BYCO PETROLEUM PAKISTAN LIMITED

INITIAL ENVIRONMENTAL EXAMINATION FOR THE OF EXTENSION OF OIL TRANSMISSION SYSTEM THROUGH SPM-II, SPM-III and PIPELINES AT HUB

Final Report

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Submission to:

Baluchistan Environmental Protection Agency

Consultants

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Acronyms

BEPA	Balochistan Environmental Protection Agency
BPPL	Byco Petroleum Pakistan Limited
CALM	Catenary Anchor Leg Mooring
EMP	Environmental Management Plan
EQS	Environmental Quality Standards
IEE	Initial Environmental Examination
MT	Metric tons
NEQS	National Environmental Quality Standards
OCIMF	Oil Companies International Marine Forum
PEPA	Pakistan Environmental Protection Agency
PLEM	Pipeline End and Manifold
SPM	Single Point Mooring (Buoy and Oil Pipeline)

CHAPTER 1: INTRODUCTION

1.1 Prelude

Byco Pakistan Petroleum Limited (BPPL) has conducted EIA study for the installation of Pakistan's first floating SPM-I floating jetty and obtained NOC from Baluchistan EPA vide reference no. DG(EPA)/3113-14/2013 dated 08-01-2013 which is attached as Annexure - 1, and further due to change in product range to handle on SPM-I proponent upon the direction of BEPA conducted IEE study and obtained NOC through reference no DG(EPA)/4734/2014 dated 02-05-2014 which is attached as Annexure-2.

This Initial Environmental Examination (IEE) Report presents the environmental aspects with respect to the extension phases of a proposed project of **"Extension of Oil Transmission System through installation of SPM-II, SPM-III and Pipelines**" which is located at Hub Baluchistan along with existing SPM-I and Pipeline. The proposed project is the part of capacity enhancement project, which will be carried out in two years. The IEE Report has been prepared in compliance with the requirements of Baluchistan Environmental Protection Act, 2012, EPA (Review of IEE and EIA) Regulation 2000 for submission to the Baluchistan Environmental Protection Agency for decision on environmental viability of the Project namely "**Extension of Oil Transmission System through installation of SPM-II, SPM-III and Pipelines**" located at Hub Baluchistan.

1.2 Project Proponent (Byco Petroleum Pakistan Limited)

1.2.1 Introduction

Byco Petroleum Pakistan Limited (BPPL) is Pakistan's emerging energy company engaged in the businesses of oil refining, petroleum marketing, chemicals manufacturing and petroleum logistics, engaged in manufacturing of a wide range of petroleum products with the objective to achieve sustainable productivity, profitability and high standards to address the environment, health and safety requirements.

Byco's operational refinery has a capacity to refine 35,000 barrels a day of crude oil into various saleable components including Liquefied Petroleum Gas, Light Naphtha, Heavy Naphtha, High Octane Blending Component, Motor Gasoline, Kerosene, Jet Fuels, High Speed Diesel and Furnace Oil. BPPL have expanded its refining complex by setting up another refinery with the capacity of 120,000 barrels per day which is completed.

Byco's crude oil tanker M T Arietis, carrying 70,000 metric tons crude oil from Abu Dhabi was berthed at the first-ever single point mooring. This marked the commissioning of the third port, which is now used for import of crude oil and handling of petroleum-related products. With a clear draft of 25 meters, this facility has a capacity to accommodate larger size vessels, carrying crude / petroleum products in cargo sizes of

over 100,000 metric tons. The full operation of single point mooring has resulted in creating adequate availability of other oil piers leading to reduced waiting time and consequential demurrage. Presently, the single point mooring is used to import crude oil for Byco's newly-completed 120,000 BPD and the existing fully operative smaller refinery of 35,000 BPD.

1.2.2 The Project Single Point Moring (SPM-II and SPM –III)

Byco has established its first single point mooring in year 2012 on the coast of the Arabian Sea at a distance of approximately 14 km from the Byco's refinery complex at Mouza Kund site and is approximately 10 km from the sea shore at 25 meters depth. It is connected to the storage tanks through 28-inch diameter offshore and onshore pipeline.

BPPL Management is now intending to establish two SPM facilities for transport of Crude oil and white oil products. SPM-II will be dedicated for crude oil and SPM-III will be dedicated for white oil products.

1.3 Project Location

Proposed project is located on the coast of the Arabian Sea at a distance of approximately 14 km from the Byco's Mouza Kund, near Byco refinery, Hub Baluchistan. Location of existing SPM and Pipeline and proposed SPMs are shown in Figure -1.

- **Location of SPM –I (Existing SPM-I):** SPM –I is located at distance of 10.5 km from on-shore.
- **Location of SPM-II (for crude):** SPM-II is located at distance of 12.5 km from shore and at distance of 2.0 km from existing SPM.
- **Location of SPM-III (for white products)** is located at distance of 1.0 km from existing SPM.

Figure 1: Location of existing SPM-I and proposed SPM-II and SPM -III

1.4 Approvals Obtained

BPPL has obtained/applied following approvals from different government Agencies for installation of SPM-II and SPM-III.

1. **Ministry of Defense (Maritime Affairs Wing):** BPPL has obtained NOC from Ministry of Defense for installation SPM-II and SPM III through letter no. U.O No. 2/4/MAW (M-2)/ 2015(M-3) dated 2nd August 2017. Copy of NOC is attached as Annexure–3.

1.5 Legal Aspects of IEE Study

1.5.1 Legislative Requirement

The objective of this study is to carry out an Initial Environmental Examination (IEE) of the proposed project activities to meet the environmental compliances laid down by the Baluchistan Environmental Protection Agency. The scope of study would be as per the Environmental Assessment Guidelines outlined by the Environment Protection Agency.

This IEE aims to identify possible environmental aspects of the project activities and suggest mitigation measure to cater environment and to fulfill the requirement for obtaining an environmental approval from the Environmental Protection Agency, Baluchistan.

The Baluchistan Environmental Protection Act 2012 (BEPA) empowers the Baluchistan EPA as the principal authority for environmental management in Baluchistan. It has established the requirements of environmental assessment for any project in place prior to commencement of work.

Section 15 of "Baluchistan Environmental Protection Act 2012" and other regulatory document such as "Environmental Protection Agency (EPA) Review of IEE/EIA Regulations 2000" requires that every new project in Baluchistan has to be preceded by an Initial Environmental Examination (IEE) or Environmental Impact Assessment (EIA) depending upon the size and severity of impacts anticipated on commissioning of the project.

The list provided in the Schedule-I of IEE/EIA Regulations 2000 indicates those projects that may not have significant affect on the environment and are, therefore, required to carry out IEE study. The list provided in the Schedule-II indicated those projects that may have significant impacts on the environment and are, therefore, required to prepare an EIA study.

The main objectives of the environmental assessment study are to identify the environmental and health impacts, both positive and negative, that may result from a proposed project. The study also provides recommendations to mitigate adverse impacts and maximize benefits on all aspects of the surrounding environment (physical, biological, social).

1.5.2 Justification for IEE Study

Environmental Protection Agency (Review of IEE and EIA) Regulations 2000 classifies projects on the basis of expected degree of adverse environmental impacts and lists them in two separate schedules. Schedule-I lists projects that may not have significant environmental impacts and therefore require an IEE, similarly Schedule-II contains the lists projects that have potentially significant environmental impacts and requiring preparation of an EIA.

The project of **"Extension of Oil Transmission System through installation of SPM-II, SPM-III and Pipelines"** falls under Schedule-I under the category of **B (5) "Oil and Gas Transmission System"**. This IEE report has, therefore been prepared in compliance with the requirements mentioned under the prevailing environmental legislation in Pakistan.

1.6 Approach and Methodology of IEE Study

1.6.1 Scope of IEE Study

The scope of this IEE Study is as under:

- Identify the characteristics of the proposed project that are likely to give rise to environmental impacts.
- Develop a baseline of project's current environmental scenario.
- Identify the type of impacts that may arise.
- Determine environmental resources which are particularly sensitive to impacts and categorize impacts on the basis of their severity.
- Evaluate impacts due to extension activities of proposed project and compliance with the relevant environmental regulations of Baluchistan.
- Evaluate impacts' severity/degree and provide necessary mitigation measures.
- Provide recommendations/suggestions for the environmental monitoring and management of social and physical environment in the surroundings of the project area during various phases of the project life.

1.6.2 Purpose and Objectives

The purpose of this IEE study is to evaluate the proposed activities against the Baluchistan Environmental Protection Agency (BEPA) requirements.

The specific objectives of this IEE are to:

- Assess the existing environmental and socioeconomic conditions at and around the project site, particularly identify any environmental and social sensitivity areas;
- Identify the likely impacts of the proposed project on the natural and socioeconomic environment, predict and evaluate these quantitatively wherever

possible and determine their significance in the light of technical and regulatory concerns, as well as those related to public perceptions;

- Propose appropriate mitigation and monitoring measures that can be incorporated into the design of the proposed activities to minimize any damaging effects or lasting negative consequences identified by the assessment
- Prepare an IEE report for submission to the Baluchistan Environmental Protection Agency (BEPA).

1.6.3 Methodology

The environmental assessment has been conducted with the following basic targets:

- Identification of the regulatory requirements that applies to the project activities in the proposed area, in the context of environmental protection, health and safety.
- Assessment of the proposed project activities in terms of their likely impacts on the environment during the extension phases of the project, in order to identify issues of environmental concern;
- Recommendation of appropriate mitigation measures that can be incorporated into the design of the project to minimize any environmental impacts identified.

For achieving these targets harmoniously the following methodology was adopted:

1. Review of regulatory requirements based on; preliminary assessment of project activities and the project area.
2. Collection of information of the proposed project activities, project design and schedule, with an emphasis on aspects that have an interface with natural and social environment.
3. Secondary literature review to collect environmental data about the project area.
4. Site visits for the collection of primary data related to various environmental aspects of the project area.
5. Evaluation of the environmental parameters those are likely to undergo significant change due to the proposed project.
6. Identification and evaluation of measures to mitigate the adverse impacts.

1.6.4 Phases of Study

The IEE study was performed in four main phases, which are described below:

a. Scoping:

The key activities of this phase included:

- **Project Data Compilation:** A specific description of the proposed activities relevant to environmental assessment was compiled with the help of the proponent.
- **Published Literature Review:** Secondary data including EIA of Oil Pipeline SPM-1 and IEE study of SPM -1 for additional product transfer conducted in March 2013 were reviewed, in addition to that other studies on weather, soil, water resources, wildlife, and vegetation were reviewed and compiled.
- **Legislative Review:** Information on relevant legislation, regulations, guidelines, and standards was reviewed and compiled.
- **Identification of Potential Impacts:** The information collected in the previous steps was reviewed and potential environmental issues identified.

b. Baseline Studies:

Following the scoping exercise, the project area was surveyed to collect primary data. During the field visits, information was collected on ecologically important areas, ambient air quality, sea water quality and local communities, public services, and sites of archaeological or cultural importance.

c. Impact Assessment:

The environmental, socioeconomic, and project information collected in previous phases was used to assess the potential impacts of the proposed activities. The issues studied included potential project impacts on:

- Sea water quality
- Soil quality
- Ambient air Quality
- Ecology of the area including wildlife and fauna
- Local communities

Following aspects were discussed in detail and evaluated for environmental scenarios associated with construction and operation phases of the **Byco Petroleum's SPM-II and SPM-III capacity Enhancement Project.**

- The present baseline conditions.
- The change in environmental parameters likely to be effected by the project related activities.
- Identification of potential impacts.
- Likelihood and significance of potential impacts.
- Mitigation measures to reduce impacts to as low as possible.
- Determination of residual impacts.
- Implementation of mitigation measures through environment management protocols.
- Evaluation of controls and monitoring of residual impacts.

d. Documentation:

The above steps, procedures and analysis have been documented in the form of an IEE report prepared according to the relevant guidelines of the Baluchistan Environmental Protection Agency and legal requirements. This report includes the findings of the assessment, project impacts, and mitigation measures to be implemented during the execution of the proposed activities.

1.7 Study Team

M/S BPPL has engaged Environmental Consultancy & Services for conducting the Environmental Assessment (IEE) Study of the proposed project. Consequently, ECS formulated the following team for conducting the study:

Name	Role	Position
Mr. Shahid Ali Lutfi	Team Leader	Consultant / Environmental Engineer
Mr. Arshad Hussain Memon	Deputy Team Leader/ Project Manager	Consultant / Environmental Engineer
Dr. Muazzam Ali Khan	Marine Ecologist	Environmental Scientist
Mr. Nouman Sheikh	Focal Person	Senior Environmental Engineer
Mr. Saddam Hussain	Social Expert	Energy /Environment Engineer
Mr. Shaikh Shahabuddin	Environmental Engineer	Civil /Environment Engineer

1.8 Report Structure

The structure of this IEE Report is as follows:

Chapter 1: Provides an introduction about the proposed project and categorization of the project with respect to the environmental regulations.

Chapter 2: Covers the project description, its precise location, construction and operation related details and the timeframe for completion of project

Chapter 3: Gives an overview of policy and legislation and relevant international guidelines concerning with the various aspects of the proposed project activities.

Chapter 4: Describes the existing environment at the proposed project area. It carries details of area infrastructures, physical, ecological and socioeconomic conditions of the area.

Chapter 5: Describes the anticipated environmental and social impacts of the project and their consequent screening in accordance with the general guidelines. The screening further identifies the residual impacts resulting as a consequence of the adoption of mitigation measures.

Chapter 6: Details the environmental management and monitoring plan to be implemented by the BPPL management for effective mitigation of adverse impacts and improved environmental performance.

Chapter 7: Summarizes the report and presents conclusion.

Annexure: A series of Annexure have been included in the report to provide information about the project, the regulations that were have been used to categorize the project as well as those governing environmental compliance, and other legal documents as the proof of validity of the project.

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CHAPTER 2: ENVIRONMENTAL LEGISLATION & OTHER REQUIREMENTS

2.1 Introduction

The principal environmental regulatory agency in Pakistan was the Environmental Protection Agency (EPA) of Pakistan that formulates environmental policies, action plans and legislation. After the 18th amendment the environmental portfolio devolved to provincial governments. Consequently, the Baluchistan Environmental Protection Agency was empowered to formulate environmental legislation, rules, regulations and standards and their enforcement/implement in the whole Baluchistan provinces as a formulating, regulatory and monitoring agencies. EPA Baluchistan head office is located at **Baluchistan Civil Secretariat 2nd Floor, Block-7 Zarghoon Road, Quetta.**

Presently, the basic legislation on environment is the Baluchistan Environmental Protection Act of 2012 (BEPA 2012) has been notified by the Government of Baluchistan and other rules and regulations are applicable of PEPA until EPA Baluchistan notify. EPA Baluchistan has also issued directions for immediate compliance with the legislation and Rules and Regulations promulgated so far.

This section provides synopsis of policies, legislation, and guidelines that may have relevance to the activities carried out by M/S BPPL within the scope defined for this IEE. The relevant requirements of the policy documents and legislative framework have also been incorporated in the environmental management and monitoring plan being formulated for the better environmental impacts management. BPPL management is committed to follow and comply with the relevant requirements of the policy documents and legislative frame work for the better management of environmental aspects and impacts of their business related activities.

2.2 Environmental Policies and Guidelines

2.2.1 National Conservation Strategy

The National Conservation Strategy (NCS) is the primary policy document of the Government of Pakistan (GoP) on national environmental issues. The document was approved by the Federal Cabinet in March 1992. The NCS identifies 14 core areas and recommends immediate attention to the stated core areas in order to preserve the country's environment.

The main objectives of the strategy are conservation of natural resources, sustainable development and improved efficiency in the use and management of resources. It covers fourteen key priority areas for policy formulation and intervention, including protecting watersheds; supporting forestry and plantations; protecting water bodies and sustaining

fisheries; conserving biodiversity; increasing energy efficiency; developing and deploying renewable resources; preventing or decreasing pollution; managing urban wastes; and preserving the cultural heritage. Energy policies include promoting efficiency and conservation as well as co-generation, hydro, biogas, solar and new alternatives. The strategy also includes measures to control and limit pollution - for example, by proper management of urban waste material, recycling programs, safe disposal practices.

2.2.2 National Environmental Policy

This policy covers all sectors and a wide range of means for promoting conservation and environmental protection in water, air and waste management, forestry, and transport. The policy aims to promote protection of the environment, the honoring of international obligations, sustainable management of resources, and economic growth. It calls for the setting of standards and regulations for ambient and indoor air quality, vehicle emissions and manufacture, energy conservation, fuel specification and building codes. It aims to promote mass transit and non-motorized transport as well as cleaner technologies, including natural gas (LPG), solar, hydroelectric, biogas and cogeneration with waste, and offering tax incentives for efficient products. It also calls for creating increased public demand for environmentally friendly products through education and mass awareness campaigns.

2.3 Environmental Legislation

2.3.1 Baluchistan Environmental Protection Act, 2012

Baluchistan Environmental Protection Act of 2012 provides the overarching provincial framework for the protection of the environment in Baluchistan. It builds on the provisions of PEPA and localizes them to the provincial context.

The act extends to whole of the province of Baluchistan and is to provide for the protection, conservation, rehabilitation and improvement of the environment, for the prevention and control of pollution, and promotion of sustainable development.

Under Section 2(qq), the Act defines "pollution" as the contamination of air, land or water by the discharge or emission of effluent or wastes or air pollutants or noise or other matter which either directly or indirectly or in combination with other discharges or substances alters unfavorably the chemical, physical, biological, radiation, thermal or radiological or aesthetic properties of the air, land or water or which may, or is likely to make the air, land or water unclean, noxious or impure or injurious, disagreeable or detrimental to the health, safety, welfare or property of persons or harmful to biodiversity. BEPA Act 2012 is attached as Annexure-4 for ready reference and further guidance.

2.4 Applicable Rules, Regulation and Standards

2.4.1 Environmental Protection Agency (Review of IEE and EIA) Regulations

The Pakistan Environmental Protection Agency Review of IEE and EIA Regulations provide the necessary details on preparation, submission and review of the IEE and EIA. Categorization of projects for IEE or EIA is one of the main components of the Regulation. Projects are classified on the basis of expected degree of adverse environmental impacts. Project types listed in Schedule - II require an EIA and Schedule- I projects require an IEE to be conducted, rather than a full-fledged EIA, provided they are not located in environmentally sensitive areas.

Salient features of the regulations relevant to the proposed project are listed below:

- Categories of projects requiring IEE and EIA are issued through two schedules attached with the Regulations. Oil and gas transmission systems projects are included in an IEE category.

- The IEE / EIA must be prepared, to the extent practicable, in accordance with the Pak-EPA environmental Guidelines discussed in the sections to follow.

- The submitted report is to be accompanied by an application in prescribed format included as Schedule - IV of the Regulation.

- The EPA is bound to conduct a scrutiny and reply within 10-days of submittal of report (a) confirming completeness (b) asking for additional information, or (c) requiring additional studies.

- The EPA is required to make every effort to complete the review process for the IEE within 45-days, and of the EIA within 90-days, of issue of confirmation of completeness.

- When EPA accord their approval subject to certain conditions, the following procedure will be followed:

    - Before commencing construction of the project, the proponent is required to submit an undertaking accepting the conditions.

    - Before commencing operation of the project, the proponent is required to obtain from the EPA a written confirmation of compliance with the approval conditions and requirements of the IEE/ EIA.

- There is a requirement for an EMP to be submitted with the request for obtaining confirmation of compliance.

- The EPA is required to issue confirmation of compliance within 15-days or receipt of request and complete documentation.

- The IEE / EIA approval will be valid for three years from date of accord.

  - A monitoring report is required to be submitted to the EPA after the completion of construction followed by annual monitoring reports during operations. Detailed IEE/ EIA review regulation 2000 are attached as Annexure-5.

2.5 National Environmental Quality Standards (NEQS)

Government of Pakistan in early 1990s realized the importance of environmental pollution control by introducing National Environmental Quality Standards (NEQS) through statutory notifications as per recommendations of various advisory committees. Pakistan Environmental Protection Committee (PEPC) in its first meeting held on 10th May 1993 approved the NEQS. Later on, a set of NEQS was announced under SRO 742 (1) 93 dated 24th Aug 1993. These approved 32 parameters prescribing permissible levels of pollutants in liquid effluent while 16 parameters for gaseous emission were of uniform standards applicable to all kinds of industrial and municipal effluent.

Revised NEQS which were approved by the Council in December 28, 1999. These NEQS were made effective under SRO 549 (1) 2000 dated 8th August 2000.

The Council made last amendments in S.R.O 742(1)/93 dated 24th August 1993 with its S.R.O. 1062(1)/2010 dated 16th October 2010.

- NEQS which were approved by the Pakistan Environment Protection Council. These NEQS for Municipal and Industrial effluent are attached as annexure-6 A.

- NEQS which were approved by the Pakistan Environment Protection Council. These NEQS for Industrial Gaseous Emissions, Motor Vehicle Exhaust, Noise and Ambient Air Quality re attached as annexure- 6 B.

- NEQS which were approved by the Pakistan Environment Protection Council. These NEQS for Ambient Noise Level re attached as annexure-6 C.

2.6 National Self-Monitoring and Reporting by Industries Program

a. Introduction

The Pakistan Environmental Protection Act 1997 makes it incumbent upon industrial facilities to restrict amount of pollutants in their air emissions and effluents to the limits specified in the National Environmental Quality Standards (NEQS). The Act also outlines institutional framework for administering its laws. The EPAs are

required to determine whether industries comply with the law. PEPA'97 requires the EPAs to measure, analyze and report the environmental performance of every industrial facility in the country, against no less than 48 environmental parameters-32 for liquid effluents and 16 for air emissions, which are in the NEQS. Unless the EPAs elicit the industrial sector's participation, this task isn't small or easy.

Perceiving the need for a more feasible approach, the Pakistan Environmental Protection Council constituted an Environmental Standards Committee in 1996 to devise realistic modalities for NEQS enforcement and simplified monitoring procedures. An Expert Advisory Committee was also appointed to address technical issues related to the NEQS and environmental mentoring and reporting procedures. Working in close collaboration with various industries, NGOs and research organizations, the Committee completed its work in August 1998. One of the important products of its efforts is the "Self-Monitoring and Reporting System for Industry", to be implemented by the EPAs in collaboration with the industry and other stakeholders.

b. Objectives of the Self-Monitoring Program

Self-Monitoring and Reporting by Industries System is designed to make the country's industry owners and operators responsible for systematic monitoring and reporting of their environmental performance. By implementing this system the government, in fact, transferred the responsibility for examining and evaluating industry's environmental performance to individual industrial facilities. Apart from saving EPAs considerable expense, time and effort, this measure will enable industry to make long-term provisions for eco-friendly production. The reported data and ongoing pollution trends will also enable government agencies to assist industrial units in controlling their pollution levels.

c. NEQS Self-Monitoring and Reporting by Industries Rules 2001

The system for implementation of NEQS by industries through self-monitoring as proposed by the Environmental Standards Committee was notified through S.R.O 528(1)/2001 as NEQS (Self-Monitoring and Reporting by Industries) Rules, 2001. These Rules classify industries into three categories (A, B and C) for liquid effluents and two categories (A and B) for emissions, each corresponding to a specified reporting frequency. Industries falling under a particular category are required to monitor and report only 'Priority Parameters' as per the specified frequency. These Rules also provide formats for recording the results of monitoring and lab analysis and their reporting to EPAs.

d. Industrial Categorization & Reporting Procedure

i. Classification of Industrial Units for Liquid effluents

"Category A"

(1) Chlor-Alkali (Mercury Cell).
(2) Chlor-Alkali (Diaphram Cell).
(3) Metal finishing and electroplating.
(4) Nitrogenous fertilizer.
(5) Phosphate fertilizer.
(6) Pulp and paper.
(7) Pesticides formulation
(8) Petroleum refining
(9) Steel Industry
(10) Synthetic Fiber
(11) Tanning and leather finishing.
(12) Textile processing
(13) Pigments and dyes.
(14) Thermal Power Plants (Oil Fired and Coal Fired).
(15) Rubber products.
(16) Paints, Varnishes and Lacquers.
(17) Pesticides.
(18) Printing.
(19) Industrial chemicals.
(20) Oil and Gas production.
(21) Petrochemicals.
(22) Combined effluent treatment.
(23) Any other industry to be specified by Federal or Provincial Agency

Category "B"

(1) Dairy industry.
(2) Fruit and vegetable processing.
(3) Glass manufacturing.
(4) Sugar.
(5) Detergent.
(6) Photographic.

(7) Glue manufacture.
(8) Oil and Gas exploration.
(9) Thermal Power Plants (Gas Fired)
(10) Vegetable oil and ghee mills.
(11) Woolen mills.
(12) Plastic materials and products.
(13) Wood and cork products.
(14) Any other industry to be specified by federal or Provincial Agency.

"Category "C"

(1) Pharmaceutical (Formulation) Industry.
(2) Marble Crushing.
(3) Cement.
(4) Any other industry to be specified by Federal or Provincial Agency

ii. Industrial Units for Gaseous Emissions

"Category "A"

(1) Cement.
(2) Glass manufacturing
(3) Iron and steel.
(4) Nitrogenous fertilizer.
(5) Phosphate fertilizer.
(6) Oil and Gas production.
(7) Petroleum refining.
(8) Pulp and paper.
(9) Thermal Power Plants (coal and oil based)
(10) Boilers, ovens, furnaces and kilns (coal and oil fired)
(11) Brick-Kilns (firewood and bagasse based)
(12) Any other industry to be specified by Federal or Provincial Agency.

Category "B"

(1) Sugar.
(2) Textile.
(3) Cholor alkali plants.
(4) Dairy industry.
(5) Fruits and vegetables.
(6) Metal finishing and electroplating.
(7) Boilers, ovens, furnaces and kilns (gas-fired)
(8) Any other industry to be specified by Federal or Provincial Agency.

iii. Reporting

Procedure

- Under Category A, each plant has to report its data every month.
- Under Category B, each plant has to report the data on quarterly basis.
- Under Category C, each plant has to report the environmental data on biannual basis.

Copy of Self-Monitoring Rules, 2001 is attached as annexure-7 for ready reference.

2.7 Other Relevant Laws

2.7.1 IMO Conventions MARPOL 73/ 78

The "International Convention for the prevention of pollution from ships, 1973 as amended by the protocol of 1978 there to" (MARPOL 73/78) is aimed at minimizing and eliminating pollution from ships. It covers two main subjects:

i. The special construction and equipment rules for the prevention of accidental pollution; and

ii. The circumstances in which discharges in the sea are authorized.

Article 4 sub-para -2: Any violation of the requirements of the present convention shall be prohibited and sanctions shall be established therefore under the law of that party. Whenever such a violation occurs that party shall either;

- Cause proceedings to be taken in accordance with its own law, or
- Furnish to the administration of the ship such information and evidence as may be in its possession that a violation has occurred.

Article 4 sub-para -4: The penalties specified under the law of a party pursuant to this article shall be adequate in severity to discourage violations of the present Convention and shall be equally severe irrespective of where the violations occur.

2.7.2 Biodiversity Action Plan

The key to protection of the biological heritage of Pakistan lies in the involvement of local people and in the support provided by competent institutions for conservation and sustainable use. The Government of Pakistan has recognized the importance of these measures in the preparation of the National Conservation Strategy and in becoming a signatory to, and ratifying, the Convention on Biological Diversity (CBD) in 1994. Developing the Biodiversity Action Plan for Pakistan, 2000 has been the most significant direct steps towards addressing the biodiversity loss.

The BAP recognizes that an Environmental Assessment (EA) is used as a tool at a project level to identify environmental effects of a proposed project and to plan for reducing adverse effects. The BAP further stipulates that an EA needs to be initiated at an early stage of project development and that public participation in the review of potential effects is important.

CHAPTER 3: DESCRIPTION OF THE PROJECT

3.1 Objective of Project

The main objective of the SPM's is to enhance handling capacity of refinery, reduce the transportation cost and other losses. The secondary feature of this project is to open the doors for other stakeholders to come forward in bringing newer technologies in the country. Presently company receives its imported crude oil at SPM-1, Port Qasim and Karachi Port Trust. This crude oil is transported to the refinery by road through road tankers from KPT and PQ. The additional facility of SPM-II and SPM-III will save these costs reduce the environmental impacts and will facilitate freight savings from utilizing larger size crude oil tankers and handling of petroleum products.

3.2 Project Ownership Details

The Off-shore right of way (RoW) falls under the jurisdiction of Ministry of Ports and Shipping. The project requires the permission from the Ports and Shipping prior to commencement. The project has applied for the permission for Installation of additional SPM. Moreover, the on-shore RoW of pipeline is same as pipeline of SPM-I which is property of M/S BPPL and was acquired at the time of SPM-I.

3.3 Terminal Location

The proposed project will be situated on the coast of the Arabian Sea besides the existing SPM-I at a distance of approximately 14 km from Byco refinery and which is shown in Figure-1. The project site falls under the jurisdiction of Mauza Kund, Tehsil Gadani, District Lasbella, Baluchistan.

3.4 Purpose / Need of the Project (SPM -2 SPM-III)

The proposed project is part of expansion plan of the company, and it's another strategic milestone in the history of BPPL. Since the installation of SPM-I in 2012, 5 Million Tons of Crude Oil has been imported. Keeping in view growing future demand due to CPEC projects it is inevitable to further enhance the handling capacity of refinery; Management of BPPL has planned to construct two additional SPMs for the transportation of crude oil for its refinery and white oil products for retails outlets.

3.5 Project Components

Proposed project extension of SPM-II, SPM-III and Pipelines is part of expansion plan of BPPL for the capacity enhancement for handling of crude oil and white oil products. During current phase two SPMs will installed and separate lines will be laid down,

starting from Single Point Mooring-1 located at 14 kilometers inside deep sea, both lines will be laid parallel to existing SPM-I. During this phase following components will be undertaken. Figure-2 shows the proposed CALM mooring system.

- Installation of Single point moorings
- Installation of buoys
- Sub Sea hose,
- PLEM and offshore pipeline

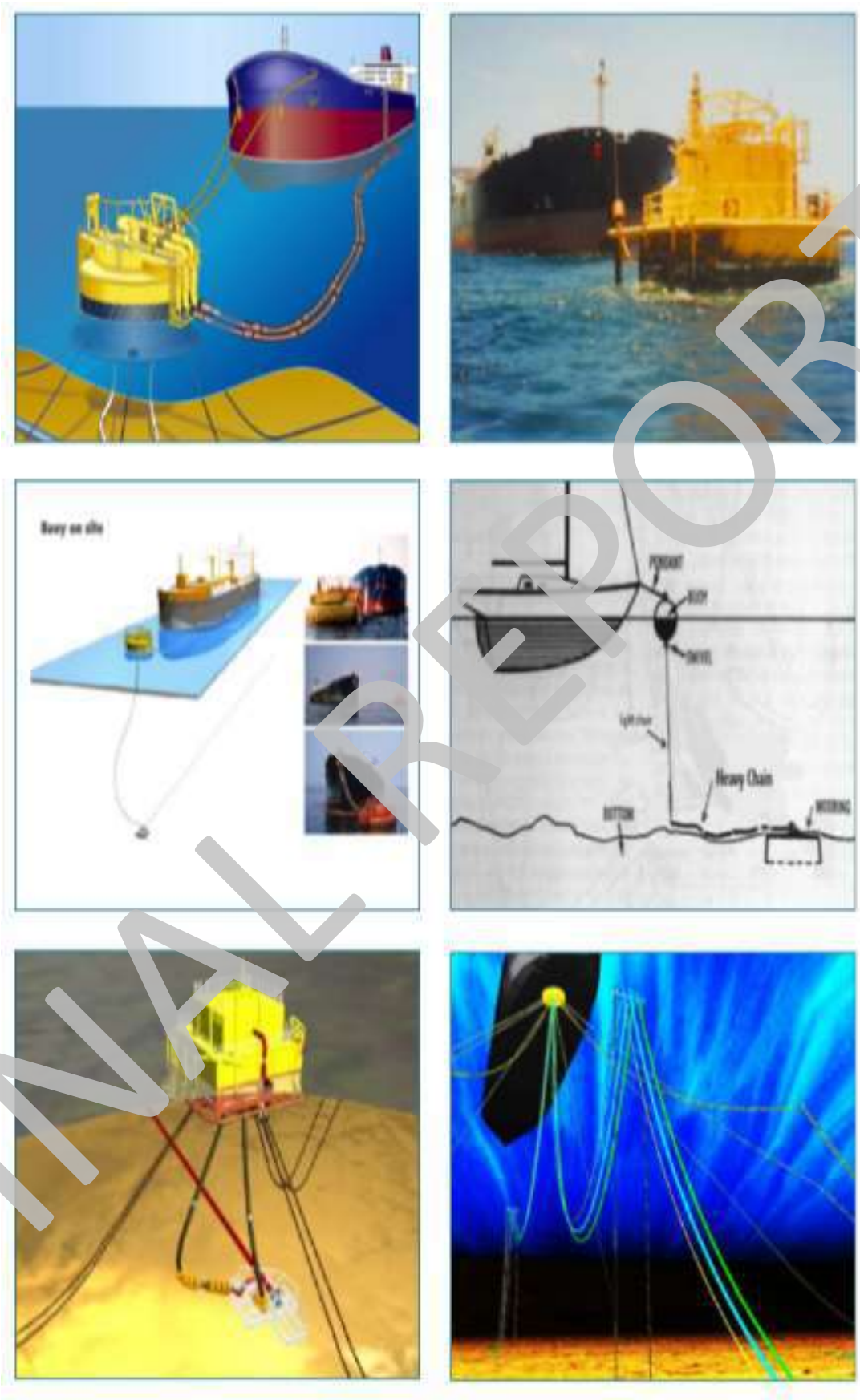


Figure 2: Schematics views of proposed CALM Buoy Mooring System

3.6 Design Criteria of Sub-Sea Pipeline & SPM-II and SPM-III

The initial SPM layout has been set in accordance with rules and requirements provided by OGRA and other authorities. Whereas designing this project, all possible latest technologies and parameters have and been considered. Selected parameters of design of sub-sea pipeline and SPM terminal are mentioned in Table-1.

Table 1: Design Specifications for SPM-II & SPM-III

Specification	SPM-II	SPM-III
Installed capacity	About 16 to 20 Million MT per Annum :	8 Million MT per Annum :
Max. Tanker Size	2500, 00.00 DWT	MR Vessel max 60000.00 DWT
SPM coordinates	Lat : 24°58'.00"N Long : 66°34'.80"	Lat : 54°57'.00"N Long : 66°37'.00" E
SPM Dimensions	Dia 10 Meter. Height 4 meter. Weight 150 MT, Skirt Dia 13.8 meter	Dia 10 Meter. Height 4 meter. Weight 150 MT, Skirt Dia 13.8 meter
Pipelines	Subsea 42"Φ" Suggested for VLCC offloading.	Subsea 28"Φ" Suggested for offloading.
Submarine Hoses	20” Dia * 2 *36.6 Meter OCIMF std, Rating 15 barg. Chinese lantern.	20” Dia * 2 *36.6 Meter OCIMF std, Rating 15 barg. Chinese lantern
Floating Hose	2 X 24"Φ" dia. Reduce To 16" Dia X 270 Meters long. OCIMF Standard rating 15 Barg.	1 X 16"Φ" dia reduce To 16" Dia X 223 meters Long OCIMF Standard Rating 15 Barg.
System Pressure	Pressure Rating 15 Barg	Pressure Rating 15 Barg
Safety coupling	Marine Breakaway Coupling (MBC) approx. 20 Φ".	Marine Breakaway Coupling (MBC) approx. 16 Φ".
Manifold Connections	2 X 16" dia Cam Lock coupling (on tanker Port side)	1 X 16" dia Cam Lock coupling (on tanker Port side)
Buoy Mooring Legs	6 Nos * 350 Meter each, 76mm chain with Anchors	6 Nos * 350 Meter each, 76mm chain with Anchors
Mooring Ropes	Hawsers 54 meters *2 * 10’’ circum, 1530KN MBL floating	Hawsers 54 meters *2 * 10’’ circum, 1530KN MBL floating

Specification	SPM-II	SPM-III
	type (OCIMF Std)	type (OCIMF Std)
Water Depth	28 Meter (Provided recent depth survey. Transiting TSS & 02 SPM Survey	Max 18 Meter (Provided recent depth survey. (Transiting TSS & SPM Survey)
Design Life	25 Years	25 Years
Vessel Charter Sizes	VLCC, max. draft @ berth 20 meter or less	MR max. draft @ berth 12 meter or less
Product handling	Crude Oil	W.C.P
Shore Storage Tanks	Various dia storage tank for receiving and storing product	Various dia storage tank for receiving and storing product
Facility Piping Network	Various dia pipeline in the system for separate circuits	Various dia pipeline in the system for separate circuits
Discharging Rate	6K MT/Hr @ 7 barg discharge pressure	2K MT/Hr @ 7 barg discharge pressure
Classification SPM	Bureau Veritas (Marine Division)	Bureau Veritas (Marine Division)

3.6.1 Selection Criteria for SPM Location

Following criteria was followed for the Location selection of SPM.

- Adequate water depth so the mooring system can survive a 100 year maximum storm environment. The recommended minimum water depth for 250,000DWT tanker mooring is SPM is approximately 28 meters.
- An area which is deep enough and free of navigational obstructions so that any fully loaded tanker or smaller can safely approach the mooring system.
- Minimizing the size and length of pipeline and avoiding restricted area such as shipping lanes.
- Keeping in view of above considerations following locations are proposed.
  - SPM -2 for crude oils Lat 24 deg 58.00 min N, Long 066 deg 34.80 min E
  - SPM-III for product Oil: Lat 24 deg 57.00 min N, Long 066 deg 37.00 min E.
  - The length of existing subsea line is 10k.m and land side length of pipeline is 4.0 km.

3.6.2 System Selection

There are three different types of single point system commonly available, which are given below;

- Catenary anchor leg mooring (CALM)
- Single- anchor leg mooring (SALM)
- Tower Moring

Based on various engineering design considerations and preliminary evaluation. The design particulars of the proposed CALM mooring system are summarized below in Table-2.

Table 2: System Selection Parameters

Parameter	Design value
Buoy diameter (m)	12
Buoy depth (m)	4.8
Buoy draft (m)	2.4
No of Chain Legs	6
Chain	92mm ×305mm min ORQ Grade with MBL of 850.
Anchor	9 tons Stevpris, 12 tons Bruce or other type of drag anchor with min 580 tons holding capacity
Hawser	168mm×75m with 650 tons MBL.

3.6.3 Environmental Considerations

Bathymetric study has been carried out for this project which reveals expected environmental parameters were studied after the assessment of previous and present record of marine environment and experience of Installation of SPM-1.

3.6.4 Pipeline Design and Flow Rates

The design capacities of flow rates have been determined to meet the pumping pressure capability of most tankers, which shall have a typical discharging pressure of around 120psi. Hydraulic simulations were performed by means of the steady-state PIPESIM 2000 thermal hydraulic models. The pressure loss stimulation resulted in the recommendation to use a 28-inch pipeline for the selected site. This diameter pipeline is

suitable for the pump pressure from the offloading vessel to be able to overcome the elevation changes and no additional pumps will be required.

3.6.5 Design Requirement of Under Buoy Hoses & Floating Hoses

The design under buoy hose bore nominal size is 0.5 meter, which is determined from the corresponding pipeline size. The analysis results have shown that the required under buoy hose length is 36.6 m, which consists of 3×12.2 m long end sections. The under buoy hose flexible risers need to be specially reinforced at the end of each joint in order to satisfy the bending requirement for the increased design from storm condition. The floating hoses end connecting to the buoy also needs to be specially reinforced. The SPM extreme offsets have been calculated under the design storm conditions at various wave and current directions. The buoy extreme offsets are important parameters which need to be used in the selection of under buoy hose design.

3.7 Construction Schedule

This expansion work for "Installation and Commissioning of SPM-II, SPM-III and pipelines" will take twenty four months from execution of project i.e. after obtaining environmental and other necessary approvals.

3.8 Construction Methodology

Below section describes construction methodology of SPM-II, SPM -III and pipelines in detail.

3.8.1 Site Clearance

The proposed project site is partially located at offshore and on shore, proposed SPM-II, SPM-III will be located near SPM-1 location approximately at the safe distance of around 1.5 Km, currently there is no significant endangered fauna found on RoW of land side. However there are few shrubs / vegetation are found on the proposed RoW which exists parallel and closer to existing pipeline. The existing shrubs / vegetation are shown in Picture gallery; however cutting of trees will be avoided. For offshore, pipeline will laid and there will be no excavation. Site clearance at on-shore will be carried out with the following Procedure.

Procedure

- Setting out control point's reference to the given co-ordinates for site identification. Site shall be handed over to contractor by the client representative/ Engineer.
- RoW shall be barricaded to avoid any accident / incident
- Any vegetation will be grabbed and cleared from the site.

3.8.2 Excavation of Trench & Pipeline laying

The RoW will be 15 ft. wide. The RoW will be marked at every 500m on the side of the pipeline trench. The construction contractor will be responsible for any damage caused, outside the RoW during the project construction phase.

The pipeline will be buried to a depth of cover of 1 m (3-4 feet) or more (as specified in ANSI 31.4). There will be at least 300-mm clearance in the trench either side of the pipe. The pipe will be strung along the construction RoW, which is, welded into a continuous length for each section and then lowered into the trench.

Excavation and its arrangements to be made at Project site in accordance with the project drawings and project specifications in order to complete this installation safely as per agreed time schedule.

Procedure

- Setting up and establishing major Gridlines for the SPMs and pipeline.
- To perform bulk excavation with reasonable slope to achieve the required levels as per drawings proper mechanical Excavators (machine) shall be used.
- The trench for the pipeline is dug after the ROW is cleared of shrubs / trees in this operation trench digger and jack hammers are brought in to create the trench.
- Sandbags will be placed within the trench to restrict water flow and to support the pipe
- To take care of the existing utility lines, like some HT line are crossing RoW with due co-ordination will be done with Engineer/Client representative.
- To have proper arrangement for shoring and supporting the excavation face to avoid any possible sliding/collapsing of the excavated soil face.
- To make proper/safe access for workers/equipment to reach the excavation pits or trenches.
- After the excavation, all surplus material shall be transported out of the pit using Dumping Trucks. It shall be disposed off /stacked as per instructions of Engineer/Client representative.

3.8.3 Testing and Commissioning

Hydrostatically testing will be carried out for each section using sea water to 1.1 times the operating pressure, within 90-98% minimum specified yield stress. Isolating block valves in each line will contain the pressure. The pressure will be monitored over a period of 24 hours every half hour for any decay and if the system integrity is proved, the pressure can be let down. The tested section will then be tied to the previously tested section, and the water will be pumped to the next section for the pressure test. Where it becomes necessary to treat the water (with corrosion inhibitor and/or biocide) the

chemicals will be provided to the contractor by BPPL. Compressed air will be used to propel the water and dry the already tested pipe.

The contractor will be responsible for cleanup and restoration of the RoW on completion of the pipeline commissioning. The restoration will include compaction of the backfilled material according to the relevant standards, using the top soil stockpiled during the trenching phase as the top most soil layer, re-contouring the RoW, as close as possible, to the original conditions, repairing any natural drainage paths if damaged, removing any surplus soil and left over materials/debris from site (for appropriate disposal), and implementing re- vegetation measures, if required.

3.9 Operation and Maintenance

Delivery mechanism and pumping will be done through pumps on the vessel and floating hoses to SPM buoy. The crude oil on the cargo would be transferred to under buoy hoses, pipelines end manifold and offshore and onshore pipelines to refinery storage tanks. Two floating roofs storage tank each of diameter 70m and height 14.68m will be constructed at BPPL refinery premises in addition of existing four tanks. Crude consignment will be required in each week.

3.10 Staff and Supplies required

a) **Staffing:** During construction and operation phases the manpower required will be around 100 to 150 personnel and 10 to 15 personnel respectively. It includes highly skilled (Engineers, supervisors and technicians) to general work force (labors).
b) **Water Supply:** During construction, sea water will be used for hydrostatic testing. During operation phase drinking water would be required for staff which will be arranged from existing BPPL resources.
c) **Electric Supply:** Diesel generator and welding generators will be used. As per requirement, fuel will be HSD.

