

## REGULATIONS FOR REGISTRATION OF ENVIRONMENTAL CONSULTANTS

Notification: xxxxx: In exercise of the powers conferred under section 33 of the Punjab Environmental Protection Act, 1997, Governor of the Punjab has been pleased to make the following regulations:

**1. Short title and commencement.**– (1) These regulations may be called the Punjab Environmental Protection (Registration of Environmental Consultants) Regulations, 2016.

(2) They shall come into force upon their notification in the official Gazette of the Punjab Government.

**2. Definitions.**– (1) In these regulations, unless there is anything repugnant in the subject or context:

(a) “**Act**” means the Punjab Environmental Protection Act, 1997;

(b) “**Director-General**” means the Director-General of the Provincial Agency;

(c) “**EIA**” means an environmental impact assessment as defined in clause (xi) section 2 of the Act;

(d) “**IEE**” means an initial environmental examination as defined in clause (xxiv) section 2 of the Act;

(e) “**Rules**” means the Punjab Environmental Protection (Registration of Environmental Consultants) Rules, 2016;

(f) “**Teaming Agreement**” means a contract between two companies for registration under as consultants under the Environmental Protection (Registration of Consultants) Rules, 2016.

(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 Rules or the Act.

**3. Accreditation of Environment Professionals.**– (1) All environment professional shall, within a period of three years of the notification of these guidelines, shall obtain Environment Professional Certification from an institution designated by or recognized by the provincial agency.

(2) The Certification shall ensure that Environmental Professionals: (a) meet the standard of environmental skills and knowledge required to implement the legal framework on environment in the province; (b) demonstrate professional integrity by being accountable to the Environmental Professional Code of Ethics; and (c) remain abreast with current practices and developments by meeting the ongoing professional development requirements.

(3) The designated institution shall certify environment professionals on successful completion of requisite requirements and passing examinations as per the syllabi and payment of fees as may be specified by the Agency.

(4) The designated institution shall conduct examinations for accreditation of environment professionals once a year.

**4. Levels of Environment Professionals.**– (1) There shall be four levels of environment professionals as described here.

(2) **Associate Environment Professional (AEP).**– Recent environmental graduates and other professionals associated with the Environmental Assessment processes shall obtain certification as Associate Environment Professionals.

(3) **Environment Professional (EP).**– Environment Professional Certification shall be awarded after a rigorous review of education, employment history, and validated environmental skills and knowledge to an Associate Environment Professional in one of the areas of expertise related to Environmental Protection, Resource Management, and Environmental Sustainability given at Regulation 5.

(4) **Lead Environment Professional (LEP).**– Lead Environment Professionals shall be awarded to Environment Professionals who possess comprehensive knowledge in environmental planning and the preparation of defensible environmental documentation, has successfully lead the environmental analysis of complex projects, and has proven senior project management experience in managing project schedules, budgets, and document quality and whose interdisciplinary work encompasses environmental protection, resource management, and environmental sustainability.

(5) **Subject Matter Specialists (SMS).**– These shall be the experts working in specific resource areas of Environmental Assessments and meet the specified eligibility criteria.

(a) Subject Matter Specialists shall be experts from various disciplines related to environment such as ecology, chemistry, sociology, hydrology, and soil science, who contribute to specific issues in the EA processes. Their core qualifications are in their respective resource fields but they also have an understanding of the environmental issues and the EA processes. The core competence and professional engagement of the SMS are in their respective resource areas. They may include university professors and researchers in research organizations or senior level practitioners.

(b) Subject Matter Specialists are expected to provide inputs in their respective areas of expertise. They shall have:

- i) an in-depth knowledge in their respective areas of specialization.
- ii) a broad understanding of the EA processes.
- iii) the capability of assessing the impacts of the project on the physical, biotic, and social environment, as applicable.
- iv) the knowledge to suggest/vet mitigation measures.

(6) An environment professional may apply for accreditation for a level for upon attaining the qualification and experience prescribed for the level.

**5. Areas of Expertise.**– Depending on the type and magnitude of projects and the depth/extent of their anticipated environmental impacts, inputs from the following disciplines shall be required for carrying out their EAs:

**1. Environmental Resources**

- a. Air Quality
- b. Water Quality
- c. Site Assessment and Reclamation
- d. Waste Management
- e. Ecology & Biodiversity

- f. Noise & Vibration
- g. Socio-Economic Aspects
- h. Hydrology, Ground Water & Water Conservation
- i. Geology
- j. Soil Conservation
- k. Risk & Hazards Management
- l. Cultural/Historic Resources
- m. Recreation
- n. Traffic/Transportation
- o. Visual/Scenic Resources
- p. Health and Safety

