exception Report (PER)	6.5.2	For any deviation	The Contractor shall submit a (PER) as requested in paragraph 6.5.2.	NSPA, FRC
7.3	Pre-final inspection “punch list”	6.5.11	Within 30 days before C&A test	The “punch list” shall be developed before the C&A test.	NSPA
8	Commissioning and Acceptance Program	6.6	Within 30 days before C&A test	The Program shall describe the methods by which all works and or applicable equipment are deemed acceptable for commissioning/handover.	NSPA
8.1	Certificate of Conformity (CoC)	6.6.6	Within 30 days before closed contract	The Contractor shall provide all CoC for each supplied equipment.	NSPA, FRC

9	Document and Drawing Control Program (DDCP)	6.7	Within 30 days after contract award	The Contractor shall develop a DDCP to manage all engineering drawings and documents to ensure 100% compliance with the quality management process, and monitoring the progress of the SOW's deliverables in real time.	NSPA
9.1	Final Documentation Package	6.7	Within 30 days before closed contract	The Contractor shall compile and submit all the requested deliverables in an orderly manner.	NSPA, FRC
10	Preventive Maintenance Plan (PMP)	7	Within 30 days before closed contract	The Contractor shall ensure that the ITANVY will be able to perform the maintenance in a good manner during the complete life cycle of installations.	NSPA, FRC
10.1	Recommended Spares Provisioning List (RSPL)	7.3	Within 30 days before closed contract	The recommended spares parts list shall indicate the quantities of spares to be stocked in order to support the built in equipment, power supply, etc.	NSPA, FRC
11	Training Plan	8	Within 30 days before C&A test	Basic trainings shall be required for the operation and maintenance of the installations and emergency procedures a separate course required for maintenance and operator teams.	NSPA
12	Organization Chart	9.2	Within the Technical Proposal	The Contractor shall provide an Organization chart with the structure of the project, including all key personnel and departments, and all subcontractors.	NSPA
13	Outline Quality Control Plan	10	Within the Technical Proposal	The Contractor shall provide an outline in which shall be documented the Contractor's approach to managing the quality assurance and quality control procedures.	NSPA
13.1	Quality Control Plan (QCP)	10	Within 30 days after contract award	The QCP shall be line with the outline QCP provided within the Technical Proposal.	NSPA
14	Outline Safety Management Plan	11	Within the Technical Proposal	The Contractor shall provide an outline in which shall describe, as stated in paragraph 11.1, the contractors guidelines and procedures to ensure all occupational health and safety issues are addressed.	NSPA

14.1	Health & Safety Plan (HSP)	11	Within 30 days after contract award	The HSP shall be line with the outline HSP provided within the Technical Proposal.	NSPA, RFC
15	Outline Environmental Protection Plan	12.5	Within the Technical Proposal	The Contractor shall provide an outline structured in accordance with the International Organizations Standards.	NSPA
15.1	Emergency Preparedness and Response Plan (EPRP)	12.5.5	Within the Technical Proposal	The Contractor shall provide an outline structured in accordance with the ISO 14001:2015, clause 8.2.	NSPA
15.2	Environmental Protection Plan (EMP)	12.5	Within 30 days after contract award	The EPP shall be line with the outline EPP provided within the Technical Proposal.	NSPA
15.3	Environmental Risk Analysis (ERA)	12.5	Within the Technical Proposal	The Contractor shall provide an ERA in which the major significant environmental aspects shall be identified for the project.	NSPA
15.4	Environmental Risk Analysis (ERA)	12.5	Monthly – By close of business on the 10 th day of each month	The Environmental Manager shall perform, monitor and record the risks encountered during the performance of the project.	NSPA, FRC

ANNEX II: Environmental Risk Analysis (ERA)

Project Location:							
Contract Number:							
Date Prepared:							
Prepared by (Name/Title):		Severity		Probability			
				Frequent	Likely	Occasional	Seldom
Reviewed by (Name/Title):		Catastrophic	E	E	H	H	M
		Critical	E	H	H	M	L
Notes: (Field Notes, Review Comments, etc.)		Marginal	H	M	M	L	L
		Negligible	M	L	L	L	L
		<p>Step 1: Review each "Risk" with identified environmental "Controls" and determine RAC rating (above). "Probability" is the likelihood to cause an incident identified as: Frequent, Likely, Occasional, Seldom or Unlikely. Severity" is the outcome/degree if an incident, near miss, or incident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible Step 2: Identify the RAC (Probability/Severity) rating as E, H, M, or L for each "Risk" on ERA. Annotate the overall highest RAC at the top of ERA.</p>				<p>RAC Rating E = Extremely High Risk H = High Risk M = Moderate Risk L = Low Risk</p>	
work task/Activity/Job Steps	Environmental Risks	Environmental Protection / Controls				RAC	