CHAPTER 4: ENVIRONMENTAL BASELINE

This section describes the environment of the project area. The project area is defined as the area where the project related activities to be carried which include the proposed project site and surroundings and the areas that can interact with the project positive and negative externalities in the long run. The description provided in this section is based on the published information and field survey data that was collected specifically for this study.

4.1 Natural Environment

4.1.1 Topography & Physiography of Land

Soil in the area is mostly brown and sandy. It is generally porous and contains high concentration of salt. The area land mass is generally flat and at some places rocky.

Soil samples were collected from 7 stands, of the sites sampled. Criteria for the selection of stands were:

1. An adequate area.
2. Relative homogeneous in floristic composition.
3. Free from flooding or burning

The BPPL SPM Zero Point (control room) is at an elevation of 30 ft above mean sea level. Land Elevation Map of BPPL SPM Zero Point (control room) is shown in Figure-3.

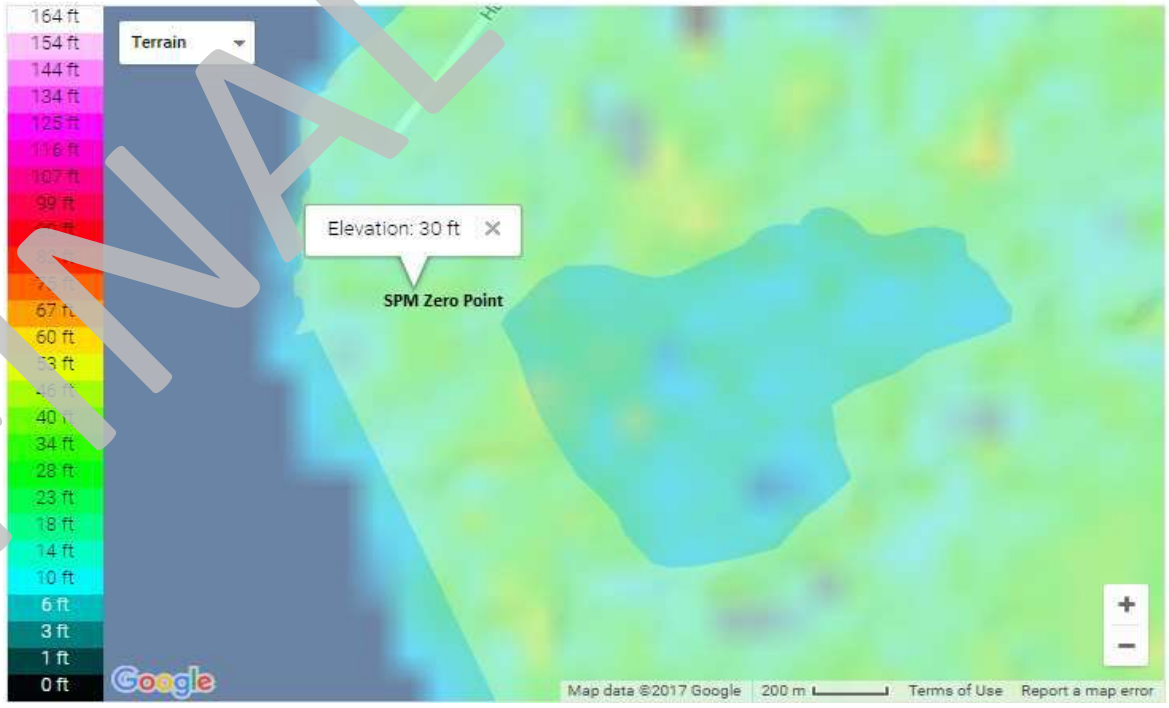


Figure 3: Land Elevation Map of SPM Zero Point

4.1.2 Methodology

Soil samples from a depth of 0-10 cm were collected using a soil auger from 3 random points within a stand and pooled. The samples were analyzed for physical and chemical parameters. Soil texture was determined by the methods as described in USDA (1951). Soil pH was determined by direct pH reading mater (Model Jenway) after preparing a suspension in the ratio of 1:25 (Soil distilled water). Water holding capacity was estimated by of the soil was determined by the method of Keen (1931) as modified by Shaukat *et al., (*1976). Organic matter of the soil was estimated by gravimetric analysis as reported in APHA (2005). Total nitrogen was determined by Kjeldahal method (APHA, 2005) whereas inorganic phosphate was determined by the method of Fogg and Wilkinson method (1958). Calcium, Magnesium and potassium were determined using Atomic absorption Spectrophotometer (Pie-Unicam).

4.1.3 Results

The results of soil analysis are presented in the table-3. The data was subjected to cluster analysis which derived five groups. Group I has high percentage of coarse sand low in water holding capacity and in pH medium organic matter content and generally high exchangeable Ca+2, Mg+2 and K+ and medium amount of phosphate. Group II associated with mangroves is characterized by high fine sand % , high WHC , pH and organic matter % and high total nitrogen content with medium Ca ++ , Mg++ and K + Group III is characterized by low silt and clay % and low TKN. Group IV has relatively higher WHC %, exchangeable Ca++ content and available PO4. Group V is characterized by high WHC % and low exchangeable Ca++.

Table 3: Soil Analysis Results

Sites	Soil properties										
	Sand%	Find sand %	Clay and silt %	WHC	pH	O.M %	TKN	Exch. Ca	Exch. Mg	Exch. K	PO_4
S-1	55.34	32.45	7.21	6.25	7.6	0.22	0.42	43	5.0	17	17
S-2	54.45	32.78	16.67	6.82	7.7	0.27	0.38	43	5.0	16	16
S-3	54.67	32.45	16.22	7.65	7.8	0.21	0.34	43	7.0	17	17
S-4	56.67	38.57	9.10	7.71	7.6	0.26	0.39	42	7.0	14	18
S-5	55.74	37.34	9.40	7.78	7.8	0.28	0.41	52	6.0	14	17
S-6	55.81	36.83	8.98	6.84	7.8	0.31	0.32	55	7.0	18	16
S-7	49.64	37.42	8.22	6.65	7.5	0.27	0.25	56	6.0	17	17

4.2 Water Resources

The area surrounding the proposed project site does not contain closer any natural surface water bodies such as river, etc. The existence of ground water is mostly saline owing to the site close proximity to seawater. As such there are no fresh water resources available that may be affected during construction and operational phase of the project.

4.3 Ecological Status

It is generally believed that on a global scale only 1.5 million species have been named and described which is in fact one third of the total species available on this planet (Novotny et al. 2002). Every single species is the part of global ecosystem without which the survival of humankind is questionable. The combination of species constitutes the biodiversity of an ecosystem. The biodiversity of the globe provides stability to the ecosystems, protecting humanity from diseases and natural disasters (Naeem and Li, 1997). These ecosystems also an economic asset base which provides services to the mankind (Costanza et al. 1997).

Biodiversity generally refers to life forms that include plants, animals and microorganisms. It also refers to genetic material they contain and the ecosystems they form. The over-riding concept of biodiversity is that every species and subspecies is potentially or actually of intrinsic value. Biodiversity is under threat mainly due to human interventions when the people degrade ecosystems and destroy habitats. Human impacts have now elevated the natural rate of species extinction by at least a thousand times (Pimm et al. 1995). The primary threat for most terrestrial and freshwater species is the destruction of their habitats (Baillie et al,. 2004),

Pakistan is rich in biodiversity having varied nature of habitats and ecosystems that have characteristics wild resources of both flora and fauna. Southern part of the country (Province of Sindh) having diverse and rich costal ecosystem and the arid area of which is having a variety of species.

According to Biodiversity Action Plan for Pakistan (2000), there is a network of 225 Protected Areas comprising 14 National Parks, 99 Wildlife Sanctuaries, 96 Game Reserves, and 16 unclassified (private, proposed or recommended) in Pakistan. The total area covered by these categories is 9,170,121 ha which makes 10.4% of the total land area. However, no critical marine habitat or endangered species have been identified in the study area.

4.3.1 Vegetation

Due to the scarce rain the area belongs to semi-arid region. The vegetation of the area includes open communities mostly dominated by grasses, shrubs, perennial herbs while small number of annuals and ephemerals appear in summer.

4.3.2 Methodology

The coverage of perennial herbs, shrubs and trees were estimated using the scale developed by Braun-Blanquet. Frequency and intensity of livestock grazing and wood/foliage harvesting were assessed using ordered scale ranging from zero (no exploitation) to 3 (highly grazed or harvested) in accordance with the practice of Enright et al., (2005). Grazing could be recognized in the field with eaten leaves or twigs and broken branches while harvesting was exhibited by cut stumps of trees or bushes (Enright et al., 2005) Each species was classified into its appropriate Raunkiaer's life-form class (Shaukat and Qadir, 1971) to construct the biological spectrum of the area.

4.3.3 Results

The vegetation cover of the area is low having low plant density. The vegetation occurs in patches while in between patches the area is mostly bare. Small phytogenic mounds can be seen mostly harbouring some halophytic plants such as *Suaeda fruticosa, Heliotropium tuberclosum, Zygophyllum simplex, Salsola imbricata, Atriplex griffithii, Eleusime compressa, Urochondra setullosa and Cyperus arenaria. Prosopis juliflora*, an invasive species from South America, has also invaded most of the plant communities, and in some of the communities has attained the position of a leading dominant.

Along with these frequent species, some species like *Heliotropium xelanicum* and *Heliotropium ophioglossum* can also be seen as rare species. A few plants of *Salvadora persica* were also seen.

In general, species diversity (richness) is low all over the landscape. Apparently there are no plants that have economic value with the exception of *Salvadora persica* which had only a few individuals. *Salvadora persica* is mostly grazed by camels owned by local people. In addition, its branches are used for making local tooth-brush.

The distribution pattern of the vegetation types and the individual species of the area can be related to three groups of factors, physical environmental characteristics (soils and topography) moisture regime, soil chemistry (governing nutrient regime) and anthropogenic disturbances regulating community composition and species diversity (Shaukat *et al.,* 1981; Enright *et al.,* 2005).

No vegetation type of significant economic or medicainal importantace has been seen. Due to high temperature and consequent increased evaporation from the soil surface, salinity is increasing due to which salt tolerant plants such as halophytes are increasing and acquiring greater abundance or dominance in the vegetation.

Suaeda fruticosa

Zygophyllum simplex

Zygophyllum simplex (dried)

Heliotropium tuberclosum

Eleusime compressa

4.4 Fauna

The faunal species comprises of large mammals, small mammals, reptiles, amphibians and birds. Marine fisheries are also an important component of the faunal species around the area. The small mammals are playing an important role on the stability of ecosystem. They occupy intermediate tropic position and are responsible for maintaining structure and function of an ecosystem as a consumer, mover and primary prey. Among the reptiles chelonians and lizards are commonly found. Snakes were also seen in the area. The area also serves as staging and wintering area for migratory shore birds, gulls and tern.

4.4.1 Large and Small Mammals

Large and small mammals were identified by using the following techniques.

a. Point surveys

This technique was based by marking observation points along the road sides, ponds or marshy areas. This was a tedious job as observer recorded all the sighting of mammals of whole day at each observation points.

b. Roadside Counts

A vehicle was used to locate the habitat and population of mostly nocturnal animals. The vehicle was moved slowly on the road sides to spot the animals if any.

c. Track counts

This technique was based on tracking of animals.

d. Field Traps and trapping procedure

Sherman traps were used for to collect the live specimens. Traps were placed in the specific areas and were set in the afternoon and checked early in the morning. The technique was however not successful because of lack of expertise.

e. Pellet counts

This technique was specifically used for large animals. In this regard random selections of plots were made.

f. Active searching

This technique was mostly used for small mammals particularly during the daytime

g Interviews with local residents

Local residents were interviewed about the existing wildlife of the area.

h. Cetaceans survey

Since the availability of limited facilities the observation on cetaceans was only limited. A boat was hired through which the team entered in to the sea. There was no significant observation was made on this regard therefore, there was no choice except to rely on secondary data.

4.4.2 Avifauna

The avifauna of the study area comprises of the following bird species that includes water birds, birds of prey and passerines along with Pigeons, Doves, Pygmies, Kingfishers, Parakeets, Cuckoos, Bee-eaters and woodpeckers. Blue Rock Pigeon, Common Myna and Common Babbler were quite common. Most of the species were residents. Falcons are rarely spotted by the locals in the area and were also not spotted during surveys.

The most common birds found in the macro-environment are sparrows, robins, crows and doves. Kites and vultures, the high flying birds were spotted but the falcons were conspicuous by their absence during the survey and the several visits to the area. The falcons were reported by the locals to be only occasional visitors. The avifauna of site is presented in table-4.

Table 4: Details of Avifauna of Project Site

S.No.	English name	Scientific name	Status	Occurrence
1.	Little Cormorant	*Phalacrocorax niger*	Common	Resident
2.	Indian Pond Heron	*Ardeola grayii*	Common	Resident
3.	Cattle Egret	*Bubulcus ibis*	Common	Resident
4.	Western Reef Heron	*Egretta gularis*	Common	Resident
5.	Little Egret	*Egretta garzetta*	Common	Resident
6.	Brahminy Kite	*Haliater Indus*	Common	Resident
7.	Kentish Plover	*Charadrius alexandrines*	Common	Resident
8.	Blue Rock Pigeon	*Columba livia*	Common	Resident
9.	Collared Dove	*Streptopelia decaocto*	Common	Resident
10.	Little Brown Dove	*Streptopelia senegalensis*	Common	Resident
11.	Rose-ringed Parakeet	*Psittacula krameri*	Common	Resident
12.	Common Koel	*Eudynamys Scolopacea*	Common	Resident
13.	Pied Kingfisher	*Ceryle rudis*	Common	Resident
14.	Little Green Bee eater	*Merops orientalis*	Common	Resident

15.	Small Sky Lark	*Alauda gulgula*	Common	Resident
16.	Wire-tailed Swallow	*Hirundo smithi*	Common	Resident
17.	Paddy-field Pipit	*Anthus rufulus*	Common	Resident
18.	White cheekedBulbul	*Pycnonotus Leucogenys*	Common	Resident
19.	Pied Bush Chat	*Saxicola caprata*	Common	Resident
20.	Common Babbler	*Turdoides caudatus*	Common	Resident
21.	Jungle Babbler	*Turdoides striatus*	Common	Resident
22.	Purple Sun Bird	*Nectarinia asiatica*	Common	Resident
23.	Indian House Crow	*Corvus splendens*	Common	Resident
24.	Common Myna	*Acridotheres tristis*	Common	Resident
25.	Indian House Sparrow	*Passer domesticus*	Common	Resident
26.	Streaked Weaver	*Ploceus manyar*	Common	Resident
27.	Great White Egret	*Casmerodius albus*	Common	Resident
28.	Gray Heron	*Ardea cinerea*	Common	Resident
29.	Lesser Sand Plover	*Charadrius leschenaulti*	Common	Resident
30.	Little tern	*Sterna albifrons*	Common	Resident
31.	Red-vented Bulbul	*Pycnonotus cafer*	Common	Resident
32.	Common Babbler	*Turdoides caudatus*	Common	Resident

4.4.3 Herpetofauna

Reptiles and amphibians have tendency to adapt both physiologically and behaviorally to different climates, from tropical forests to hot deserts and marine to fresh water. They also act as important biological indicators which respond immediately to any local environmental changes. Their usual pray are insects and other invertebrates and therefore they maintain the population of these animals while at the same time they act as a source of food for other carnivore species (birds and mammals).

In Pakistan however, very little work has been done on these important communities mainly because of lack of expertise and awareness. They usually consider as symbol of fear and threat.

Reptiles are getting rare because of aridity which has in general reduced the biodiversity of the area. The common lizards found in the area are Indian Monitor lizard (V*aranus bengalensis*) spiny-tailed lizard (*Uromastix hardwickii)*. However, they were not

observed may be because of their hibernation. All sand mounds in the area were found to have their burrows. Their abundance is nevertheless low as reported by the locals. Other reptiles reported here include Indian Garden Lizard (*Calotes versicolor*) and Sindh Sand Gecko (*Crossobamon orientalis*) reported but not spotted. The Indian sand boa (*Eryx johni*) and Saw-scaled Viper were also reported but not spotted. Indian common krait was also reported but not spotted

4.4.4 Mammals and Small Animals

No large or small mammals have been observed in the study area. It was reported that the number and frequency of visits by these animals in the area is substantially reduced now. It is inferred from the frequency of visits that those spotted and reported by the locals did not seem to have their habitat in the microenvironment. They appear to have strayed in as casual visitors.

4.5 Fishes

Fish occupy a prominent place in consumer diet in the coastal areas. Fisheries share in the country GDP is 0.80% whereas its share in total expert economy is 1.23%.

The number of commercially important marine fisheries resources of Pakistan is about 350 that accounts for 240 demersal fish, 50 small pelagic, 10 are medium sized pelagic and 18 are large pelagic fish. In addition, there are 15 species of shrimps, 12 of squid/cuttlefish/octopus and 5 species of lobsters are also present (IUCN 2004; WWF, 2005).

After the study of Qureshi, (1972) no other studies have appeared in the literature which gives detailed account of marine fisheries in Pakistan. A check list of Marine fishes of West Pakistan was developed by Jaleel and Khalil Uddin (1972) is also an important document. Species of Rhinobatidae, Torpedinae, Rajinae and Dasyatinae commonly occur in estuaries and shallow open seas. Dominant pelagic communities are the fishes of Clupeiformes. These are not only in pelagic ecosystem but also in the benthic-demersal ecosystem.

Among the marine catfishes Ariidae, Tachysuridae occur inshore and in estuarine areas. Arius, Bagre and Trachysurus dominate this group (Qureshi, 1972). Among the fishes of Scorpaeniformes; Trigla, Lepidotrigla, Prionotus and Platycephalus are found abundant in the coastal areas, estuaries and along the continental shelf (Qureshi, 1972).

Perciformes is the largest group of fishes that dominate the demersal fish fauna of coast, estuaries, mangrove swamps and continental shelf of the tropical sea, which is represented by more than 100 species in catches. Along the coast of Pakistan three groups of the Perciformes can be separated into species associated with inshore muddy areas, of sandy bottoms like that of continental shelf and those that inhabit rocky areas.

Wide varieties of Perciform families occur on sandy grounds including Sparidae, Nemptridae, Pomadasyidae, Mullidae, Gerridae and Leiognathids. Epinephelus, Serranus, Lutjanus, Lethrinus etc (Hussain, 1973). Generally Groupers and snappers dominate in trawl catches and long line fishing operations (Qureshi, 1972).

4.6 Benthic Fauna

Seven sediment samples were collected from the same sampling sites for biota analysis. Each sample had a volume of about 500 ml. These samples were fixed with 10% formalin solution and were analyzed within two weeks' time. For biotic analysis, each sediment sample was washed through a 0.5 mm sieve and the residue was placed in Petri dishes and examined under the stereomicroscope. All the organisms present were carefully removed and preserved in fresh solution of 8% formalin.

Out of 7, two samples collected from stations 2 and 6 had no biota whereas sample collected from station 1 had only dead barnacle shells. Remaining four samples had very low density of organisms. Details of each sample are given below:

Sample 1

Only dead barnacle shells, belonging to genus *Balanus*, were present. They number 38 and varied from 5 mm to 17 mm in shell height. All the shells were empty and lacked terga and scuta which made identification possible only up to genus level with certainty.

Sample 2

No organism was found. The residue was composed of debris containing wood and paper pieces and fibers and other decaying materials.

Sample 3

Only four polychaeta worms were present in the sample. One belongs to genus *Diopatra* (21 mm in length) and the remaining three to genus *Arabella* (20 to 38 mm in length).

Sample 4

Only crustaceans were present; one juvenile crab measuring 9 mm in carapace length and two isopods measuring 5 and 6 mm in total length. Other groups such as polychaeta, nematodes were absent.

Sample 5

Six polychaeta worms were found in the sample. These worms belong to genus *Diopatra* (one specimen measuring 23 mm in length), *Arabella* (3 specimens measuring from 12 to 26 mm in length), *Eunice* (one specimen measuring 20 mm in length) and one unidentified worm (broken anterior and posterior part, hence could not be identified) of about 48 mm in length.

Sample 6

No organism was found in the sample.

Sample 7

Both crustacea and polychaeta were found in this sample. The group Crustacea was represented by two isopods measuring 4.5 and 5 mm in length. Polychaeta included two Arabella (10 and 15 mm in length), one phyllodocid (18 mm in length), and one unidentified worm of about 18 mm in length.

At station 1, the presence of empty barnacle shells indicates that they were brought by wave action as there was no hard substratum for their attachment. The dead animal was also not found in the shell. Polychaete worms constitute one of the major groups of macro invertebrates in the soft bottom.

From the results it reveals that the area is not polluted but at the same time the area is not supported the presence of any desirable marine life form. In general, the area represents a very low biodiversity. Some of the faunal species are represented in below Figures.

Diopatra sp

Balanus sp

Polychaeta worms

Heliotropium tuberclosum

4.7 Marine Profile of Area

Seven sampling sites will be selected around the project area so as to determine the existing marine water quality. Samples were collected from 8 different sites and physical, biochemical and chemical characteristics of the marine water were determined. During the sampling, the oil sheen appearance was observed close to the adjacent jetty project.

4.7.1 Physical Characteristics

The results of physical and chemical parameters are reported in Table-5.

i. pH

pH values of marine water at different sampling stations ranged between 7.1-7.6. Marine water pH of the entire area is towards alkaline side which favors the growth of flora especially algae.

ii. Salinity

The salinity of marine water was between 31.6-36.4 parts per thousand.

iii. Biochemical oxygen demand (BOD_5)

The BOD_5 values of marine water ranged between 80-110 mg/l, whereas, the average BOD values of all the sites was 94.38 mg/l. The values are high as compared to the NEQS Standards which represent the maximum permissible limit of 80 mg/L. High BOD_5 interferes with aquatic life and harmful to fishes as it tends to deplete dissolved oxygen. BOD_5 generating compounds such as hydrocarbons are toxic to fish beyond 10-20 mg/l.

iv. Chemical oxygen demand

The COD values represent both biologically and chemically oxidizable substances. The COD values of water samples ranged between 229-415 mg/l with an average value of 314.2 mg/l. These values represent the presence of high concentration of chemically oxidizable matter that may be toxic to marine life forms.

vi. Dissolved Oxygen (DO)

Although, DO is not considered to be the pollutant parameter however its concentration represents the extent of pollution. The values of DO in water ranged between 2.31-4.09 mg/L.

vii. Phenol

The concentration of phenol in marine water ranged between 0.45-2.14 mg/l. These values indicate a pollution load entering into the area from the industries nearby.

viii. Total Kjeldahal Nitrogen (TKN)

Nitrogen and phosphorus are often considered as limiting nutrients. Higher concentration of which is responsible for eutrophication. The concentration of TKN ranged from 70.68-122.08 mg/l with an average value 95.04 mg/l. The highest concentration of TKN was found at S-1. The concentration of TKN at the sampling stations can adequately support the growth of marine flora and fauna. However, increased level of fauna could be remotely attributed to the presence of increased quantity of TKN which is also an indicator of increased quantity of organic nitrogen that is essential for the survival and propagation of biota.

ix. Total Suspended solids

The values of TSS ranged from 96-147 mg/l with an average value of 116mg/l.

Table 5: Sea Water (Physical and Chemical) Analysis Results

Sampling Sites	Parameters mg/l							
	pH	Salinity °/₀	BOD_5	COD	DO	Phenol	TKN	TSS
S-1	7.6	36.4	100	354	3.64	1.56	122.08	110
S-2	7.4	31.6	90	269	2.88	2.14	116.48	128
S-3	74.	31.7	85	333	2.31	0.87	101.12	96
S-4	7.5	34.2	90	415	4.09	0.45	94.08	109
S-5	7.2	33.5	110	257	3.16	1.07	70.68	147
S-6	7.1	32.8	105	318	2.74	0.98	82.24	121
S-7	7.2	35.8	80	229	3.28	0.73	95.08	111
S-8	7.1	32.3	95	339	2.59	0.66	78.56	107
Average	**7.31**	**33.54**	**94.38**	**314.2**	**3.09**	**1.06**	**95.04**	**116.13**
Min	**7.1**	**31.6**	**80**	**229**	**2.31**	**0.45**	**70.68**	**96**
Max	**7.6**	**36.4**	**110**	**415**	**4.09**	**2.14**	**122.08**	**147**

x. Metals

The results of the metal analysis are reported in Table-6. Cd and Hg were not found in any of the sample. Whereas, the concentration of As was also very low ranged from 0.001 to 0.03 mg/l. The concentration of Cu fluctuated between narrow ranges from 0.001 – 0.007 mg/l. The average concentration of Cr was 0.267 mg/l. The concentration of Lead ranged between 1.21-1.43 mg/l in water which might come from plumbing material, battery, and paint manufacturing plants. Lead exhibits low toxicity potential to plants but a high potential for toxicity to animals including marine life forms. The

concentration of Ni varied between 0.025 – 1.153 mg/l. In general the concentration of Ni was fairly low in most of the samples. Zn is generally not considered as significant pollutant. Its presence is rather desirable for the development of primary productivity in the area. The average concentration of Zn was 0.30 mg/l.

Table 6: Sea Water Metal Analysis Results

Sampling sites	Metals mg/l							
	As	Cu	Cd	Cr	Hg	Pb	Ni	Zn
S-1	0.03	0.001	<0.001	0.31	<0.001	1.41	0.348	0.365
S-2	0.03	0.006	<0.001	0.21	<0.001	1.43	1.153	0.268
S-3	0.001	0.005	<0.001	0.43	<0.001	1.32	0.228	0.528
S-4	0.001	0.001	<0.001	0.09	<0.001	1.36	0.025	0.28
S-5	0.001	0.001	<0.001	0.06	<0.001	1.29	0.705	0.348
S-6	0.001	0.001	<0.001	0.54	<0.001	1.39	0.210	0.103
S-7	0.001	0.004	<0.001	0.23	<0.001	1.21	0.35	0.24
Min-Max	**<0.001-0.03**	0.001-0.007	**<0.001**	**0.21-0.54**	**<0.001**	**1.21-1.43**	**0.025-1.153**	**0.24-0.587**

4.8 Climate Profile of Hub Area

HUB is the situated in the south-eastern part of Baluchistan province at latitude 25° 2’ N, longitude 66° 53’Eat elevation of 29 meters (95 feet) above sea level. The climate information presented in this profile gives detailed historical monthly average weather conditions along with exceptional weather occurrences. To maintain relevance to current weather trends the information given has been calculated using data collected over the recent past decade. The climate profile is taken from closest available data source to Hub. For the preparation of climate profile of Hub, the climate data of weather observing stations located at Karachi (South) has been used, This weather observing station is located in the south-south-east direction of Hub at a distance of about 18 km. The climate of Hub area is relatively mild due to its nearness to North Arabian Sea. The year for Hub may be divided into three seasons, winter, summer and monsoon; however the last season is very brief. The area of Hub often experienced two summer seasons in the year, first April to mid-June, other mid-September to October and July to September are the rainy months Table-7 depicted the extreme climate recorded in the area during the past five decades (1953-2012). Similarly Table-8 illustrates the ten years (2003-2012) monthly observed climate data.

The summer highest temperature recorded in area is 46 °C on 17 June 1979. The winter lowest temperature is 4.5 °C which was recorded on 6 January 2007. The highest rainfall during a 24-hour period is 211.3 millimeters (8.3 inches) recorded on 26 July 1967 while highest monthly rainfall is 509.3 millimeters (20.1 inches), which was recorded in July

1967 also. The highest annual rainfall record is 957 millimeters (37.7 inches) in 1967. The principle mode of rainfall occurs during the monsoon season and on average 16-18 rainy days in the year. There is frequency of 1-3 days of dust storm in a year, mainly in the months of October to December. Wind normally blows, most of the time in the year, from south-west direction with speed 6-13 knots. The Figure-4 shows the monthly distribution of temperature and rainfall of Hub.

Figure 4: Monthly Distribution of temperatures and rainfall

Figure-5 shows the spatial distribution of annual rainfall over the country. The figure depicted that the area received around 200 mm of annual rainfall. Annually, it is expected that the sun to shine for an average of 7-8 hours per day. This represents the average number of hours in the daytime that the sun is visible and not obscured by cloud e.g. the average number of hours the sun is actually out and shining (Figure-6) and monthly humidity distribution is shown in Figure-7.

The area normally experienced around 29.5 °C of maximum temperature annually, as evident from Figure-8. Similarly, the Figure-9 shows the area experienced the minimum temperature of 20 °C annually. On average, annually the area is affected by foggy conditions on 1-2 days.

Monthly climatic conditions:

Following are the monthly summary of climatic conditions in the area:

January

In the month of January daytime temperatures are generally reach around 25.4°C, with highest maximum record of 31.7 °C on 17 January 1965. At night the average minimum temperature drops down to around 12°C, with lowest ever temperature recorded as 4.5 °C on 6 January 2007. The average monthly amount of precipitation has been recorded at around 6 mm. Throughout the month one can expect to see rain or drizzle falling on 1-2 days of the month. The highest rainfall during this month was 63 millimeters, which occurred in 1976. The average humidity in morning is in 60s % and in 40s % in evening. During this month the wind normally blows from north-east and south-west direction with speed 4-10 knots.

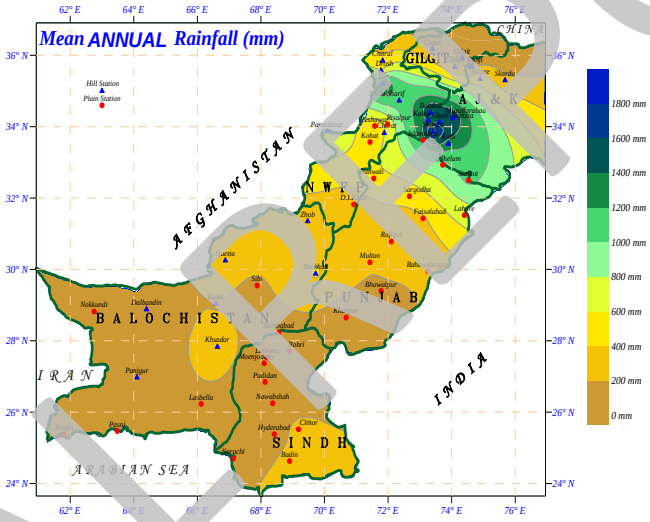


Figure 5: Spatial distribution of rainfall

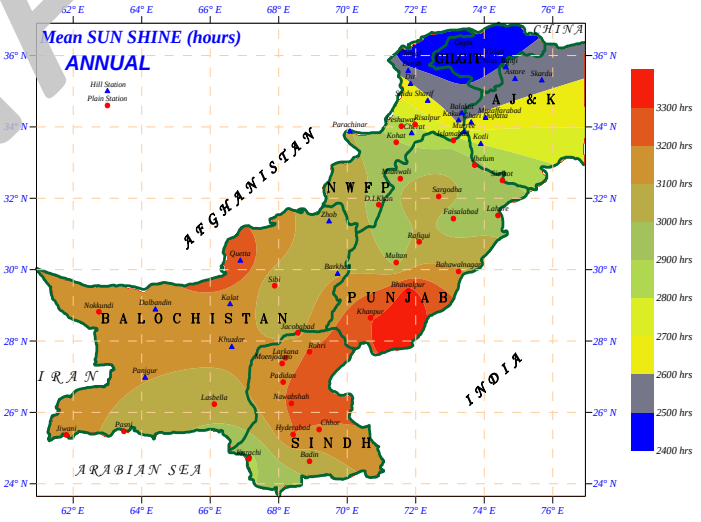


Figure 6: Spatial distribution of sunshine

February

The average total monthly rainfall during the month is around 7.6 mm. The highest rainfall during this month was 56.1 millimeters (2.2 inches), which occurred in 1961. On average minimum temperature during the month is around 14.6 °C. The lowest temperature of 5 °C was recorded on 10 February 1957, while the highest temperature of 34.5 °C was recorded on 26 February 1985. During February the wind normally blows from north-west and south-west direction with speed 4-12 knots. The average humidity in morning is in 70s % and in 40s % in evening.

March

On average maximum temperature during the month is around 30.7 °C and minimum temperature is around 18.8°C. The lowest temperature was 9°C on 4 March 2003 and the highest was 42.5 °C recorded on 20 March 2010. The highest monthly rainfall of 132.8 millimeters (5.2 inches) was recorded in 1967. During March the wind normally blows from north-west direction in morning with speed 3-4 knots and from south-west in the evening with speed 12-14 knots. The average humidity in morning is in 70s % and in 40s % in evening.

April

In this month the weather rain occurred occasionally and in little amount with total monthly average 3.3 mm. The highest monthly rainfall of 57.9 millimeters (2.3 inches) was recorded in 1967. Humidity is higher than first three months of the year and ranges around 70-80 % in morning and around 50s % in evening. April daytime average temperatures are generally reach highs of around 39.1°C. At night the average minimum temperature drops down to around 26°C. The lowest temperature of the month was 15.5 °C on 16 April 1983 and the highest was 44.5 °C on 26 April 2008. During April the wind normally blows from south-west direction with speed 4-16 knots.

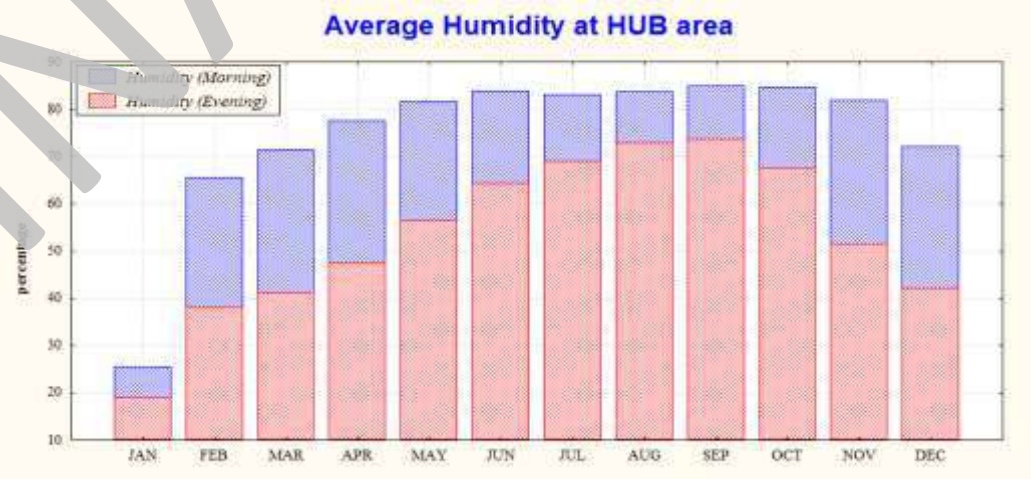


Figure 7: Monthly distribution of Humidity

May

Temperatures increases and the weather becomes hotter and very little rain in the month. In this month of the year, humidity is between 80s % (morning) and 60s % (evening). May daytime temperatures are generally reach highs of around 40.5°C. At night the average minimum temperature drops down to around 23 °C. The highest temperature during May was 45.5 °C, which was recorded on 21 May 2011, while the lowest temperature of 19.4 °C was recorded on 10 May 1960. May is the driest month of the year with average monthly rainfall of only 0.7 millimeters. The highest monthly rainfall of 40 millimeters (1.6 inches) was recorded in 1997. During May the wind normally blows from south-west direction with speed 10-18 knots.

June

June is the hottest month around this area, with monthly maximum temperatures is 34 °C and the average monthly minimum temperature is 28 °C. The hottest June was on 17 June 1979, when temperatures reached 46 °C; the lowest temperature ever recorded was on 2 June 1986 when 21 °C was recorded. The humidity is quite high like May. Average rainfall during this month is 7.4 mm (0.29 inches) and the sky remains partly cloudy. On average there may 1-2 rainy days in the month. The highest monthly rain that occurred was in June 2010, when 128 millimeters (5.03 inches) rain was recorded in the area. During June the wind normally blows from south-west direction with speed 10-18 knots.

July

Throughout the month of July daytime average temperatures are 32.8°C. At night the average minimum temperature is around 27.6 °C. The highest temperature during July was 41.1 °C which was recorded on 2 July 1958, while the lowest temperature of 22.8 °C was recorded on 4 July 1967. The month of July may be termed as one of the rainiest month in the area. The average monthly amount of rainfall is recorded as 80.7 mm, that's 3.77 inches. Throughout the month one can expect to have rain on 4-6 days of the month. The highest monthly rainfall of 509.3 millimeters (20.05 inches) was recorded in the area on 1967. The humidity is ranging around 80s % (morning) and 70s % (evening). During July the wind normally blows from south-west direction with speed 10-18 knots.

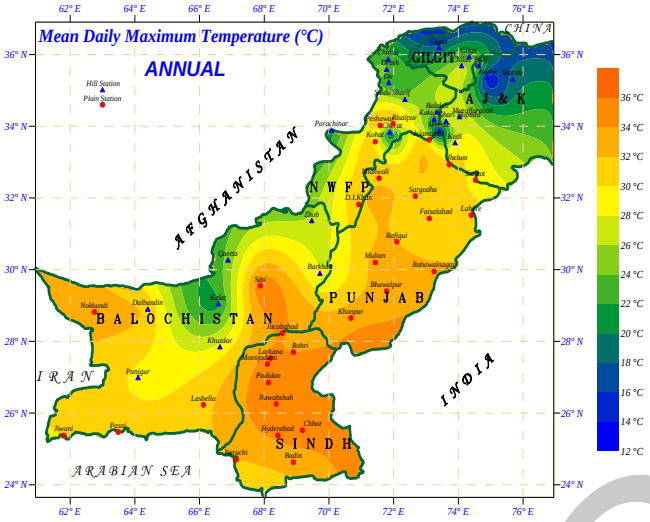


Figure 8: Spatial distribution of maximum temperature

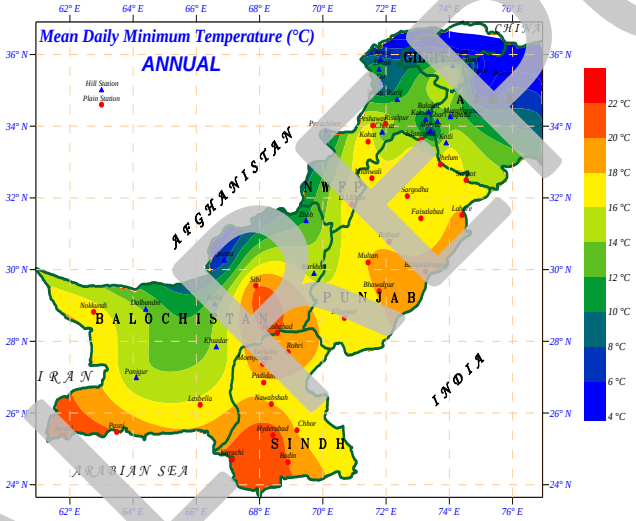


Figure 9: Spatial distribution of minimum temperature

August

The weather of August is almost identical to July, as far as temperature is concern. August is the second rainiest month of the year with average monthly amount of rainfall is recorded as 49.4 mm, that's 1.94 inches. Throughout the month, there can be 4-5 rainy days in the month. The highest monthly rainfall of 272 millimeters (10.71 inches) was recorded in 2007. The temperatures of July continue through August with a slight decrease. The monthly average day time temperature is recorded as 31.4 °C and night time average temperature is 26.5 °C. The highest temperature of August of 41.5 °C was recorded on 27 August 2000, and the lowest was 22 °C, recorded on 18 August 1978. The monthly average humidity is 80s % in morning and in 70s % in evening. During August the wind pattern is almost similar to July with minor decrease in intensity of speed.

September

The monthly average rainfall of this month is 22.5 mm (0.89 inches). The highest monthly rainfall of 200.4 millimeters (7.89 inches) was recorded in 1959. Throughout the month one can expect to see rain or drizzle falling on 2 days of the month. The monthly average day time temperature is 32.1 °C and night time average temperature is 25.4 °C. The highest temperature of 42 °C was recorded on 2 September 2008 and lowest was 21 °C recorded on 27 September 1994. During September the wind normally blows from south-west direction with speed 8-16 knots. The monthly average humidity is 80s % in morning and in 60s % in evening.

October

October is also one of the driest month, with monthly average rainfall is 0.9 mm and it is hard to see any rainy day during the month. The highest monthly rainfall in October was recorded only 17 millimeters in 2004. The average maximum temperature of the month is 33.8 °C and the average monthly minimum temperature is 17.9 °C. The highest temperature of 42.5 °C was recorded on 12 October 1998 and lowest was 13.8 °C recorded on 30 October 1984. During October the wind normally blows from north-west (morning) with speed of2-4 knots and south-west (evening) direction with speed 10-12 knots.

November

Rainfall remains rare during this month and witnessed in very few occasion with only 2.3 millimeters monthly average and 52.3 millimeters (2.06 in) is maximum monthly rainfall recorded in 1959. The average maximum temperature of the month is 31.4 °C and the average monthly minimum temperature is 17.9 °C. The highest temperature of 38 °C was recorded on 3 November 1977 and lowest was 10 °C recorded on 29 November 1966. During November the wind normally blows from north-east (morning) with speed of 2-4 knots and from south-west (evening) with 8-10 knots speed.

December

The month of December is second coldest month of the area and rains do occur in this month but are very low in intensity. The monthly average rainfall of the month is 7.8 mm (0.31 inches) and the highest rainfall during this month was 90.2 millimeters (3.55 inches), which occurred in 1974. The average maximum temperature of the month is 274.2 °C and the average monthly minimum temperature is 13.8 °C. The lowest temperature of 5.5 °C was recorded on 31 December 1990, while the highest temperature of 34.5 °C was recorded on 2 December 2011. During December, the wind normally blows from north-east (morning) with 2-4 knots speed and from south-west (evening) with 8-10 knots speed. Throughout the month one can expect to see rain or drizzle falling on 1 day of the month.

Table 7: Climate averages and extremes of HUB area

Weather Parameter	unit	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Highest recorded Maximum Temperature	°C	31.7	34.5	42.5	44.5	45.5	46.0	41.1	41.5	42.0	42.5	38.0	34.5	46.0
Average Maximum Temperature	°C	25.4	27.2	30.7	33.3	34.5	34.3	32.8	31.4	32.1	33.8	31.4	27.2	29.5
Mean Temperature	°C	18.9	20.9	24.5	28.1	30.4	31.2	30.3	28.9	28.8	28.0	24.6	20.5	24.9
Average Minimum Temperature	°C	12.3	14.6	18.8	22.8	26.1	28.0	27.6	26.5	25.4	22.2	17.9	13.8	20.3
Lowest Minimum Temperature	°C	4.5	5.0	9.0	15.5	19.4	21.0	22.8	22.0	21.0	13.8	10.0	5.5	4.5
Heaviest Rainfall in 24 hrs	mm	45.0	45.0	68.8	42.9	40.0	104.0	211.3	209.8	84.0	15.5	38.1	90.2	211.3
Monthly Average Rainfall	mm	6.2	7.6	7.3	3.3	0.7	7.4	80.7	49.4	22.5	0.9	2.3	7.8	193.4
Heaviest Rainfall in a month	mm	63.0	56.1	132.8	57.9	40.0	128.0	509.3	272.0	200.4	17.0	52.3	90.2	957.0
Rainy days	days	1.4	1.5	0.9	0.6	0.1	1.1	4.9	4.0	1.6	0.3	0.4	1.1	17.3
Wind Speed (morning)	knots	3.7	3.4	3.2	4.3	6.6	8.7	9.4	8.8	6.2	2.4	2.5	3.5	5.0
Wind Speed (evening)	knots	9.0	10.9	12.9	14.7	17.0	17.2	16.9	15.8	14.4	11.0	8.6	8.1	12.1
Humidity (Morning)	%	65.5	71.4	77.6	81.6	84.0	83.0	83.8	84.9	84.8	81.8	72.1	65.9	74.6
Humidity (Evening)	%	38.3	41.1	47.6	56.4	64.3	69.0	73.0	73.7	67.6	51.5	42.2	38.9	53.5

Compilation period: 1952-2012

Table 8: HUB area Annual Climate record (2003-2012)

Year	Temperature (°C)					Rainfall (mm)			Wind Speed (knots)		Relative Humidity (%)	
	Maximum		Mean	Minimum		Average	Heaviest in 24 hr	Rainy Days	Morning	Evening	Morning	Evening
	Highest	Average		Average	Lowest							
2003	42.0	32.0	26.8	21.6	8.5	264	60	21	6.0	16.2	77.1	53.1
2004	43.0	32.3	27.2	21.8	9.5	41	12	11	6.7	16.5	78.7	51.6
2005	40.5	31.6	26.5	21.4	9.0	58	16	10	5.2	14.1	76.3	52.3
2006	41.5	31.7	26.7	21.7	5.5	288	62	20	5.4	14.4	80.3	56.5
2007	44.5	32.4	27.0	21.6	4.5	425	142	21	4.3	12.7	81.5	53.8
2008	44.5	32.2	26.6	20.9	5.5	116	50	9	4.4	13.1	78.3	50.5
2009	43.5	32.8	27.4	22.2	11.5	298	205	10	5.0	13.4	77.4	52.5
2010	42.5	32.8	27.1	21.6	7.5	381	104	18	4.8	13.8	76.8	51.7
2011	45.5	32.3	27.1	21.7	7.0	186	75	19	4.4	12.5	74.2	51.4
2012	42.5	31.9	27.1	21.3	6.5	69	17	14	5.3	14.2	73.3	49.7

CHAPTER 5: POTENTIAL ENVIRONMENTAL IMPACT AND PROPOSED MITIGATION MEASURES

5.1 Potential Impacts

This section of the IEE report presents the potential environmental and social impacts positive or negative arisen due to the Extension of SPM-II, SPM-III and pipeline. This section presents screening process to identify the overall impacts of construction and operation activities impact of its waste and discharges into watershed as well as the living environment and to provide mitigation measures that need to be adopted, wherever necessary, to reduce, minimize or compensate for the negative impact.