**3. Resource Management**

- a. Energy
- b. Fisheries and Wildlife
- c. Natural Resource Management

**4. Environmental Sustainability**

- a. Sustainability
- b. Education and Training
- c. Research and Development
- d. Policy and Legislation
- e. Communications and Public Awareness

**6. Registration of Consulting Firms.–** (1) A firm shall be registered in one of the following three categories for its core competence in one of more Sectors according to the strength of its experts, past experience, professional affiliations and trainings of its experts:

- i. **Category A:** Consultants in this category shall be eligible to undertake all types of studies (e.g., Environmental Impact Assessments [EIAs], Strategic Environmental Assessments [SEAs], environmental surveys, Preliminary Environmental Reviews [PERs], Action Plans, Construction Environmental Management Plans [CEMPs], Operation Environmental Management Plan [OEMPs]) for projects falling within their core competency requirements.
- ii. **Category B:** Consultants in this category shall be eligible to undertake preliminary studies, e.g., Initial Environmental Examinations [IEEs], Environmental Surveys, Preliminary Environmental Reviews [PERs], Action Plans, (i.e., all studies except SEAs, EIAs) for projects falling within their core competency requirements.
- iii. **Category C:** Consultants in this category shall be eligible to undertake EAs for the projects belong to Schedule III and falling within their core competency requirements.

(2) A firm may be a government, public sector, or private organization which may be proprietary firms, partnership firms, private or public limited company or a consortium of firms having teaming agreements.

(3) A firm may have a teaming agreement with one or more firms for the purposes of registration with the agency.

(4) A firm may apply for change in its category, addition or deletion of core competency, as and when needed.

**7. Registration of Consultants.–** (1) Any individual wishing to be involved in any EA must be registered with the agency.

(2) Registration shall be divided into three categories: Environment Professional (EP), Lead Environment Professional (LEP), and Subject Matter Specialists (SMS)

(3) An applicant may opt for any registration category appropriate to their skills and experience.

(4) For Environmental Professional and Lead Environmental Professional categories, an applicant may select up to four areas of expertise from the list provided in Regulation 5.

(5) A Subject Matter Specialist may only indicate one area of expertise.

(6) For registration in a category, an applicant must meet the minimum criteria for the category as given in **Annexure xxx**.

(7) Registration shall be open to both nationals and expatriates.

**8. Qualification for Environmental Professional.–** (1) A registered firm shall have an arrangement with one or more laboratories registered with the agency for collecting environmental data.

**7. Laboratories for Monitoring Environmental Data.–** (1) A registered firm shall have an arrangement with one or more laboratories registered with the agency for collecting environmental data.

(2) If a firm engages more than one laboratory to cover its requirements of environmental assessments being carried out in different parts of the province, it shall have a clear internal guideline of assigning the work to a particular laboratory and maintaining the necessary record of the same.

(3) Laboratories engaged in environmental data collection shall be those certified by the agency.

**8. Quality Management System.–** (1) The registered firm shall have a Quality Management Systems (QMS) for the organization. The QMS shall be based on ISO 9001:2008 standards.

(2) The content of the Quality Manual shall, as a minimum, reflect the following:

(a) Quality Policy

(b) Control of records and documents

(c) Performance Measurement and Review

(d) Actions taken to address Non-Conformance

- (e) Identification, retention and assessment of performance of empanelled experts
- (f) Collection of primary data
- (g) Collation, synthesis, and interpretation of secondary data
- (h) Work outsourced
- (i) Laboratory work, including calibration of equipment and lab safety
- (j) Complaints and appeal

**9. Application Process.**– (1) The application form may be downloaded from the EPA Punjab website [www.epa.punjab.gov.pk](http://www.epa.punjab.gov.pk). Detailed information on documents to be submitted with the application shall also be provided on the same website.

**(1) Important points to be considered while applying**

- a) Experts proposed must meet the requirements given in these Guidelines both in respect of qualification and experience (for LEP - overall EA related experience; for subject specialists - overall in area/s of expertise and environmental assessment related).
- b) A LEP may be proposed for a maximum of 5 Areas and a SMS for a maximum of 2 functional areas.
- c) An expert may be proposed both as an LEP and SMS, provided s/he meets the Guideline's requirements.
- d) The application must have at least three in-house subject specialists - one LEP who together with another two subject specialists should cover the core areas of water, wastewater, solid waste, and air pollution.
- e) CVs of experts must be submitted in Formats given in Appendices XXX.
- f) All the areas of expertise must be covered in the application.
- g) It is not mandatory for a firm to be certified to ISO 9001 but it should have a Quality Management System for guiding the activities of the organization. The Quality Management System should address the procedures mentioned in Appendix XXX of the Guidelines. The application must be accompanied by the Quality Management System manual of the Organization.
- h) The Consultant Organization must have an arrangement with an EPA Punjab Certified Laboratory for environmental data generation. It can be an in-house or an independent laboratory. For the laboratories, the certificate of registration with the agency must be submitted.
- i) For an independent laboratory, copy of the agreement with it must be submitted with the application.