The screening process identifies the existence of significant environmental impacts during the different phases of construction and operation of the project and suggests the mitigation measures that may have to be adopted in order to reduce minimize or compensate for the impact. The screening of potential environmental impacts by the checklist also identifies the residual impact as a result of adoption of mitigation measures that may be needed for minimizing the impact.

5.1.1 Impact Assessment Methodology

Impacts analysis is performed in the following steps;

- Identification of potential impacts
- Evaluation and quantification (where possible) of potential impacts
- Interpretation of the significance of potential impacts

If it is found that an impact will be detrimental to the environment, appropriate mitigation measures are identified to reduce it as far as possible. Finally, the management and monitoring measures required to reduce the impact as low as is reasonably practicable, are specified where needed.

5.1.2 Identification of potential Impact

Various studies and guidelines have identified the typical impact of oil pipeline on the environment.

5.1.3 Quantification of Impacts

This step refers to the evaluation and the quantification (where possible), or the qualitative description, of the anticipated impact of the proposed project on various environmental factors social economical health and safety factors.

5.1.4 Significance of Potential Impacts

The next step in impact assessment is determining the significance of the potential impact. To determine the significance, both the consequence and the likelihood of

occurrence of the impact need to be considered. The consequence of the proposed activity is evaluated on the basis of institutional recognition, public recognition, and technical recognition of the issue or the environmental resources that are affected. Institutional recognition means that the importance of the impact is recognized in the laws, development plans, and policy statements of the government. Public recognition means that a segment of the public, especially the community directly affected by the project, expresses concern about the impact. Technical recognition means that the importance is based on scientific or technical knowledge, or on the judgment of critical resource characteristics.

The overall assessment of significance is made using a standard risk assessment approach that considers the potential consequences of the impact in conjunction with the likelihood of occurrence.

5.2 Impact of working Atmospheric Conditions

The proposed SPM-II, SPM-III and Pipelines project intended to be located in the terrestrial area of Hub coastal region at Lasbella District and aquatic region of Arabian Sea at Khalifa Point in Sonmiani bay. Due to Arabian Sea this area has normally moderate weather.

Keeping in view these climatic conditions, the site has been chosen as the most safe and suitable place for laying out the pipeline. As far as the aquatic conditions are concerned, the risks of natural phenomena as tsunami, storm and seismic activity are negligible from the past record. The buried pipeline does not cause any aesthetical impact on the environment.

5.3 Construction Phase Impacts

Construction phase will be stretch over the limited period of two years, which have only some limited period temporary impacts, construction activities include surveying, ROW clearing, pipe line stringing, bending, line welding, coating and wrapping, ditching, laying, back filling, installation of cathode protection for corrosion control, testing, restoration and cleanup.

During screening of the construction related impact issues to the environment following activities were considered to form an assessments.

- Site Clearance
- Trenching & excavation;
- Movement of vehicles and equipment;
- Excavation of the seabed;
- Vessel movement for laying out the pipeline;
- Wastewater generated from construction crew's activities as well as hydraulic testing of pipeline.

Land may be contaminated by spillage or solid waste generation during construction activities. However, air shed pollution may slightly impact the physical and geographical features of the area. At this stage, solid and liquid wastes have been importantly given focus, which are anticipated to be mainly generated from proposed SPMs Pipelines Project.

a. **Site Clearance:** It may cause potential adverse impacts such as:
   - Physical scarring of the landscape
   - Risk of land slippage
   - Accelerated soil erosion
   - Alteration of soil quality by loss of top soil
   - Blockage of natural drainage

b. **Trenching & excavation** Construction activities, particularly trenching operation, can cause land slippage and soil erosion in places where the RoW crosses unstable lands, slopes and streams. In addition, the loss of top soil during the trenching operation can potentially affect the soil quality. Environmental impacts can arise from excavation and backfilling operation during the campsite preparation and pipeline construction activities.

   As a result of natural vegetation removal due to the movement of construction machinery and excavation, physical scarring takes place all along the RoW.

c. **Movement of Vehicles & Equipment:** Movement of vehicles involved in constriction activities may contaminate air and soil. Geomorphology may be affected due to the movement of leaky vehicles.

d. **Excavation of the Sea Bed**: Sea bed extraction drifting coarse grained and gravel formation may contaminate the sea water. Under water slope erosion and dilution of backfill soil may occur due to heavy water currents.

e. **Vessel Movement:** It may cause the increase in turbidity and temperature of sea water. Wastewater generated during construction activities, although in small amount but it can pollute the water shed.
f. **Wastewater Generation**: Wastewater generated from construction crew although minimum in quantity may contaminate the seawater and it can discolor the water.

During construction phase of the SPM-II & SPM-III Jetty and laying of pipes on the sea floor, the main impacts will be noise, dust, and increase in suspended material in the water column near the construction area of the SPM jetties and adjoining areas, moreover during laying of pipeline from Zero Point to the storage area at Byco Refinery a lot of suspended material will be added in the water columns about the route of pipeline due to excavation and then putting the pipelines in trench. The workers engaged for the construction work will stay in temporary facilities near the site. This could create problems such as pollution from sewage, water run-off and use of local wood for domestic fuel. Construction of the jetty and lying of pipeline is expected to destroy the underwater marine habitats in the sub-tidal region through physical disturbance and also affect other marine habitats in the vicinity by modifying the water quality, prevailing water movements and erosion patterns. Large scale excavation work for laying the pipelines and dropping of SPM jetty would disturb the bottom sediment and the particles would remain in the water column because the physical environmental conditions in this area would discourage them from settling. Digging filling and resettling of sediment may change sediment texture in the coastal and offshore areas in the vicinity of Hub River mouth.

Mitigation Measures:
Following mitigation measures will be adopted to reduce the impacts:

- The area covered by the project activities will be kept to a minimum;
- Natural or existing clearing will be used to the extent possible;
- The size of the cleared area will be minimized, consistent with safety and health considerations;
- When clearing a campsite, disturbance to topsoil will be minimized It will be ensured that the camp waste are minimized;
- Fuel, oils, and other hazardous substances will be handled and stored according to standard safety practices;
- Fuel, oils, and chemicals will be stored in areas lined by an impervious base and containing dykes;
- All operating vehicles will be checked for any fuel, oil, or battery fluid leakage;
- A daily leak/ spill record will be maintained for each vehicle.
- Leaky vehicles will not be operated unless repaired;
- Excavation of the sea bed should be limited to the required depth and should be completed within the specified period so that natural rehabilitation process of biological communities could take place.
- Vessel movement during the construction activities should be minimize as

much as possible moreover vessels used should be in good working condition so as to avoid leakages and spills into the sea water;

- Wastewater generated from construction crew shall be managed in a manner to minimize the quantity;
- Technical facilities for earthwork and installation within the water area should be used such that to minimize the total amount of processed soil and the width of the underwater trench;
- Prevention measures must be adopted to avoid the risk situations. For prevention of the marine environment pollution by contaminants of pipe-lay ships should be rigged up by system of collection of oil into special capacities;
- Sewage will be treated so that surface and ground water are not contaminated (through septic tank or sewage treatment plan);
- Since the SPM Jetty used for ships to unload their cargo is situated 10.5 km offshore from the coast, there is no need to dredge a channel, due to availability of sufficient depth for ships to anchor. Therefore no mitigation measures dredging / excavation for making a navigation channel will be required;
- The construction phase of the SPM-II and SPM-III as well as laying of pipelines for oil transportation will be for a shorter duration, it is proposed to ensure to implement an environmental friendly plan during this phase so that minimum disturbance of habitat is caused;
- In order to control the sewage pollution due to temporary work force employed during construction phase the contractor will be required to provide adequate facilities for the workers involved in construction;
- Excavated material from the sub-sea pipeline trench will be used for backfilling the trench after laying the pipe;
- The dredged or excavated material if any will be disposed at designated site.

5.4 Operation Related Impacts

The release of oil during the operational phase can be possible as accidental release/ leakage or spillage during the cargo transfer from ship to SPM buoys, and SPM buoys to pipelines. The other release is solid waste generated during routine maintenance of valves and floating pipes etc. This waste can easily be stored at jetty and on completion of maintenance can be brought to shore and disposed by environmental friendly manner.

Solid waste will be handled properly by the Operation and maintenance contractor. The leakage/ bursting of pipeline may contaminate air, water and soil.

5.4.1 Impacts of Leakages/ Spills of POL Products

The only significant impact during operational activities is from leakage / bursting of pipeline which may create oil spill in the sea water or may contaminate the soil.

Mitigation Measures:

BPPL as the environment friendly responsible entity has OSR plan and equipment to handle Tier-I spill with its own resource. The Oil spill response plan is discussed in the in the chapter-6, in addition to that following mitigation measures will be adopted for the prevention of impacts on geographical and physical features:

- Hazardous material will not be incinerated and used oil will be collected in drums and transported to the nearest city for recycling;

Contaminated soil will be handled as follows:

- Soil contaminated by minor spills or leaks (defined as contaminated soil covering an area up to 0.1 m² and 75 mm deep) will be collected and sent for appropriate disposal (e.g., bioremediation);
- Soil contaminated by moderate spills or leaks (defined as the spills or leakage having a volume of up to 200 liters) will be contained using shovels, sand and soil. The contaminated soil will be removed from the site and sent for appropriate disposal (e.g., incineration);
- Soil contaminated as a result of major spill (defined as the spill or leakage having a volume of more than 200 liters, requiring the initiation of emergency response procedures) will also be removed from the site and may require special treatment such as bio remediation.

5.4.2 Impacts of Solid Waste

Solid waste generated during the maintenance (may be due to corrosion or outer mechanical or man-made impacts) either in terrestrial or marine jurisdiction can affect the water or soil. During the maintenance, the leftovers and cuttings of plastic, metal and other packaging can disturb the marine and terrestrial environment.

Mitigation Measures:

Management of BPPL has hired operation and maintenance contractor who's solely responsible for the environmentally safe disposal of the solid waste generated during the maintenance and operation.

- The disposal activity will be supervised by the Safety Officer EHS.
- It can be managed by safe EHS practices and complete SOP for the Solid waste management.

5.4.3 Impacts Affecting the Climate of Area

There is no any significant source of emission during the operation phase of the crude/ W.O.P transfer from SPM to pipeline except accidental release/ leakage or spillage.

The major potential emissions from the operation and maintenance activity are:

- CO_2
- CH_4
- NO_X
- SO_X
- VOCs

A. Carbon Dioxide (CO_2)

- CO2 contributes to the greenhouse effect, which in turn causes global warming. High concentrations of CO2 in the atmosphere make more CO2 dissolve in water land this may cause increase in the sea's pH value.

B. Methane (CH_4)

- Methane is a greenhouse gas. It is not toxic. It is highly flammable and may form explosive mixtures with air. Methane is also asphyxiate and may displace oxygen in an enclosed space.

C. Oxides of Nitrogen (NO_X)

- Impact on fish and other fauna through acidification of water courses and the ground;
- Damage to health, crops and building due to production of ground level ozone.

D. Oxides of Sulphur (SO_X)

- SO_2 in increase concentration below 25 ppm appears to have irritant effects confined to the upper respiratory tract;
- however, if particulate adsorption takes place with the formulation of aerosols, the lower portion of the respiratory tract may be affected;
- SO_X are a major cause of acid rain which, in turn, may result in acid rain deposition;

- SO2 and SO3 in the presence of water react with limestone to form CaSO4 and Gypsum, causing corrosion of buildings etc; it inhibits the growth of plants causing the disease of necrosis and choruses. It can reduce the productivity through livestock as well. The result assigned is the same as for impacts on human health.

E. Volatile Organic Compounds (VOCs)

- VOCs released into the environment can damage soil and ground water. Vapors of VOCs escaping into the sir contribute to air pollution;
- VOCS are significant greenhouse gases via their role on creating Ozone and in prolonging the life of methane in the atmosphere, although the effect varies depending on the local air quality.

Mitigation Measures:

In order to manage the above impacts following mitigation measures will be adopted:

- The pipeline should be designed, constructed and maintained in a manner that meets industry standards and regulatory requirements;
- Preventive maintenance, inspection and repair program will ensure that bursting of pipeline would not occur;
- In case any emergency occurs immediate action should be taken to avoid or minimize the air and water shed contamination.

5.4.4 Impact Affecting the Climate of the Sea

The Single Point Mooring pipeline project is located in Hub and Gadani areas of Baluchistan, which has an 'Arid Marine Tropical Coastline type' of climate. The weather is generally fine. The onshore site of pipeline is located in unpolluted environment and thus has good air quality. Ambient air quality measurements of four pollutants, SO_2, NO_2, CO and CO_2 were taken at BPPL at the time of construction. Concentrations of these pollutants were well within NEQs limits. The SPM Pipeline site is a calm location with an average noise level ranges in between 60-69 dB(A).

The main sources of pollutants due to operation activities would be maintenance machinery like crane, side boom, welding generator, boats, and barges. The operation activities may pose certain impacts viz.

- Dust
- Smoke
- Fume
- Particulate matter

- Noise

A. Dust

It is a small solid particle created by the breakup of the larger masses process such as crushing grinding and blasting may come directly from the processing or handling of materials such as cement, crush and other construction material. They settle under the influence of gravity. Dust may range in size from 1.0 to 10000 µm.

B. Smoke

It is a fine solid particle resulting from incomplete combustion of organic particles such as fuel. It consists mainly of carbon and other combustible material. Smoke particles have diameter ranging from 0.5 to 1µm.

C. Fumes

These are fine solid particles often metallic oxides such as zinc and lead oxides) formed by condensation of vapors of solid material. They range in size from 0.03 to 0.3 µm fumes flocculated and coalesce then settle out. Basically they are generated thorough calcinations or molten process.

D. Particulate Matter

A high concentration of suspended particulate poses health hazards to human, particularly those susceptible to illness. Health problems associated with lead particulates have been of special interest. Lead is emitted in the atmosphere as lead oxides, (PbO, PbO2 and PbO3), lead sulphates, lead sulfide and lead halides.

E. Noise

The excess noise may cause Audibility diseases, Hypertension; Material cracking by vibration and boom and also dislocation of the marine fish habitats. A persistent source of noise may cause social/cultural changes by changing the habits of local populace and in severe cases may force dislocations of people. Enhanced noise levels may cause migration of wildlife from the source area. The construction activity will produce noise due to the maneuvering of vehicles but it should be reduced by appreciable amounts by proper barriers around the BPPL activities.

Mitigation Measures

- Only vehicles those are properly tuned and which do not emit abnormal exhausts will be used;
- Vehicular traffic will be minimized through good journey management;
- Only vehicles with good exhaust muffler will be used;
- Wood and shrubs will not be used as fuel.

- A forestation measures will be planned and implemented, if required, wherever and whenever necessary. To prevent impacts on the vegetation and ecology of the project area, it will be ensured that the trees planted on the site are all of native species.

5.4.5 Impact Affecting the Hydrology and Marine Ecology

Hydrology and hydrographs of the site may be disturbed by the leakages and damages of pipeline. The SPM Jetty project area is not known to contain any rare or endangered species and the jetty is not expected to disturb the ecology of the core area significantly. The project is also not expected to release any hazardous pollutants during normal operations except accidental oil spill. Its location and operation is not expected to affect the breeding habitats of marine animals or migratory paths of any bird species. Generally adverse impacts are anticipated on the marine life during operation. The only probability of degrading the ecosystem will be due to collision of ships, boats or tankers. An oil spill due to tanker accident would contaminate the environment leading towards adverse impacts and the ecological impact would be confined to the ecosystem around the spill zone.

Pipeline bursting may also occur due to corrosion, damage from anchor drag, severe weather, human error or a combination of factors. Spill may range from minor, moderate and major.

Oil spill affect plants chemically and physically. Although plants sometime survive fouling by producing new leaves, even relative non-toxic oil can stressor kill plants if oil physically prevents plant gas-exchange.

Spilled oil at the shore area has little impact on inter tidal organisms. Some barnacles die when random tar balls adhere to their shell, but other soon colonizes the tarred surfaces. Minor spills do not overwhelm inter tidal communities. In contrast, major spills can devastate inter tidal habitats, estuaries, and salt marshes.

The marine ecology may be disturbed due to the spills in the following manner:

A. Benthic communities:

Oil spill may suffocate or poison seafloor communities. The ecological recovery of the impacted area is not dependent solely on the amounts and composition of contaminants that persists after a spill. Repopulation usually occurs through several phases, involving different species at different times. Recovery rates depend on the population dynamics (reproduction, growth, and maturation) and ecological interactions Predation and competition etc).

B. Plankton:

Reaction of phytoplankton to oil in the water column is variable, whereas zooplankton may be killed by very small concentrations of hydrocarbons. Major spills may decimate zooplankton population, but population rebounds quickly, due to immigration and rapid generation. Delicate effects of massive plankton kills from spills include disturbance to community balance and injection of large quantities of hydrocarbons into the food chain.

C. Marine Animals:

Major oil spills can have devastating impacts. The heavy concentrations of oil can create floating traps of gooey "mousse". Animal may ingest toxic quantities of hydrocarbons or may suffer other effects of contact or physical fouling.

Exposure to oil may occur through physical contact with floating dispersed or stranded oil, by ingestion of oil or contaminated food directly, or by inhalation of the fumes of new products.

Animal that depends on fur for their thermal insulation suffer loss of body temperature when their fur is fouled with Oil. Most other sea mammals (whales and porpoises, manatees) rely on blubber and vascular constriction for controlling of their body temperatures. These animals are more resistant to the thermal effects of oiling. Animals away from the immediate area of the spill are not likely to suffer serious consequences.

D. Fish:

Direct kills of adult fish have been observed at only a few oil spills around the world. At the major spills some fish were found to have ingested oil. Modest oil contamination of muscles tissues was found in several instances. The main vulnerability of fish is to their eggs and larvae, which are very sensitive to the toxic PAH constituents of oil. In some cases, impacts on fish populations persist for years after a spill, due to residual hydrocarbons in the physical environment and in the food chain.

E. Marine Birds:

Aquatic birds are the most visible vulnerable to oil spills many species depend on the sea and coastal areas for food and nesting habitats. High mortality is likely when sea birds come into contact with oil / diesel it clogs with interstitial spaces of the feathers, which provide water repellency to the birds.

Mitigation Measures:

Following mitigation measures can reduce the environmental impacts in case of oil spill:

A regular preventive maintenance plan is in place to check and avoid any major leakage from the pipeline. In case bursting happens, technical methods should be immediately applied such as 'AIR CURTAIN' for mechanical containment of oil spill; Air Curtain is a method of mechanical containment of oil spills and blasting shock waves. Air is bubbled through a perforated pipe, causing an upward water flow that retards the spreading of oil. Air curtains are also used as barriers to prevent fish from entering a polluted body of water and to absorb energy transmitted by blasting shock waves.

Supplementary techniques, including the use of chemicals such as dispersant or bio remediation may be helpful to address the problem:

- The seabed manifold of the submarine line should be provided with a "fail safe" automatic means of closure which can also be activated manually at the buoy or at a shore connection;
- Subject to an acceptable inspection and maintenance program, all lines should be entrenched on the sea bottom, where the following measures cannot be met:
- The lines should traverse a route of minimum cross current and uniform gradient and there should be no unsupported sections; and
- Anchors and/ or concrete weight jacks may be required to stabilize the lines against sliding.
- Floating hoses should be connected to the buoy piping in such a manner to ensure that loads on the hoses are kept within the manufacturer's design limits;
- Under buoy hoses should be connected so that under all conditions they form a faired curve between the bottom manifold and the underside of the buoy and do not touch bottom. Under buoy hoses should have electrical discontinuity;
- In order to avoid the risk of oil spill safe handling of ships during operation has been ensured. However, the proponent has developed an Oil Spill Contingency Plan. Management of BPPL has developed the capacity to handle the Tier-1 oil spill upto 7 tons. BPPL have internationally recognized Tier-1 equipment and also dedicated and trained team is available to handle any oil spill emergencies. Procedure of OSR plan is discussed in the following chapter and detailed OSR Plan is attached as Annexure 11.

5.4.6 Impacts on nearest Power Plants (HUBCO)

Industrial installation like HUBCO power plant can be impaired or damaged by the oil spill. HUBCO power station relies on the coastal water for the cooling processes are at risk from the potential intake of Oil that may contaminate the condenser tubes. Production may be limited or entirely suspended until the tubes have been cleaned.

Mitigation Measure:

Apart from the regular maintenance, in case of the oil spill occurs at the SPM jetty the available booms will be deployed to isolate the oil from spreading towards the HUBCO power plant and other installation in the area if any.

5.4.7 Impact Affecting Socio- economic and Cultural Environment

The project's socioeconomic and cultural impact was assessed based on the analytical understanding gained from the baseline socioeconomic and cultural environment of the area. The effects identified were screened, and their relevance determined through a review of baseline data and a thorough study of project activities and processes.

The effects were analyzed on the basis of positive or negative impact, and the intensity and permanence of each.

Villages will not be encountered in the RoW therefore no disturbances are seen on the local inhabitants. It is anticipated that there is no negative impact of project on the social environment however positive impacts are likely to occur. Such positive impacts may arise in the following manner:

Local people from villages closest to the project site (and therefore the most faired likely to be affected by the project and the activities) will be given preference for job employment process will be fair transparent and open.

There is no relocation of utilities and any public infrastructure or private structure envisaged.

CHAPTER 6: ENVIRONMENTAL MANAGEMENT PLAN

6.1 Introduction

Environmental protection planning is an important component of overall planning and implementation of mega-projects. Industrial activities, including those involved in the construction of the SPM-II and SPM -III and its associated pipelines by Byco refinery are reviewed and approved by Government agencies through a variety of approvals, authorizations and permits addressing issues ranging from human health and sanitation to fisheries and wildlife habitat avoidance or protection.

This EMP outlines the contents of both construction and operational phases. It constitutes a contract document for use in the field by the contractor(s) and their personnel during construction as well as by the personnel of BPPL during operations.

A comprehensive environmental management plan (EMP) was formulated during the EIA study of SPM-I at the time of construction of the project. Another IEE for change in products was also prepared in 2013 and approval was obtained for only operation phase of SPM-I and change in product ranges for management plan same is intact and being followed in true letter in sprit. This IEE report represents the construction and operation impacts and mitigation measures for the construction and operation phases and their potential impacts on marine environmental management.

Management of BPPL has developed the capacity for construction and operation of SPM technology, Team has developed the capacity for EMP implementation with a proven track record of zero oil spill and other HSE related accidents.

BPPL and its construction contractor, through its engineering and environmental consulting team, is responsible for implementing the EMP and ensuring that all personnel are informed about the EMP and the requirement to implement the procedures it contains. The EMP is intended as a quick reference for Project personnel and regulators to monitor compliance.

6.1.1 Purpose of EMP

In this section, a structure of EMP is being given for the assistance to project proponent and contractor. It is recommended, the management must implement this EMP and where required, changes must be made accordingly.

It is aimed to achieve the following objectives:

- Outlining measures to be taken during the product transportation from SPM to BPPL storage tanks to eliminate or offset adverse environmental impacts, or reduce them to acceptable levels.
- The actions needed to implement these measures such as defining roles and responsibilities of the project proponent for the implementation of EMP and identifying areas where these roles and responsibilities can be shared with other stakeholders.
- Defining the requirements for communication, documentation, training, management and implementation of the mitigation measures.
- Actions required assessing the effectiveness of the mitigation measures employed such as guide through the monitoring mechanism and identifying related parameters that will be required for confirming the effective implementation of the mitigation measures.
- Ensure that the operator and its contractor(s) meet all environmental related legal obligations; and
- Provide concise and clear instructions to project personnel such as BPPL staff and contractors regarding procedures for protecting the environment and minimizing environmental impact.

6.1.2 Scope of EMP

EMP will be centered on the protection of aquatic habitat due to activities under the direct control of BPPL management where activities may give rise to significant environmental impacts; the EMP includes action plan related to the BPPL locations.

BPPL cargo will be off-loaded from the ship via floating pipes it will pass through the SPM floating jetties, then it will pass through the subsea pipeline and then it will appear on the shore then it will reach to the BPPL storage tanks. This EMP will be specific to the pipeline right of way.

The EMP also supports collaboration and joint actions with affiliated organizations, and contractors within the BPPL's area of influence.

In line with the Environment Policy, the following criteria will be used to determine priorities for attention:

- Impact on the physical and biological environment;
- Contribution to innovation and definition of best environmental practice;
- Compliance with statutory requirements and other environmental commitments;
- Availability of resources.

6.1.3 Organization of EMP

The EMP provides the procedures; organization and instruction to ensure project personnel understand and implement Environmental Protection Procedures for routine activities associated with the commissioning and operation of the Project and its anticipated facilities. The organization, style and format of the EMP is intended to enhance its use by project personnel in the field and to provide an important support document between overall environmental management of the project and various permits and authorizations issued for specific operation related project components and activities.

6.1.4 Maintenance of EMP

EMP is live document and EMP needs to be revised on timely basis to keep up-to-date as per the requirements comes up regularly. Therefore, outlining the responsibilities and activities associated with the maintenance of the EMP is essential. The responsibilities of the Environmental Monitoring are mentioned and procedures for requesting EMP revisions are outlined. EMP revision procedures include requirements for notification of the appropriate government agencies and other stakeholders so that their role is also included in the overall management process.

6.1.5 Management Approach

Project proponent will undertake overall responsibility for compliance with the EMP. It will ensure that all activities comply with positive environmental sensitivities as well as it will cooperate with the concerned regulatory agencies such as the Baluchistan Environmental Protection Agency. (BEPA)

Some of the approaches to be followed during the environmental management practices are given below.

- Complying with the relevant legislation and regulations.
- Regularly reviewing of the impacts on the environment.
- Developing appropriate indicators in order to monitor core impacts.
- Setting appropriate annual objective, targets and publicly reporting on progress.
- Communicating openly with internal and external stakeholder on environmental issues.

6.2 Roles and Responsibilities

In case of normal operational phase, main responsibility for environmental performance will be supervised by Senior EHS Manager, Assistant Manager (Environment Safety), Assistant Manager (Medical), Assistant Manager (Oil Spill Response), and Environmental officer while the daily management will be performed under the direction of Senior Manager Operations and Manager Administration and

Security, Under their surveillance, environmental management during operations will be performed as per the mitigation and monitoring plans outlined in the IEE report.

The roles and responsibilities of BPPL's, Senior Manager Operations OSR & EHS Manager, Assistant Manager (Environment Safety), Assistant Manager (Medical), Assistant Manager (Oil Spill Response) Manager Admin and Security, contractors and all EMP holders and all personnel is defined in this section. An organizational chart of the SPM Project Environmental Management Roles and Responsibilities is included in this section. EHS Organizational Chart of BPPL is given below in Figure 10.

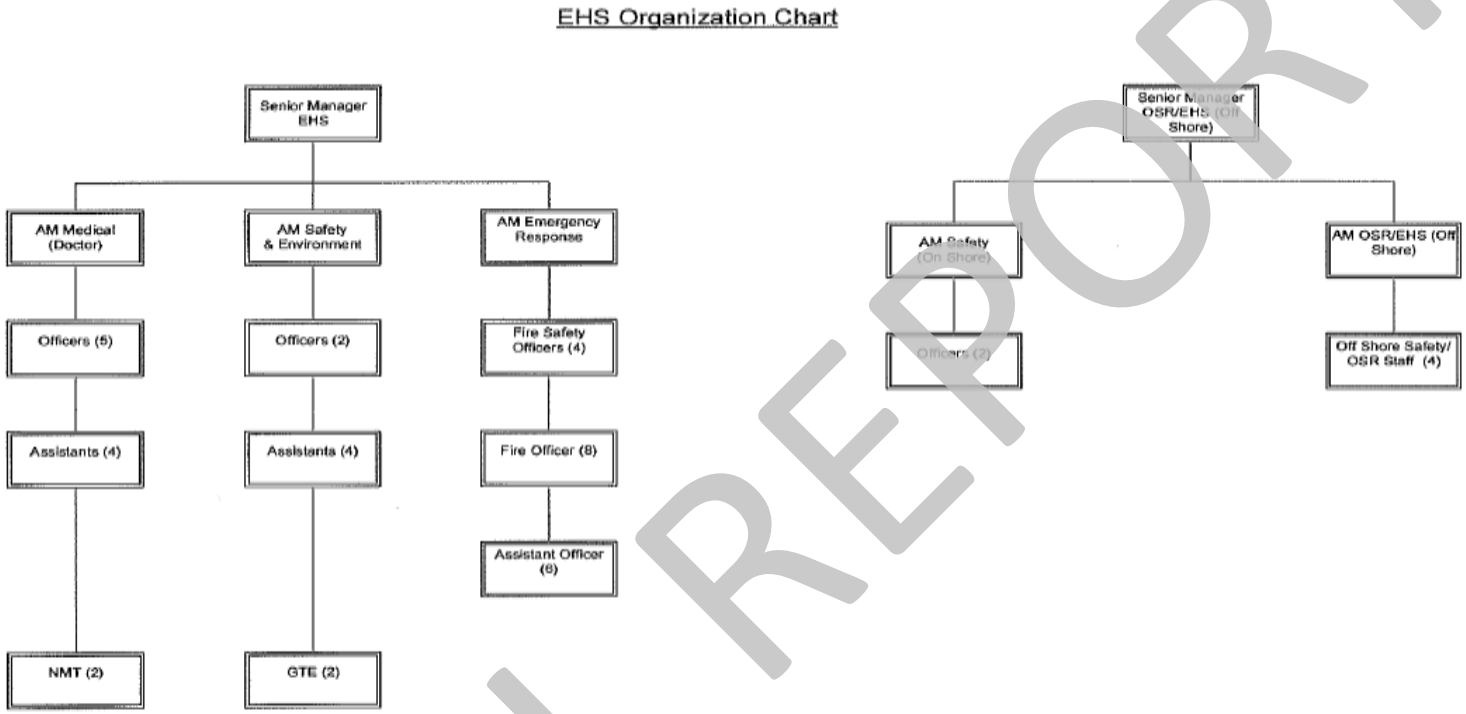


Figure: 10 EHS Organizational Chart of BPPL

A brief structure of role and responsibilities is given below:

A. Senior Manager (Operations)

Environmental management plan will be regulated by the Senior Manager (Operations) of BPPL.

Some of the key role and responsibilities are described below:

- To consider and react to issues and solutions proposed by the EHS department;
- To cooperate and consult with relevant environmental agency in order to perform in a better way;
- To approve any change in decision making and authorities in consultation with Manager EHS, if appropriate

B. Manager Admin and Security

- The Manager Admin / Security will have responsibility for managing client's corporate public relations efforts and reporting to the CEO of Corporate Communications.
- The Manager Admin and Security will develop and execute an integrated administration & public relations plan based on marketing strategy and reflecting the individual divisional (service line) public relations objectives.
- The role requires careful cross company collaboration and will necessitate both strategic leadership and practical execution.
- This is a corporate role with broad responsibility for managing both corporate and product PR programs, administrating the team, also responsible for the overall security of the facility.

C. Senior EHS Manager

The role of EHS manager is vital. The success of an EMP always depends on proper and effective management provided by Senior EHS manager. Following are some of the roles and responsibilities of EHS manager:

- To identify issues and where possible propose solutions for inclusion in the management plan review process;
- To ensure that the points of view of staff, contractor and EHS officers are considered and placed in the EMP accordingly;
- To improve coordination and exchange of information between top management, employees, contractors etc.;
- To contribute towards the actions to deliver the management plan and ensure its continual development;

- To review EMP every year under the supervision of top management, tackling issues and change EMP accordingly with the solutions and suggestions;
- To monitor the progress, development and implementation of this management plan.

D. Assistant Manager (Environment & Safety) (Onshore /Off Shore)

The role of Assistant Manager (EHS) will be vital during the operation phase. He will be the key advisor on environmental issues to the EHS Manager and Manager Admin & Security at the SPM site and other BPPL facilities.

- To integrate, as far as possible, the aims and objectives of different users within an agreed plan.
- To maintain a balanced, holistic approach to the solution of concerned issues in accordance with the compliance to the legislative requirements.
- To provide professional guidance on questions relating to the environmental management and issues raised by contractors/relevant personals.
- To progress the EMP process through development towards implementation.
- Ensure that all necessary safety approvals are in place prior to commencement of location activities as stipulated in local regulations.
- Assist the EHS Manager in seeking budgetary approvals for various safety operational requirements.
- To ensure that all Safety Management system requirements in terms of procedures and work instructions are implemented for all location based activities.

E. Assistant Manager (Medical/ Doctor) (Onshore /Off Shore)

The job holder is responsible for Development and implementation of Occupational Health & Medical Services Support System:

- Ensure availability & implementation of health procedures: This will include, but not limited to: medical fitness and screening, immunization, catering surveillance and hygiene, medical evacuation, first aid, medical facilities / equipment / supplies, medical, occupational and industrial health support services, medical audits and inspection, input into medical and Para- medical staff training etc.
- Ensure control on medical coverage for employees and review/develop Organizations' Health policies (Health Strategy, Emergency Response Plan, Medical Plan, health surveillance etc) in accordance with local Law.
- Monitor the implementation of all health policies and audit recommendations within the Organization and Contractor(s) if any.

- Ensure that Health Risk Assessment (HRA) is performed in all operations to keep risks to as low as reasonably practicable.
- Advice on Occupational Hygiene requirements in terms of accommodation, sanitation, water supplies, infectious diseases, catering facilities and staff, food supplies.
- Ensure that health and hygiene conditions are in compliance with requirements and associated standards. Provide information and regular written reports to Management for all activities associated with key health performance indicators and health related activities.
- Participate in Occupational Health Audits of medical facilities.
- Facilitating and supervising medical professionals on health issues e.g. epidemic prevention, general and occupational health related issues.
- Provide medical emergency cover, including arrangement for medical evacuation / repatriation wherever. This activity will be done in liaison with medical evacuation providers and medical specialists.
- Assessment of risk related to lifestyle and environment and develop health promotion, rehabilitation and employee assistance program.
- Assess any potential social/community health issues and impacts associated with Organizations' operations.

F. Assistant Manager Oil Spill Response

Following are the key responsibilities of an Assistant Manager Oil Spill response:

- Assistant Manager OSR will be responsible to supervise the any Oil spill occur at the SPM location;
- AM OSR will keep the resources ready for the level 1 oil spill;
- AM OSR will provides key liaison role in coordinating in case of any major spill to the Senior Management;
- AM OSR will train the OSR staff with new techniques of oil cleaning and mitigation measures.
- AM OSR will take the necessary steps for the Oil spill prevention techniques;
- In case of major spill keep the contact with the local and regional authorities.

G. Environmental Officer / Inspector

Following are the key responsibilities of an environmental inspector:

- An Environmental Inspector (EI) is responsible to supervise the environmental compliance and inspection process;
- Environmental inspector provides key liaison role in coordinating attendees and facilitating agreements in the field, as appropriate, with agency representatives;
- The EI will play a significant role suggesting methods to bring operation activity into compliance and/or to temporarily halt certain activities that may cause damage to sensitive environmental resources;
- In addition to these responsibilities, the environmental inspector contributes to the Environmental Management Team by developing swift and innovative solutions to unanticipated environmental issues which develop during operation.

H. Assistant Safety Manager (On shore /Off)

Safety supervisor has at least three responsibilities with which Environmental Safety can provide assistance. These responsibilities are employee training, provision of personal protective equipment and accident & injury reporting.

I. **Employee Training**: Supervisors are responsible for ensuring that each new employee, whether temporary permanent, receives appropriate safety training at the start of employment.
Supervisors are responsible for ensuring that their employees receive the necessary safety training based on the work that their employees perform.

II. **Personnel Protective Equipment:** OSHA requires each supervisor to assess the hazards of the work area to determine the type of protective equipment needed and to provide training on its use. This review must be documented. Completing the Hazard Assessment Form meets this documentation requirement. The Personal Protective Equipment Plan includes detailed information to assist in selecting the proper protective equipment.

III. **Accident and Injury Reporting**: It is the supervisor's responsibility to report all accidents or injuries that occur to their employees while at work. Each supervisor must ensure that any employee who is injured while at work completes and signs the Employee's Report of Work-Related Injury Form. Additionally, the supervisor must receive the employee form, Accident Witness Statement Form (if the accident was witnessed by another person), and fill out a corresponding Supervisor's Report of Work- Related Injury Form.

I. Individual Employees

Employees must assume a high level of responsibility to work safely and strive for an incident-free workplace by:

- Considering the consequences of their acts on their safety and that of fellow employees;
- Following all general and job related EHS work procedures and practices;
- Detecting, reporting and correcting unsafe work behavior or conditions;
- Applying EHS work practices both on and off the job;
- Making or suggesting enhancement to the jobs at hand to reduce or eliminate the risk or stresses associated with job performance;
- Reinforcing safe behavior;
- Working safely and with regard for the environment is a condition of employment and no employee should ever consciously perform an unsafe act.

6.3 Trainings

Training is vital for the safe and efficient operation at the SPM and an important step for the implementation of the EMP. All the employees will require to be trained to work appropriately on EMP. HR department will organize trainings in consultation with EHS Manager /AEHS Manager. It will make sure that employees understand the issues associated with the proposed activities and products. Trainings should be arranged on regular basis with notification that it should be attended by all respective employees.

A. Training Need Assessment

Assistant EHS Manager will determine the training requirements during the operation phase for the BPPL employees, contractors, subcontractors and visitors. Need assessment process will be done in consultation with HR department. Induction will be the basis of all training courses for contractor and subcontractor during the operation phase.

Trainings identified in EMP are given below:

- Site induction course;
- Training for oil spill response and use of equipment;
- Training for emergency response and preparedness;
- Training for site environmental controls;
- Specific environmental training for relevant employees e.g. installing erosion and sedimentation controls, daily checks to maintain controls, cleaning up Oil spills and waste minimization at the SPM area.

Oil spill response of level 1 has been permanently setup at the SPM location which can handle the small spills. OSR section includes the Booms, Skimmers absorbents and dispersants.

A permanent firefighting system has been installed, which include firefighting water at different locations and foam generators and CO2 extinguishers in the tank farm area. The personnel have been trained in the use and operation of said systems.

Equipment such as; firefighting equipment, medical hospital equipment and ambulance shall be available in case of any emergency.

B. Personal Trainings:

I. Procedure to respond to Oil Spill

Follow procedure SPM-OSR-001

However, the following immediate actions should be followed accordingly.

- If the spill occurs, then the captain and the crewmembers should give immediate notice thereof to the technical personnel working at the SPM facility for the latter to halt all operations.
- Crewmembers must identify the size or level of spill in order for the personnel working at the SPM to mobilize the appropriate internal or external resources required to promptly respond to the incident.
- Remove every source of ignition / spark in the area;
- Isolate the area by using floating booms available at SPM site;
- Try to seal the seepage, if it is possible to do it in safe manner.
- Remove the product with absorbent material or other mechanical means in order for wastes to be properly disposed of or it may be reused.

II. Procedures for Flammable Substances (Jet fuel, Diesel, Motor gasoline):

To respond to a seepage involving a flammable product, the following steps should be taken;

- Isolate the area;
- Remove every source of ignition in the area;
- Use duly grounded armored equipment in the Hot Area;
- Try to seal the seepage, if it is possible to do it in safe manner.

- Try to contain the product to prevent it from filtering into drainage networks other places;
- Monitor flammability indices in the risk area to analyze the need to isolate a broader area;
- Remove the product with absorbent material or other mechanical means in order for wastes to be properly disposed of.

III. Procedures for Toxic Substances:

In situations involving the seepage of liquid substances classified as toxic, the most important thing to do is to wear appropriate breathing equipment.

If there is any doubt regarding the concentration of the substance in the environment, breathing equipment that affords the highest possible protection will be worn, that is, self-contained compressed-air breathing masks and appropriate clothing. In addition, the following steps will be taken:

- Try to seal the seepage, if it is possible to do it in a safe manner;
- Isolate and evacuate the area that poses a danger immediately;
- Try to contain the product to prevent it from filtering into drainage networks or sea;
- Permanently monitor the concentration of vapors in the risk area to analyze the need to isolate a broader area;
- Remove the product with absorbent material or other mechanical means in order for waste to be properly disposed of.
- Decontaminate all clothing, equipment, materials and areas reached by the product.

IV. Procedure to respond to fire on Ship during offloading of Flammable Materials

Personnel in-charge of unloading the products like (Furnace Oil, Naphtha, Motor Gasoline and Diesel) BPPL are expediently trained to carry out their work and respond to any emergency.

If a fire breaks out on a ship, then, besides the basic firefighting procedures, the following steps will be taken:

- If the fire breaks out next to the mooring wharf, loading operations must be interrupted immediately and the ship must get ready to weigh anchor;

- If the fire breaks out aboard the ship, then the captain and the crewmembers should give immediate notice thereof to the technical personnel working at the SPM facility for the latter to halt all operations;
- Technical member shall immediately follow the other procedure of Emergency response plan.
- Crewmembers must identify the type of fire in order for the personnel working at the SPM to mobilize the appropriate internal or external resources required to promptly respond to the incident.

V. Procedure Involved in Products Offloading from Vessel

Person SPM In-charge: The person in charge of the SPM will personally monitor all operations involving highly inflammable products. Same person will closely cooperate with and remain in close contact with the person supervising the off loading of products from the pipeline into the storage tanks.

During unloading Operations: Off-loading will begin at the minimum rate, in order to be able to quickly stop the supply if there is any leakage etc. The pressure of supply lines will be checked to make sure that the maximum working pressure is not being exceeded. The refinery storage tanks will be constantly measured. Upon completion of loading operations, all loading connections will be disconnected.

Monitoring of the subsea supply line

A dedicated boat will be deployed to do surveillance of the subsea supply line track, to notice and communicate any leakage to the ship and relevant sections.

Check List: Before off-loading of the products at SPM follow the steps given below:

- There should be a clear signaling system in place to report the commencement of off-loading operations, reduction in the off-loading rate, the end of off-loading operations, and emergency shutdowns;
- All intake and discharge valves in the sea should be closed;
- The valve in the central pipe of SPM where the product is to be loaded should be open and duly aligned.
- Upon completion of off-loading operations, check whether.
- Distribution valves have been closed, and the valves in the loading system have been closed, including intakes in the central pipe.

6.3.1 Communications

For effective monitoring, management and documentation of the environmental performance during the operation, the Health, Safety and Environmental (EHS) matters will be discussed during daily meetings held on site. Environmental concerns raised during the meetings will be mitigated after discussions between the Assistant Manager (EHS) and the contractor. Any issues that require attention of higher management of BPPL will be communicated to them for action. The Assistant Manager (EHS) will also prepare a monthly environmental report which includes the EHS related issues. Duplicates of the report will be provided to the higher managements of BPPL and of the contractor. Communication is the key of successes in good management practices. Steps given below will assist in effective communication and documentation.

A. Opening Meeting

The aim of organizing the kick-off meeting is to define the environmental responsibilities, awareness of EMP to the managing staff and to streamline the work plan according to the EMP. This meeting will be arranged prior to commencement of activities.

B. Monthly Meetings

Monthly meetings will be held after the opening meeting. Aim of this meeting is to review the progress of activities performed, explore ideas and problems, and discuss about the progress in acquisition and analysis of information. Deadlines are reevaluated in it and if necessary, and issues will be resolved accordingly.

C. Minutes of Meetings

In the end of quarterly meetings, minutes will be issued which are comprised of the discussion made in the meeting, issues discussed and decisions taken with the time frame for their implementation. Main points of minutes for general employees may be incorporated in the record register. These meeting minutes will also be provided to the higher authorities of BPPL and the contractor if any involved for their own record.

6.4 Regulatory Requirements

Approvals, Authorizations and Permits The list of potential approvals, authorizations and permits required for the Project from various agencies including, provincial, and federal are given below:

- Baluchistan Environment Protection Agency (BEPA)
- Ministry of Defense
- Ministry of Ports and Shipping

6.5 Environmental Health and Safety

BPPL is devoted to manage and operate its operation plants, property in a manner consistent with its core standards to protect the environment, health and safety of people as well as integrity of assets and comply with applicable Environment, Health and Safety (EHS) laws, regulations and internal EHS standards. Which are laid down by the EHS department. BPPL is going to implement Du point process safety management system at its entire operational sites.

This section will outline an Environmental Health and Safety Management System which will delineate mitigation measures and best management practices and SOPs related to the activities. This management is recommended to carry out a complete Risk assessment, evaluate, monitor, identify and control all potential hazards and risks that may arise during the operation phase of the oil products and dissertation phases of the proposed project. The management has already established the Environment Health and Safety Plan (EHSP) along with the Plant Health and Safety Rules and enforced on site. The Plan has outline roles, responsibilities and which are given above;

Protection of the public and workforce health and safety during related operations is paramount for the management of BPPL. Management has hired the expert personnel and the Environment, Health and Safety Management System (EHSMS), the potential health and safety hazards and risks will be identified and assessed, then the subject of substantial planning, organization and procedural/ facility development.

The SPM facility has the state of art technology for fire protection systems, flame, smoke and low and high-temperature detectors and alarms, and manual shut-down systems. The efficiency and stability of operations will be maximized by the use of a high level of automation, regular preventative maintenance, and safeguards such as back-up systems and the provision for safe emergency shut-downs. Prior to project commissioning, all personnel will be required to undertake an extensive training program to ensure safe operating practices pertain to the new products.

The training program and subsequent regular refresher programs will involve issues covering operations, hazards, safety and emergency procedures and environmental management. The Health and Safety Rules should include provisions for, impediment of and response to oil leakages, release of hydrocarbons and accidental spills. It is also the responsibility of the management to provide the following basic information:

- Description of all potential hazards/ risks;
- Health and Safety implications about all hazards;

- Description about management techniques including inspections, maintenance follow up, reports, personnel protective gears and medical monitoring.

6.6 Standard Operation Procedures /Best Practices /Work Permits

Management of BPPL has formulated the various SOPS/and work permits for the safe operations of the facility, important procedures are briefly described below:

6.6.1 Procedure for Emergency Response Plan

Purpose

The purpose of this procedure is to provide a clear and concise reference of the important actions for a number of emergency situations that may arise at the on-shore site. It is therefore must for all key personnel in the emergency response organization or crisis management organization, to be familiar with the contents of this procedure and to have full knowledge of their duties and responsibilities. Define lines of communication both internal & external; Detailed ERP is attached as Annexure-8.

6.6.2 Procedures for General EHS Rules

Purpose

To outline the general SPM policies and rules in a way that provides a clear understanding to all personnel on the SPM (including contractors and visitors) so that acceptable behavior can be expected to achieve a smooth, safe, secure, healthy and environmental friendly operation. Detailed procedure is attached as Annexure -9.

6.6.3 Procedures for Visitors Safety

Purpose

To set a general safety requirements and rule for all visitors at the SPM facility. Detailed visitor's guideline is attached as Annexure -10.

6.6.4 Procedure for Oil Spill Response Plan

Purpose:

The purpose of this procedure is to provide a clear and concise reference of the important actions for a number of emergency situations that may arise at the off-shore site of oil spill. It is therefore necessary that all key personnel in the emergency response organization or crisis management organization, to be familiar with the contents of this procedure and to have full knowledge of their duties and responsibilities. Define lines of communication both internal & external. BPPL has established OSR plan to handle the Tier III Oil spill, list of OS equipment and detailed Oil spill response plan are attached as Annexure-11.

6.6.5 Procedure for Waste Water /Storm Water Management

Purpose

The purpose of the adopted procedure is to provide guidelines and simplify the process of categorizing, quantifying, managing, and disposing of wastewater wherever and whenever arising during the project's operation phase. Wastewater management is a critical component of company's operating policies. Wastewater management includes the proper disposal / recycling and reuse of the wastewater generated during operation phase. The procedure is designed to assist in a company's wide effort to provide protection for the environment and to comply with company's corporate requirement, environmental laws and regulations regarding proper wastewater management. Wastewater generated at the SPM location will be treated in the Soak pit, and Wastewater will not be disposed in any water body so that the NEQS for the monitoring does not apply.

6.6.6 Procedure for Waste Management Plan

Purpose

The purpose of this procedure is to provide guidelines and simplify the process of categorizing, quantifying, managing, and disposing of solid waste. Waste management is a critical component of company's operating policies. Waste management includes the proper handling, collection, storage, manifesting, transportation, and disposal/ recycling of the solid waste generated. The procedure is designed to assist in a company wide effort to provide protection to the environment and to comply with company's corporate requirement, environmental laws and regulations regarding proper waste management. Detailed procedure for the Waste Management Plan is attached as Annexure-12.

6.6.7 Procedure for Noise and Air Emission

A. Purpose

The purpose of this guideline is:

- To monitor contents of polluting substances in the atmospheric air;
- To control observance of approved limiting permissible emissions at man-made sources;
- To monitor natural sources and a number of man-made sources of emission at work sites at the Operation phase;
  - ✓ To monitor noise emissions;
  - ✓ Sources of noise emissions.

B. Scope

Scope of work includes:

- Evaluation of present ambient air quality and noise level at existing area;
- Evaluation of impact of traffic movement at the proposed site and noise level;
- Evaluation of impacts on roads and in the adjacent area due to construction and operation;
- Recommendations for mitigation techniques to redress the expected impacts for operational phase;

C. Definitions

- In common use the word noise means unwanted sound or noise pollution. Excessive noise permanently damages hearing, but a continuous low-level sound can be dangerous too.

D. Procedure

- Air emissions (continuous or non-continuous) from SPM facility include combustion sources for power generators and pumps.
- Emissions resulting from fugitive sources, gases from these sources typically include nitrogen oxides (NO_x), carbon monoxide (CO),carbon dioxide (CO2), and, in case of sour gases, sulfur dioxide (SO2). In addition to that hydrocarbons will also be the form of pollutant which may release during oil spills from pipeline, SPM or tank farm. All those emissions will be in less quantity and dispersion of those will be quite good due to the wind effect as the project is in the coastal zone.
- The main noise emission sources in SPM facility include machinery employed during operation phase of the pipeline, lifting and hoisting equipment, generators, barges, tugs, boats and general loading/ unloading operations at SPM.
- Atmospheric conditions that may affect noise levels include humidity, wind direction, and wind speed. Vegetation, such as trees, and walls can reduce noise levels. Installation of acoustic insulating barriers can be implemented, where necessary.

E. Noise and Air Emissions Management Options

Noise and air emissions monitoring includes:

- Strategic environmental planning (e.g., SPM site and fatal flaw analyses);
- Pollution control device feasibility, troubleshooting, and cost evaluations;
- Innovative solutions and flexible permitting;
- Regulatory tracking and rule making negotiation on behalf of corporations and trade associations;
- Enforcement assistance, economic evaluations, expert testimony;
- Environmental Management System (EMS) development;
- Risk Management Plans;
- Emission release inventories (Toxic Release Inventories, Global Warming and Green House Gas Inventories);
- Leak Detection and Repair;
- Pollution control technology assessment;
- Emission inventory development;
- Capture efficiency;
- Control equipment performance and equipment specifications and warrantees;
- Compliance assessment;
- Non-compliance resolution;
- Negotiation of commercial terms for air pollution and control equipment and control systems;
- Development of parametric monitoring, periodic monitoring, and compliance assurance monitoring.

6.6.8 Procedure for Barge and Supply Ship

A. Purpose

The purpose of this procedure is to achieve the desired productivity. To set down the method for handling of cargo from the vessel efficiently, effectively and safely.

B. Scope

This procedure applies to all vessels calling at the SPM.

C. Responsibility

EHS Head is responsible for the implementation of this procedure.

D. Procedure

I. Information Required

Shipping efficiency is highly dependent upon the quality and timing of information made available to the Terminal Planning Section. This section is responsible for, amongst other activities, preparing quay crane utilization plans and container discharge and load sequences. Information sources are:

II. Shipping Line:

Shipping line is responsible for providing inward bay plan information, dangerous cargo declarations and any particular information which may be useful ensuring smooth operations. For planning purposes this information should be available to the SPM at least 24 hrs prior to vessels arrival with updates from the last port of call at least 12 hours prior to vessel arrival. Communications should be through fax or emails.

III. The Operations Superintendent:

Is responsible for ensuring the best information is available concerning availability of cargo handling equipment and manpower availability.

IV. Planning for Operations

- In all cases the start position for operations occurs when, through the Vessel Planner, the SPARCS system generates off-loading working programs and sequence sheets for storage facility to be worked. These planned ship-working programs will have taken into account:
- Vessel stability requirements;
- Disposition of cargo to be discharged from the vessel;
- Resource availability by way of cargo handling equipment and manpower; Conditions of contract with the client.

6.6.9 Procedure for Personal Protective Equipments

A. Purpose

The purpose of this procedure is to establish a guideline for the use of personal protective equipment during the work at SPM Site by every individual under any potential risk.

B. Scope

This Procedure applies to all jobs carried out within the premises of the SPM Facility or on behalf of SPM outside the premises.

C. Definition

- Personal Protective Equipment (PPE) is safety clothing and equipment for specified circumstances or areas, where the nature of the work involved or the conditions under which people are working, requires it's wearing or use for their personal protection to minimize risk.

D. Management Responsibility

Line Managers/Supervisors are responsible for:

- Implementing this guideline in their area of responsibility ensuring appropriate selection of PPE.
- Ensuring staff and health and safety representatives are consulted in relation to selection, use and training in relation to PPE.

Employees are responsible for:

- not placing themselves or others at risk of injury
- using PPE that is provided
- Participating in consultation processes associated with selection, use and training in relation to PPE.

Students, Visitors and Volunteers are responsible for:

- not placing themselves or others at risk of injury
- Using PPE that is provided or in the case of a student providing and using the type of PPE required for certain practical studies.

Health and Safety Representatives are responsible for:

- Assisting Line Managers and staff in the identification with the selection and use of PPE.

Required PPE's

Circumstances in which PPE may be required to be worn include:

- Head protection in the form of a safety helmet shall be worn where, there is a possibility that a person may be struck on the head by a falling object, a person may strike his/her head against a fixed object, or there may be inadvertent head contact with electrical hazards.

- Eye protection shall be provided where a risk of eye injury exists. Typical hazards might include flying particles, dust, splashing substances, harmful gases, vapors, aerosols, and high intensity radiation from welding operations.
- Hearing protection shall be provided where a risk of noise induced hearing loss exists. The need for hearing protection shall be assessed from the conduct of noise surveys in potential noise hazard areas.
- Respiratory protection shall be provided, after all other practicable measures have been taken to provide control measures, to ensure that no staff member is exposed to an atmosphere that is or may be injurious to health.
- Protective clothing and sunscreen shall be provided for staff, who are required to work outdoors and are exposed to the sun's rays for continuous periods in a day. Direct exposure of the skin to UV radiation from outdoor work shall be minimized by providing hats, long sleeves/trousers and an adequate supply of sunscreen.
- Hand protection shall be provided where there is an identified hazard associated with a potential for hand injury. A list of hazards shall be compiled for each workplace and suitable hand protection obtained to minimize risk.
- Protective footwear (safety footwear) shall be provided where the nature of the work exposes the employee to a medium to high risk of injury to feet, e.g. occupations such as workshop/maintenance and gardening staff.
- High visibility safety vests shall be provided and worn where there is a risk of injury associated with working on or near roadways or near moving traffic or moving plant.
- Compliance with requirements to use PPE by individual(s), including staff, students, visitors and volunteers should be monitored. Where there is non-compliance this shall be investigated to ascertain the reason(s) and handled in accordance with human resources or student management procedures.

6.6.10 Procedure for Permit to Work

Purpose

To define the scope, objectives, policy, responsibilities and principles for the permit-to-work system in a way that:

- Provides everyone on-site a basic understanding of what is meant by a 'permit-to-work' system,
- Outline the basic requirements for obtaining permit-to-work, and Ensures compliance of legal and in-house requirements and consistency in the execution of the permit-to-work system. So that the safe operations of SPM

facilities on site can be maintained and / or further enhanced. Detailed procedure for the Permit to work is attached as Annexure -13.

6.7 Environmental Quality Objectives

The criteria for management's quality objectives and generation of solid waste and wastewater quality, air and noise quality are detailed here. The management BPPL shall review Environmental Objectives once a year and try to complete them in the stipulated time frame. This will also include any applicable treatment criteria for the National Effluent Quality Standards (NEQS) as per Baluchistan Environment Protection Act 2012.

6.8 Compliance Monitoring

The management of BPPL shall be responsible for the implementation of the Environmental Monitoring Plan laid in the subsequent section. The monitoring reports shall be prepared by the Assistant Manager EHS for internal and external reporting. Monitoring reports shall be prepared as per the frequency mentioned in the monitoring plan for a particular parameter. Internal reporting shall be done on monthly basis whereas the external monitoring shall be done as per the frequency mentioned against each of the monitoring parameter. Any reporting requirement mentioned in the IEE approval or any other document shall also be complied with. Monitoring shall be performed through independent authorized laboratories. A detailed Environmental monitoring plan is given in table-9.

……next page

Table 9: Environmental Management Plan for Key Project Components

DC= During construction Phase, DO= During Operation Phase.				
Sr. #	**Key Project Components / Impacts**	**Action**	**Responsibility**	**Stage /Timing**
1.	Soil Contamination	1.1 Unnecessary dust generation during movement of vehicle will be avoided by sprinkling water at regular intervals	EHS Officer	DC / DO
		1.2 Ensure that all excavated material is confined to within a work corridor and disposed of in an environmentally safe manner	EHS Officer	DC / DO
		1.3 All contamination will be stored indoor and properly disposed off through development of disposal and safety plan	EHS Officer	DC / DO
		1.4 Lubricants, fuels will be stored properly with impervious lining to protect the soil contamination	EHS Officer	DC / DO
2.	Sea Water Pollution	2.1 Prevention of Oil leakage and seepage from the hose pipe, Submarine pipe and any other installations in the SPM and Plant Area	Assistant EHS Manager	DO

Sr.#	Key Project Components / Impacts	Action	Responsibility	Stage /Timing
3.	Impact on Water Resources	3.1 Washing of the vehicles will be done in the designated areas.	Admin	DC / DO
		3.2 Efficient and low water consumption technology will be selected for the operation of the project	Assistant EHS Manager / EHS Officer	DC / DO
		3.3 Post and convey water conservation messages at site	Assistant EHS Manager / EHS Officer	DC / DO
4.	Waste Water Disposal	4.1 Ensure that sewage wastewater from BPPL will be disposed after the proper treatment	Assistant Manager EHS EHS Officer	DC / DO
		4.2 Ensure that oil or fuel leakages from the construction machinery are prevented and should not enter in the septic tank.	EHS Manager	DC / DO
		4.3 Ensure that no chemical enter into the septic tank otherwise it will damage the biological treatment system of the septic tank.	Safety Officer	DC / DO

	Key Project Components / Impacts	Action	Responsibility	Stage /Timing
5.	Impacts on Ambient Air Quality	5.1 Ensure that Transportation corridor dust is sprinkled regularly with water to avoid dust emissions.	EHS Manager EHS Officer	DC / DO
		5.2 Ensure the proper ambient air monitoring in the Plant area, Office and SPM Location as per NEQS for the Ambient air	EHS Manager / EHS Officer	DC / DO
6.	Fire and Life Safety	6.1 Engineering design to include the NFPA codes for all fire protection devices	Senior EHS Manager /Assistant Manager EHS	DC / DO
7.	Noise	7.1 Ensure that vehicles and equipments will be regularly monitored for noise	Assistant Manager EHS	DC / DO
		7.2 Ensure contractor should not use machinery or vehicle which is unfit or without silencer	EHS Officer	DC / DO
8.	Air Emission	8.1 Ensure that Gen-sets should be monitored as per Self-Monitoring Rules	EHS Officer	DC / DO
		8.2 Ensure that vehicles /tugs /boats should be monitored as per self-monitoring rules	Contractor EHS Officer	DC / DO

9.	Solid Waste Management	9.1 Ensure that solid waste management is as per Solid Waste Disposal plan given in the monitoring plan in sub-section (f) of section-6.	EHS Manager Safety Officer Contractor	DC / DO

A. Air Emissions Monitoring Plan

Air Emissions monitoring of the BPPL will be performed according to the following plan for the given below parameters:

Phase	Source	Parameters	Frequency	Standards
Construction & Operations	Diesel generator	SOx, NOx, CO, CO2, PM_{10}	Monthly & Quarterly (Standby)	NEQS
	Gas Generator	NO_x, CO, CO_2, PM_{10}	Quarterly	NEQS

B. Ambient Air Monitoring Plan

Ambient Air Monitoring of the BPPL will be performed according to the following plan for the given below parameters:

Phase	Location	Parameters	Frequency	Standards
Construction & Operations	SPM Location	SO_x, NO_x, CO, CO_2, PM_{10}	Annually	NEQS

C. Sea Water Quality Monitoring

Sea Water Quality will be monitored according to the following plan for the given below parameters:

Phase	Location	Parameters	Frequency	Standards
Construction & Operation	SPM Location	pH ,Oil and Grease	Monthly	NEQS

D. Ground Water Quality Monitoring

Ground Water quality will be monitored according to the following plan for the given below parameters during operation phase:

Phase	Location	Parameters	Frequency	Standards
Construction & Operation	Along the pipeline or any test well	TDS, TSS, pH, Total Coli form, Fecal Coli form Oil and grease	Bi-Annual	NDWQS

E. Soil Contamination Monitoring

Soil Contamination will be monitored according to the following plan for the given below parameters:

Phase	Location	Monitoring Method	Frequency	Method
Operation	Landside Pipeline	Leakage incidents Review of Complaints log	Quarterly	Visual Field Survey

F. Solid Waste Monitoring Plan

Management of the BPPL has to maintain the waste generation record on monthly basis also ensure the safe disposal of the waste as per following plan:

Parameters	Disposal	Frequency	Responsibility	Supervision
Construction & Operation Stage				
Hazardous Waste				
Used Oil Filters , Un -used Chemicals, Tube lights, as mentioned in WMP	Incineration through EPA approved Waste contractor	Monthly	Operation and Maintenance Contractor	EHS Officer
Non-Hazardous Waste				
Recyclable (Paper, Plastic and Metals, etc.) will be segregated at source through separate bins. As mentioned in the WMP	Recycling using third party waste management contractor	Monthly	Operation and Maintenance Contractor	EHS Officer
Non-recyclable, Construction waste, debris, etc.	Disposal at Landfill site	As per requirement	Operation and Maintenance Contractor	EHS Officer
Non-Recyclables Domestic solid waste	Disposal at landfill site through approved contractor	As per requirement		EHS Officer

G. Drinking Water Quality Monitoring Plan

Drinking water which will be provided to the employees will be monitored as per following plan during the Construction & operation phase:

Stages	Parameters	Locations	Frequency	Standards
Construction Operations	TDS, TSS, pH, Total Coli form, Fecal Coli form	Drinking water sources	Quarterly	NSDWQ /WHO

H. Biodiversity Monitoring

Biodiversity will be monitored as per following plan during the construction & operation phases:

Stages	Parameters	Locations	Frequency	Methodology
Construction & Operations	Flora and Fauna (Fish , birds etc)	SPM Location and Right of Way	On Servicing of Ship	Through Survey and filling checklist

Annexure

Annexure 1: EIA NOC for SPM-I Construction and Operations phases

OFFICE OF THE DIRECTOR GENERAL BALOCHISTAN
ENVIRONMENTAL PROTECTION AGENCY
GOVERNMENT OF BALOCHISTAN
SAMUNGLI ROAD QUETTA

Office: 081-9201840 Fax: 081-9201180 Lab: 081-9239506 Email: epa_baluchistan@yahoo.com

No. DG(EPA)/3113-14 /2013 Dated: 08-01-13

Subject:- **Approval for Commencement of SPM**

1. **Name & Address of the Proponent (I)** **Name & Address of the Proponent (II)**

M/S Byco Petroleum Pakistan Limited
9th Floor ,the Harbour Front ,Dolmen City
HC-3,Block 4,Marine Drive,Clifton,
Karachi -75600,Pakistan

M/S Coastal Refinery Limited (CRL)
10-C Bukhari Comm
Lane-3 Defence Ho
Society Phase-VI, K

2. After physical visit of SPM and Pipeline of SPM Project as per specifications, the Balochistan Environmental Protection Agency has decided to accord its operational approval only to **M/S Byco Petroleum Pakistan Limited (Proponent (I)** subject to the following conditions:

i) Mitigation measures and **Environmental Management Plan** as recommended in the Environmental Impact Assessment (EIA) report shall be strictly implemented.

ii) The implementation of the National Environmental Quality Standards (NEQS) shall be the sole responsibility of the proponent during **ship Beaching** and operation.

iii) In order to address the Environmental concern with respect to SPMB pipeline & Operation, the proponent shall formulate **H.S.E. Department** with their organizational setup. They would help in implementing various measures for the prevention of Environmental degradation.

iv) **Water Quality Monitoring** around the SPMB and the pipeline shall be carried out on regular basis for the purpose of obtaining quantitative information regarding levels of contaminates.

v) The **Solid Waste Generation** during Ship Beaching and [illegible] shall be continuously monitored and disposed off in the manner suggested in EIA report.

vi) The **Off Loading and Transportation** of Crude Oil should be monitored in presence of EPA Technical Lab Staff at SPMB.

vii) **Regular Monitoring** of the potential hazards in the right of way of the pipeline should be carried out, which would be helpful in providing an early warning and curtailing risk of any disaster.

viii) The proponent should ensure availability and usage of **Personal Protection Equipments** during off loading and operation.

ix) The proponent is liable to prepare an annual **Environmental Audit Report** through an independent Environmental consultant and submit the same to the provincial Environmental Protection Agency for evaluation of the SPM operation.

x) **Job opportunities** should be provided to the locals of the area.

xi) All precautionary measures should be strictly adhered to minimize any Negative **Impacts** on soil, marine ecosystem, groundwater, ambient air qual and biodiversity in the SPM area.

xii) **Social Development Plan** should be in place by the proponent (BPL) for the benefit of communities in the project area.

xiii) In case of any **verifiable damage to community** the compensation will invariably be paid by the proponent as per prevailing laws of the Country

xiv) In case of any **accident, spillage, leakage and disaster**, the proponent (BPL) would be solely responsible and would undertake all necessary measures to redress the same.

xv) The preparation and up gradation of **Emergency Response System** and **Disaster Risk Management** shall be the Sole responsibility of the proponent (I).

xvi) Separate IEE /EIA should be submitted to this agency for any deviation in **location, technology, or process** as given in the EIA report consequent development.

6. The proponent shall be liable for **compliance of section 13,14,17 and 18 of EIA / IEE regulation 2000,** which direct for conditions for approval, confirmation of compliance, entry, inspection and monitoring of SPM.

7. This approval **will not absolve** the proponent (I) from obtaining any other approval that may be required under any Law.

8. This approval **will not allow** the proponent (II) to operate / use the SPM.

8. This approval shall be treated as **null and void** if the conditions are not complied with.

Director General

Annexure 2: IEE NOC for SPM-I handling of Additional Oil Products

OFFICE OF THE DIRECTOR GENERAL BALOCHISTAN
ENVIRONMENTAL PROTECTION AGENCY
GOVERNMENT OF BALOCHISTAN
SAMUNGLI ROAD QUETTA

Fax: 081-9201180 Lab: 081-9202833 Email: epa_balochistan@yahoo.com

No. DG(BPA)/ 4734 /2014 Dated: 09-05 /2014

Subject:- **Submission of Initial Environmental Examination (IEE) report for handling of additional POL products using existing SPM and pipeline at Hub Balochistan**

1. **Name & Address of the Proponent**

M/S Byco Petroleum Pakistan Limited
The Harbour Front, 9th Floor ,Dolmen City
HC-3,Block 4 ,Marine Drive, Clifton
Karachi -75600,Pakistan.
UAN:# (92 21) 111 222 081
Fax # (92 21) 111 888 081

2. After thorough review of IEE report Environmental Protection Agency has decided to convey its approval to M/S Byco Petroleum Pakistan Limited subject to the following conditions:

i) Mitigation measures and Environmental Management Plan as recommended in the Initial Environmental Examination (IEE) report shall be strictly implemented.

ii) The implementation of the National Environmental Quality Standard (NEQS) shall be the sole responsibility of the proponent during handling of Additional POL products.

iii) For the management of waste, EHS management plan should be developed.

iv) **Waste Water Disposal / Sea Water pollution** ensure that waste water from BPPL will be disposed off into sewerage System. Similarly, Oil leakage and seepage from the hose pipe, Submarine pipe and any other installations in the SPM and plant Area should be disposed off after proper treatment.

v) **Ambient Air Monitoring** CO_2, CH_4, NOX, SOX and Volatile Organic Compound (VOCs) should be ensured through proper ambient air monitoring in the plant area, and SPM location as per NEQS.

vi) The **Solid Waste Generation** during Maintenance shall be supervised by the safety officer by safe EHS Practices.

vii) The Crude Oil storage tanks refined products tanks should be monitored properly during loading and un-loading

viii) The proponent should ensure availability and usage of **Personal Protection Equipments** during loading and operation.

ix) The proponent is liable to prepare an annual **Environmental Audit Report** through an independent Environmental consultant and submit the same to the Provincial Environmental Protection Agency for evaluation of the SPM operation.

x) **Job opportunities** should be provided to the locals of the area.

xi) All precautionary measures should be strictly adhered to minimize any Negative **Impacts** on soil, marine ecosystem, groundwater, ambient air quality and biodiversity in the SPM area.

OFFICE OF THE DIRECTOR GENERAL BALOCHISTAN
ENVIRONMENTAL PROTECTION AGENCY
GOVERNMENT OF BALOCHISTAN
SAMUNGLI ROAD QUETTA

Fax: 081-9201180 Lab: 081-9202833 Email: epa_balochistan@yahoo.com

No. DG(EPA)/ 4734 /2014 Dated: 08-05 /2014

Subject:- **Submission of Initial Environmental Examination (IEE) report for handling of additional POL products using existing SPM and pipeline at Hub Balochistan**

1. **Name & Address of the Proponent**

M/S Byco Petroleum Pakistan Limited
The Harbour Front, 9th Floor ,Dolmen City
HC-3,Block 4 ,Marine Drive, Clifton
Karachi -75600,Pakistan.
UAN:# (92 21) 111 222 081
Fax # (92 21) 111 888 081

2. After thorough review of IEE report Environmental Protection Agency has decided to convey its approval to M/S Byco Petroleum Pakistan Limited subject to the following conditions:

i) **Mitigation measures and Environmental Management Plan** as recommended in the Initial Environmental Examination (IEE) report shall be strictly implemented.

ii) The implementation of the National Environmental Quality Standard (**NEQS**) shall be the sole responsibility of the proponent during handling of **Additional POL** products'.

iii) For the management of waste, EHS management plan should be developed.

iv) **Waste Water Disposal / Sea Water pollution** ensure that waste water from BPPL will be disposed off into sewerage System. Similarly, Oil leakage and seepage from the hose pipe, Submarine pipe and any other installations in the SPM and plant Area should be disposed off after proper treatment.

v) **Ambient Air Monitoring** CO2, CH4, NOX, SOX and Volatile Organic Compound (VOCs) should be ensured through proper ambient air monitoring in the plant area, and SPM location as per NEQS.

vi) **The Solid Waste Generation** during Maintenance shill be supervised by the safety officer by safe EHS Practices.

vii) The Crude Oil storage tanks refined products tanks should be monitored properly during loading and un-loading

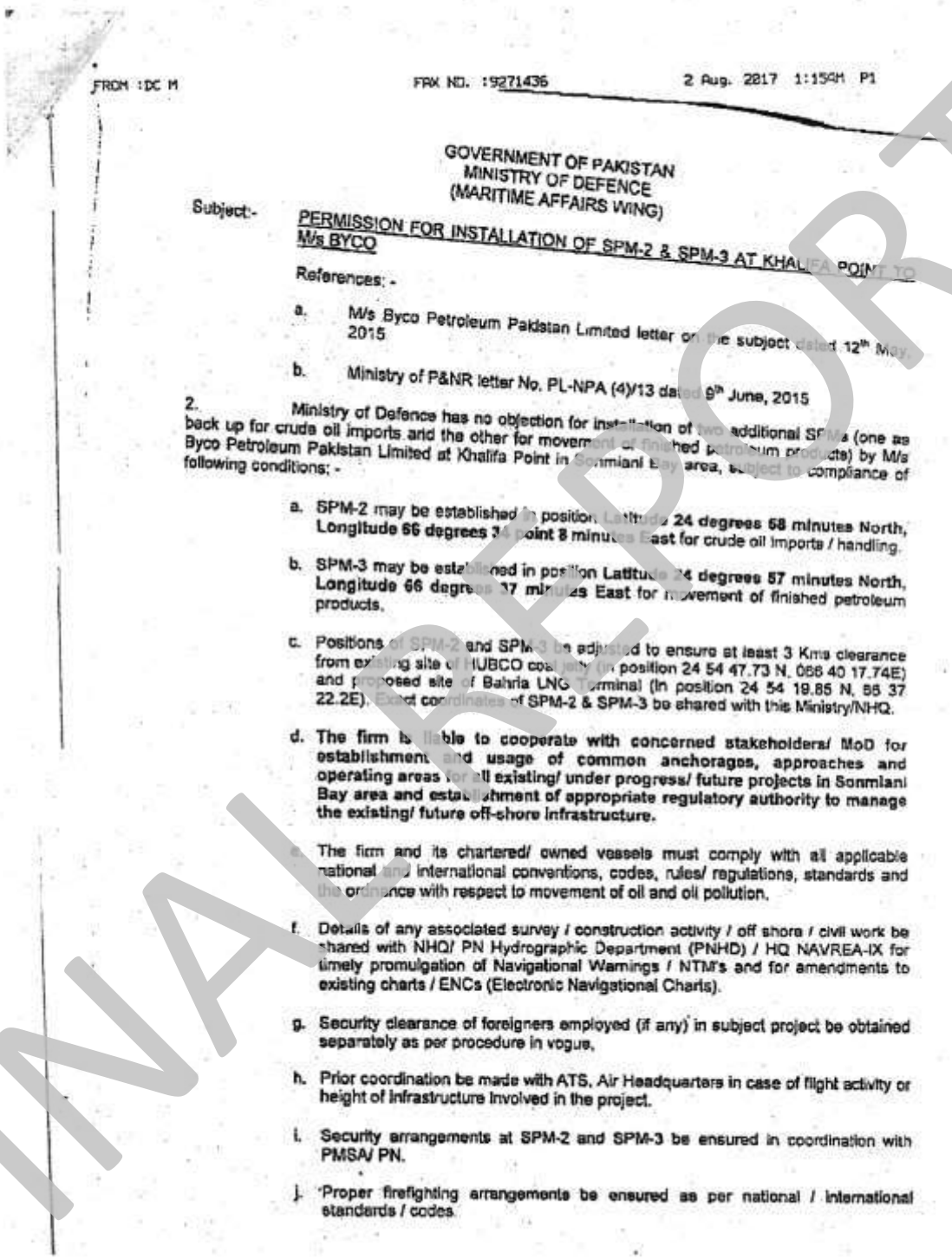
viii) The proponent should ensure availability and usage of **Personal Protection Equipment** during loading and operation.

ix) The proponent is liable to prepare an annual **Environmental Audit Report** through an independent Environmental consultant and submit the same to the Provincial Environmental Protection Agency for evaluation of the SPM operation.

x) **Job opportunities** should be provided to the locals of the area.

xi) All precautionary measures should be strictly adhered to minimize any **Negative Impacts** on soil, marine ecosystem, groundwater, ambient air quality and biodiversity in the SPM area.

Annexure 3 NOC from Ministry of Defense Maritime Affairs Wing



FROM :DC M FAX NO. :9271436 2 Aug. 2017 1:15PM P1

GOVERNMENT OF PAKISTAN
MINISTRY OF DEFENCE
(MARITIME AFFAIRS WING)

Subject:- PERMISSION FOR INSTALLATION OF SPM-2 & SPM-3 AT KHALIFA POINT TO M/s BYCO

References: -

a. M/s Byco Petroleum Pakistan Limited letter on the subject dated 12th May, 2015

b. Ministry of P&NR letter No. PL-NPA (4)/13 dated 9th June, 2015

2. Ministry of Defence has no objection for installation of two additional SPMs (one as back up for crude oil imports and the other for movement of finished petroleum products) by M/s Byco Petroleum Pakistan Limited at Khalifa Point in Sonmiani Bay area, subject to compliance of following conditions: -

a. SPM-2 may be established in position Latitude 24 degrees 58 minutes North, Longitude 66 degrees 34 point 8 minutes East for crude oil imports / handling.

b. SPM-3 may be established in position Latitude 24 degrees 57 minutes North, Longitude 66 degrees 37 minutes East for movement of finished petroleum products.

c. Positions of SPM-2 and SPM-3 be adjusted to ensure at least 3 Kms clearance from existing site of HUBCO coal jetty (in position 24 54 47.73 N, 066 40 17.74E) and proposed site of Bahria LNG Terminal (In position 24 54 19.85 N, 66 37 22.2E). Exact coordinates of SPM-2 & SPM-3 be shared with this Ministry/NHQ.

d. The firm is liable to cooperate with concerned stakeholders/ MoD for establishment and usage of common anchorages, approaches and operating areas for all existing/ under progress/ future projects in Sonmiani Bay area and establishment of appropriate regulatory authority to manage the existing/ future off-shore infrastructure.

e. The firm and its chartered/ owned vessels must comply with all applicable national and international conventions, codes, rules/ regulations, standards and the ordinance with respect to movement of oil and oil pollution.

f. Details of any associated survey / construction activity / off shore / civil work be shared with NHQ/ PN Hydrographic Department (PNHD) / HQ NAVREA-IX for timely promulgation of Navigational Warnings / NTM's and for amendments to existing charts / ENCs (Electronic Navigational Charts).

g. Security clearance of foreigners employed (if any) in subject project be obtained separately as per procedure in vogue.

h. Prior coordination be made with ATS, Air Headquarters in case of flight activity or height of infrastructure involved in the project.

i. Security arrangements at SPM-2 and SPM-3 be ensured in coordination with PMSA/ PN.

j. Proper firefighting arrangements be ensured as per national / international standards / codes.

FROM :DC M FAX NO. :9271436 2 Aug. 2017 1:17AM P1

-: 2 :-

k. Obtaining necessary NOCs/ approvals from Federal Environmental Protection Agency (EPA) and Provincial EPAs. Copies of the same be shared with MoD.

l. National/ International Environmental Quality Standards (NEQs) will be observed/ ensured. Moreover, all mitigation measures w.r.t marine flora/ fauna/ MPA/ eco system are to be ensured, as applicable.

m. Churna Island and Somiani Bay Area are under consideration to be declared as Marine Protected Areas (MPAs). Necessary measures be ensured in this regard and the firm will be liable to observe/ comply MPA management/ regulations, once implemented.

n. Obtaining NOC from the Chief Inspector of Explosives. Copy of the same be shared with MoD, prior start of the work.

o. Considering the dictates of the security situation, PMSA ships / boats be berthed/ facilitated on the SPMs / associated infrastructure without any charges.

p. The firm is to have ready in hand adequate quantity of oil and chemical spill response equipment, material and manpower to combat oil spill. Oil Spill Contingency plan be revised/ reviewed in light of upcoming SPM-2 & SPM-3. Copy of the plan be shared with Maritime Disaster Response Committee/ relevant Authorities.

3 The case will continue to be reviewed and if considered necessary, any other condition can be imposed without any liability on GoP / MoD.

Yasir Tahir

Cdr M. Yasir Tahir TI(M)
Assistant Chief (Maritime)
Ph: 051-9271436

Secretary,
Ministry of Petroleum & Natural Resources
Islamabad

Min of Def u.o No. 2/4/MAW(M-2)/2015 (M-3) dated 2nd August, 2017

Copy to: -

1. Secretary,
   Ministry of Ports & Shipping, Islamabad
2. Secretary,
   Ministry of Climate Change, Islamabad
3. DG, Ports & Shipping, Karachi
4. Cdr S.M. Khalid (JI-7)
   JSHQ, Chaklala, Rawalpindi
5. ACNS(OP), NHQ, Islamabad
6. Dte Gen ISI, Islamabad
7. DDG PMSA, Karachi
8. Mr. Imran Farookhi
   Chief Executive Officer
   Byco Terminals Pakistan Limited, Karachi

BYCO Document Control Stamp 02-08-2017

Copies. FJ

Annexure 4: Baluchistan Environmental Protection Act, 2012

BALOCHISTAN PROVINCIAL ASSEMBLY SECRETARIAT

BALOCHISTAN ENVIRONMENTAL PROTECTION BILL 2012 BILL NO. ___

OF 2012.

A

BILL

Balochistan Environmental Protection Bill 2012.

to provide for the protection, conservation, rehabilitation and improvement of the environment, for the prevention and control of pollution, and promotion of sustainable development

Preamble Whereas, it is expedient to provide for the protection, conservation, rehabilitation and improvement of the environment, prevention and control of pollution, promotion of sustainable development, and for matters connected therewith and incidental thereto;

Short title, extent and commencement

1. It is enacted as follows:
(1) *This Act, shall be called the Balochistan Environmental Protection Act, 2012.*
(2) *It extends to the whole Province of Balochistan except Tribal Areas.*
(3) It shall come into force at once.

Definitions

2. In this Act, unless there is anything repugnant in the subject or context,—

(a) adverse environmental effect" means impairment of, or damage to, the environment and includes—

(i) human health and property or biodiversity, coast, beaches and ecosystem;

(ii) pollution; and

(iii) any adverse environmental effect on Land, Air and Water;

(b) "Agricultural waste" means waste from farm and agricultural activities including poultry, cattle farming, animal husbandry residues from the use of fertilizers, pesticides and other farm . chemicals;

(c) "Air pollutant" means any substance that causes pollution of air and includes soot, smoke, dust particles, odour, light, electro-magnetic, radiation, heat, fumes, combustion exhaust, exhaust gases, noxious gases, hazardous substances and radioactive substances;

(d) *"Alien species" means a species that does not occur naturally in Balochistan.*

(e) *"Balochistan coastline or coastal zone" means the territorial jurisdiction of the coastline of the Province of Balochistan.*

(f) *"Best practicable environmental option" means the best method for preventing or minimizing adverse effects on the environment, having regard to, among other things:*
(i) the nature of the discharge and the sensitivity of the receiving environment to adverse effects;
(ii) the financial implications, and the effect on the environment, of that option when compared with other options; and

(iii) the current state of technical knowledge and the likelihood that the option can be successfully applied.

(g) "Biodiversity" or "biological diversity" means the variability among living organisms from all sources, including inter alia terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part, including diversity within species, between species and of ecosystems;

(h) *"Clinical waste" means any waste produced by hospitals, clinics, nursing homes, doctor's offices, medical laboratories, medical research facilities and veterinarians which is infectious or potentially infectious.*

(i) "Council" means the Balochistan Environmental Protection Council established under section 3;

(j) "Discharge" includes spilling, leaking, pumping, depositing, seeping, releasing, flowing out, pouring, emitting, emptying or dumping;

(k) "Ecosystem" means a dynamic complex of plant, animal and micro-organism communities and their non- living environment interacting as a functional unit;

(l) "Effluent" means any material in solid, liquid or gaseous form or combination thereof being discharged from industrial activity or any other source and includes a slurry, suspension or vapor;

(m) "Electronic waste" means discarded computers, office electronic equipment, entertainment device electronics, mobile phones, television sets, Cathode ray tubes (CRT) and refrigerator, VCRs, stereos, copiers, and fax machines. It also includes used electronics which are destined for reuse, resale, salvage, recycling, or disposal and electronic products nearing the end of their "useful life."

(n) "Emission standards" means the permissible standards established by the Provincial Agency for emission of air pollutants and noise and for discharge of effluent and waste;

(o) "Endemic and indigenous species" means a species which occurs naturally in the wild only in Balochistan, or a species which only breeds in the wild in Balochistan.

(p) "Environment" means—

(i) air, water and land;

(ii) all layers of the atmosphere;

(iii) all organic and inorganic matter and living organisms;

(iv) the ecosystem and ecological relationships;

(v) buildings, structures, roads, facilities and works;

(vi) all social and economic conditions affecting community life; and

(vii) the inter-relationships between any of the factors specified in sub-clauses (i) to (vi);

(q) "Environmental impact assessment" means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigation and

compensatory measures, formulation of environmental management and training plans and monitoring arrangements, and framing of recommendations and such other components as may be prescribed;

(r) "Environmental Magistrate" means the Magistrate of the First Class appointed under Section 32 ;

(s) "Environmental Tribunal" means the Balochistan Environmental Protection Tribunal constituted under section 28;

(t) "Exclusive Economic Zone" shall have the same meaning as in the Territorial Waters and Maritime Zones Act, 1976 (LXXXII of 1976);

(u) "Factory" means any premises in which industrial activity is being undertaken;

(v) "Genetic Resource" means any material of plant, animal, microbial or other origin containing functional units of heredity of actual or potential value;

(w)"Government" means the Government of Balochistan.

(x) "Government Agency" includes—

(i) a department, attached department, bureau, section, commission, board, office or unit of the Provincial Government;

(ii) a developmental or a local authority, company or corporation established or controlled by the Provincial Government; and

(iii) the Balochistan Environmental Protection Agency. ; and

(iv) any other body defined and listed in the Rules of Business of the Provincial Government;

(y) "Handling", in relation to any substance, means the manufacture, processing, treatment, package, storage, transportation, collection, destruction, conversion, offering for sale, transfer or the like of such substance;

(z) "Hazardous substance" means—

(i) a substance or mixture of substances, other than a pesticide as defined in the Agricultural Pesticides Ordinance, 1971 (II of 1971), which, by reason of its chemical activity or toxic, explosive, flammable, corrosive, radioactive or other characteristics, causes, or is likely to cause, directly or in combination with other matters an adverse environmental effect; and

(ii) any substance which may be prescribed as a hazardous substance;

(aa) "Hazardous waste" means waste which is or which contains a hazardous substance or which may be prescribed as hazardous waste and includes hospital waste and nuclear waste;

(bb) "Historic waters" means such limits of the waters adjacent to the land territory of Pakistan as may be specified by notification under section 7 of the Territorial Waters and Maritime Zones Act, 1976 (LXXXII of 1976);

(cc) "Hospital waste" includes waste medical supplies and materials of all kinds, and waste blood, tissue, organs and other parts of the human and animal bodies, from hospitals, clinics and laboratories;

(dd) "Industrial activity" means any operation or process for manufacturing, making, formulating, synthesizing, altering, repairing, ornamenting, finishing, packing or otherwise treating any article or substance with a view to its use, sale, transport, delivery or disposal, or for mining, for oil and gas exploration and development, or for pumping water or sewage, or for generating, transforming or transmitting power or for any other industrial or commercial purpose;

(ee) "Industrial waste" means waste resulting from an industrial activity;

(ff) "Initial Environmental Examination" means a preliminary environmental review of the reasonably foreseeable qualitative and quantitative impacts on the environment of a proposed project to determine whether it is likely to cause an adverse environmental effect for requiring preparation of an environmental impact assessment;

(gg) "Integrated pollution control" means the holistic system aimed at pollution prevention and minimization at source, managing the impact of pollution and waste on the receiving environment and remediation of damaged and polluted environments.

(hh) "Living modified organism" means any living organism that possesses a novel combination of genetic material obtained through the use of modern technology.

(ii) "local authority" means a regional or district set up of EPA or any Agency designated by the Provincial Government, by notification in the official Gazette, to be a local authority for the purposes of this Act;

(jj) "Local council" means a local council constituted or established under a law relating to local Government;

(kk) "Motor vehicle" means any mechanically propelled vehicle adapted for use upon land whether its power of propulsion is transmitted thereto from an external or internal source, and includes a chassis to which a body has not been attached, and a trailer, but does not include a vehicle running upon fixed rails;

(ll) "Municipal waste" includes sewage, refuse, garbage, waste from abattoirs, sludge and human excreta and the like;

(mm) "Environmental Quality Standards" means standards established by the Federal/Provincial Agencies under clause (e) of sub-section (1) of section 6 and approved by the Council under clause (c) of sub - section (1) of section 4;

(nn) "Noise" means the intensity, duration and character of sounds from all sources, and includes vibration;

(oo) "Nuclear waste" means waste from any nuclear reactor or nuclear plant or other nuclear energy system, whether or not such waste is radioactive;

(pp) "Person" means any natural person or legal entity and includes an individual, firm, association, partnership, society, group, company, corporation, co-operative society, Government Agency, non-governmental organization, community-based organization, village organization, local council or local authority and, in the case of a vessel, the master or other person having for the time being the charge or control of the vessel;

(qq) "Pollution" means the contamination of air, land or water by the discharge or emission of effluent or wastes or air pollutants or noise or other matter which either directly or indirectly or in combination with other discharges or

substances alters unfavorably the chemical, physical, biological, radiation, thermal or radiological or aesthetic properties of the air, land or water or which may, or is likely to make the air, land or water unclean, noxious or impure or injurious, disagreeable or detrimental to the health, safety, welfare or property of persons or harmful to biodiversity;

(rr) "Prescribed" means prescribed by rules made under this Act;

(ss) "Project" means any activity, plan, scheme, proposal or undertaking involving any change in the environment and includes—

(i) construction or use of buildings or other works;

(ii) construction or use of roads or other transport systems;

(iii) construction or operation of factories or other installations;

(iv) mineral prospecting, mining, quarrying, stone-crushing, drilling and the like;

(v) any change of land use or water use; and

(vi) alteration, expansion, repair, decommissioning or abandonment of existing buildings or other works, roads or other transport systems, factories or other installations;

(tt) "Protection of environment" means the qualitative and quantitative improvement of the different components of the environment and prevention of the deterioration of qualitative and quantitative standards;

(uu) "Proponent" means the person who proposes or intends to undertake a project;

(vv)"Provincial Agency" means the Balochistan Environmental Protection Agency established under section 5, or any Government Agency, local council or local authority exercising the powers and functions of the Provincial Agency;

(ww) "Rules & Regulations" means rules and regulation made under this Act;

(xx) "Sewage" means liquid or semi-solid wastes and sludge from sanitary conveniences, kitchens, laundries, washing and similar activities and from any sewerage system or sewage disposal works;

(yy) "Ship breaking" means breaking up of various types of ship for recycling.

(zz) "Standards" means qualitative and quantitative standards for discharge of effluent and wastes and for emission of air pollutants and noise either for general applicability or for a particular area, or from a particular production process, or for a particular product, and includes the Environmental Quality Standards, emission standards and other standards established under this Act and the rules and regulations;

(aaa) "Strategic Environmental Assessment" Strategic environmental assessment (SEA) is a system of incorporating environmental considerations into policies, plans, programmes and strategies. It is sometimes referred to as strategic environmental impact assessment.

(bbb) "Sustainable Development" means development that meets the needs of the present generation without compromising the ability of future generations to meet their needs;

(ccc) "Sustainable Management" means management of the use of natural resources to provide for the health, safety and social, cultural and economic well-being of people and communities taking into account the following:

(i) safeguarding the life-supporting capacity of natural resources and ecosystems;

(ii) ensuring the maintenance of the life-supporting capacity and quality of natural resources and ecosystems to meet the reasonably foreseeable

needs of future generations;
(iii) avoiding the creation of adverse effects and, where adverse effects cannot be avoided, mitigates and remedies adverse effects.

(ddd) *"Territorial waters" shall have the same meaning as in the Territorial Waters and Maritime Zones Act, I 976 (LXXXII of 1976);*

(eee) "Vessel" includes anything made for the conveyance by water of human beings or of goods; and

(fff) "Waste" means any substance or object which has been, is being or is intended to be, discarded or disposed of, and includes liquid waste, solid waste, waste gases, suspended waste, industrial waste, agricultural waste, nuclear waste, municipal waste, hospital waste, used polyethylene bags and residues from the incineration of all types of waste.

(ggg) "Water resource" includes surface water, an aquifer or ground water , a river or spring, a natural channel in which water flows regularly or intermittently, and a wetland, lake or dam into which, or from which, water flows.

Establishment of the Balochistan Environmental Protection Council.—

3. (1) The Provincial Government shall, by notification in the official Gazette, establish a Council to be known as the Balochistan Environmental Protection Council consisting of—

(a) Chief Minister or such other person as the Chief Minister may nominate in this behalf.	Chairperson
(b) Minister for Environment	Vice chairperson
(c) Chief Secretary Balochistan	Member
(d) Secretary Environment	Member/Secretary
(e) Secretary Finance	Member
(f) Secretary Industries	Member
(g) Secretary Agriculture	Member
(h) Secretary Forest	Member
(i) Secretary P&D	Member
(j) Secretary S&GAD	Member
(k) Director General EPA	Member

(l) Such other persons not exceeding six (6) as the Provincial Government may appoint, with the following representation:

One from the Balochistan Chamber of Commerce & Industries and one from the Balochistan Chamber of Agriculture, Two Environment experts/Scientist, One Educationist and One from Non Governmental Organization.

(2) The Members of the Council, other than ex-officio members, shall be appointed in accordance with the prescribed procedure and shall hold office for a term of two years.

(3) The Council may constitute committees of its members and entrust them with such functions as it may deem fit, and the recommendations of the

committees shall be submitted to the Council for approval. The council or any of such committee may seek assistance from any Government Department or expert in the relevant environmental field in performance of its functions.

Functions and powers of the Council.—

4. (1) The Council shall:-

(a) co-ordinate and supervise enforcement of the provisions of this Act; and

(b) approve comprehensive environmental policies and ensure their implementation within the framework of a National /Balochistan conservation strategy as may be approved by the Federal/Provincial Government from time to time;

(c) approve the Environmental Quality Standards;

(d) provide guidelines for the protection and conservation of species, habitats, and biodiversity in general, and for the conservation of renewable and non-renewable resources.

(e) co-ordinate integration of the principles and concerns of sustainable development into development plans and policies;

(f) The Council shall frame its own rules of procedure.

(g) The Council shall hold meetings, as and when necessary, but not less than two meetings, shall be held in a year.

(2) The Council may direct the Provincial Agency or any Government Agency to prepare, submit or implement projects for the protection, conservation, rehabilitation and improvement of the environment and the sustainable development of resources or to undertake research in any aspect of environment.

Establishment of the Balochistan Environmental Protection Agency.

5. (1) The Government of Balochistan shall by a notification in the official Gazette established Balochistan Environmental Protection Agency to exercise the powers and perform the functions assigned to it under this Act and the rules and regulations made thereunder.

(2) The Balochistan Environmental Protection Agency shall be headed by a Director-General who shall be appointed by the Government of Balochistan on such terms and conditions as it may determine.

(3) The Balochistan Environmental Protection Agency shall have such administrative, technical and legal staff, as the Government of Balochistan may specify, to be appointed in accordance with Balochistan Civil Servant Act 1974.

(4) The powers and functions of the Balochistan Environmental Protection Agency shall be exercised and performed by the Director-General.

(5) The Director-General may, by general or special order, delegate any of the powers and functions to staff appointed under sub-section (3).

(6) For assisting the Balochistan Environmental Protection Agency in the discharge of its functions the Government of Balochistan shall establish Advisory Committees for various sectors and appoint as members thereof representatives of the relevant sector, educational institutions and non- governmental organizations.

Functions of the Balochistan Environmental Protection Agency

6. (1) The Balochistan Environmental Protection Agency shall—

(a) administer and implement this Act and the rules and regulations made;

thereunder;

(b) prepare, in co-ordination with the relevant Government Agency and in consultation with the concerned sectors Advisory Committees, environmental policies for approval by the Council;

(c) take all necessary measures for the implementation of the national environmental policies approved by the Council;

(d) prepare and publish an Annual Environment Report on the state of the environment;

(e) establish standards for the quality of the ambient air, water and land, by notification in the official Gazette in consultation with the other relevant Government Departments/ Agencies.

(f) Revise the Environmental Quality Standards with approval of the Council:

Provided that

(i) before seeking approval of the Council, the Balochistan Environmental Protection Agency shall publish the proposed Environmental Quality Standards for public opinion in accordance with the prescribed procedure; and

(ii) different standards for discharge or emission from different sources and for different areas and conditions may be specified; where standards are less stringent than the Environmental Quality Standards prior approval of the Council shall be obtained;

(iii) certain areas, with the approval of the Council, may exclude from carrying out specific activities, projects from the application of such standards;

(g) co-ordinate environmental policies and programmes;

(h) establish systems and procedures for surveys, monitoring, measurement, examination, investigation, research, inspection and audit to prevent and control pollution, and to estimate the costs of cleaning up pollution and rehabilitating the environment in various sectors;

(i) take measures to promote research and the development of science and technology which may contribute to the protection of the environment, and sustainable development;

(j) certify one or more laboratories as approved laboratories for conducting tests and analysis and one or more research institutes as environmental research institutes for conducting research and investigation for the purposes of this Act.

(k) initiate legislation in various sectors of the environment;

(l) render advice and assistance in environmental matters including such information and data available with it as may be required for carrying out the purposes of this Act:

Provided that the disclosure of such information shall be subject to the restrictions contained in the proviso to sub-section (3) of section 15;

(m) assist the local councils, local authorities, Government Agencies and other persons to implement schemes for the proper disposal of wastes so as to ensure compliance with the standards established by it;

(n) provide information and guidance to the public on environmental matters;

(o) recommend environmental courses, topics, literature and books for incorporation in the curricula and syllabi of educational institutions;

(p) promote public education and awareness of environmental issues through mass media and other means including seminars and workshops;

(q) specify safeguards for the prevention of accidents and disasters which may cause pollution, collaborate with the concerned person in the preparation of contingency plans for control of such accidents and disasters, and co-ordinate implementation of such plans;

(r) encourage the formation and working of non-governmental organizations, community organizations and village organizations to prevent and control pollution and promote sustainable development;

(s) perform any function which the Council may assign to it.

(2) The Balochistan Environmental Protection Agency may—

(a) undertake inquiries or investigation into environmental issues, either of its own accord or upon complaint from any person or organization;

(b) request any person to furnish any information or data relevant to its functions;

(c) initiate with the approval of the ***Provincial/Federal Government,*** requests for foreign assistance in support of the purposes of this Act and enter into arrangements with foreign agencies or organizations for the exchange of material or information and participate in international seminars or meetings;

(d) recommend to the Government of Balochistan the adoption of financial and fiscal programmes, schemes or measures for achieving environmental objectives and goals and the purposes of this Act, including—

(i) incentives, prizes awards, subsidies, tax exemptions, rebates and depreciation allowances; and

(ii) taxes, duties and other levies;

(e) establish and maintain laboratories to help in the performance of its functions under this Act and to conduct research in various aspects of the environment and provide or arrange necessary assistance for establishment of similar laboratories in the private sector;

(f) provide or arrange, in accordance with such procedure as may be prescribed, financial assistance for projects designed to facilitate the discharge of its functions.

Powers of the Balochistan Environmental Protection Agency

7. Subject to the provisions of this Act, *the Balochistan Environmental Protection Agency may*

(a) lease, purchase, acquire property both moveable and immovable;

(b) fix and realize fees, rates and charges for rendering any service or providing any facility, information or data under this Act or the rules and regulations;

(c) enter into contracts, execute instruments subject to approval of the Provincial Government, necessary for proper management and conduct of its business made thereunder;

(d) subject to approval of the Provincial Government appoint in accordance with prescribed procedures such experts and consultants as it considers necessary for the efficient performance of its functions on appropriate terms and conditions;

(e) summon and enforce the attendance of any person and require him to supply any information or document needed for the conduct of any enquiry or investigation into any environmental issue;

(f) The Director General Balochistan EPA or any other Regional officer specifically authorized in this behalf by the Director General shall have the power to impose fine/administrative penalty up to rupees one hundred thousand from case to case basis.

(i) the fine/administrative penalty shall be recovered as per land revenue act.

(ii) the fine/administrative penalty initially or for an interim period shall be placed with the Balochistan EPA till the decision of the Environmental Tribunal or Magistrate; and

(iii) the fine/administrative penalty after the final decision shall be deposited in the public exchequer.

(g) enter and inspect and under the authority of a search warrant issued by the Environmental Court or Environmental Magistrate, search at any reasonable time, any land, building, premises, vehicle or vessel or other place where or in which. there are reasonable grounds to believe that an offence under this Act has been, or is being, committed;

(i) Subject to the provisions of this Act, any person generally or specifically authorized in this behalf by the Director General shall be entitled to enter, at all reasonable times, with such assistance as he considers necessary, any building or place for the following purposes, namely:-

a) to perform duties conferred on him under this Act or rules;

b) to inspect any activity in such building or place in accordance with this Act, the rules or any notice, order or direction issued thereunder;

c) to examine or test any equipment, industrial plant, record, register or any other important matter relating thereto;

d) to conduct a search of any building or place which the said person has reason to believe to have been the place of occurrence of any offence in contravention of any notice, order or direction issued under this Act or the

rules;

e) to seize/close any equipment, industrial plant, record, register, document or other matter which may serve as evidence of the commission of any offence punishable under this Act or the rules.

(ii) The provisions of the Code of Criminal Procedure shall be applicable in respect of any search or seizure under this Act.

(a) take samples of any materials, products, articles or substances or of the effluent, wastes or air pollutants being discharged or emitted or of air, water or land in the vicinity of the discharge or emission;

(b) arrange for test and analysis of the samples at a certified laboratory;

(i) Every person authorized in this behalf by the Director General may, in such manner as may be prescribed by rules, collect from any factory, premises or place samples of air, water, soil or of any other substance for the purpose of analysis.

(ii) The results of the analysis of samples collected under clause (i) shall not be admissible in evidence in any legal proceeding unless the provisions of the clauses (iii) and (iv) have been complied with.

(iii) Subject to the provisions of sub-section (4), the officer collecting a sample under clause (i) shall-

(a) serve notice on the owner or proponent or agent of the said place, in such manner as may be prescribed by rules, of his intention to collect such sample;

(b) collect the sample in the presence of the said occupier or agent;

(c) put the sample into a container and affix on it a seal bearing the signatures of himself and of the occupier or agent;

(d) prepare a report of the sample collected and sign it himself and take the signature of the occupier or agent;

(e) send without any delay, the said container to the laboratory specified by the Director General EPA.

(iv) Where a sample is collected under clause (i) and a notice is served by the collecting officer under sub clause a) of clause (iii), the collecting officer shall, if the occupier or agent willfully absents himself at the time of the collection of the sample or, though being present, refuses to sign the sample or report, in the presence of two witnesses, give his signature and attest and seal it and shall send it without any delay to the laboratory specified by the Director General, mentioning that the occupier or agent had not been present or, as the case may be, refused to give his signature.

(i) confiscate any article used in the commission of the offence where the offender is not known or cannot be found within a reasonable time:

Provided that the power under clauses (f), (h), (l) and (j) shall be exercised in accordance with the provisions of the Code of Criminal Procedure, 1898 (Act V of 1898). or the rules made under this Act and under the direction of the Environmental

Tribunal or Environmental Magistrate; and

(j) establish an Environmental Co-ordination Committee comprising the Director-General as its chairman and the heads of relevant Government Agencies and such other persons as the Government of Balochistan may appoint as its members to exercise such powers and perform such functions as may be delegated or assigned to it by the Government of Balochistan for carrying out the purposes of this Act and for ensuring inter departmental co-ordination in environmental policies.

Establishment, powers and functions of the Regional or District Environmental Protection Agencies.—

8. (1) Government of Balochistan shall, by notification in the official Gazette, establish the Regional or District Environmental Protection Agency, to exercise such powers and perform such functions as may be delegated to it by the Government of Balochistan under sub-section (2) of section 34.

(2) The Regional or District Environmental Protection Agency shall be headed by an officer at least of the rank of regional Director or Deputy Director who shall be appointed by the Provincial Government on such terms and conditions as prescribed in the Balochistan Civil Servant Act 1974.

(3) The Regional or District Environmental Protection Agency shall have such administrative, technical and legal staff as the Government of Balochistan may specify, to be appointed in accordance with the Balochistan Civil Servants Appointment, Promotion and Transfers Rules 2009 such procedure as may be prescribed.

(4) The powers and functions of the Regional or District Environmental Protection Agency shall be exercised and performed by an Officer of the rank of regional Director or Deputy Director appointed as head.

(5) The Director General may, by general or special order, delegate any of the powers and functions to staff appointed under sub-section (3).

Establishment of the Balochistan Sustainable Development Funds.—

9. (1) There shall be established in the Province a Balochistan Sustainable Development Fund.

(2) The Balochistan Sustainable Development Fund shall be derived from the following sources, namely:—

(a) grants made or loans advanced by the Federal Government or the Provincial Government;

(b) aid and assistance, grants, advances, donations and other non-obligatory funds received from foreign governments, national or international agencies, and non-governmental organizations; and

(c) contributions from private organizations and other persons.

(3) The Balochistan Sustainable Development Fund shall be utilized in accordance with such procedure as may be prescribed for—

(a) providing financial assistance to the projects in the public/private sector designed for the protection, conservation, rehabilitation and improvement of the environment, the prevention and control of pollution, the sustainable development of resources and for research in any aspect of environment; and

(b) any other purpose which in the opinion of the Board shall help to achieve environmental objectives and the purposes of this Act.

Management of the Balochistan Sustainable Development Fund.—

10. (1) The Balochistan Sustainable Development Fund shall be managed by a Board known as the Sustainable Development Fund Board consisting of:-

(i) Secretary Environment Department	Chairperson
(ii) Secretary Industries Department	Member
(iii) Secretary Social welfare Department	Member
(iv) Secretary Finance Department	Member
(v) Secretary Forest Department	Member
(vi) Secretary Agriculture Department	Member

(vii) such non-official persons not exceeding six (6) as the Members Government of Balochistan may appoint including two (2)representatives of the Balochistan Chamber of Commerce and Industry, two (2) representatives of the Balochistan Chamber of Agriculture and two (2) representative of leading non-governmental organizations/donors.

(viii) Director General, Balochistan Environmental Protection Agency Member/Secretary

(2) the Board shall have the power to—

(a) sanction financial assistance for eligible projects; as specified in section 9(3) of this Act

(b) invest moneys held in the Balochistan Sustainable Development Fund in such profit - bearing Government bonds, savings schemes and securities as it may deem suitable; and

(3) The Board shall constitute committees of its members to undertake regular monitoring of projects financed from the Balochistan Sustainable Development Fund and to submit progress reports to the Board which shall publish an Annual Report incorporating its annual audited accounts and performance evaluation based on the progress reports.

(4) Audit of the fund shall be conducted on annual basis.

Inter-Provincial Environmental issues:-

11. (1) The project falling within the geographical jurisdiction of two or more Provinces, the IEE or EIA may be submitted by the proponent to each Provincial Environmental Agencies for review and approval.
(2) In case of any dispute or concerns the matter shall be settled through mutual consultation of the Provinces to avoid any inconveniences or future litigation.
(3) The concerned Provinces may constitute a joint technical or review committee including a representative of the concerned Federal Ministry dealing with Environment and coordination.

Multilateral Environmental Agreements:-

12. (1) The obligation of the International Conventions, Treaties and Protocols shall be observed as before devolution of the subject of Environment to the Province on Environment or climate change. In case of any international/ bilateral cooperation, the matter shall be proceeded with consultation with the concerned Federal Ministries.

(2) The Government of Balochistan/ Environmental Protection Agency shall extend support to those obligation of the International Conventions, Treaties and Protocols where adequate assistance provided by the Federal Government.

Strategic Environment Assessment (SEA):-

13. (1) This section regulates the conditions, methods and procedure according to which the assessment of impact of certain plans and programmes on the environment (hereinafter referred to as: strategic assessment) shall be carried out in order to provide for the environmental protection and improvement of sustainable development through integration of basic principles of environmental protection into the procedure of preparation and adoption of plans and programmes.

(2) The Government at all levels of administration and in every sector shall incorporate environmental considerations into policies, plans, programmes and strategies.

Prohibition of certain discharges or emissions and potential harmful items or materials .—

14. (1) Subject to the provisions of this Act and the rules and regulations no person shall discharge or emit or allow the discharge or emission of any effluent or waste or air pollutant or noise in an amount, concentration or level or is likely to cause, a significant adverse effect on the environment or human health which is in excess of the Environmental Quality Standards or, where applicable, the standards established under sub-clause (ii) of clause (f) of section 6.

(2) The Government of Balochistan shall not allow any imported or locally made commodities or items or materials or equipment or instruments or automobile or pesticides etc. into its provincial jurisdiction which may have any potential of causing Environmental problems.

(3) No person or company related to public and private sector shall introduce any of the imported or locally made items or materials or equipment or instruments or automobile or pesticides etc as per subsection (2) for any purpose unless it has filed an application to the Balochistan Environmental Protection Agency, as the case may be, and has obtained approval from the Government Agency in respect thereof.

(4) The Government of Balochistan may levy a pollution charge on any person who contravenes or fails to comply with the provisions of sub-section (1), to be calculated at such rate, and collected in accordance with such procedure as may be prescribed.

(5) Any person who pays the pollution charge levied under sub-section (2) shall not be charged with an offence with respect to that contravention or failure.

(6) The approved license in terms of section 15 of this Act does not affect the applicant's duty to obtain any other authorization required in order to undertake the activity or implement the project concerned, whether in terms of this Act or any other legislation

(7) A person /firm causing discharge of pollutants shall take all reasonable measures to ensure that the best practicable environmental option is adopted in relation to the discharge of emission and conservation of the environment.

Initial Environmental Examination and Environmental Impact Assessment.—

15. (1) No proponent of a project of public and private sector shall commence construction or operation unless he has filed an Initial Environmental Examination with the Government Agency designated by Balochistan Environmental Protection Agency, as the case may be, or, where the project is likely to cause an adverse environmental effects an environmental impact assessment, and has obtained from the Government Agency approval in respect thereof.

(2) The Government Agency shall subject to standards fixed by the Balochistan

Environmental Protection Agency—

(a) review the initial environmental examination and accord its approval, or require submission of an environmental impact assessment by the proponent; or

(b) review the environmental impact assessment and accord its approval subje to such conditions as it may deem fit to impose, require that the environmental impact assessment be re-submitted after such modifications as may be stipulated c reject the project as being contrary to environmental objectives.

(3) Every review of an environmental impact assessment shall be carried out with public participation and no information will be disclosed during the course of such public participation which relates to—

(i) trade, manufacturing or business activities, processes or techniques of a proprietary nature, or financial, commercial, scientific or technical matters which the proponent has requested should remain confidential, unless for reasons to be recorded in writing, the Director General of the Balochistan Environmental Protection Agency is of the opinion that the request for confidentiality is not well- founded or the public interest in the disclosure outweighs the possible prejudice to the competitive position of the project or its proponent; or

(ii) international relations, national security or maintenance of law and order, except with the consent of the Government of Balochistan; or

(iii) matters covered by legal professional privilege.

(4) The Government Agency shall communicate its approval or otherwise within a period of four months from the date the initial environmental examination or environmental impact assessment is filed complete in all respects in accordance with the prescribed procedure, failing which the initial environmental examination or, as the case may be, the environmental impact assessment shall be deemed to have been approved, to the extent to which it does not contravene the provisions of this Act and the rules and regulations.

(5) Subject to sub-section (4) the appropriate Government may in a particular case extend the aforementioned period of four months if the nature of the project so warrants.

(6) The provisions of sub-sections (1), (2), (3), (4) and (5) shall apply to such categories of projects and in such manner as may be prescribed.

(7) The Government Agency shall maintain separate registers for initial environmental examination and environmental impact assessment projects, which shall contain brief particulars of each project and a summary of decisions taken thereon, and which shall be open to inspection by the public at all reasonable hours and the disclosure of information in such registers shall be subject to the restrictions specified in sub-section (3).

(8) No concession areas for any developmental activities shall be awarded to any International/National groups or firms without consultation and concurrence of the Government of Balochistan/Environmental Protection Agency.
(9) The prospect licenses for mining, quarrying, crushing etc. shall only be awarded/ granted in compliance with the sub section (1), (2), (3), (4) and (5) .

(10) The cellular companies shall obtain environmental approval from the Balochistan EPA before installing Base Transceivers Station (BTS).

(11) BTS Stations should be required to undergo routine evaluation for Compliance. Whenever an application is submitted to the Balochistan EPA for construction or modification of a transmitting facility. EPA shall have the authority to take action if a cellular base station antenna does not comply with the International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines and recommendations of the report titled 'Environmental and Health Related Effects of the Cellular Base Station Antennas' carried out by IT and Telecom Division, Ministry of Information Technology.

(12) No person or company related to public and private sector shall commence construction or operation unless the concerned building authority accord approval under the provisions of the in vogue Building Code.

(13) after fulfilling the sub section (12) an action plan shall be submitted to the concerned municipal/town/union council to carry out the activities for a specific time period as to provide the general public or road users an alternative corridor.

(14) the waste generated during the construction or maintenance or repair of any building shall be appropriately disposed of or transported or collected to a designated place allocated for the purpose like any land fill site to avoid public nuisance.

(15) the construction or repair activities especially in the main city area shall be carried out in a manner to minimize the road congestion or blockage.

(16) the proponent of the project shall remit fifty thousand rupees as review fee of an Initial Environmental Examination (IEE) and one hundred thousand as review fee for Environmental Impact Assessment (EIA).

(17) the person or company in public or private sector intend to commence any scheme or project do not falling under schedule I and II of this Act shall remit twenty five thousand rupees as an Environmental approval fee to the Balochistan Environmental Protection Agency.

Prohibition of import of hazardous waste.—

16. No person shall import hazardous waste into Balochistan and its jurisdiction limits.

Handling of hazardous substances and License:-

17. (1) Subject to the provisions of this Act, no person shall generate, collect, consign, transport, treat, dispose of, store, handle or import any hazardous substance except—

(a) under a license issued by the Government of Balochistan and in such manner as may be prescribed; or

(b) in accordance with the provisions of any other law for the time being in force, or of any international treaty, convention, protocol, code, standard, agreement or other instrument to which Pakistan is a party.

(2) Every owner or proponent of any land or premises on which hazardous waste is kept, treated or disposed of shall make a written application to the Balochistan Environmental Protection Agency for a hazardous waste management license, which shall at least include details of:

a) the chemical composition, nature and volume of the waste which is being, or will be, produced;

b) the industrial process, trade or activity giving rise to the waste;

c) the way in which the applicant proposes to keep, treat or dispose of the hazardous waste, including storage and handling procedures;

d) the precautions which will be taken to avoid any adverse effects on the environment being caused by the hazardous waste.

(3). the Balochistan Environmental Protection Agency shall evaluate each application for a license under this Article in the following manner:

a) grant a hazardous waste management license, with or without conditions, if satisfied that the proposed method of keeping, treating and disposing of the hazardous waste will not cause any adverse effects; or

b) refuse to grant a license giving reasons for the refusal in writing to the applicant.

(4). the Balochistan Environmental Protection Agency would take a decision in regard to subsection 2 within thirty (30) days of the date of lodging of the application for a license.

(5) The license shall be granted for a reasonable period not exceeding five years. On expiry of the license for renewal same procedure shall be followed.

Electronic Wastes:-

18. (1) Every producer, distributer, collection centre, refurbisher, dismantler or recyclers shall store the electronic waste for a period not exceeding six months and shall maintain a record of collection, sale, transfer, storage and segregation of wastes and make these records available for inspection:

Provided that the Balochistan Environmental Protection Agency may extend the said period in following cases, namely:

(a) Dismantlers and Recyclers up to six months of their annual storage capacity of the owner; or

(b) Collection centers who do not have access to any registered dismantling or recycling facility; or

(c). the waste which needs to be specifically stored for development of a process for its recycling, reuse.

(2) Every producer, distributer, collection centre, refurbisher, dismantler or recyclers shall make arrangements for the environmentally sound management and disposal of electronic waste.

(3) the 'environmentally sound management of electronic waste' as "taking all steps required to ensure that electronic waste are managed in a manner which shall protect health and environment against any adverse effects which may result from hazardous substance contained in such wastes."

(4) the provisions of this section shall apply to every producer, consumer and bulk consumer involved in manufacture, sale, purchase and processing of electronic equipment or components.

(5) information dissemination on electronic waste and the environmentally sound management of electronic waste is also mandated from producers.

(6) to regulate the provisions of this section all the relevant international conventions, protocols and treaties collectively called as multilateral environmental agreements (MEAs) shall be applicable where Pakistan is signatory or ratified the MEAs.

(7) any person or company or unit who contravenes or fails to comply with the provisions of the above subsections shall be imposed penalty under section 25 of this act.

General Prohibition in relation to Solid and Hospital Waste management and Waste Management License:-

19. (1) No person may collect, transport, sort, recover, store, dispose of or otherwise manage waste in a manner that results in a significant adverse effect.

(2) Every person who imports, produces, collects, recovers, transports, keeps, treats or disposes of waste shall take all reasonable measures to prevent a significant adverse effect on the environment from occurring.

(3) The owner or proponent of every premises upon which solid and hazardous hospital waste is produced shall ensure that all hazardous waste whether solid or hospital waste is separated from other waste, and is stored in separate containers pending disposal, in accordance with the requirements of the Balochistan Environmental Protection Agency as set out in regulations, published guidelines or license conditions.

(4) A person shall not dispose of solid and hazardous hospital waste in such a manner that it becomes litter or is likely to become litter.

(5) Unless in possession of a valid waste management license issued by the Balochistan Environmental Protection Agency, no person may construct, own or operate a landfill site, incinerator or other facility at which waste is permanently disposed of or is stored indefinitely.

(6). The Balochistan Environmental Protection Agency shall evaluate each application for a license and shall do the following:

a) grant a license if the Balochistan Environmental Protection Agency is satisfied that the applicant has sufficient expertise to undertake the activity in question in accordance with the law and in a manner that will not have significant adverse effects; or

b) refuse to grant a license giving reasons for the refusal in writing to the applicant.

(7). The Balochistan Environmental Protection Agency shall reach a decision in regard to subsection 2 within thirty (30) days of the date of lodging of the application for a license with the Balochistan Environmental Protection Agency.

(8). If there are reasonable grounds to grant license, and those grounds are communicated to the license holder in writing, the Balochistan Environmental Protection Agency may amend, revoke or impose new conditions in an existing waste management license.

(9). The license granted under subsection (6) shall be subject to review if condition of license granted are not fulfilled.

Management of Water Resources:-

20. (1) All persons, for the purpose of protection, conservation, development, use, control and management of water resources, would take into account the following measures:

a) protecting aquatic and associated ecosystems and their biological diversity;

b) reducing and preventing pollution and degradation of water resources.

(2) When preparing water resource management plans, Departments and other relevant institutions shall at least take the following into account:

a) provisions for integrated watershed management;

b) regulation of sustainable abstraction of groundwater;

c) regulation of the use of ground or surface water for agricultural, industrial, mining, and urban purposes;

d) measures to protect human health and ecosystems;

e) measures to protect wetlands and their associated ecosystems;

f) any other provision necessary for the sustainable use and management of water resources.

(3) An owner of land or a person who uses the land on which any activity or process is performed or undertaken which causes or is likely to cause significant pollution of a water resource must take measures to prevent any such pollution.

Regulation of motor vehicles.

21. (1) Subject to the provisions of this Act, and the rules and regulations, no person shall operate a motor vehicle from which air pollutants or noise are being emitted in an amount, concentration or level which is in excess of the Environmental Quality Standards, or where applicable the standards established under clause (e) of section 6 (1).

(2) For ensuring compliance with the standards mentioned in sub-section (1), the Balochistan Environmental Protection Agency may direct that any motor vehicle or class of vehicles shall install such pollution control devices or other equipment or use such fuels or undergo such maintenance or testing as may be prescribed.

(3) Where a direction has been issued by the Government Agency under subsection (2) in respect of any motor vehicles or class of motor vehicles, no person shall operate any such vehicle till such direction has been complied with.

(4) To regulate the provision of this Act a green squad comprising of representative of Traffic Police, Motor Vehicle Examiner, Excise & Taxation and EPA Balochistan shall be in place to monitor and inspect the automobiles running on the road as per the Environment Quality Standard.

(5) The inspection or monitoring shall be carried out at least once in a month wherein a mechanism be chalked out for issuance of warning tickets (red: Highly polluted, Blue: less polluted) on a prominent on the vehicle, as the case may be for specific period of time not exceeding 30 days to maintain the vehicle in order .

(6) Whoever contravenes or fails to comply with the provision of subsection (5) such vehicle should be made off road or punishable with fine at least twenty thousand rupees which may be extended to one hundred thousand rupees. In the case of continuing contravention or failure the vehicle shall be impounded.

Alien Species and Living Modified Organisms:-

22. (1) The import into Balochistan of alien species and of living modified organisms is prohibited without a permit issued by the relevant authority under any law enforce in Balochistan. The Balochistan Environmental Protection Agency in consultation with the Departments of Agriculture, Livestock and Animal Husbandry and Food shall monitor the matter.

(2) No permit for the introduction of an alien species or of a living modified organism shall be issued unless the environmental impact indicates that there is a reasonable certainty that no harm to indigenous natural resources or human health will result from the proposed introduction.

(3) Subsection 1 and 2 of this Section shall apply equally to introductions of alien species and living modified organisms into the Province of Balochistan and to introductions from one ecosystem to another within the province.

(4) The introduction of alien species and living modified organisms into protected areas shall not be allowed.

Coastal Zone:-

23. (1) Subject to the provisions of this Act the activities or concentration or level of discharges of the following units established on onshore and offshore shall be monitored strictly to prevent the pollution and environmental degradation caused by the following multi-magnitude and multidisciplinary units.

a) Ports and shipping
b) Fisheries
c) Ship dismantling
d) Shipping Traffic (Oil Tankers & Vessels) & dredging.
e) Oil and gas mineral exploration.
f) Coastal power plants and Energy sector.
g) Oil refineries and Industries

(2) The ship breaking at Gaddani or anywhere else in the coastal belt/zone of this province shall be subject to fulfilling all the relevant obligations under the Basel Convention "on the Control of Trans-boundary Movements of Hazardous Waste and their Disposal", Rotterdam Convention "on the prior Informed Consent(PIC) Procedure for certain Hazardous Chemicals and Pesticides in International Trade" and other relevant Treaties/Protocols and provisions of this Act.

(3) During the process of ship breaking/dismantling the waste, hazardous waste or sludge or Polychlorinated biphenyls or asbestos etc, shall be disposed of in a manner to ensure Protection of Terrestrial and Marine environment.

(4) The activities of ship breaking/dismantling activities on shore or offshore within territorial limit of Balochistan shall be monitored at least biannually to ensure environmental protection and prevent degradation and pollution.

(5) The disposal of untreated sewage and domestic wastes and untreated disposal of industrial effluents into the sea is an offence any person or company or unit who contravenes or fails to comply with the provisions of this Act shall face to penalty under section 25.

Environmental protection order.

24. (1) Where the Balochistan Environmental Protection Agency is satisfied that the discharge or emission of any effluent, waste, air pollutant or noise, or the disposal of waste, or the handling of hazardous substances, or any other act or omission is likely to occur, or is occurring, or has occurred, in violation of the provisions of this Act, rules or regulations or of the conditions of a license, and is likely to cause, or is causing or has caused an adverse environmental effect, the Balochistan Environmental Protection Agency may, after giving the person responsible for such discharge, emission, disposal, handling, act or omission an opportunity of being heard, by order direct such person to take such measures that the Balochistan Environmental Protection Agency may consider necessary within such period as may be specified in the order.

(2) In particular and without prejudice to the generality of the foregoing power, such measures may include—

(a) immediate stoppage, preventing, lessening or controlling the discharge, emission, disposal, handling, act or omission, or to minimize or remedy the adverse environmental effect;

(b) installation, replacement or alteration of any equipment or thing to eliminate, control or abate on a permanent or temporary basis, such discharge, emission, disposal, handling, act or omission;

(c) action to remove or otherwise dispose of the effluent, waste, air pollutant, noise, or hazardous substances; and

(d) action to restore the environment to the condition existing prior to such discharge, disposal, handling, act or omission, or as close to such condition as may be reasonable in the circumstances, to the satisfaction of the Balochistan Environmental Protection Agency.

(3) Where the person, to whom directions under sub-section (1) are given, does not comply therewith, the Balochistan Environmental Protection Agency may, in addition to the proceedings initiated against him under this Act, the rules and regulations, itself take or cause to be taken such measures specified in the order as it may deem necessary and may recover the reasonable costs of taking such measures from such person as arrears of land revenue.

Penalties

25. (1) Whoever contravenes or fails to comply with the provisions of sections 14, 15, 16, 18 or section 24 or any order issued there-under shall be punishable with fine which may extend to one million rupees, and in the case of a continuing contravention or failure, with an additional fine which may extend to one hundred thousand rupees for every day during which such contravention or failure continues:

Provided that if contravention of the provisions of section 14 also constitutes contravention of the provisions of section 21, such contravention shall be punishable under sub-section (2) only.

(2) Whoever contravenes or fails to comply with the provisions of section 17, 19, 21, 22 or 23 or any rule or regulation or conditions of any license, any order or direction, issued by the Council or the Balochistan Environmental Protection Agency, shall be punishable with fine which may extend to one hundred thousand rupees, and in case of continuing contravention or failure

with an additional fine which extend to one thousand rupees for every day during which such contravention continues.

(3) Where an accused has been convicted of an offence under sub-sections (1) and (2), the Environmental Court and Environmental Magistrate, as the case may be, shall, in passing sentence, take into account the extent and duration of the contravention or failure constituting the offence and the attendant circumstances.

(4) Where an accused has been convicted of an offence under sub-section (1) and the Environmental Court is satisfied that as a result of the commission of the offence monetary benefits have accrued to the offender, the Environmental Court may order the offender to pay, in addition to the fines under sub-section (1), further additional fine commensurate with the amount of the monetary benefits.

(5) Where a person convicted under sub-sections (1) or sub-section (2) had been previously convicted for any contravention under this Act, the Environmental Court or, as the case may be, Environmental Magistrate may, in addition to the punishment awarded thereunder—

(a) endorse a copy of the order of conviction to the concerned trade or industrial association, if any, or the concerned Provincial Chamber of Commerce and Industry or the Federation of Pakistan Chambers of Commerce and Industry;

(b) sentence him to imprisonment for a term which may extend to two years;

(c) order the closure of the factory;

(d) order confiscation of the factory, machinery, and equipment, vehicle, material or substance, record or document or other object used or involved in contravention of the provisions of the Act:

Provided that for a period of three years from the date of commencement of this Act the sentence of imprisonment shall be passed only in respect of persons who have been previously convicted for more than once for any contravention of sections 14, 16, 17, 18,19 or 24 involving hazardous waste;

(e) order such person to restore the environment at his own cost, to the conditions existing prior to such contravention or as close to such conditions as may be reasonable in the circumstances to the satisfaction of the Balochistan Environmental Protection Agency; and

(f) order that such sum be paid to any person as compensation for any loss, bodily injury, damage to his health or property suffered by such contravention.

(6) The Director-General of the Balochistan Environmental Protection Agency or an officer generally or specially authorized by him in this behalf may, on the application of the accused compound an offence under this Act with the permission of the Environmental Tribunals or Environmental Magistrate in accordance with such procedure as may be prescribed.

(7) Where the Director-General of the Balochistan Environmental Protection Agency is of the opinion that a person has contravened any provision of Act he may, subject to the rules, by notice in writing to that person require him to pay to the Balochistan Environmental Protection Agency an

administrative penalty in the amount set out in the notice for each day the contravention continues; and a person who pays an administrative penalty for a contravention shall not be charged under this Act with an offence in respect of such contravention.

(8) The provisions of sub-sections (6) and (7) shall not apply to a person who has been previously convicted of offence or who has compounded an offence under this Act who has paid an administrative penalty for a contravention of any provision of this Act.

Offences by bodies corporate

26. Where any contravention of this Act has been committed by a body corporate, and it is proved that such offence has been committed with the consent or connivance of, or is attributed to any negligence on the part of, any director, partner, manager, secretary or other Officer of the body corporate, such director, partner, manager, secretary or other officer of the body corporate, shall be deemed guilty of such contravention along with the body corporate and shall be punished accordingly:

Provided that in the case of a company as defined under the Companies Ordinance, 1984 (XLVII of 1984), only the Chief Executive as defined in the said Ordinance shall be liable under this section.

Explanation.— For the purposes of this section, "body corporate" includes a firm, association of persons and a society registered under the Societies Registration Act, 1860 (XXI of 1860), or under the Co-operative Societies Act, 1925 (VII of 1925).

Offences by Government Agencies, local authorities or local councils.

27. Where any contravention of this Act has been committed by any Government Agency, local authority or local council, and it is proved that such contravention has been committed with the consent or connivance of, or is attributable to any negligence on the part of, the Head or any other officer of the Government Agency, local authority or local council, such Head or other officer shall also be deemed guilty of such contravention along with the Government Agency, local authority or local council and shall be liable to be proceeded against and punished accordingly.

Balochistan Environmental Tribunals.—

28. (1) The Government of Balochistan may, by notification in the official gazette establish Balochistan Environmental Protection Tribunals which shall exercise jurisdiction under this Act.

(2) The Balochistan Environmental Protection Tribunal shall consist of a Chairperson who is, or has been, or is qualified for appointment as, a judge of the High Court to be appointed after consultation with the Chief Justice of the High Court and two members to be appointed by the Government of Balochistan which at least one shall be a technical member with suitable professional qualifications and experience; in the environmental field as may be prescribed. For every sitting of the Balochistan Environmental Protection Tribunal the presence of the Chairperson and not less than one Member shall be necessary.

(3) A decision of Balochistan Environmental Protection Tribunal shall be expressed in terms of the opinion of the majority or if the case has been decided by the Chairperson and only one of the members and a there is a difference of opinion between them, the ;decision of the Balochistan Environmental Protection Tribunal shall be expressed in terms of the opinion of the Chairperson.

(4) Balochistan Environmental Protection Tribunal shall not, merely by reason of a change in its composition, or the absence of any member from any sitting, be bound to recall and rehear any witness who has given evidence, and

may act on the evidence already ;recorded by, or produced, before it.

(5) Balochistan Environmental Protection Tribunal may hold its sittings at such places within its territorial jurisdiction as the Chairperson may decide.

(6) No act or proceeding of Balochistan Environmental Protection Tribunal shall be invalid by reason only of the existence of a vacancy in, or defect in the constitution, of, the Balochistan Environmental Protection Tribunal.

(7) The terms and conditions of service of the Chairperson and members of the Balochistan Environmental Protection Tribunal shall be such as may be prescribed.

Jurisdiction and powers of Balochistan Environmental Tribunals.

29. (1) Balochistan Environmental Protection Tribunal shall exercise such powers and perform such functions as are, or may be, conferred upon or assigned to it by or under this Act or the rules and regulations made there under.

(2) All contravention punishable under sub-section (1) of section 25 shall exclusively be triable by Balochistan Environmental Protection Tribunal.

(3) Balochistan Environmental Protection Tribunal shall not take cognizance of any offence triable under sub-section (2) except on a complaint in writing by- -

(a) the Government Agency or local council; and

(b) any aggrieved person, who has given notice of not less than thirty days to the Provincial Agency concerned, of the alleged contravention and of his intention to make a complaint to the Environment Tribunal.

(4) In exercise of its criminal jurisdiction, the Balochistan Environmental Protection Tribunal shall have the same powers as are vested in Court of Session under the Code of Criminal Procedure, 1898 (Act V of 1898).

(5) In exercise of the appellate jurisdiction under section 22 the Balochistan Environmental Protection Tribunal shall have the same powers and shall follow the same procedure as an appellate court in the Code of Civil Procedure, 1908 (Act V of 1908).

(6) In all matters with respect to which no procedure has been provided for in this Act, the Balochistan Environmental Protection Tribunal shall follow the procedure laid down in the Code of Civil Procedure, 1908 (Act V of 1908).

(7) Balochistan Environmental Protection Tribunal may, on application filed by any officer duly authorized in this behalf by the Director-General of the Balochistan Environmental Protection Agency, issue bail able warrant for the arrest of any person against whom reasonable suspicion exist, of his having been involved in contravention punishable under sub-section (1) of Section 25:

Provided that such warrant shall be applied for, issued, and executed in accordance with the provisions of the Code of Criminal Procedure, 1898 (Act V of 1898):

Provided further that if the person arrested executes a bond with sufficient sureties in accordance with the endorsement on the warrant he

shall be released from custody, failing which he shall be taken or sent without delay to the officer in-charge of the nearest police station.

(8) All proceedings before the Balochistan Environmental Protection Tribunal shall be deemed to be judicial proceedings within the meaning of section 193 and 228 of the Pakistan Penal Code (Act XLV of 1860), and the Balochistan Environmental Protection Tribunal shall be deemed to be a court for the purpose of section 480 and 482 of the Code of Criminal Procedure, 1898 (Act V of 1898).

(9) No court other than Balochistan Environmental Protection Tribunal shall have or exercise any jurisdiction with respect to any matter to which the jurisdiction of Balochistan Environmental Protection Tribunal extends under this Act, the rules and regulations made thereunder.

(10) Where the Balochistan Environmental Protection Tribunal is satisfied that a complaint made to it under sub-section (3) is false and vexatious to the knowledge of the complainant, it may, by an order, direct the complainant to pay to the person complained against such compensatory costs which may extend to five hundred thousand rupees.

Appeals to the Environmental Tribunal.—

30. (1) Any person aggrieved by any order or direction of the Balochistan Environmental Protection Agency under any provision of this Act, and rules or regulations may prefer an appeal with the Balochistan Environmental Protection Tribunal within thirty days of the date of communication of the impugned order or direction to such person.

(2) An appeal to the Balochistan Environmental Protection Tribunal shall be in such form, contain such particulars and be accompanied by such fees as may be prescribed.

Appeals from orders of the Environmental Tribunal

31. (1) Any person aggrieved by any final order or by any sentence of the Balochistan Environmental Protection Tribunal passed under this Act may, within thirty days of communication of such order or sentence, prefer an appeal to the High Court.

(2) An appeal under sub-section (l) shall be heard by a Bench of not less than two Judges.

Jurisdiction of Environmental Magistrates

32. (1) Notwithstanding anything contained in the Code of Criminal Procedure, 1898 (Act V of 1898), or any other law for the time being in force, but subject to the provisions of this Act, all contravention punishable under sub-section (2) of section 25 shall exclusively be trial-able by Environmental Magistrate especially empowered in this behalf under section 14 of the Code of Criminal Procedure, 185(Act No. V of 1898).

(2) An Environmental Magistrate shall be competent to impose any punishment specified in sub-sections (2) and (4) of section 25.

(3) An Environmental Magistrate shall not take cognizance of an offence trial able under sub-section (l) except on a complaint in writing by—

(a) the Balochistan Environmental Protection Agency, or Government Agency or a local council; and

(b) any aggrieved person.

Appeals from orders of Environmental Magistrates.

33. Any person convicted of any contravention of this Act or the rules or regulations by an Environmental Magistrate may, within thirty days from the date of his conviction, appeal to the Court of Sessions whose decision thereon shall be final.

Power to delegate.

34. *(1)* The Government of Balochistan may, by notification in the official Gazette, delegate any of its or of the Balochistan Environmental Protection Agency powers and functions under this Act and the rules and regulations to any Government Agency, local council or local authority.

(2) The Balochistan Environmental Protection Agency may also by notification in the official Gazette, delegate any of its powers or functions under this Act and the rules and regulations to EPA Regional or sub-offices. In case of nonexistence of its Regional/Sub-offices may delegate its powers or functions to any local council or local authority in the Province.

Power to give directions.

35. In the performance of its functions the Provincial Agency shall be bound by the direction given to it in writing by the Government.

Indemnity.

36. No suit, prosecution or other legal proceedings shall lie against the Government , the Council, the Balochistan Environmental Protection Agency, the Director-Generals of the Balochistan Environmental Protection Agency, members, officers, employees, experts, advisers, committees or consultants of the Balochistan Environmental Protection Agency or the Environmental Tribunal or Environmental Magistrates or any other person for anything which is in good faith done or intended to be done under this Act or the rules or regulations made thereunder.

Dues recoverable as arrears of land revenue.

37. Any dues recoverable by the Balochistan Environmental Protection Agency under this Act, or the rules or regulations shall be recoverable as arrears of land revenue.

Act to override other laws.

38. The provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any other law for the time being in force.

Power to make rules.

39. The Government of Balochistan may, by notification in the official Gazette, make rules for carrying out the purposes of this Act including rules for implementing the provisions of the international environmental Agreements, specified in the Schedule to this Act.

Power to amend the Schedule

40. The Government of Balochistan may, by notification in the official Gazette, amend the Schedule so as to add any entry thereato or modify or omit any entry therein.

Power to make regulations.

41. (1) For carrying out the purposes of this Act, the Balochistan Environmental Protection Agency may, by notification in the official Gazette and with the approval of the Government of Balochistan, make regulations not inconsistent with the provisions of this Act or the rules made thereunder.

(2) In particular and without prejudice to the generality of the foregoing power, such regulations may provide for

(a) submission of periodical reports, data or information by any Government agency, local authority or local council in respect of environmental matters;

(b) preparation of emergency contingency plans for coping with environmental hazards and pollution caused by accidents, natural disasters and

calamities;

(c) appointment of officers, advisers, experts, consultants and employees;

(d) levy of fees, rates and charges in respect of services rendered, actions taken and schemes implemented;

(e) monitoring and measurement of discharges and emissions;

(f) categorization of projects to which, and the manner in which, section 15 applies;

(g) laying down of guidelines for preparation of initial environmental examination and environmental impact assessment and development of procedures for their filing, review and approval;

(h) providing procedures for handling hazardous substances; and

(i) installation of devices in, use of fuels by, and maintenance and testing of motor vehicles for control of air and noise pollution.

Repeal, savings and succession.

42. (1) The provision of Pakistan Environmental Protection Act 1997 (Act No.XXXIV of 1997) applicable to the Province of Balochistan are hereby repealed.

(2) Notwithstanding the repeal of the Pakistan Environmental Protection Act 1997 hereinafter called the repealed Act, any rules or regulations or appointments made, orders passed, notifications issued, powers delegated, contracts entered into, proceedings commenced, rights acquired liabilities incurred, penalties, rates, fees or charges levied, things done or action taken under any provisions of the repealed Act shall, so far as they are not inconsistent with the provisions of this Act be deemed to have been made, passed, issued, delegated, entered into, commenced, acquired, incurred, levied, done or taken under this Act, until they are repealed, rescind, withdrawn, cancelled, replaced or modified in accordance with the provisions of this Act.

(3) On the establishment of the Balochistan Environmental Protection Agency under this Act, all properties, assets and liabilities pertaining to the Balochistan Environmental Protection Agency established under repealed Act shall vest in and be the properties, assets and liabilities, as the case may be, of the Balochistan Environmental Protection Agency established under this Act.

(4) The Balochistan Environmental Protection Agency constituted under the repealed Act and existing immediately before the commencement of this Act shall be deemed to have been constituted under section 5 and the Director General and other officers and employees appointed in the said Agency shall be deemed to be Director General, officers and employees appointed under the Balochistan Civil Servant Act 1974.

(5) Notwithstanding the repeal of the Pakistan Environmental Protection Act 1997(Act No.XXXIV of 1997), all proceeding pending immediately before commencement of this Act, against any person under the repealed Act and rules, regulation or order made thereunder, or any other Law or rules shall continue under that Law and rules, in the manner proceeded thereunder.

SCHEDULE
(See section 39)

1. International Plant Protection Convention, Rome, 1951.

2. Plant Protection Agreement for the South-East Asia and Pacific Region (as amended), Rome, 1956.

3. Agreement for the Establishment of a Commission for Controlling the Desert Locust in the Eastern Region of its Distribution Area in South-West Asia (as amended), Rome, 1963.

4. Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, 1971 and its amending Protocol, Paris, 1982.

5. London Convention on Ocean Dumping 1972.

6. Convention Concerning the Protection of World Cultural and Natural Heritage (World Heritage Convention), 1972.

7. MARPOL Convention on Prevention of Pollution from Ship, 1973/78.

8. Convention on International Trade in Endangered Species of Wild Funa and Flora (CITES), Washington, 1973.

9. Convention on the Conservation of Migratory Species of Wild Animals, Bonn, 1979.

10. Convention on the Law of the Sea, Montego Bay, 1982.

11. Vienna Convention for the Protection of the Ozone Layer, Vienna, 1985.

12. Montreal Protocol on Substances that Deplete the Ozone Layer, Montreal, 1987 and amendments thereto.

13. Agreement on the Network of Agriculture Centres in Asia and the Pacific, Bangkok, 1988.

14. Convention on the Control of Transboundary Movements of Hazardous Waste and Their Disposal, Basel, 1989.

15. Convention on Biological Diversity, Rio de Janeiro, 1992.

16. United Nations Framework Convention on Climate Change, Rio De Janeiro, 1992.

17. Convention on the Protection and Use of Transboundary Watercourses and International Lakes, 17 March 1992.

18. The Rio Declaration on Environment and Development, 13 June 1992

19. London Amendment to Montreal Protocol on Substances that deplete the ozone layer, 10 Aug 1992

20. United Nations Convention on the Law of the Sea, 16 Nov 1994

21. Washington Declaration on Land Based Marine Pollution 1995.

22. UN Convention on Non-Navigational Uses of International Watercourses, 1995

23. Ban Amendment to the Basel Convention on the Control of Trans-boundary Movements of Hazardous Wastes and their Disposal, 22 Sept 1995.

24. The Kyoto Protocol, 11 Dec 1997

25. The Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 11 Sept 1998.

26. The Beijing Amendment to the Montreal Protocol on Substances that deplete the ozone layer, 1 Jan 2000

27. The Cartagena Protocol on Biosafety to the Convention on Biological Diversity, 29 Jan 2000.

28. Stockholm Convention on Persistent Organic Pollutants (POPs), 23 May 2001.

29. International Treaty on Plant Genetic Resources for Food and Agriculture, 3 Nov 2001.

30. Hong Kong International Convention For The Safe And Environmentally Sound Recycling Of Ships, 2009

STATEMENT OF OBJECTS AND REASONS.

After the 18th Constitutional amendments the subject of environment vide Notification No.4-9/2011-Min dated 29th June, 2011 stand devolved to the provinces with effect from 1st July, 2011. Even after the deletion of the subject of environment from the concurrent list the Pakistan Environmental Protection Act 1997 remained intact as per Article 270-AA, Sub-Article(6). However, there is provision that the province through an appropriate legislature/competent authority may alter, repeal and amend the laws related to the subject.

To regulate and effectively address the peculiar environmental issues of the province of Balochistan this act namely "Balochistan Environmental Protection Act 2012" is submitted as per provisions of the Article 270-AA, Sub-Article(6) of 18th Constitutional amendments.

(Mir Asghar Rind)

Minister for Environment Department

SECRETARY

Balochistan Provincial Assembly

Dated _____ November, 2012.

Annexure 5: PEPA IEE/ EIA Review Regulations 2000

PAKISTAN ENVIRONMENTAL PROTECTION AGENCY (REVIEW OF IEE AND EIA) REGULATIONS, 2000

S.R.O. 339 (1)/2001. - In exercise of the powers referred by section 33 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), Pakistan Environmental Protection Agency, with the approval of the Federal Government is pleased to make the following Rules, namely : -

1. Short title and commencement

(1) These regulations may be called the Pakistan Environmental Protection Agency Review of Initial Environmental Examination and Environmental Impact Assessment Regulations, 2000.

(2) They shall come into force at once.

2. Definitions

(1) In these regulations, unless there is anything repugnant in the subject or context –

(a) "Act" means the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997);

(b) "Director-General" means the Director-General of the Federal Agency;

(c) "EIA" means an environmental impact assessment as defined in section 2(xi);

(d) "IEE" means an initial environmental examination as defined in section 2(xxiv); and

(e) "section" means a section of the Act.

(2) All other words and expressions used in these regulations but not defined shall have the same meanings as are assigned to them in the Act.

3. Projects requiring an IEE

A proponent of a project falling in any category listed in Schedule I shall file an IEE with the Federal Agency, and the provisions of section 12 shall apply to such project.

4. Projects requiring an EIA

A proponent of a project falling in any category listed in Schedule II shall file an EIA with the Federal Agency, and the provisions of section 12 shall apply to such project.

5. Projects not requiring an IEE or EIA

(1) A proponent of a project not falling in any category listed in Schedules I and II shall not be required to file an IEE or EIA:

Provided that the proponent shall file –

(a) an EIA, if the project is likely to cause an adverse environmental effect;

(b) for projects not listed in Schedules I and II in respect of which the Federal Agency has issued guidelines for construction and operation, an application for approval accompanied by an undertaking and an affidavit that the aforesaid guidelines shall be fully complied with.

(2) Notwithstanding anything contained in sub-regulation (1), the Federal Agency may direct the proponent of a project, whether or not listed in Schedule I or II, to file an IEE or EIA, for reasons to be recorded in such direction:

Provided that no such direction shall be issued without the recommendation in writing of the Environmental Assessment Advisory Committee constituted under Regulation 23.

(3) The provisions of section 12 shall apply to a project in respect of which an IEE or EIA is filed under sub-regulation (1) or (2).

6. Preparation of IEE and EIA

(1) The Federal Agency may issue guidelines for preparation of an IEE or an EIA, including guidelines of general applicability, and sectoral guidelines indicating specific assessment requirements for planning, construction and operation of projects relating to particular sector.

(2) Where guidelines have been issued under sub-regulation (1), an IEE or EIA shall be prepared, to the extent practicable, in accordance therewith and the proponent shall justify in the IEE or EIA any departure therefrom.

7. Review Fee

The proponent shall pay, at the time of submission of an IEE or EIA, a non-refundable Review Fee to the Federal Agency, as per rates shown in Schedule III.

8. Filing of IEE and EIA

(1) Ten paper copies and two electronic copies of an IEE or EIA shall be filed with the Federal Agency.

(2) Every IEE and EIA shall be accompanied by –

(a) an application, in the form prescribed in Schedule IV; and

(b) copy of receipt showing payment of the Review Fee.

9. Preliminary scrutiny

(1) Within 10 working days of filing of the IEE or EIA, the Federal Agency shall –

(a) confirm that the IEE or EIA is complete for purposes of initiation of the review process; or

(b) require the proponent to submit such additional information as may be specified; or

(c) return the IEE or EIA to the proponent for revision, clearly listing the points requiring further study and discussion.

(2) Nothing in sub-regulation (1) shall prohibit the Federal Agency from requiring the proponent to submit additional information at any stage during the review process.

10. Public participation

(1) In the case of an EIA, the Federal Agency shall, simultaneously with issue of confirmation of completeness under clause (a) of sub-regulation (1) of Regulation 9, cause to be published in any English or Urdu national newspaper and in a local newspaper of general circulation in the area affected by the project, a public notice mentioning the type of project, its exact location, the name and address of the proponent and the places at which the EIA of the project can, subject to the restrictions in sub-section (3) of section 12, be accessed.

(2) The notice issued under sub-regulation (1) shall fix a date, time and place for public hearing of any comments on the project or its EIA.

(3) The date fixed under sub-regulation (2) shall not be earlier than 30 days from the date of publication of the notice.

(4) The Federal Agency shall also ensure the circulation of the EIA to the concerned Government Agencies and solicit their comments thereon.

(5) All comments received by the Federal Agency from the public or any Government Agency shall be collated, tabulated and duly considered by it before decision on the EIA.

(6) The Federal Agency may issue guidelines indicating the basic techniques and measures to be adopted to ensure effective public consultation, involvement and participation in EIA assessment.

11. Review

(1) The Federal Agency shall make every effort to carry out its review of the IEE within 45 days, and of the EIA within 90 days, of issue of confirmation of completeness under Regulation 9.

(2) In reviewing the IEE or EIA, the Federal Agency shall consult such Committee of Experts as may be constituted for the purpose by the Director-General, and may also solicit views of the sectoral Advisory Committee, if any, constituted by the Federal Government under sub-section (6) of section 5.

(3) The Director-General may, where he considers it necessary, constitute a committee to inspect the site of the project and submit its report on such matters as may be specified.

(4) The review of the IEE or EIA by the Federal Agency shall be based on quantitative and qualitative assessment of the documents and data furnished by the proponent, comments from the public and Government Agencies received under Regulation 10, and views of the committees mentioned in sub-regulations (2) and (3) above.

12. Decision

On completion of the review, the decision of the Federal Agency shall be communicated to the proponent in the form prescribed in Schedule V in the case of an IEE, and in the form prescribed in Schedule VI in the case of an EIA.

13. Conditions of approval

(1) Every approval of an IEE or EIA shall, in addition to such conditions as may be imposed by the Federal Agency, be subject to the condition that the project shall be designed and constructed, and mitigatory and other measures adopted, strictly in accordance with the IEE/EIA, unless any variation thereto have been specified in the approval by the Federal Agency.

(2) Where the Federal Agency accords its approval subject to certain conditions, the proponent shall –

(a) before commencing construction of the project, acknowledge acceptance of the stipulated conditions by executing an undertaking in the form prescribed in Schedule VII;

(b) before commencing operation of the project, obtain from the Federal Agency written confirmation that the conditions of approval, and the requirements in the IEE/EIA relating to design and construction, adoption of mitigatory and other measures and other relevant matters, have been duly complied with.

14. Confirmation of compliance

(1) The request for confirmation of compliance under clause (b) of sub-regulation (2) of Regulation 13 shall be accompanied by an Environmental Management Plan indicating the measures and procedures proposed to be taken to manage or mitigate the environmental impacts for the life of the project, including provisions for monitoring, reporting and auditing.

(2) Where a request for confirmation of compliance is received from a proponent, the Federal Agency may carry out such inspection of the site and plant and machinery and seek such additional information from the proponent as it may deem fit:

Provided that every effort shall be made by the Federal Agency to provide the requisite confirmation or otherwise within 15 days of receipt of the request, with complete information, from the proponent.

(3) The Federal Agency may, while issuing the requisite confirmation of compliance, impose such other conditions as the Environmental Management Plan, and the operation, maintenance and monitoring of the project as it may deem fit, and such conditions shall be deemed to be included in the conditions to which approval of the project is subject.

15. Deemed approval

The four-month period for communication of decision stipulated in sub-section (4) of section 12 shall commence from the date of filing of an IEE or EIA in respect of which confirmation of completeness is issued by the Federal Agency under clause (a) of sub-regulation (1) of Regulation 9.

16. Extension in review period

Where the Federal Government in a particular case extends the four-month period for communication of approval prescribed in sub-section (5) of section 12, it shall, in consultation with the Federal Agency, indicate the various steps of the review process to be taken during the extended period, and the estimated time required for each step.

17. Validity period of approval

(1) The approval accorded by a Federal Agency under section 12 read with Regulation 12 shall be valid, for commencement of construction, for a period of three years from the date of issue.

(2) If construction is commenced during the initial three year validity period, the validity of the approval shall stand extended for a further period of three years from the date of issue.

(3) After issue of confirmation of compliance, the approval shall be valid for a period of three years from the date thereof.

(4) The proponent may apply to the Federal Agency for extension in the validity periods mentioned in sub-regulations (1), (2) and (3), which may be granted by the Federal Agency in its discretion for such period not exceeding three years at a time, if the conditions of the approval do not require significant change:

Provided that the Federal Agency may require the proponent to submit a fresh IEE or EIA, if in its opinion changes in location, design, construction and operation of the project so warrant.

18. Entry and inspection

(1) For purposes of verification of any matter relating to the review or to the conditions of approval of an IEE or EIA prior to, during or after commencement of construction or operation of a project, duly authorized staff of the Federal Agency shall be entitled to enter and inspect the project site, factory building and plant and equipment installed therein.

(2) The proponent shall ensure full cooperation of the project staff at site to facilitate the inspection, and shall provide such information as may be required by the Federal Agency for this purpose and pursuant thereto.

19. Monitoring

(1) After issue of approval, the proponent shall submit a report to the Federal Agency on completion of construction of the project.

(2) After issue of confirmation of compliance, the proponent shall submit an annual report summarizing operational performance of the project, with reference to the conditions of approval and maintenance and mitigatory measures adopted by the project.

(3) To enable the Federal Agency to effectively monitor compliance with the conditions of approval, the proponent shall furnish such additional information as the Federal Agency may require.

20. Cancellation of approval

(1) Notwithstanding anything contained in these Regulations, if, at any time, on the basis of information or report received or inspection carried out, the Federal Agency is of the opinion that the conditions of an approval have not been complied with, or that the information supplied by a proponent in the approved IEE or EIA is incorrect, it

shall issue notice to the proponent to show cause, within two weeks of receipt thereof, why the approval should not be cancelled.

(2) If no reply is received or if the reply is considered unsatisfactory, the Federal Agency may, after giving the proponent an opportunity of being heard:

(i) require the proponent to take such measures and to comply with such conditions within such period as it may specify, failing which the approval shall stand cancelled; or

(ii) cancel the approval.

(3) On cancellation of the approval, the proponent shall cease construction or operation of the project forthwith.

(4) Action taken under this Regulation shall be without prejudice to any other action that may be taken against the proponent under the Act or rules or regulations or any other law for the time being in force.

21. Registers of IEE and EIA projects

Separate Registers to be maintained by the Federal Agency for IEE and EIA projects under sub-section (7) of section 12 shall be in the form prescribed in Schedule VIII.

22. Environmentally sensitive areas

(1) The Federal Agency may, by notification in the official Gazette, designate an area to be an environmentally sensitive area.

(2) Notwithstanding anything contained in Regulations 3, 4 and 5, the proponent of a project situated in an environmentally sensitive area shall be required to file an EIA with the Federal Agency.

(3) The Federal Agency may from time to time issue guidelines to assist proponents and other persons involved in the environmental assessment process to plan and prepare projects located in environmentally sensitive areas.

(4) Where guidelines have been issued under sub-regulation (3), the projects shall be planned and prepared, to the extent practicable, in accordance therewith and any departure therefrom justified in the EIA pertaining to the project.

23. Environmental Assessment Advisory Committee

For purposes of rendering advice on all aspects of environmental assessment, including guidelines, procedures and categorization of projects, the Director-General shall constitute an Environmental Assessment Advisory Committee comprising –

(a) Director EIA, Federal Agency ... Chairman

(b)	One representative each of the Provincial Agencies	...	Members
(c)	One representative each of the Federal Planning Commission and the Provincial Planning and Development Departments	...	Members
(d)	Representatives of industry and non-Governmental organizations, and legal and other experts	...	Members

24. Other approvals

Issue of an approval under section 12 read with Regulation 12 shall not absolve the proponent of the duty to obtain any other approval or consent that may be required under any law for the time being in force.

SCHEDULE I
(*See* Regulation 3)

List of projects requiring an IEE

A. Agriculture, Livestock and Fisheries

1. Poultry, livestock, stud and fish farms with total cost more than Rs.10 million
2. Projects involving repacking, formulation or warehousing of agricultural products

B. Energy

1. Hydroelectric power generation less than 50 MW
2. Thermal power generation less than 200 KW
3. Transmission lines less than 11 KV, and large distribution projects
4. Oil and gas transmission systems
5. Oil and gas extraction projects including exploration, production, gathering systems, separation and storage
6. Waste-to-energy generation projects

C. Manufacturing and processing

1. Ceramics and glass units with total cost more than Rs.50 million
2. Food processing industries including sugar mills, beverages, milk and dairy products, with total cost less than Rs.100 million
3. Man-made fibers and resin projects with total cost less than Rs.100 million
4. Manufacturing of apparel, including dyeing and printing, with total cost more than Rs.25 million
5. Wood products with total cost more than Rs.25 million

D. Mining and mineral processing

1. Commercial extraction of sand, gravel, limestone, clay, sulphur and other minerals not included in Schedule II with total cost less than Rs.100 million
2. Crushing, grinding and separation processes

3. Smelting plants with total cost less than Rs.50 million

E. Transport

1. Federal or Provincial highways (except maintenance, rebuilding or reconstruction of existing metalled roads) with total cost less than Rs.50 million
2. Ports and harbor development for ships less than 500 gross tons

F. Water management, dams, irrigation and flood protection

1. Dams and reservoirs with storage volume less than 50 million cubic meters of surface area less than 8 square kilometers
2. Irrigation and drainage projects serving less than 15,000 hectares
3. Small-scale irrigation systems with total cost less than Rs.50 million

G. Water supply and treatment

Water supply schemes and treatment plants with total cost less than Rs.25 million

H. Waste disposal

Waste disposal facility for domestic or industrial wastes with annual capacity less than 10,000 cubic meters

I. Urban development and tourism

1. Housing schemes
2. Public facilities with significant off-site impacts (e.g. hospital wastes)
3. Urban development projects

J. Other projects

Any other project for which filing of an IEE is required by the Federal Agency under sub-regulation (2) of Regulation 5

SCHEDULE II
(*See* Regulation 4)

List of projects requiring an EIA

A. Energy

1. Hydroelectric power generation over 50 MW
2. Thermal power generation over 200 MW
3. Transmission lines (11 KV and above) and grid stations
4. Nuclear power plans
5. Petroleum refineries

B. Manufacturing and processing

1. Cement plants
2. Chemicals projects
3. Fertilizer plants
4. Food processing industries including sugar mills, beverages, milk and dairy products, with total cost of Rs.100 million and above
5. Industrial estates (including export processing zones)
6. Man-made fibers and resin projects with total cost of Rs.100 M and above
7. Pesticides (manufacture or formulation)
8. Petrochemicals complex
9. Synthetic resins, plastics and man-made fibers, paper and paperboard, paper pulping, plastic products, textiles (except apparel),printing and publishing, paints and dyes, oils and fats and vegetable ghee projects, with total cost more than Rs.10 million
10. Tanning and leather finishing projects

C. Mining and mineral processing

1. Mining and processing of coal, gold, copper, sulphur and precious stones
2. Mining and processing of major non-ferrous metals, iron and steel rolling
3. Smelting plants with total cost of Rs.50 million and above

D. Transport

1. Airports
2. Federal or Provincial highways or major roads (except maintenance, rebuilding or reconstruction of existing roads) with total cost of Rs.50 million and above
3. Ports and harbor development for ships of 500 gross tons and above
4. Railway works

E. Water management, dams, irrigation and flood protection

1. Dams and reservoirs with storage volume of 50 million cubic meters and above or surface area of 8 square kilometers and above
2. Irrigation and drainage projects serving 15,000 hectares and above

F. Water supply and treatment

Water supply schemes and treatment plants with total cost of Rs.25 million and above

G. Waste Disposal

1. Waste disposal and/or storage of hazardous or toxic wastes (including landfill sites, incineration of hospital toxic waste)
2. Waste disposal facilities for domestic or industrial wastes, with annual capacity more than 10,000 cubic meters

H. Urban development and tourism

1. Land use studies and urban plans (large cities)
2. Large-scale tourism development projects with total cost more than Rs.50 million

I. Environmentally Sensitive Areas

All projects situated in environmentally sensitive areas

J. Other projects

1. Any other project for which filing of an EIA is required by the Federal Agency under sub-regulation (2) of Regulation 5.
2. Any other project likely to cause an adverse environmental effect

SCHEDULE III
(See Regulation 7)

IEE/EIA Review Fees

Total Project Cost	IEE	EIA
Upto Rs.5,000,000	NIL	NIL
Rs.5,000,001 to 10,000,000	Rs.10,000	Rs.15,000
Greater than Rs.10,000,000	Rs.15,000	Rs.30,000

SCHEDULE IV
[*See* Regulation 8(2)(a)]

Application Form

1.	Name and address of proponent		Phone: Fax: Telex:	
2.	Description of project			
3.	Location of project			
4.	Objectives of project			
5.	IEE/EIA attached?	IEE/EIA :	Yes/No	
6.	Have alternative sites been considered and reported in IEE/EIA?		Yes/No	
7.	Existing land use		Land requirement	
8.	Is basic site data available, or has it been measured?	(only tick yes if the data is reported in the IEE/EIA) Meterology (including rainfall) Ambient air quality Ambient water quality Ground water quality	Available Yes/No Yes/No Yes/No Yes/No	Measured Yes/No Yes/No Yes/No Yes/No
9.	Have estimates of the following been reported?	Water balance Solid waste disposal Liquid waste treatment	Estimated Yes/No Yes/No Yes/No	Reported Yes/No Yes/No Yes/No
10.	Source of power		Power requirement	
11.	Labour force (number)	Construction: Operation:		

Verification. I do solemnly affirm and declare that the information given above and contained in the attached IEE/EIA is true and correct to the best of my knowledge and belief.

Date _____

Signature, name and _____
designation of proponent
(with official stamp/seal)

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SCHEDULE V
[*See* Regulation 12]

Decision on IEE

1. Name and address of proponent _____
   _____
2. Description of project _____
3. Location of project _____
4. Date of filing of IEE _____
5. After careful review of the IEE, the Federation Agency has decided –

   (a) to accord its approval, subject to the following conditions:
   _____
   _____

   or (b) that the proponent should submit an EIA of the project, for the following reasons –
   _____
   _____

   [Delete (a) or (b), whichever is inapplicable]

Dated _____

Tracking no.___

Director-General
Federal Agency
(with official stamp/seal)

SCHEDULE VI
[*See* Regulation 12]

Decision on EIA

1. Name and address of proponent _____
   _____
2. Description of project _____
3. Location of project _____
4. Date of filing of EIA _____
5. After careful review of the EIA, and all comments thereon, the Federation Agency has decided –

   (a) to accord its approval, subject to the following conditions:
   _____
   _____

   or (b) that the proponent should submit an EIA with the following modifications-
   _____
   _____

   or (c) to reject the project, being contrary to environmental objectives, for the following reasons:
   _____
   _____

   [Delete (a)/(b)/(c), whichever is inapplicable]

Dated _____

Tracking no.___

Director-General
Federal Agency
(with official stamp/seal)

16

SCHEDULE VII
[*See* Regulation 13(2)]

Undertaking

I, (full name and address) as proponent for (name, description and location of project) do hereby solemnly affirm and declare that I fully understand and accept the conditions contained in the approval accorded by the Federal Agency bearing tracking no. _____ dated _____, and undertake to design, construct and operate the project strictly in accordance with the said conditions and the IEE/EIA.

Date _____

Signature, name and _____
designation of proponent
(with official stamp/seal)

Witnesses
(full names and addresses)

(1) _____

(2) _____

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SCHEDULE VIII
(*See* Regulation 21)
Form of Registers for IEE and EIA projects

S. No.	Description	Relevant Provisions
1	2	3
1.	Tracking number	
2.	Category type (as per Schedules I and II)	
3.	Name of proponent	
4.	Name and designation of contact person	
5.	Name of consultant	
6.	Description of project	
7.	Location of project	
8.	Project capital cost	
9.	Date of receipt of IEE/EIA	
10.	Date of confirmation of completeness	
11.	Approval granted (Yes/No)	
12.	Date of approval granted or refused	
13.	Conditions of approval/reasons for refusal	
14.	Date of Undertaking	
15.	Date of extension of approval validity	
16.	Period of extension	
17.	Date of commencement of construction	
18.	Date of issue of confirmation of compliance	
19.	Date of commencement of operations	
20.	Dates of filing of monitoring reports	
21.	Date of cancellation, if applicable	

Annexure 6-A: NEQS for Municipal and Industrial Effluent

REGISTERED No. M-302
L. 7646

The Gazette of Pakistan

EXTRAORDINARY
PUBLISHED BY AUTHORITY

ISLAMABD, THURSDAY, AUGUST 10, 2000

PART-II

Statutory Notification (S.R.O)

GOVERNMENT OF PAKISTAN

MINISTRY OF ENVIRONMENT, LOCAL GOVERNMENT AND RURAL DEVELOPMENT

NOTIFICATION

Islamabad, the 8th August 2000

S.R.O. 549 (I)/2000.___ In exercise of the powers conferred under clause (e) of sub-section (1) of section of 6 of the Pakistan environmental Protection Act. 1997 (XXXIV of 1997), the Pakistan Environmental Protection Agency, with the prior approval of the Pakistan Environmental Protection Council, is pleased to direct that the following further amendments shall be made in its Notification No. S.R.O. 742(I)/93, dated the 24th August, 1993, namely: ___

In the aforesaid Notification, in paragraph 2._____

(1289)

[4138(2000)/Ex.GAZ]

Price : Rs. 5.00

(1) for Annex, I the following shall be substituted, namely:_____

Annex-I

"NATIONAL ENVIRONMENTAL QUALITY STANDARDS FOR MUNICIPAL AND LIQUID INDUSTRIAL EFFLUENTS (mg/l, UNLESS OTHERWISE DEFINED)

S. No.	Parameter	Existing Standards	Revised Standards Into Inland Waters	Into Sewage Treatment [3]	Into Sea [3]
1	2	3	4	5	6
1.	Temperature or Temperature Increase *	40°C	≤3°C	≤3°C	≤3°C
2.	pH value (H^+)	6-10	6-9	6-9	6-9
3.	Biochemical Oxygen Demand $(BOD)_5$ at 20°C [1]	80	80	250	80**
4.	Chemical Oxygen Demand (COD) [2]	150	150	400	400
5.	Total Suspended Solids (TSS)	150	200	400	200
6.	Total Dissolved Solids (TDS)	3500	3500	3500	3500
7.	Oil and Grease	10	10	10	10
8.	Phenolic compounds (as phenol)	0.1	0.1	0.3	0.3
9.	Chloride (as Cl^-)	1000	1000	1000	SC***
10.	Fluoride (as F^-)	20	10	10	10
11.	Cyanide (as CN^-) total	2	1.0	1.0	1.0
12.	An-ionic detergents (as MBAS) [12]	20	20	20	20
13.	Sulphate (SO_4^{2-})	600	600	1000	SC***
14.	Sulphide (S^{2-})	1.0	1.0	1.0	1.0
15.	Ammonia (NH_3)	40	40	40	40
16.	Pesticides [3]	0.15	0.15	0.15	0.15

1	2	3	4	5	6
17.	Cadmium [1]	0.1	0.1	0.1	0.1
18.	Chromium (trivalent and hexavalent [4] ..	1.0	1.0	1.0	1.0
19.	Copper [5]	1.0	1.0	1.0	1.0
20.	Lead [4]	0.5	0.5	0.5	0.5
21.	Mercury [3]	0.01	0.01	0.01	0.01
22.	Selenium [5]	0.5	0.5	0.5	0.5
23.	Nickel [5] ..	1.0	1.0	1.0	1.0
24.	Silver [4]	1.0	1.0	1.0	1.0
25.	Total toxic metals	2.0	2.0	2.0	2.0
26.	Zinc	5.0	5.0	5.0	5.0
27.	Arsenic [4] ..	1.0	1.0	1.0	1.0
28.	Barium [4]	1.5	1.5	1.5	1.5
29.	Iron	2.0	8.0	8.0	8.0
30.	Manganese	1.5	1.5	1.5	1.5
31.	Boron [4]	6.0	6.0	6.0	6.0
32.	Chlorine	1.0	1.0	1.0	1.0

Explanations:

1. Assuming minimum dilution 1:10 on discharge, lower ratio would attract progressively stringent standards to be determined by the Federal Environmental Protection Agency. By 1:10 dilution means, for example that for each one cubic meter of treated effluent, the recipient water body should have 10 cubic meter of water for dilution of this effluent.

2. Methylene Blue Active Substances; assuming surfactant as biodegradable.

3. Pesticides include herbicides, fungicides, and insecticides.

4. Subject to total toxic metals discharge should not exceed level given at S. N. 25.

5. Applicable only when and where sewage treatment is operational and BOD_5=80mg/l is achieved by the sewage treatment system.

Annexure 6-B: NEQS for Industrial Gaseous Emissions, Motor Vehicle Exhaust, Noise and Ambient Air Quality

6. Provided discharge is not at shore and not within 10 miles of mangrove or other important estuaries

* The effluent should not result in temperature increase of more than 3°C at the edge of the zone where initial mixing and dilution take place in the receiving body. In case zone is not defined, use 100 meters from the point of discharge.

** The value for industry is 200 mg/l

*** Discharge concentration at or below sea concentration (SC).

Note:_____ 1. Dilution of liquid effluents to bring them to the NEQS limiting values is not permissible through fresh water mixing with the effluent before discharging into the environment.

2. The concentration of pollutants in water being used will be substracted from the effluent for calculating the NEQS limits, and

(2) for Annex-II the following shall be substituted, namely:____

Annex-II

"NATIONAL ENVIRONMENTAL QUALITY STANDARDS FOR INDUSTRIAL GASEOUS EMISSION (mg/Nm³, UNLESS OTHERWISE DEFINED)."

S. No.	Parameter	Source of Emission	Existing Standards	Revised Standards
1	2	3	4	5
1.	Smoke	Smoke opacity not to exceed	40% or 2 Ringlemann Scale	40% or 2 Ringlemann Scale or equivalent smoke number
2.	Particulate matter	(a) Boilers and Furnaces		
	(1)	(i) Oil fired	300	300
		(ii) Coal fired	500	500
		(iii) Cement Kilns	200	300
		(b) Grinding, crushing, Clinker coolers and Related processes, Metallurgical Processes, converter, blast furnaces and cupolas.	500	500
3.	Hydrogen Chloride	Any	400	400

1	2	3	4	5
4.	Chlorine	Any	150	150
5.	Hydrogen Fluoride	Any	150	150
6.	Hydrogen Sulphide	Any	10	10
7.	Sulphur Oxides [2][3]	Sulfuric acid/Sulphonic acid plants		
		Other Plants except power Plants operating on oil and coal	400	1700
8.	Carbon Monoxide	Any	800	800
9.	Lead	Any	50	50
10.	Mercury	Any	10	10
11	Cadmium	Any	20	20
12.	Arsenic	Any	20	20
13.	Copper	Any	50	50
14.	Antimony	Any	20	20
15.	Zinc	Any	200	200
16.	Oxides of Nitrogen	Nitric acid manufacturing unit.	400	3000
	(3)	Other plants except power plants operating on oil or coal:		
		Gas fired	400	400
		Oil fired	-	600
		Coal fired	-	1200

Explanations:-

1. Based on the assumption that the size of the particulate is 10 micron or more.

2. Based on 1 percent Sulphur content in fuel oil. Higher content of Sulphur will case standards to be pro-rated.

3. In respect of emissions of Sulphur dioxide and Nitrogen oxides, the power plants operating on oil and coal as fuel shall in addition to National Environmental Quality Standards (NEQS) specified above, comply with the following standards:-

A. **Sulphur Dioxide**

Sulphur Dioxide Background levels Micro-gram per cubic meter (ug/m^3) Standards.

Background Air Quality (SO_2 Basis)	Annual Average	Max. 24-hours Interval	Criterion I Max. SO_2 Emission (Tons per Day Per Plant)	Criterion II Max. Allowable ground level increment to ambient (ug/m^3) (One year Average)
Unpolluted	<50	<200	500	50
Moderately Polluted*				
Low	50	200	500	50
High	100	400	100	10
Very Polluted**	>100	>400	100	10

* For intermediate values between 50 and 100 ug/m^3 linear interpolations should be used.

** No projects with Sulphur dioxide emissions will be recommended.

B. Nitrogen Oxide

Ambient air concentrations of Nitrogen oxides, expressed as NO, should not be exceed the following:-

Annual Arithmetic Mean 100ug/m^3 (0.05 ppm)

Emission level for stationary source discharge before missing with the atmosphere, should be maintained as follows:-

For fuel fired steam generators as Nanogram (10^9-gram) per joule of heat input:

Liquid fossil fuel	130
Solid fossil fuel	300
Lignite fossil fuel	260

Note:- Dilution of gaseous emissions to bring them to the NEQS limiting value is not permissible through excess air mixing blowing before emitting into the environment.

[File No. 14(3)/98-TO-PEPC.]

HAFIZ ABDULAH AWAN
DEPUTY SECRETARY (ADMN)

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PART II

Statutory Notifications (S. R. O.)

GOVERNMENT OF PAKISTAN

MINISTRY OF ENVIRONMENT

NOTIFICATIONS

Islamabad, the 18th October, 2010

S. R. O. 1062(I)/2010.—In exercise of the powers conferred under clause (c) of sub-section (I) of section 6 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), the Pakistan Environmental Protection Agency, with the prior approval of the Pakistan Environmental Protection Council, is pleased to establish the following National Environmental Quality Standards for Ambient Air.

National Environmental Quality Standards for Ambient Air

Pollutants	Time-weighted average	Concentration in Ambient Air: Effective from 1st July, 2010	Concentration in Ambient Air: Effective from 1st January 2013	Method of measurement
Sulphur Dioxide (SO_2)	Annual Average* 24 hours**	80 µg/m³ 120 µg/m³	80 µg/m³ 120 µg/m³	-Ultraviolet Fluorescence method
Oxides of Nitrogen as (NO)	Annual Average* 24 hours**	40 µg/m³ 40 µg/m³	40 µg/m³ 40 µg/m³	- Gas Phase Chemiluminescence

[2944(2010)/Ex. Gaz.] *Price: Rs. 5.00*

Pollutants	Time-weighted average	Concentration in Ambient Air: Effective from 1st July, 2010	Concentration in Ambient Air: Effective from 1st January 2013	Method of measurement
Oxides of Nitrogen as (NO_2)	Annual Average*	40 µg/m³	40 µg/m³	- Gas Phase Chemiluminescence
	24 hours**	80 µg/m³	80 µg/m³	
O_3	1 hour	180 µg/m³	130 µg/m³	-Non dispersive UV absorption method
Suspended Particulate Matter (SPM)	Annual Average*	400 µg/m³	360 µg/m³	- High Volume Sampling, (Average flow rate not less than 1.1 m3/minute).
	24 hours**	550 µg/m³	500 µg/m³	
Respirable Particulate Matter, PM_{10}	Annual Average*	200 µg/m³	120 µg/m³	-β Ray absorption method
	24 hours**	250 µg/m³	150 µg/m³	
Respirable Particulate Matter, $PM_{2.5}$	Annual Average*	25 µg/m³	15 µg/m³	-β Ray absorption method
	24 hours**	40 µg/m³	35 µg/m³	
	1 hour	25 µg/m³	15 µg/m³	
Lead Pb	Annual Average*	1.5 µg/m³	1 µg/m³	- AAS Method after sampling using EPM 2000 or equivalent Filter paper
	24 hours**	2 µg/m³	1.5 µg/m³	
Carbon Monoxide (CO)	8 hours**	5 mg/m³	5 mg/m³	- Non Dispersive Infra Red (NDIR) method
	1 hour	10 mg/m³	10 mg/m³	

*Annual arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.

** 24 hourly /8 hourly values should be met 98% of the in a year. 2% of the time, it may exceed but not on two consecutive days.

S. R. O. 1063(I)/2010.— In exercise of the powers conferred under clause (c) of sub-section (1) of section 6 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), the Pakistan Environmental Protection Agency, with the prior approval of the Pakistan Environmental Protection Council, is pleased to establish the following National Standards for Drinking Water Quality.

National Standards for Drinking Water Quality

Properties/Parameters	Standard Values for Pakistan	Who Standards	Remarks
Bacterial			
All water intended for drinking (e.Coli or Thermotolerant Coliform bacteria)	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Most Asian countries also follow WHO standards
Treated water entering the distribution system (E.Coli or thermo tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml sample	Must not be detectable in any 100 ml sample	Most Asian countries also follow WHO standards
Treated water in the distribution system (E. coli or thermo tolerant coliform and total coliform bacteria)	Must not be detectable in any 100 ml sample In case of large supplies, where sufficient samples are examined, must not be present in 95% of the samples taken throughout any 12-month period.	Must not be detectable in any 100 ml sample In case of large supplies, where sufficient samples are examined, must not be present in 95% of the samples taken throughout any 12 month period.	Most Asian countries also follow WHO standards
Physical			
Colour	≤ 15 TCU	≤ 15 TCU	
Taste	Non objectionable/Acceptable	Non objectionable/Acceptable	
Odour	Non objectionable/Acceptable	Non objectionable/Acceptable	
Turbidity	< 5 NTU	< 5 NTU	
Total hardness as $CaCO_3$	< 500 mg/l	---	
TDS	< 1000	< 1000	
pH	6.5 – 8.5	6.5 – 8.5	
Chemical			
Essential Inorganic	***mg/Litre***	***mg/Litre***	
Aluminium (Al) mg/l	≤ 0.2	0.2	

Properties/Parameters	Standard Values for Pakistan	Who Standards	Remarks
Antimony (Sb)	≤ 0.005 (P)	0.02	
Arsenic (As)	≤ 0.05 (P)	0.01	Standard for Pakistan similar to most Asian developing countries
Barium (Ba)	0.7	0.7	
Boron (B)	0.3	0.3	
Cadmium (Cd)	0.01	0.003	Standard for Pakistan similar to most Asian developing countries
Chloride (Cl)	< 250	250	
Chromium (Cr)	≤ 0.05	0.05	
Copper (Cu)	2	2	
Toxic Inorganic	*mg/Litre*	*mg/Litre*	
Cyanide (CN)	≤ 0.05	0.07	Standard for Pakistan similar to Asian developing countries
Fluoride (F)*	≤ 1.5	1.5	
Lead (Pb)	≤ 0.05	0.01	Standard for Pakistan similar to most Asian developing countries
Manganese (Mn)	≤ 0.5	0.5	
Mercury (Hg)	≤ 0.001	0.001	
Nickel (Ni)	≤ 0.02	0.02	
Nitrate (NO_3)*	≤ 50	50	
Nitrite (NO_2)*	≤ 3 (P)	3	
Selenium (Se)	0.01 (P)	0.01	
Residual chlorine	0.2-0.5 at consumer end 0.5-1.5 at source	—	
Zinc (Zn)	5.0	3	Standard for Pakistan similar to most Asian developing countries

* indicates priority health related inorganic constituents which need regular monitoring.

Properties/Parameters	Standard Values for Pakistan	Who Standards	Remarks
Organic			
Pesticides mg/L		PSQCA No. 4639-2004, Page No. 4 Table No. 3 Serial No. 20- 58 may be consulted.***	Annex II
Phenolic compounds (as Phenols) mg/L		≤ 0.002	
Polynuclear aromatic hydrocarbons (as PAH) g/L		0.01 (By GC/MS method)	
Radioactive			
Alpha Emitters bq/L or pCi	0.1	0.1	
Beta emitters	1	1	

*** PSQCA: Pakistan Standards Quality Control Authority.

Proviso:

The existing drinking water treatment infrastructure is not adequate to comply with WHO guidelines. The Arsenic concentrations in South Punjab and in some parts of Sindh have been found high then Revised WHO guidelines. It will take some time to control arsenic through treatment process. Lead concentration in the proposed standards is higher than WHO Guidelines. As the piping system for supply of drinking water in urban centres are generally old and will take significant resources and time to get them replaced. In the recent past, Lead was completely phased out from petroleum products to cut down Lead entering into environment. These steps will enable to achieve WHO guidelines for Arsenic, Lead, Cadmium and Zinc. However, for bottled water, WHO limits for Arsenic, Lead, Cadmium and Zinc will be applicable and PSQCA Standards for all the remaining parameters.

S. R. O. 1064(I)/2010.—In exercise of the powers conferred under clause (c) of sub-section (1) of section 6 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), the Pakistan Environmental Protection Agency, with the prior approval of the Pakistan Environmental Protection Council, is pleased to establish the following National Environmental Quality Standards for Noise.

Annexure 6-C: NEQS for Ambient Noise Level

3210 THE GAZETTE OF PAKISTAN, EXTRA., NOVEMBER 26, 2010 [PART II

National Environmental Quality Standards for Noise

S. No.	Category of Area / Zone	Effective from 1st July, 2010		Effective from 1st July, 2012	
		Limit in dB(A) Leq *			
		Day Time	Night Time	Day Time	Night Time
1.	Residential area (A)	65	50	55	45
2.	Commercial area (B)	70	60	65	55
3.	Industrial area (C)	80	75	75	65
4.	Silence Zone (D)	55	45	50	45

Note: 1. Day time hours: 6.00 a. m to 10.00 p. m.

2. Night time hours: 10.00 p. m. to 6.00 a.m.

3. Silence zone: Zones which are declared as such by the competent authority. An area comprising not less than 100 meters around hospitals, educational institutions and courts.

4. Mixed categories of areas may be declared as one of the four above-mentioned categories by the competent authority.

*dB(A) Leq: Time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

[No. F. I(12)/2010-11-General.]

MUHAMMAD KHALIL AWAN,
Section Officer (PEPC).

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Annexure 7: Self-Monitoring Rules, 2001

S.R.O. 528 (1)/2001. - In exercise of the powers conferred by section 31 of the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997), the Federal Government is pleased to make the following rules, namely: -

1. **Short title and commencement**. - (1) These rules may be called the National Environmental Quality Standards (Self-Monitoring and Reporting by Industry) Rule, 2001.

(2) They shall come into force at once.

2. **Definitions**. - **(1)** In these rules, unless there is anything repugnant in the subject or context, -

(a) **Act** means the Pakistan Environmental Protection Act, 1997 (XXXIV of 1997);

(b) **Associated Company** and associated undertaking, shall have the same meaning as defined in the Companies Ordinance, 1984 (XLVII of 1984);

(c) **Certified environmental laboratory** means an environmental laboratory which has been granted certification under the Pakistan Environmental Protection Agency (Certification of Environmental Laboratories) Regulations, 2000;

(d) **Director-General** means the Director-General of the Federal Agency;

(e) **Environmental monitoring** report means the report submitted by an industrial unit to the Federal Agency in respect of priority parameters;

(f) **industrial unit** means any legal entity carrying on industrial activity;

(g) **pollution level** means number of units per unit of production determined under the Pollution Charge for Industry (Calculation and Collection) Rules, 2001;

(h) **priority parameters** means those parameters of the National Environmental Quality Standards which have been selected for purposes of submission of Environmental Monitoring Reports to the Federal Agency by an industrial unit; and

(i) **Schedule** means the Schedule to these rules.

(2) All other words and expressions used in these rules but not defined herein shall have the same meanings as are assigned to them in the Act.

3. **Responsibility for reporting**. - All industrial units shall be responsible for correct and timely submission of Environmental Monitoring Reports to the Federal Agency.

4. **Classification of industrial units**. - On the basis of the pollution level of an industrial unit, the Director-General shall classify the unit into category "A", "B" or "C" for liquid effluents, and category "A" or "B" for gaseous emissions:

Provided that till such time as the pollution level of an industrial unit is determined, it shall be classified according to the type of industry to which it belongs, as shown in Schedule I for liquid effluents and in Schedule II for gaseous emissions.

5. **Category "A" industrial units**. - (1) An industrial unit in category "A" shall submit Environmental Monitoring Reports on monthly basis-

(a) in respect of liquid effluents, for priority parameters listed in column 3 of Table A of Schedule III:

Provided that during start-up or upset conditions, priority parameters mentioned in column 4 of Table A of Schedule III shall be recorded on hourly basis;

(b) in respect of gaseous emissions, for priority parameters listed in Table B of Schedule III.

(2) An industrial unit in category "A" shall maintain a record of the times during which start-up and upset conditions occur, and shall mention the total time elapsed in such conditions in its monthly Environmental Monitoring Report.

6. **Category "B" industrial units**.- An industrial unit in category "B" shall submit Environmental Monitoring Reports on quarterly basis-

(a) in respect of liquid effluents, for priority parameters listed in Table A of Schedule IV;

(b) in respect of gaseous emissions, for priority parameters listed in Table B of Schedule IV.

7. **Category "C" industrial units**. - An industrial unit in category "C" shall submit Environmental Monitoring Reports on biannual basis for priority parameters in respect of liquid effluents listed in Schedule V.

8. **Special Industries**. - (1) Without prejudice to the provisions of rule 4, the Director-General may classify a large industrial unit with very high pollution levels as "Special Industry".

(2) In addition to complying with the requirements of rule 5, a Special Industry shall submit Environmental Monitoring Reports for such parameters and at such frequency as the Director-General may require.

9. **Environmental Monitoring Report**. - (1) An Environmental Monitoring Report shall comprise a Liquid Effluents Monitoring Report, a Gaseous Emissions Monitoring Report and a Cover Sheet which shall be in the form as set out in Forms A, B and C, respectfully, of Schedule VI.

(2) All measurements of priority parameters contained in the Environmental Monitoring Report submitted by an industrial unit shall be based on test reports of a certified environmental laboratory, and attested copies of such results shall be attached with the Environmental Monitoring Report:

Provided that such certified environmental laboratories shall not be part of, or an associated company or associated undertaking of, the said industrial unit.

(3) The Gaseous Emissions Report shall cover the priority parameters listed in Schedule VII, and shall include, every two years, a metal analysis of all gaseous emissions from the industrial unit.

10. **Sampling, testing and analysis**. - Sampling testing and analysis of effluents, gaseous emissions and waste shall be carried out in accordance with the Environmental Samples Rules, 2001.

11. **Monitoring conditions of EIA approval**. - The provisions of these rules shall be in addition to, and not in derogation of, the monitoring conditions laid down in an EIA approval.

12. **Compilation, analysis and management of data**. - The Federal Agency shall compile, analyze and manage the data contained in the Environmental Monitoring Reports with the objective, *inter alia*, of enforcing the National Environmental Quality Standards and developing an environmental database.

Schedule I
(*See* rule 4)
Classification of Industrial Units for Liquid Effluents

1. **Category "A"**

(1) Chlor-Alkali (Mercury Cell).
(2) Chlor-Alkali (Diaphram Cell).
(3) Metal finishing and electroplating.
(4) Nitrogenous fertilizer.
(5) Phosphate fertilizer.
(6) Pulp and paper.
(7) Pesticides formulation.
(8) Petroleum refining.
(9) Steel industry.
(10) Synthetic fiber.
(11) Tanning and leather finishing.
(12) Textile processing.
(13) Pigments and dyes.
(14) Thermal Power Plants (Oil Fired and Coal Fired).
(15) Rubber products.
(16) Paints, Varnishes and Lacquers.
(17) Pesticides.
(18) Printing.
(19) Industrial chemicals.
(20) Oil and Gas production.
(21) Petrochemicals.
(22) Combined effluent treatment.
(23) Any other industry to be specified by Federal or Provincial Agency.

2. **Category "B"**

(1) Dairy industry.
(2) Fruit and vegetable processing.
(3) Glass manufacturing.
(4) Sugar.
(5) Detergent.
(6) Photographic.
(7) Glue manufacture.
(8) Oil and Gas exploration.
(9) Thermal Power Plants (Gas Fired)
(10) Vegetable oil and ghee mills.
(11) Woolen mills.
(12) Plastic materials and products.
(13) Wood and cork products.

4

(14) Any other industry to be specified by federal or Provincial Agency.

3. **Category "C"**

(1) Pharmaceutical (Formulation) Industry.
(2) Marble Crushing.
(3) Cement.
(4) Any other industry to be specified by Federal or Provincial Agency

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Schedule II
(*See* rule 4)
Classification of Industrial Units for Gaseous Emissions

1. Category "A"

(1) Cement.
(2) Glass manufacturing
(3) Iron and steel.
(4) Nitrogenous fertilizer.
(5) Phosphate fertilizer.
(6) Oil and Gas production.
(7) Petroleum refining.
(8) Pulp and paper.
(9) Thermal Power Plants (coal and oil based)
(10) Boilers, ovens, furnaces and kilns (coal and oil fired)
(11) Brick-Kilns (firewood and bagasse based)
(12) Any other industry to be specified by Federal or Provincial Agency.

2. Category "B"

(1) Sugar.
(2) Textile.
(3) Choloralkali plants.
(4) Dairy industry.
(5) Fruits and vegetables.
(6) Metal finishing and electroplating.
(7) Boilers, ovens, furnaces and kilns (gas-fired)
(8) Any other industry to be specified by Federal or Provincial Agency.

Schedule III
(See rule 5(1)(a) and (b))
Table A
Category "A"
Priority Parameters for Monitoring of Liquid Effluents

S.No.	Industry	Priority Parameters for Normal Plant Conditions to be Reported on a Monthly Basis	Priority Parameters for Start-up and Upset Conditions to be Recorded on an Hourly Basis
1.	Chlor-Alkali (Mercury Cell)	Effluent Flow, Temperature, pH, TSS, Chlorine, Mercury, Chlorides	Effluent Flow, Temperature, pH, TSS, Mercury, Chlorides
2.	Chlor-Alkali (Diaphragm Cell)	Effluent Flow, Temperature, pH, TSS, Chlorine, Chlorides	Effluent Flow, Temperature, pH, TSS, Chlorides
3.	Metal Finishing and Electropiating[2]	Effluent Flow, Temperature, pH, TSS, Oil and Grease, Arsenic, Cadmium, Chromium (trivalent), Chromium (hexavalent), Lead, Nickel, Mercury, Silver, Zinc, Flourides, Cyanides	Effluent Flow, Temperature, pH, TSS,
4.	Nitrogeneous Fertilizer	Effluent Flow Temperature, pH, TSS, Ammonia, COD	Effluent Flow, Temperature, pH, TSS,
5.	Phosphate Fertilizer	Effluent Flow, Temperature, pH, TSS, Cadmium, Flourides, COD	Effluent Flow, Temperature, pH, TSS,
6.	Pulp and paper	Effluent Flow, Temperature, pH, COD, TSS, Sulphides, BOD5	Effluent Flow, Temperature, pH, TDS, TSS,
7.	Pesticides Formulation	Effluent Flow, Pesticides	Effluent Flow,
8.	Petroleum Refining	Effluent flow, Temperature,pH, COD, TSS, BOD5 Oil and Grease, phenolic compounds	Effluent Flow, Temperature, pH, TSS,
9.	Steel Industry[3]	Effluent flow, Temperature, pH, COD, TSS, TDS, Chromium (trivalent), Iron, Oil and Grease, Cadium Copper	Effluent Flow, Temperature, pH, TSS,
10.	Synthetic Fiber	Effluent Flow, Temperature pH, COD TSS, BOD5, Oil and Grease, Sulfides	Effluent Flow, Temperature, pH, TSS,
11.	Tanning and Leather Finishing	Effluent Flow, Temperature, pH, COD, TSS, BOD5 Sulfide, Oil and Grease, Chromium (trivalent), Chromium (hexavalent), TDS, Phenolic compounds	Effluent Flow, Temperature, pH, TSS,
12.	Textile Processing	Effluent Flow, Temperature, pH, COD, TSS, TDS, BOD5, Copper, Chromium	Effluent Flow, Temperature, pH, TSS,

S.No.	Industry	Priority Parameters for Normal Plant Conditions to be Reported on a Monthly Basis.	Priority Parameters for Start-up and Upset Conditions to be Recorded on an Hourly Basis
13.	Pigments and Dyes	Effluent Flow, pH, Temperature, COD, lead, Copper, Zinc.	Effluent Flow, Temperature, pH,
14.	Thermal Power Plants (Oil fired and coal fired)	Effluent Flow, Temperature, pH, TSS, Oil and Grease	Effluent Flow, Temperature, pH, TSS
15.	Rubber Products	COD, Cadmium TSS	TSS
16.	Paints, Varnishes & Laequers	PH, TSS, COD, Lead, Chromium, Cadmium, Zinc, Barium.	PH, TSS
17.	Pesticides	COD, Mercury, Pesticides	COD,
18.	Printing	COD, Lead	COD,
19.	Industrial Chemicals	PH, COD, TDS, Phenolic Compounds, Cyanide, Ammonia, Cadmium*, Chromium*, Mercury*, Nickel*, Zinc*, Arsenic*,	PH, COD, TDS,
20.	Oil and Gas Production	Effluent Flow, Temperature, ph, COD, TSS, TDS, Oil and Grease, Chloride, BOD5, Phenolic Compounds	Effluent Flow, Temperature, pH, TSS, TDS,
21.	Petrochemicals	Effluent Flow, Temperature pH, COD, TSS, TDS, Oil and Grease, BOD5, Phenolic Compounds.	Effluent Flow, Temperature, pH, TSS, TDS,

1. Industry using chromium in its cooling water system will also report chromium (trivalent, hexavalent) in addition to the stipulated priority parameters for each sector.
2. Steel Industry includes steel-re-rolling mills, electric furnaces, and foundries.

* Priority parameters will be limited to those occurring in chemicals and raw materials used.

Schedule IV
[See rule 6(a) and (b)]
Table A
Category "B"
Priority Parameters for Monitoring of Liquid Effluents

S. No.	Industry	Priority Parameters for Normal Plant Conditions to be Reported on a quarterly Basis[1]
1.	Dairy Industry	Effluent Flow, Temperature, pH, BOD_5, TSS, TDS, Oil and Grease
2.	Fruit and Vegetable Processing	Effluent Flow, Temperature, pH, BOD_5, TSS, COD
3.	Glass Manufacturing	Effluent Flow, Temperature, pH, TSS, COD, Oil and Grease
4.	Sugar	Effluent Flow, Temperature, pH, BOD_5, TSS, COD, Oil and Grease
5.	Detergent	pH, COD, Oil and Grease, An-ionic Detergent
6.	Photographic	pH, COD, Silver, Cyanide, Fluoride
7.	Glue Manufacture	BOD, COD, pH.
8.	Oil and Gas Exploration	Effluent Flow, Temperature, pH, COD, TSS, TDS, Oil and Grease, Chloride, BOD_5, Phenolic compounds
1.	Industry using chromium in its cooling water system will also report Chromium (trivalent, hexavalent) in addition to the stipulated priority parameters for each sector	

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Table B
Category "A"
Priority Parameters for Monitoring of Gaseous Emissions

S. No.	Industry	Priority Parameters for Normal Plant Conditions to be reported on a Monthly basis	
		Process Emission	Emission from fired Equipment
1.	Cement	Particulates	CO, *SOx, NOx, Particulates
2.	Glass Manufacturing	Particulates	CO, *SOx, NOx, Particulates
3.	Iron and Steel	Particulates, Fluorides CO, NOx, SOx	
4.	Nitrogenous Fertilizers	Ammonia, Particulates	CO, *SOx, NOx, Particulates
5.	Phosphate Fertilizers	Ammonia, Flouride, Particulate	
6.	Oil and Gas Production	CO, *SOx, NOx, H_2S and Particulates.	
7.	Petroleum Refining	H_2S, NOx, SOx, Particulates	CO, *SOx, NOx, Particulates
8.	Pulp and Paper	Chlorine, SOx	CO, *SOx, NOx, Particulates
9.	Thermal Power Plants (Coal and Oil based)		*SOx, NOx, CO, Heavy Metals and Particulates
10.	Boilers, Ovens, Furnaces and Kilns (Coal and Oil fired)		CO, NOx, *SOx, Particulates.
11.	Brick Kilns (Firewood and Bagasse)		CO, Particulates

1. Metal analyses of all gaseous emission would be carried out once in two years.
*Only where fuel contains hydrogen sulphide (H2S) more than 20ppm

Table B
Category "B"
Priority Parameters for Monitoring of Gaseous Emission
Category "B"

S. No.	Industry	Priority Parameters for Normal Plant Conditions to be reported on a Quarterly Basis[1]
	Process Emission	**Emission from fired Equipment**
1.	Sugar	CO, *SOx, NOx, Particulates
2.	Taxtile	CO, *SOx, NOx, Particulates
3.	Chloralkali Plants	Chlorine
4.	Dairy Industry	CO, NOx, *SOx, Particulates
5.	Fruits and Vagetables	CO, NOx, *SOx, Particulates
6.	Metal Finishing and Electroplating	Particulates
7.	Boilers, Ovens, furnaces and Kilns (Gas–fired)	CO, NOx

1. Metal analyses of all gaseous emission would be carried out once in two years
*Only where fuel contains hydrogen sulphide (H2S) more than 20ppm

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Schedule V
(See rule 7)
Category "C"

Priority Parameters for Monitoring of Liquid Effluents

S. No.	Industry	Priority Parameters for Normal Plant Conditions to be Reported on a quarterly Basis
1.	Pharmaceutical (formulation industry, marble crushing, Cement, and any other industry as notified by EPAs	Effluent Flow, Temperature, pH, COD, TSS, TDS,

1. Industry using chromium in its cooling water system will also report chromium (trivalent, hexavalent) in addition to the stipulated priority parameters for each sector.

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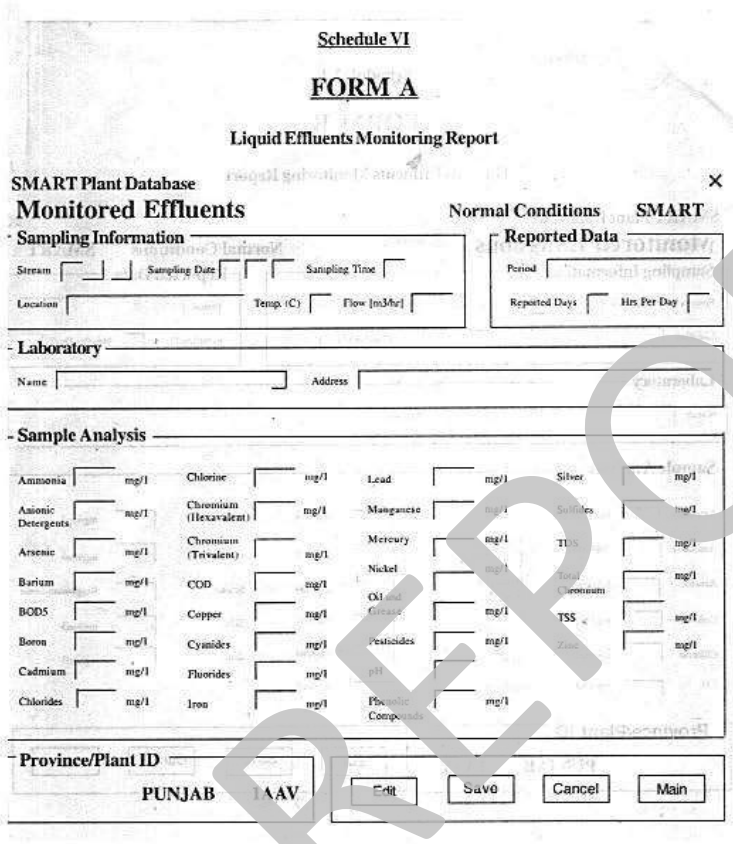
National Environmental Quality Standards (Self-Monitoring and Reporting by Industry) Rule, 2001



Schedule VI

FORM A

Liquid Effluents Monitoring Report

SMART Plant Database

Monitored Effluents

Normal Conditions SMART

Sampling Information

Stream Sampling Date Sampling Time

Location Temp. (C) Flow [m3/hr]

Reported Data

Period

Reported Days Hrs Per Day

Laboratory

Name Address

Sample Analysis

Ammonia	mg/l	Chlorine	mg/l	Lead	mg/l	Silver	mg/l
Anionic Detergents	mg/l	Chromium (Hexavalent)	mg/l	Manganese	mg/l	Sulfides	mg/l
Arsenic	mg/l	Chromium (Trivalent)	mg/l	Mercury	mg/l	TDS	mg/l
Barium	mg/l	COD	mg/l	Nickel	mg/l	Total Chromium	mg/l
BOD5	mg/l	Copper	mg/l	Oil and Grease	mg/l	TSS	mg/l
Boron	mg/l	Cyanides	mg/l	Pesticides	mg/l	Zinc	mg/l
Cadmium	mg/l	Fluorides	mg/l	pH			
Chlorides	mg/l	Iron	mg/l	Phenolic Compounds	mg/l		

Province/Plant ID

PUNJAB AAV

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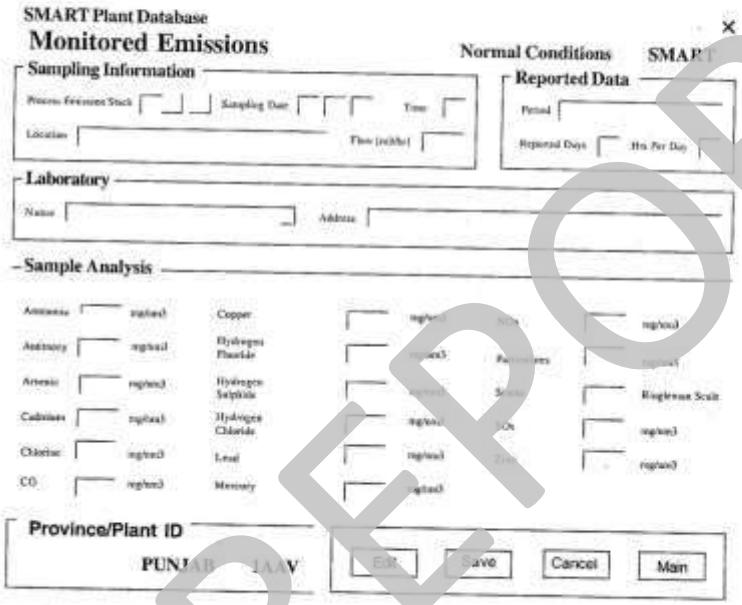
Schedule VI

FORM B

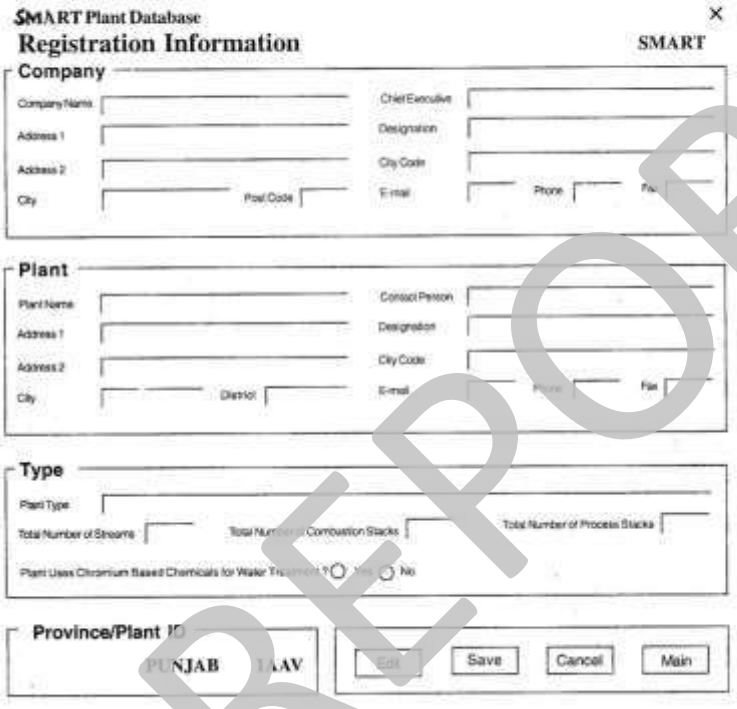
Gaseous Effluents Monitoring Report



National Environmental Quality Standards (Self-Monitoring and Reporting by Industry) Rule, 2001

FORM C

Environmental Monitoring Report Cover Sheet



Schedule VII
[See rule 9(3)]
Priority Parameters for Monitoring of Gaseous Emissions

S. No.	Emission source	Priority Parameters 2 for Reporting
1.	Boiler, Ovens Furnaces and Kilns	
	Gas Fired	CO, NOx
	Oil Fired	CO, NOx, SOX, Particulates
	Coal	CO, NOx, SOX, Particulates
	Bagasee and Firewood	CO, Particulates
2.	Brick Kilns	CO, NOx, SOX, Particulates
3.	Thermal Power Plants	Sox, NOx, Particulates
4.	Process Emission[1]	Particulates Ammonia, Chlorine, H2S, flouride, SOx, NOx, Co, Mercury*, Lead*, Zinc*, Cadmium*, Arsenic*, Antimony*

1. Process emissions involving fuel combustion will also include parameters as for Boilers, Ovens, furnaces and Kilns.
2. Metal analyses of all gaseous emissions would be carried out once in two years.
* Priority parameters will be limited to those occurring in chemicals and raw-materials used.

F. No. 14 (3)/98-TO-PEPC

(SAEED ATHAR)
Section Officer

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Annexure 8: Detailed Emergency Response Plan

Single Point Mooring Byco Petroleum Pakistan Ltd.	EHS MANAGEMENT SYSTEM & PROCEDURES MANUAL		SPM-EHS-ERP-001
EMERGENCY RESPONSE PLAN-ON SHORE SITE			
ISSUE: 02	REV: 01	DATE: Sep-2015	Page 1 of 10

1 PURPOSE

The purpose of this procedure is to provide a clear and concise reference of the important actions for a number of emergency situations that may arise at the on-shore site. It is therefore must for all key personnel in the emergency response organization or crisis management organization, to be familiar with the contents of this procedure and to have full knowledge of their duties and responsibilities. Define lines of communication both internal & external;

2 OBJECTIVE

The objective of this document is to make clarity of roles and responsibilities in case of an Emergency Evacuation, Casualty, and/or fire, pertaining to onshore activities.

In dealing with the emergency, the ultimate objectives are:

- Protect and rescue human life;
- Minimize damage to company property and the environment ;
- Containment of the emergency to prevent escalation;
- Render, safe the affected areas;
- Eliminate threat;
- Preserve relevant records and equipment for the subsequent inquiry into the cause and circumstances of the emergency;
- Protect the interest of the company.

3 Types of Emergencies

This plan is particularly aimed at reducing and handling the risk of an emergency impacting on ON-SHORE, personnel, business continuity & environment. The following types of emergencies are discussed in this plan:

- Fire & Explosion
- Natural disaster
- Earthquake
- Typhoon/Cyclone
- Bomb threat
- Man overboard

! CONTROLLED DOCUMENT DO NOT COPY

3.1 LEVEL OF EMERGENCY

(ALERT I Emergency) Minor incident

•Has no potential risk to lives or property or the environment. •Within the capability of a site employee to handle. e.g. minor fires which can be easily extinguished or minor product release which can be easily isolated, contained and cleaned up.

(ALERT II Emergency) Considered serious in nature

• Still within the capability of BTPL ERT to handle the situation or Emergency assistance from ORC-1 may be required. e.g. fires involving tank, pipeline, or offices, relatively large spillage of product but can be isolated safely or will require extensive clean up.

(ALERT III Emergency) Major and serious in nature, with extended duration.

•Beyond the capability of BTPL's Emergency Response Team to handle. •Implications are serious, warranting the activation of CMT. •Assistance from ORC-1, Fire Evacuation may be required. e.g. major fire of ON-SHORE site.

4 EMERGENCY ORGANIZATIONS

Based upon the category of emergency, there are following two organizational structures to cope up with the emergency situation.

a. **Emergency Response Team (ERT)**
b. **Crisis Management Team (CMT)**

4.1 Emergency Response Team - Operational response and control of the on ground situation.

An Emergency **Response Team (ERT)** is comprised of senior staff from key functions such as "Operations, EHS, Administration, Maint., and Security" groups within the organization. Representation on the ERT should only come from the following groups:

4.2 Crisis Management Team - Decision making and in-crisis risk management

A **Crisis Management Team (CMT)** is made up of senior executive leadership team members, and is the highest level decision-making authority in the organization. As senior leadership these individuals are the

most qualified to make decisions and evaluate risk, regardless of whether or not the organization is in a state of crisis.

4.3 The Three Priorities of Emergency Organization

There are 3 priorities in a crisis or emergency situation for the Crisis Management Organization:

1. Ensuring **Life Safety** of employees, contractors, neighbors and on-site visitors,
2. Protecting the organization's **Brand Image**,
3. Minimizing **Operational Disruption**.

4.4 DECISION MAKING MATRIX

The observer must notify his supervisor, who will notify the Head Operations. An incident report form must be completed within 24 hrs of the incident.	**Escalating Notification Levels**		
	Report these events in regular management reports only.	Immediate notification to Head Operations, or designate	Immediate notification to Head Operations, CEO or designate
	Increasing Severity		
	Alert I, Incident	Alert II, EMERGENCY	Alert III, CRISIS
Injuries and accidents	Single LTI involving BTPL personnel or Contractor or minor injury to public	Multiple LTIs to BTPL personnel or contractors or significant injury to public	Fatality or multiple serious injuries to staff or contractors or visitor or public
Fire and explosion	Extinguisher by hand Held equipment	Fire or explosion where Emergency Response Team mobilized or emergency assistance required from ORC-1	Fire or explosion requiring large scale emergency response Team and multiple External agencies Loquacity crisis
Criminal activity or security issues	Criminal activity with loss >US$1K, or asset loss > US$50K	Criminal activity with loss > US$10K or asset loss > US$0.5M	Major criminal activity warranting parent company attention or asset loss >US$5M
Natural disasters, Earthquakes	Localized minor damage to facilities due to storm flooding	Widespread storm, flood damage but minimal interruption to business	Destruction of facilities disaster control organizations activated

5 ROLES AND RESPONSIBILITIES OF EMERGENCY RESPONSE & CRISIS MANAGEMENT TEAM

5.1 Emergency Response Manager (ERM) - Head of Operations or his designate

Head Operations or his designate shall take over the responsibilities of Emergency Response Manager (ERM) and his duties are as follows;

Alert -I, II & III

- Report to the GM OMS and Inform about the emergency level.
- Keep liaison with ORC and inform them about the Emergency Response Plan.
- Assist GM OMS in taking the technical decisions for controlling the emergency.
- Take on-spot decisions in consultation with Incident Controllers for handling the emergency.
- Analyze the situation and inform GM OMS concerning the announcement that the emergency situation is under control.
- Lead Fire Fighting and Rescue Teams.
- Maintain front line communication and incident site liaison.
- Specify "Rescue Area" to transport the victims if applicable.
- Support all activities of the emergency team.
- Ensure evacuation of all non essential personnel.
- Keep head count of terminal staff.
- As soon as the emergency is under control, inspects the area and makes the final decision to announce that the emergency situation is under control.

5.2 Incident Controller-I (Operations Shift Supervisors)

Operations Shift Supervisor will act as an Incident Controller-I or and will act as Emergency Response Manager during off hours/ days or in the absence of his supervisor. His responsibilities are as follow:

- Inform Head Operations.
- Reach on the site of emergency and access the situation.
- Try to put out fire in the very initial stage of fire incident by using fire extinguisher.
- If fire becomes out of control, immediately raise Emergency Alarm/Hooter, run towards nearest assembly point and inform EHS in charge SPM.
- Establish communication with Head Operations and keep them informed about the situation.
- Check wind direction.

- Lead the Fire Fighting and Rescue Teams on the site of emergency.
- Control all activities of fire fighting team at the incident location.
- Control & contain spreading of fire / vapor cloud forming as a result of an emergency.
- Activate all firefighting equipment
- Assembly location of the Emergency Squad would be one of the ECC depending upon the wind direction.
- If the situation is not under control, inform ORC for firefighting and medical aid required.
- As soon as the emergency is under control, inform Head Operations.
- Coordinate with EHS In charge the complete evacuation of the facility to the safest place.
- Instruct Emergency Response Teams to remain at safe distance from the emergency site.
- Keep close eye on every Fire Fighting and Rescue team members and instruct them to leave if situation goes out of control.
- Keep the Company staff away from the incident site.

5.3 Incident Controller-II (EHS In charge)

The EHS In charge will be responsible for the following roles:

Provide specialist advice in all areas, such as

- Environment Health and Safety legislation's and emergency response
- Liaison with authorities as required like EPA, City District Fire Station, KPT Fire Station, Hospitals and Emergency Service Edhi, Chipa etc.
- Lead and assist Evacuation Team and First Aid Team.
- Compile all information for root cause analysis and making Incident Investigation Report BTPL-EHS-F-011 and BTPL-EHS-F-012 Event Investigation Report as describe in Incident UTL-EHS-MSP-011.
- Keep Head Operations informed about the information and curse of action taken.

Demonstrate leadership qualities and try to keep the entire response centralize as practicable.

Alert I, II & III

- Work in coordination with the Head Operations and other Incident Controllers.
- Prepare required firefighting equipment to support fire fighting team on the spot.
- Arrange first aid kit and rescue equipment.
- Arrange and maintain the continuous supply of fire extinguishing media.
- Prepare equipment for spill cleanup.

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EMERGENCY RESPONSE PLAN-ON SHORE SITE			
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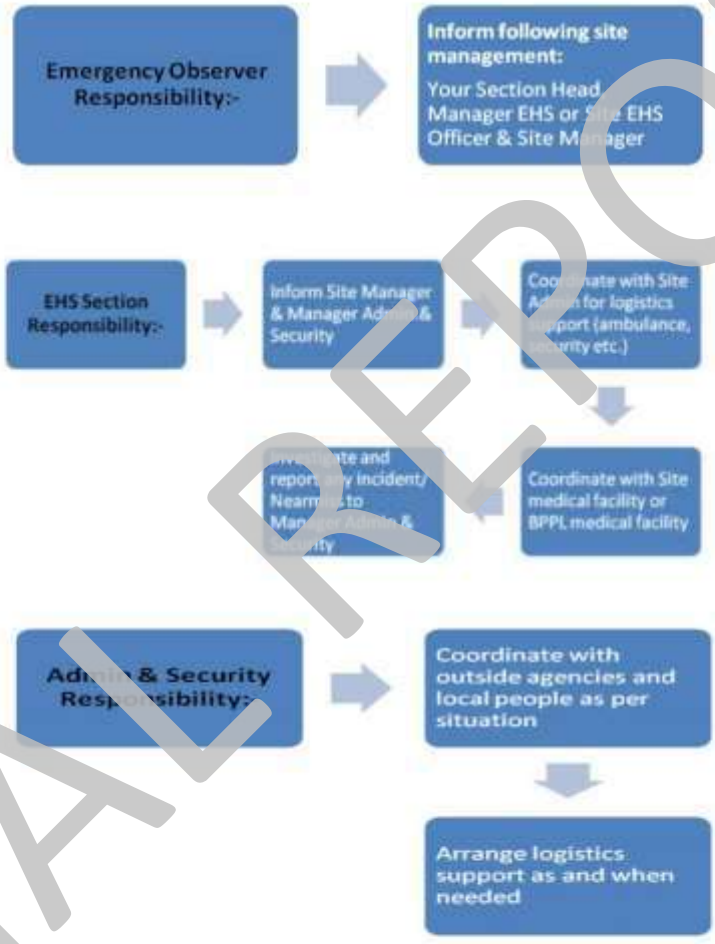
6.0 ORDER OF COMMUNICATION:

Any observer who found any Fire / Property damaged/ Injury / medical emergency at On-Shore site will follow the following order of communication:



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7. DETECTION, DECLARATION & RESPONSE OF AN EMERGENCY

7.1 Emergency Alarm

Continuous sound of the siren for five minutes.

7.2 Raising the Alarm

Site security supervisor of SPM site will raise an emergency alarm.

7.3 Response against Alarm

Once the alarm is raised, the first line defense, i.e., the Emergency Response Team (ERT) go to the scene of emergency, makes an assessment of the situation and decides on the method to start combating the emergency.

7.4 Declaring the Emergency

The Head Operations or his designate is the authority who can declare an emergency situation depending upon the nature of emergency. Under such circumstances, they will inform key personnel about the status of the emergency. While during evening & night shifts and off days the shift supervisor is the authority to declare the emergency condition and subsequent responses after consultation with Head Operations

7.5 End of Emergency Alarm

The Head Operations or his designate will declare the safe conditions or end of emergency after ensuring the site is safe for working. Ending emergency alarm will be sounded for five minutes to declare the safe condition.

8.0 COMPOSITION OF EMERGENCY RESPONSE TEAMS

8.1 Firefighting & Rescue Team

EHS incharge in consultation with Head Operations will establish the Separate teams for Firefighting & Rescue Operations, he shall arrange for proper training and availability of complete logistics for both teams.

8.2 First Aid & Evacuation Teams

EHS incharge in consultation with Head Operations will establish the Separate teams for First Aid & Evacuation Operations, he shall arrange for proper training and availability of complete logistics for both teams.

9.0 REVIEW OF ERP

Emergency Response & Crisis management Plan will be reviewed after every three years or;

- upon occurrence of any major emergency
- or, change in scope of activities

10 RECORDS

EHS In charge shall also ensure the update of Emergency telephone numbers, employee information whenever need arises.

a. Emergency Telephone Numbers

b. Employees Information (As per HR List)

Record Number	Record Name	Maintained by	Retention Period
Nil	List of Trained Firefighting & Rescue Team Members	EHS incharge	Life Time
Nil	List of Trained First Aid & Evacuation Team Members	EHS incharge	Life Time

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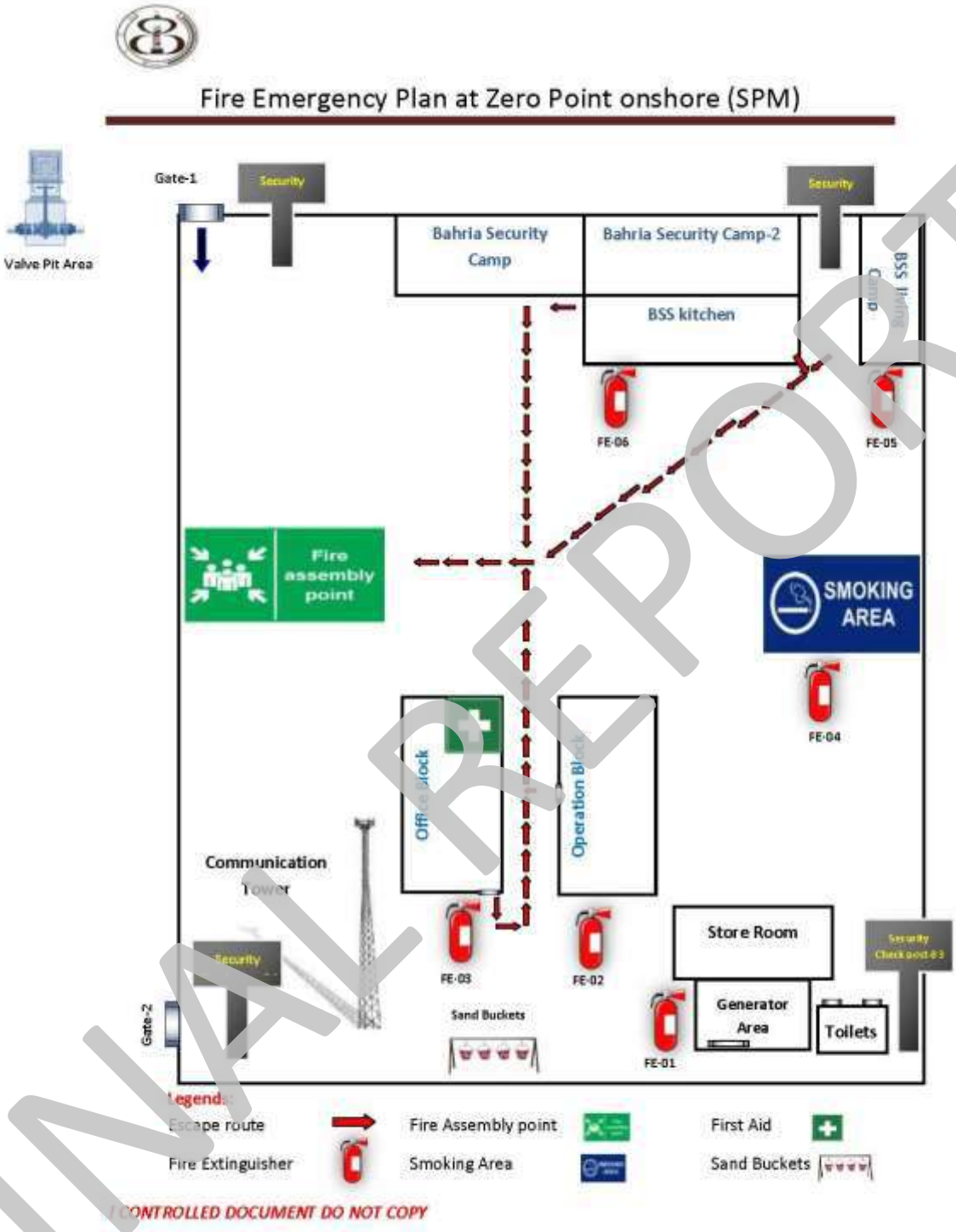
EMERGENCY CONTACT NUMBERS – SERVICES

SERVICES	NUMBERS
FIRE BRIGADE	
Hub City	0853-32090 & 32029
Hub Power Plant	021-111-22-11-22
Karachi City	021-37773252
HOSPITALS	
Murshid Hospital HUB	021-32811301~6
Agha Khan Hospital KHI	021-34930051~3
Dr. Zia Uddin Hospital KHI	021-3466482[illegible]
Liaqat National Hospital KHI	021-341400[illegible]
Civil Hospital KHI	021-99215470, 99215960
Jinnah Hospital KHI	021-99201300~9
AMBULANCE SERVICES	
Edhi Ambulance	021-366398[illegible], 021-3251086[illegible]4
Chippa Ambulance	021 111 111 134
POLICE	
Police Helpline	15



Annexure 9: Detailed Procedure for General EHS Rules

Single Point Mooring Byco Petroleum Pakistan Ltd.	EHS MANAGEMENT SYSTEM & PROCEDURES MANUAL		SPM-EHS-MSP-005
PROCEDURE FOR GENERAL EHS RULES			
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1 PURPOSE

To outline the general SPM policies and rules in a way that provides a clear understanding to all personnel on the Universal SPM (including contractors) so that acceptable behavior can be expected to achieve a smooth, safe, secure, healthy and environmentally friendly operating facility.

2 RESPONSIBILITIES

2.1 It is the responsibility of everyone on site to observe the general SPM policies, rules and requirements.

2.2.1 The line managers / supervisors are responsible for ensuring all members of their group clearly understand and observe the general SPM policies, rules and requirements, and take necessary corrective steps, including disciplinary action if necessary to counsel those who have not been observing such policies, rules and requirements.

2.2.2 Any SPM employee who is responsible for visitors and vendors visiting the SPM or contractors working on site is to ensure that these people are also aware of and observe the general SPM policies, rules and requirements.

3 GENERAL SPM POLICIES AND RULES

3.1 *Personal Behavior and Actions*

3.1.1 All personnel on site are expected to behave and act in a safe manner, respect the right of others and protect both individual's life and company property. The following are examples of actions which are not to be engaged in or tolerated.

- horseplay and fighting
- theft
- consumption of alcoholic beverages or illegal drugs
- reporting to work under the influence of alcohol or illegal drugs
- gambling
- sexual or racial harassment
- sleeping on the job
- smoking in unauthorized areas
- fishing or swimming from the SPM shoreline or jetty
- wearing slippers (flip-flops) or open-toed sandals at operational / construction sites

- use of unauthorized pagers, mobile phones, radios or other electrical or electronic devices in operational areas (e.g. tank pits, truck loading bay, and jetty platforms)
- operation of any motorized vehicle without an appropriate driving license
- driving of vehicle in hazardous areas (e.g. tank pits) without permit
- infringing of safety rules & requirements
- food is not allowed in the operational and work permit areas

3.1.2 Any actions or behavior not in keeping with the above general rules (not limited by the list of examples shown) is subject to immediate disciplinary actions.

3.2 Naked Flame

3.2.1 No naked flame is allowed to be used on site unless it is covered by work permits such as Hot Work permit issued by the Control Room or Operations. Work permits are not required for designated permanent hot work areas where naked flame such as oxy-acetylene torch cutting is allowed. This restriction is also not applicable to equipment which are either installed at fixed locations for burning purposes or within controlled areas.

3.2.2 Open burning of refuse or any material on site is strictly prohibited unless permitted by SPM Manager.

3.3 Use of Mobile Phone

3.3.1 Use of mobile phone in operational areas is strictly prohibited.

3.3.2 All personnel on site are expected to comply with this policy and should submit their phone sets at security main gate office. If the visitors are only visiting the Administration Building they can bring in their mobile phone after describing this to security supervisor at main gate.

3.3.3 If contractors are required to use mobile phone in their designated areas they require permission from the SHE Section.

3.4 Traffic Control

3.4.1 All personnel on site are expected to comply with posted safety and traffic control rules and other published procedures. When in doubt with any procedures, consult the supervisory personnel before engaging in an activity.

3.5 Security Control

All personnel on site, by their entry onto SPM property, are subject to general SPM security provisions, including allowing SPM security and management personnel to conduct inspections of personal belongings, vehicles and containers at any time while entering, working on, or leaving the SPM.

3.6 Emergency Response

All personnel on the SPM are expected to be familiar with the hazards of the areas they are working in, the locations and operations of emergency equipment, emergency exists routes and alternate assembly points, SPM emergency signals and how to raise an alarm if they discover an emergency situation.

3.7 General Safety Rules and Practices

The following are some general safety rules and good practices, though not necessarily exhaustive, to be observed by all personnel on site:

- Do not rush or run. In an emergency, react and follow emergency procedures calmly and move quickly but in an orderly manner to prevent injuries.
- Hold handrails while ascending or descending stairs.
- Open swing doors slowly and do not stand behind swing doors.
- Use of drugs and alcohol strictly prohibited.
- Report all product spillage, near misses, incidents and injuries no matter how much minor they may be.
- Any person sustaining an injury on the job, no matter how slight, shall report for first aid and for medical attention immediately. The injured should first notify his supervisors before reporting.
- Remove items such as necklace (chains), rings, and neckties while working on or near equipment that have exposed rotating or moving parts. Hair of shoulder length must be tightly secured to prevent it from being entangled by rotating or moving parts of equipment.
- Employees should train themselves to be on lookout for regulatory/safety signs and should observe them all times.
- Employees should avoid going under work being performed at elevations.
- Watch for falling objects. Material should be handled with care.
- When work is being carried on from scaffolds or other elevations overhead, warning signs should be used below and area should be roped or fenced off to prevent from working underneath or being in a location where they are likely to be hit by falling objects.

- Employees should keep clear of ropes, cables and other lines under strain.
- Employees should keep clear of suspended loads.
- Employees should be on the watch for any sort of leakage, defective ladders, steps, railings and any other unsafe conditions or absence of safeguards. Defects should immediately be reported to the supervisors.
- Employees should never use compressed air to clean their clothing. Also, compressed air should never be directed at another person.
- If clothing get saturated with flammable liquid or a chemical, they should be removed immediately and affected body part must be washed preferably under the safety shower.
- Employees must use proper clothes while at work for example:
- Loose clothing dangling sleeves, neckties, rings long hair, etc., must not be worn when working with moving machinery.
- Each employee must use the protective equipment required for safely performing his work and ensure that those are in proper working condition.
- Employee shall not bring fire arms, explosives, intoxicating liquor and narcotics into the SPM
- Proper safe equipment should be used. Defective equipment should be reported immediately.
- Always follow the safety regulations, safe practices and the operating instructions which apply to your craft and operating locations.
- Safety rules have been prepared for the benefit of the employee, fellow workers and the company. Violation of the safety rules is a serious offense and the employee will be subject to disciplinary action.
- Clean up spills immediately with appropriate materials.
- Always maintain good housekeeping.

4 SAFE PRACTICES FOR SUPERVISORS

Supervisors are the key personnel in creating and supporting effective safety awareness among the employees. Good supervisors study and strictly observe all the safety regulations and safe practices and in turn inspire and train those they supervise to have an interest in and adhere to all safety regulations, and use safe practices.

4.1 Each supervisor is held responsible for taking all possible & reasonable precautions, as are within his power, for safety with respect to persons, and/or property, and/or company product. They shall satisfy themselves by observations & follow-up that all safety regulations, safe practices & operating instructions are being followed properly.

4.2 Each supervisor should be familiar with the personal protective equipment and be able to recognize and assess hazards requiring PPE use.

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PROCEDURE FOR GENERAL EHS RULES			
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4.3 Exercise close supervision at all times and on a continuous basis, obtain and give safety training and/or job instruction training. Satisfy themselves that the people they supervise can, and do perform their work with safety and efficiency.

4.4 When receiving a new employee, whether newly employed or transferred permanent or contractor employee give special attention to his mental and physical fitness for the work he has to perform.

4.5 Explain in detail to a new employee the safety regulations, safe practices, and operating instructions which apply to his occupation and operating location. It must not be taken for granted that a new employee, or a transferee knows his work just because he says so.

4.6 Explain in details the particular hazards of the operating location in which the employee is working, or is to work, and the safety regulation and safe practices to be observed to ensure safety.

4.7 All conditions that may affect the body of persons or equipment must be reported at once. When their correction is within the ability of an individual, those must be corrected immediately.

4.8 Supervisors shall not permit the use of improper or unsafe tools or equipment.

4.9 Supervisors shall not permit any vehicle found in unsafe condition to be operated until it is in safe working.

4.10 Supervisors shall take immediate action to initiate correction of an unsafe condition which develops in an operating location in the SPM, and which is a hazard to persons and/or property and until the correction made, some alternative safe arrangement must be made to carry on the operations affected.

4.11 Supervisors shall see that safety devices and/or protective equipment are used at all times when needed. When in doubt as to the necessity of using safety devices or equipment, the safe course shall be taken.

4.12 Supervisors are responsible for the general housekeeping and/or operating conditions of and/or the operating locations and the area of which they are in charge.

4.13 All supervisors must familiarize themselves with safety regulations and safe practices and carefully supervise all work under their charge, being especially watchful to see that the safety regulations and safe practices are employed. They shall lend their advice and suggestions to those doing the work, whether maintenance, operations or construction so as to promote safe, efficient operating and engineering control.

4.14 The attention of supervisors is also called to these important requirement:

- Employees must be instructed in the proper methods of using tools, equipment.
- Supervisors must see that those working under them understand, and can use correct method of
- Adjusting and using protective equipment.
- A through knowledge of the proper uses and limitations of protective equipment is required of supervisors.

4.15 It is the responsibility of supervisors to report at once any unsafe act, near-miss, injury or operational upset to his supervisor and the Safety Department without concealing any act.

4.16 Each supervisor must do frequent audits on safety procedures and regulations to check compliance with those working under him.

4.17 Supervisors should know how to identify health and workplace hazardous and take corrective actions Immediately.

5 CORRECTIVE ACTIONS

5.1 As safety, health and environmental protection is one of the main concerns of SPM, it is essential that actions are taken to correct unsafe or undesirable practices which have led or may lead to injuries, incidents or property damage.

5.2 Willful violation of safety, health, environmental and other site rules and procedures which had caused or may cause serious injuries, incidents, or detrimental impact on the operations on site may lead to disciplinary action to be taken against the person(s) involved. Disciplinary actions shall be taken on a case-by-case basis by the line organization.

Annexure 10: Detailed Procedure for Visitors Safety

Single Point Mooring Byco Petroleum Pakistan Ltd.	EHS MANAGEMENT SYSTEM & PROCEDURES MANUAL	SPM-EHS-MSP-006
PROCEDURE FOR VISITORS SAFETY		
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1 PURPOSE

To set out general safety requirements and rules for all visitors to the SPM.

Note:

If certain circumstances are not covered by SPM safety requirements and rules or discrepancies arise due to interpretation of such requirements and rules, any applicable Government laws and regulations shall prevail.

2 DEFINITIONS

2.1 Visitors in this context include all personnel who are not engaged in any work such as maintenance work and they are entering the SPM on Visitor Passes.

2.2 Safety in this context includes but is not limited to safety, health and environmental protection.

3 RESPONSIBILITIES

3.1 It is the responsibility of SPM employees to ensure that their visitors observe all safety, health, environmental, and security procedures and rules while they are at the SPM.

3.2 All visitors are responsible for their own safety and SPM will not be held liable for any injury or mishap incurred by them if the SPM safety requirements and rules are not observed by them.

3.3 SPM management of SPM is responsible to ensure that the same standards of safety requirements and rules are imposed upon the visitors regardless of their status and to ensure that the general conditions of the SPM are safe for the visitors to visit.

3.4 Personal guests including children are allowed to visit if accompanied by SPM representative after getting permission from the respective authorities.

4 SAFETY REQUIREMENTS AND RULES FOR VISITORS

4.1 *Attire*

4.1.1 Visitors are expected to be properly attired while visiting the SPM. Visitors with sandals, slippers, shorts and singlet are not allowed on the SPM.

Female visitors should not wear high heel shoes.

4.1.2 Visitors with loose long hair or wearing neckties shall not go near to moving or rotating

This document has been developed to stream line the SPM operations with EHS requirements

equipment.

4.2 Personal Protective Equipment (PPE)

4.2.1 Visitors will be issued with necessary PPE such as hard hats, safety glasses and disposable earplugs if necessary.

4.2.2 Visitors are required to wear safety shoes if they are going to areas where there is potential foot injury hazard.

4.3 Access Route

4.3.1 Visitors must report to the Main Gate Office upon arrival at the SPM and obtain the Visitor Passes.

4.3.2 Visitors are required to walk on the main road to the Office/Central Control Room. Walking through the maintenance shop, etc., is not allowed unless they are accompanied by a SPM employee.

4.3.3 No visitor is allowed to stay overnight on site.

4.4 Tools and Equipment

4.4.1 All tools and equipment brought in by visitors must be declared at the Security gate using the Material Gate Pass. Visitors bringing out any tools, equipment or material belonging to the SPM must be approved by SPM authorized signatory using the Material Gate Pass Form.

4.4.2 Tools or equipment to be brought into the classified hazardous area must be intrinsically safe type.

4.5 Smoking

Smoking is strictly prohibited at the SPM.

4.6 SPM Emergency

In the event of a SPM emergency, visitors shall follow the instructions of the SPM employees who are accompanying them. If the fire alarm is activated all visitors shall assemble at the open space outside the Office Building and shall take instruction from the Admin. & IR Officer/supervisor.

For SPM visitors, they should proceed to the emergency assembly point to clock-in and await for further instruction.

4.7 *Reporting of Injuries*

4.7.1 If injuries occur, the visitor shall report to the site employee who is responsible for his/her visit and get medical assistance from the Central Control Room.

4.7.2 The site employee concerned shall follow-up with an incident report in accordance with the Incident Investigation and Reporting procedure (SPM-EHS-MSP-011).

4.8 *Photograph Taking*

Photograph taking in any form on the SPM is not allowed unless prior approval is obtained from the SPM Management. A 'Hot Work' Permit shall be obtained from the CCR.

4.9 *Minimum Safety Equipment Requirements for Safe Boating*

Lifejacket or PFD (portable floating device) for each person on board a lifejacket that fits for each
Lifebuoys
A sound-signalling device
A watertight flashlight if operated after sunset, before sunrise or in periods of poor visibility.
Portable fire extinguisher
First Aid kit
Hand Flare & Smoke Signal

5 REFERENCES

5.1 **"Procedure for Incident Investigation and Reporting" (SPM-EHS-MSP-011).**

Annexure 11: Detailed Oil Spill Response Plan

Single Point Mooring Byco Petroleum Pakistan Ltd.	EHS MANAGEMENT SYSTEM & PROCEDURES MANUAL		SPM-EHS-MSP-023
PROCEDURE FOR THE CONTINGENCY PLAN OF OIL SPILL RESPONSE			
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Category of TIER-1 (minor oil spill up to 07 to 70 Tons)

Purpose:

The purpose of this procedure is to provide a clear and concise reference of the important actions for a number of emergency situations that may arise at the off-shore site oil spill. It is therefore must for all key personnel in the emergency response organization or crisis management organization, to be familiar with the contents of this procedure and to have full knowledge of their duties and responsibilities. Define lines of communication both internal & external.

Step 1- Oil Spill Observed TIER-01

This is a minor oil spill up to 07 Tons and/or affects a localized area. It may be contained and dealt by utilizing the local resources held by the terminal. In the event of a spill, steps are recommended for the OSR team, Incident commander and duty staff.

1. First Information reported by The Tanker' Master/ Security boat/ Hameedi boat.
2. CCR will inform incident to Manager OSR/Sr Manager Logistics & OSR/ Head of Operation/ Manager Operations.
3. Instruct the tanker to stop discharging.
4. Closed all valves.
5. Seize all operations to curtail further spill.
6. Gather information about weather (Wind Speed, Direction & Tidal position etc).
7. Assess the situation.
8. Continuously monitor the spill.

Step 2- Response Organization

After receiving information about the Contingency Plan of OSR will be implemented.

1. OSC/OSR team will meet at H.O to activate Contingency Plan.
2. H.O will declare as Emergency Response Centre (ERC).
3. Arrange transportation for OSR equipments, OSR team to reach at incident site.
4. Informed to PMSA-DRC regarding the incident.
5. Event log book to be maintained.

! CONTROLLED DOCUMENT DO NOT COPY

Step 3- Prepare Response Action Plan Considering

On seen commander, OSR team and OSR equipment will move to incident site.

1. Assess the situation.
2. Size of spill.
3. Fate of Oil.
4. Oil type.
5. Resources at risk.
6. Priorities for protection

Step 4 - Stop the source of the spill

Incident Commander

1. Instruct the tanker to unmoor the vessel.
2. Closed all valve.
3. Cast off vessel.

Gear up OSR team and ensure readiness of OSR equipment and logistics.

Step 5 - Containment of spilled oil

Deployed Tier-1 OSR equipments: Start boom reel & inflate boom segments by boom inflator petrol engine. The inflated boom pulls by another marine craft to make U shape or J shape as per prevailed situation.

Inflated boom pull by marine craft very slowly and with close coordination with boom reel operator and contain spilled oil by making U shape.

Step 6 - Recovery of contained spilled oil

To recover the spilled oil deployed Skimmer, Spat pump, Hydraulic power pack 4.5 KW, hoses and other accessories on another marine craft i.e. tug.

With help of crane placed Skimmer in contained spilled oil by inflated boom U shape.
Start pumps and to recover spilled oil in tug storage tanks.

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PROCEDURE FOR THE CONTINGENCY PLAN OF OIL SPILL RESPONSE			
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Step 7 - Clean Up Strategy

After recovery of oil in tug storage tanks placed spill kit absorber into spilled oil for further oil recovery and clean up.
If there is need initiate Shoreline cleanup also.

Step 8 - Termination of cleanup operation

The decision to terminate the cleanup operations must be made by the on scene Commander in consultation HO Emergency Response Center and with MDRC and all concerned parties. The decision to terminate should be made when the desired level of clean up has been achieved or further operation becomes ineffective.

Step 9- Storage and disposal of recovered material

In case if oil comes to the shore, it will be recovered by third party contractors deployed / hired by ship owners, EPA, district administrators, district council / town committees, local volunteers and others. The MDRC must be kept informed on situation of cleanup operation.
The recovered oil and material during the cleanup operation will be transported to the designated location by EPA.

Consult refinery with respect to collecting the recovered oil for reused and recycling. If the recovered oil is not suitable recycling / reuse then it must be contained within temporary storage facilities awaiting disposal. Dispose of recovered oil in accordance with the resource consents.

Step 10 - Activate Operational readiness of SPM

Emergency Response Centre (ERC) at HO will finally review the incident situation, containment of spilled oil, recovery of oil and clean up strategy. After satisfaction and consultation with the top management will give go ahead to activate operational readiness of SPM.

Step 11 - Cleaning and disposal of contaminated gear

The oil spill response equipments and associated gear should be carried out at an appropriate site. Care should be taken to ensure that no oil is lost during transportation to the cleaning site.

Step 12 - Restock and Review

Ensure OSR equipments are replenished after the event and send back to the store area.

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PROCEDURE FOR THE CONTINGENCY PLAN OF OIL SPILL RESPONSE			
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Category of TIER-2 (minor oil spill up to 70 to 700 Tons)

Purpose:

The purpose of this procedure is to provide a clear and concise reference of the important actions for a number of emergency situations that may arise at the off-shore site oil spill. It is therefore must for all key personnel in the emergency response organization or crisis management organization, to be familiar with the contents of this procedure and to have full knowledge of their duties and responsibilities. Define lines of communication both internal & external.

Step 1- Oil Spill Observed TIER-02

Oil spills more than 07 Tons to 70 Tons will be in the category of TIER 2. It may be contained and dealt by utilizing the resources held by the terminal and mobilizing the national level resources including PMSA, PN, KPT, PQA, OMC, SEPA, NIOH, Pakistan Coast Guard, Provincial Govts of Sind & Baluchistan in the response of efforts. Following steps are recommended to mitigate the oil spill.

1. First Information reported by The Tanker Master/ Security boat/ Hameedi boat.
2. CCR will inform incident to Manager OSR/Sr. Manager Logistics & OSR/ Head of Operation/ Manager Operations.
3. Inform to ORC.
4. Instruct the tanker to stop discharging.
5. Closed all valve.
6. Seize all operations to curtail future spill.
7. Gather information about weather (Wind Speed, Direction & Tidal position etc).
8. Assess the situation.
9. Continuously monitor the spill.
10. Log book maintain by CCR.

Step 2- Response Organization

After receiving information about the Contingency Plan of OSR will be implemented.

1. OSC/OSR team will meet at H.O to activate Contingency Plan for TIER-2.
2. H.O will declare as Emergency Response Centre (ERC).
3. Arrange transportation for OSR equipments, OSR team to reach at incident site.

4. Informed to PMSA-DRC regarding the incident by Sr. Manager Logistic & OSR OR Manager OSR-EHS.
5. Inform to other stake holders PN, KPT, PQA, OMC, SEPA, NIOH, BEPA, Local Govts of Karachi and District Lasbela.
6. Event log book to be maintained.

Step 3 - Prepare Response Action Plan Considering

On seen commander, OSR team and OSR equipment will move to incident site.

1. Assess the situation.
2. Size of spill.
3. Fate of Oil.
4. Oil type.
5. Resources at risk.
6. Priorities for protection

Step 4 - Stop the source of the spill

Incident Commander

1. Instruct the tanker to unmoor the vessel.
2. Closed all valve.
3. Cast off vessel.

Gear up OSR team and ensure readiness of OSR equipment and logistics.
OSC will coordinate with KPT & PQA to lay down inflated boom as protection boom along keamari shore side. OSC will coordinate with PMSA to deployed inflated boom on shore site of HUBCO & BYCO.

Step 5 - Containment of spilled oil

Deployed OSR equipments: Start boom reel & inflate boom segments by boom inflator petrol engine. The inflated boom pulls by another marine craft to make U shape or J shape as per prevailed situation.

Inflated boom pull by marine craft very slowly and with close coordination with boom reel operator and contain spilled oil by making U shape.

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Step 6- Recovery of contained spilled oil

To recover the spilled oil BYCO will deploy Skimmer, Spat pump, Hydraulic power pack 4.5 KW, hoses and other accessories on another marine craft i.e tug.
OSC will call KPT, PMSA to deploy their Skimmers and accessories on spills oil area for oil recovery.

With the help of crane placed Skimmer in contained spilled oil by inflated boom U shape.
Start pumps and to recover spilled oil in tug storage tanks.
On the instructions of OSC, KPT and PMSA start skimmer system and recover spilled oil in their tugs storage tanks.

Step 7 - Clean Up Strategy

After recovery of spilled oil in tug storage tanks by BYCO and other stake holders placed spill kit absorber into spilled oil for further oil recovery and clean up.
If there is need initiate Shoreline cleanup also.

Step 8 - Termination of cleanup operation

The decision to terminate the cleanup operations must be made by the On Scene Commander in consultation HO Emergency Response Center and with MDRC and all concerned parties. The decision to terminate should be made when the desired level of clean up has been achieved or further operation becomes ineffective.

Step 9- Storage and disposal of recovered material

When oil comes to the shore, it is to be recovered by third party contractors deployed / hired by ship owners, EPA, district administrators, district council / town committees, local volunteers and others. The MDRC must be kept informed on situation of cleanup operation.
The recovered oil and material during the cleanup operation will be transported to the designated location by EPA.

Consult refinery with respect to collecting the recovered oil for reused and recycling.

If the recovered oil is not suitable recycling / reuse then it must be contained within temporary storage facilities awaiting disposal.

Dispose of recovered oil in accordance with the resource consents.

Step 10- Activate Operational readiness of SPM

Emergency Response Centre (ERC) at HO will finally review the incident situation, containment of spilled oil, recovery of oil and clean up strategy. After satisfaction and consultation with the top management will give go ahead to activate operational readiness of SPM.

Step 11- Cleaning and disposal of contaminated gear

The oil spill response equipments and associated gear should be carried out at an appropriate site. Care should be taken to ensure that no oil is lost during transportation to the cleaning site.

Step 12-Restock and Review

Ensure OSR equipments are replenished after the event and send back to the store area.

Category of TIER-3 (oil spill more than 700 Tons)

Purpose:

The purpose of this procedure is to provide a clear and concise reference of the important actions for a number of emergency situations that may arise at the off-shore site oil spill. It is therefore must for all key personnel in the emergency response organization or crisis management organization, to be familiar with the contents of this procedure and to have full knowledge of their duties and responsibilities. Define lines of communication both internal & external.

Oil spill in the category of TIER-3, more than 70 tons. TIER-3 events are rear but have the potential of to cause wide spared damage, affecting many people and overwhelming the capabilities of local, regional and even national resources. In the event of TIER-3, international support will be required along with national level resources.
BYCO has a contract with an international Turkish based company M/S MAVI DENIZ for handling of TIER-3 oil spill.

M/S MAVI DENIZ (FOR TIER 3- OIL SPILL)

Local Agent

Contact No 021-32316400

Emergency Contact No. 0332-3263573

Fax	021-32316497
Email	info@shahzadinternational.com
	International
Contact No	0090-216 3924143
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Fax	0090-2163924700
Email	info@mavideniz.com.tr

Annexure-12: Detailed Procedure for Waste Management Plan

Single Point Mooring Byco Petroleum Pakistan Ltd.	EHS MANAGEMENT SYSTEM & PROCEDURES MANUAL		SPM-EHS-MSP-010
PROCEDURE FOR WASTE MANAGEMENT PLAN			
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1 PURPOSE

The purpose of this procedure is to provide guidelines and simplify the process of categorizing, quantifying, managing, and disposing of solid waste. Waste management is a critical component of company's operating policies. Waste management includes the proper handling, collection, storage, manifesting, transportation, and disposal/ recycling of the solid waste generated. The procedure is designed to assist in a company wide effort to provide protection to the environment and to comply with company's corporate requirement, environmental laws and regulations regarding proper waste management.

2 SCOPE

The waste management plan has been developed for the SPM zero point site site as well as waste generated during the planned works at SPM buoy.

3 DEFINITIONS

3.1 Waste:

Any material, for which no further use is intended, is considered a waste. It can be solid, semi solid or liquid. Additionally, abandoned materials and materials intended to be recycled are considered waste. It is very important to understand this concept, because even though something is going to be recycled, it must be managed as a waste until it is actually recycled.

3.2 Hazardous Waste:

Waste is categorized as a hazardous waste if it has one or more of the following properties:

- Ignitability (flash point less than 60°C);
- Corrosivity (pH less than or equal to 2.0, or greater than or equal to 12.5);
- Reactivity (inherently unstable under ordinary conditions or when exposed to water);
- Irritability (when in contact with body causes inflammation);
- Toxicity (may carry risk of injury to health of organisms or the environment).

3.3 Non-hazardous Waste:

The waste is categorized as non-hazardous wastes, if they do not possess any of the hazardous characteristics as defined above. However, non-hazardous waste may still present hazards to employees who handle them. All recommended safety and handling practices must be followed.

4- PROCEDURE

Priorities to manage the waste are listed below:

- Eliminate waste production whenever and wherever possible;
- Use the material only for its intended purpose on site;
- Minimize waste production;
- Reuse;
- Recycle waste on site;
- Dispose of waste through properly designed waste disposal facility.

4.1 Waste Minimization

To minimize waste, the following steps shall be taken by all personnel working on the project site:

- Only the needed amount of materials shall be ordered. Before purchasing hazardous material, all alternatives for non-hazardous material should be explored.
- Prior consideration shall be given to the sizes of containers available when ordering products that could potentially generate waste. The intent is to avoid unused products and/or their containers from becoming waste that require special handling.

4.2 Waste Categorization

All waste generated at SPM facilities shall be categorized in two major categories (i.e. Hazardous waste and Non-hazardous waste). Each category has different types of requirement for handling, storage and disposal.

4.3 Labelling

For the storage of waste, labeling will be done in the following manner:

- Name of the waste (e.g., waste oil,solvents);
- Waste category (e.g., toxic, ignitable);
- Facility name and address (disposal site,etc.);
- Date of waste accumulation: (date when waste was placed in drum);
- Wastes are segregated and located in designated areas to optimize control storage areas.

4.4- Segregation

Waste management becomes very complicated if different types of waste are mixed together. A small amount of hazardous waste, mixed with a non-hazardous waste or recyclable material, can make the whole mixture a hazardous waste. Disposal costs and liabilities for hazardous waste are very high, so it is extremely important to identify waste and keep them segregated.

- The scheme of segregation is as follows:
- All hazardous waste shall be segregated from other types of hazardous waste as well as non-hazardous waste at the point of generation of waste.
- At all facilities, following types of containers, with colour coding for easy identification, shall be kept to collect and segregate common waste:

Coding system for different type of waste

Waste material	(Colour or code)
Rugs	(blue);
Plastic	(blue);
Paper	(blue);
Glass	(blue);
Oily rags	(red);
Used oil	(red);
Metallic	(black)

- Food waste shall be collected in SEParate containers;
- All containers must be properly and clearly labeled. The label must clearly mention the name or type of waste. Also, if the waste is hazardous, it should be clearly labeled on the container.

4.5- Storage and Handling

- Waste that will be sent for recycling or off-site disposal shall be temporarily stored at waste storage facilities available at different sites such as Junkyard, Scrap yard, pits, etc.
- The oily sludge, contaminated soil and other hazardous liquid waste (e.g.rinsate, chemicals, etc.) shall be stored in lined pits with HDPE liner. Liner shall be of sufficient thickness (at least 20mil) and adequate strength to withstand tears and punctures;
- All other waste awaiting disposal shall be kept in closed containers SEParately. Care must be taken to prevent waste giving rise to secondary environmental problems, such as odors' or soil and groundwater pollution through rainwater leaching;

- All stored waste must be clearly labeled with type of waste and warning signs;
- Monthly estimates of hazardous and non hazardous waste and volumes generated on site;
- Waste segregation, waste storage containers, general housekeeping and the provision of adequate resources will be monitored;
- All workers handling wastes shall use proper PPE.

4.6- Recycling

Recycling and reuse minimizes the quantity of waste requiring disposal. Some of the wastes can be reused within the facilities while others can only be recycled at off-site recycling centers. For example, recycling of used oil is possible in some of the Lube Oil Recycling companies; batteries may be sent back to manufacturer or distributor for recycling. Waste shall not be sold to the unauthorized contractors/companies, who may not have proper recycling facilities.

4.7- Treatment

Some of the waste; such as wastewater from camps, oily wastewater from process, etc., require proper treatment before disposal. The treated water should comply with National Environmental Quality Standards (NEQS).

4.8- Disposal

Disposal becomes the only available alternative, if reuse and recycling options are exhausted. A material should be classified as a waste for disposal only if no other useful purpose can be identified and if the material cannot be beneficially reused or recycled. The choice of a suitable disposal option for any waste depends on both environmental and economic considerations. The final disposal can be either at on-site disposal facilities or at off-site disposal facilities.

(a) <u>On-site Disposal Facilities</u>

Burial Pits: Only segregated food waste shall be buried in burial pits. Buried waste should be covered with a thick layer of soil to reduce the environmental problems, such as odor from decaying / degrading waste, spreading of waste into other areas due to wind, vermin and disease vectors flies, mosquitoes, etc.

Reserve pits: These pits are used to temporarily store drilling waste, chemical waste, oily sludge and contaminated soil. The pits should be properly designed and lined to avoid soil, groundwater and surface water contamination.

(b) <u>Off-site Disposal Facilities</u>

In Pakistan, properly designed and well-operated commercial waste disposal facilities are scarce. All such facilities are being explored and evaluated for possible future use.

6- RECORDING & REPORTING

SPM has to record the information about source, composition, quantity, and final disposal of the waste. This information is needed for regulatory compliance, risk assessment and setting reduction targets and objectives as well as corporate statistics.

The Waste collection should be recorded and fill the form SPM-EHS-F-003.

7- RECORDS

Document Number	Record Name	Maintained by	Retention Period
SPM-EHS-F-003	Control of EHS Records	EHS Head	Ongoing

Annexure 13: Detailed Procedure for Permit to Work

Single Point Mooring Byco Petroleum Pakistan Ltd.	EHS MANAGEMENT SYSTEM & PROCEDURES MANUAL		SPM-EHS-MSP-015
PROCEDURE FOR PERMIT TO WORK			
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1 PURPOSE

To define the scope, objectives, policy, responsibilities and principles for the permit-to-work system in a way that:

- provides everyone on-site a basic understanding of what is meant by a 'permit-to-work' system,
- Outline the basic requirements for obtaining permit-to-work, and
- Ensures compliance of legal and in-house requirements and consistency in the execution of the permit-to-work system.

So that the safe operations of SPM facilities on site can be maintained and / or further enhanced.

2 SCOPE

2.1 The permit-to-work system will in principle cover all on site non-routine work such as maintenance and repair activities including field check which may create potential hazards.

2.2 Routine 'operational work' is exempted from the permit-to-work requirement.

3. DEFINITIONS

3.1 Permit-to-work System is a formal written system used to control certain types of work which are identified as non-routine work and potentially hazardous. It is also a means of communication among site personnel to ensure all necessary safety precautions are taken before commencing such work. The types of work permits are:

a. Cold Work Permit - CWP
b. Hot Work Permit - HWP
c. Confined Space Entry Permit - CSEP
d. Scaffold Permit - SP
e. Excavation Permit - EP
f. Radiation Permit – RP
g. Vehicle Entry Permit- VEP

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3.2 **Hot Work** refers to any work that produces or gives rise to heat or spark that can be a source of ignition.

3.3 **Non-Routine Work** refers to maintenance and repair work carried out by maintenance or contractor personnel. It also covers 'hot work', vehicle entry and confined space entry by operational personnel.

3.4 **Permit Approving Authority** means any Duty Shift Supervisor or his designate that is authorized to approve work permit.

3.5 **Operational Work** refers to routine product handling and storage work, product line preparation, tank gas freeing and cleaning, drums or ISO-tanks filling, venting, water draw-off, etc.

4 POLICY

It is SPM policy to protect every individual on site by means of a permit-to-work system in conjunction with specific work procedures and safe practices. All works which are under the control of the permit-to-work system shall be carried out strictly in accordance with the requirements and conditions specified in the work permits, though they are not necessarily exhaustive.

5 OBJECTIVES & TARGET OF PERMIT TO WORK SYSTEM

5.1 To ensure the proper authorization of non-routine work.

5.2 To make clear to the people carrying out the work the exact identity, nature and extent of the job, the hazards involved, and any limitations on the extent of the work and the time during which the job may be carried out;

5.3 To specify the precautions to be taken, including safe isolation from potential hazards;

5.4 To ensure that the person in direct charge of the SPM facility is aware of all work to be done there;

5.5 To provide not only a system of continuous control but also a record showing that the nature of the work and the precautions needed have been checked by appropriate people;

5.6 To provide for the suitable display of work permits;

5.7 To provide a procedure for times when work has to be suspended, i.e. stopped before it is completed;

5.8 To provide for the cross-referencing of work permits for work activities that may interact or affect one another.

5.9 To provide a formal hand-over procedure for use when a work permit is issued for a period longer than one shift; and

5.10 To provide a formal hand-back procedure to ensure that part of the SPM or facility affected by the work is in a safe condition and ready for reinstatement.

6 PRINCIPLES

6.1 A permit-to-work is NOT simply permission to carry out a **'dangerous'** job. It is an essential part of Operations Safety management which provides a carefully planned system of procedure involving safety checks and authorizations prior to doing non-routine work on site, and determine how that work can be carried out safely.

6.2 The permit-to-work system should not be regarded as an easy way of avoiding the need to eliminate hazards and reduce risks.

6.3 The issue of work permits does not, by itself, make a job safe or guarantee safety. The conditions and safety precautions stipulated in a work permit are normally addressing those foreseeable risks or hazards and they are by no means exhaustive. Safety can only be achieved by those preparing for the work and those carrying out work in accordance with the work procedure, methods, use of right tools, and use the right judgment for which they have been trained and made responsible.

7 RESPONSIBILITIES

7.1 The SPM Management has the overall responsibility to ensure that the permit-to-work system is:

7.1.1 Functioning and maintained in accordance with its objectives

7.1.2 Reviewed whenever necessary to assess its effectiveness, and to amend and update. A Checklist for the assessment of the system is as shown in Attachment I.

7.2 **Line Managers / Supervisors** are responsible to ensure that:

7.2.1 All their staff and contractors under their control understand the system.

7.2.2 Adequate training and instructions are given to their staff and contractors.

7.3 **Permit Approving Authority**

7.3.1 Employees authorized to issue and approve permit are responsible to ensure that it is safe to perform the works stated in the permit.

7.3.2 Ensure that the maintenance person or permit applicant is aware of the requirements and safety precautions stated on the permit.

7.3.3 The Shift Supervisor to stop the work if unusual operating conditions arise which may affect safety of the work / personnel.

7.3.4 Follow all the precautions and safety measures stipulated in the permits and strictly comply with the requirements and procedures of the permit-to-work system.

7.3.5 Get advice immediately if they are in doubt or if any circumstances or change of conditions make the area unsafe.

8 AUTHORIZED SIGNATORY

8.1 Only designated SPM employees are authorized to approve work permits Authorization levels are defined in individual work permit procedures.

8.2 Contractors are required to counter-sign the permit to acknowledge their understanding and acceptance of permit conditions and requirements prior to commencement of work to be carried out by them.

9 PERMIT VALIDITY

9.1 A work permit is normally valid till 1730 hours from the time of approval (i.e. any time from 0830 hrs to 1730 hours).

9.2 The expired work permit can only be extended if the safety conditions established prior to it's expiry are maintained through physical confirmation and the in-coming or new shift team supervisor and contractors are thoroughly informed of the status of the work.

10 PERMIT SUSPENSION AND CANCELLATION

10.1 A work permit will be automatically suspended if there is an emergency alarm. Work can only be resumed upon clearance given by the permit approving authority or CCR. However, if the safety conditions established have changed due to the emergency, the work permit should be treated null and void and a fresh permit on should be re-issued if work is to be resumed after the emergency is called off.

10.2 Anyone who spots a hazardous condition developing around the work site or a life threatening situation has the responsibility to cause the work to be suspended or stopped and alter the permit approving authority or CCR.

11 DISPLAY OF WORK PERMITS

11.1 Carbon copies of permit should be kept in the Central Control Room for reference.

11.2 Original copies of the permits should be conspicuously displayed at the work site. If this is not practicable when a job is carried out in a number of locations, such as excavation work, copies of the permit should then be kept by the supervisor who shall be on site at all times.

12 PERMIT ENDORSEMENT

12.1 Where work to be carried out under the control of permit-to-work system has a potential safety, health and environmental impact on surrounding must be evaluated prior to start of work.

12.2 Permit endorsement should also apply to work carried out outside SPM boundary that has a potential impact on the operations of other adjacent operating companies or facilities.

13 CROSS-REFERENCING

As provisions are made for cross-referencing with related activities covered by other types of work permits, the permit issuing authority and other responsible personnel for the work should be aware of the implications of the existence of other permits and the necessity to make cross-reference to the actual work being done at the same site.

14 TRAINING

14.1 All individuals who are involved in the permit-to-work system should be properly trained to understand it's intent and limitations, and have detailed knowledge of procedures that apply to their own job.

14.2 Proper training should be conducted for those who are authorized or assigned to perform testing requiring the use of analytical instruments such as explosimeters O_2 meter and Drager pump and tubes.

15 RECORD KEEPING

All copies of work permits should be kept by the EHS Department for at least 24 months.

16 WORK PERMIT FORMAT

Work permit has been divided into eight (08) sections, namely

16.1-General

It contains information about the date, time, permit number, permit applicant (SPM employee) name, designation, employee number and validity of permit.

16.2-Contractor Information

This section contains Contractor's information, workers involved, equipment and contact numbers.

16.3-Work & Work Area Related Information

This is a detailed section and very important for executor, issuer and contractor. It should be filled very carefully and verified with extreme responsibility to avoid any chance of skipping a single listed item. This section contains detailed information about work and work area. This shall be filled out by permit applicant in the presence of contractor supervisor

16.4-PPE to be Used

In this section all mandatory PPE will be marked and must be provided before start of job.

16.5-Signatories

In this section all authorized persons will sign-off and must write their names. Permit will be considered incomplete if the name of signatory is missing.

16.6-Permit Extension

Permit Extension beyond the shift can only be authorized by Incoming Shift Supervisor after verification of work and work area conditions; if he is not satisfied he can cancel the permit by signing section G of the permit. Permit cannot be extended for more than two complete shifts, for the jobs involving more than a day work, the Blanket Work Permit Procedure SPM-EHS-MSP-022 after acquiring the concerned permit.

16.7 Permit Cancellation

The Shift Supervisor, EHS In charge, the permit applicant or any other supervisor level staff of SPM is authorized to cancel the permit, if he observes any violation, or change in working condition. In this case he shall strike through the sections from A to F and sign-off section-G of work permit by giving brief reason pertaining to cancelation. After cancellation he shall immediately inform all concerned and ensure demobilization of contractor from the work site in a safe and secure manner.

16.8-Completion & Closer

The area owner must ensure that his area has been cleared and normal operating conditions have been established, before accepting the closure of permit. Without achieving the normal operating conditions and housekeeping the permit closure will not be accomplished. This section must also be sigh-off by all concerned after fulfilling all requirements.

17 EXCEPTIONS

17.1 Work in Hazardous Areas

17.1.1 In the event that the prevailing circumstances prevent the execution of certain potentially hazardous work under the permit requirements and it is absolutely necessary to carry out such work, special procedures and safety precautions should be worked out and approved by the Operations or SPM Manager depending on the nature of work and potential risks involved. Such special procedures must be clearly communicated to all personnel involving in the work to avoid misunderstanding.

17.1.2 The intent of the above exceptions clause is to provide an avenue and enough flexibility for the Permit Approving Authority to seek advice and higher authority to deal with such circumstances.

17.2 Blanket Work Permit

The permit-to-work system can be exempted and a Blanket Work Permit issued for designated areas where activities, such as major construction or projects can be performed with minimal involvement of the operating areas. To ensure safety concerns are addressed and yet provide flexibility in the control of such activities the responsible contractor or group will prepare detailed plans and procedures for the SPM Management to approve. Plans and procedures for such activities shall include but not limited to the following items.

a. Boundaries of the designated area to be shown on appropriate drawings and updated as the activity needs change. The designated area shall be segregated from the existing SPM facilities by means of physical barriers and perimeter signs to alert SPM personnel of the special area and clearly identify to workers involved with project the area to which they will be assigned to and that entering any other area on the SPM will not be allowed without authorization.

b. Project schedule and manpower planning charge (for security control).

c. Access routes for vehicles and personnel for the designated area.

d. Emergency personnel accounting and evacuation procedure.

e. However, the contractor shall have their own inspection & certification system to effectively control on scaffold erection and approval and radiography work.

The End