**10. Closure of Application.**– (1) An application has to be complete in all respects for the assessment process to be completed. The applicant shall be informed of the completion of the application within 30 days of its receiving by the agency. The agency may require additional information during the process of assessment of the application. If all information is not available even after 6 months of the expiry of the last time period given to it, it would be construed that the applicant is not interested in pursuing the application and it will be treated as 'closed'. The applicant would be informed accordingly. Should it so desire, the applicant may reapply and rejoin the queue after ensuring that the inadequacies have

been properly addressed. For details of conditions of closure of applications, see **Appendix XXX**.

**11. Organizational Commitment.**– (1) The ultimate objective of the Consultant Registration Guidelines is to contribute towards improving the quality of environmental assessment in the province. This will come about when there is a commitment from the registered consultants towards continual improvement. One of the important aspects of the agency will be to assess such a commitment from the registered consultants. Issues to be considered are:

- a) Efforts made by the consultant towards capacity building in the organization
- b) Efforts made for doing quality work
- c) Innovative approaches adopted

**12. Facilities.**– (1) The consultant organization shall have infrastructure like office space, equipment etc., commensurate with the scope stated in the application for registration.

**13. Suspension or Cancellation.**– (1) The agency may suspend or cancel a registration on account of any or more grounds during registration process or after, but not limited, to the following:

- a) Non-compliance or violation of the requirements and conditions of registration and deviation from facts as stated in application and enclosures.
- b) Submission of false or misleading information in the application or in subsequent submissions.
- c) Improper use of emblem of the agency.
- d) Carrying out changes in environment professionals / experts for registered areas without the approval of or intimation to the agency.
- e) Failure to report any major legal (mandatory compliance) changes.
- f) Using fraudulent practices by the registered consultant in respect of its submission / interaction with the agency which would include, but not limited to, deliberate concealment and/or submission of false or misleading information, suppression of information, falsification of records or data, and non-reporting of completed environmental assessments to the agency. The fraudulent practices covering the above aspects would also include the consultant firm's interaction with the project proponent and the environmental assessment prepared by them.
- g) Non- payment of applicable fees.
- h) Violation of the Code of Conduct for the Consultant Firms.
- i) Any other condition deemed appropriate by the agency.

(2) The decision for the suspension or the cancellation shall be taken by the agency in consultation with the Consultant Registration Advisory Committee.

**14. Code of Conduct.**– (1) All consultants are obliged to improve the standing of the consultancy profession by rigorously observing the Code of Conduct. Failure to do so may result in the suspension or cancellation of registration.

- (2) The consultant firm shall undertake:

- a. To act professionally, accurately and in an unbiased manner.
- b. To be truthful, accurate and fair to the assigned work, without any fear or favor.
- c. To judiciously use the information provided by or acquired from the client in carrying out the environmental assessment and to maintain the confidentiality of information received or acquired in connection with the assignment.
- d. To avoid and / or declare any conflict of interest that may affect the work to be carried out.
- e. Not to accept any favor from the clients, or their representatives.
- f. Not to act in a manner detrimental to the reputation of any of the stakeholders including the provincial agency and the client.
- g. To co-operate fully in any formal enquiry procedure of the provincial agency as per the appeals procedure.

**15. Requests for Review of Decisions.**— (1) The following procedure will be applicable:

- a. In case an applicant wishes for a review or reconsideration of any registration decision taken by the provincial agency, it may send a request for same to the provincial agency.
- b. The request received from an applicant by the agency will be put up on the website of the agency.
- c. The request must mention specific complaints (not generic in nature) and supported by documentary evidence.
- d. Anonymous/pseudonymous requests shall not be entertained.
- e. Each request must be accompanied with a Demand Draft of Rs. 50,000/ payable in favor of "Director General, EPA Punjab."
- f. One special Advisory Committee meeting is proposed to be organized every month to consider such cases.
- g. Agenda of such meetings along with cases to be put up shall be posted on the website of the agency.
- h. Firms making the request may present their case in person to the Advisory Committee, if so desired by them.
- i. Decision of the Advisory Committee shall be intimated to the concerned firm as well as posted on the website of the agency.

**16. Records.**— (1) All information concerning environmental assessment related work should be meticulously documented, as defined in the firm's QMS to meet the requirements of these Guideline.

- a) The firm shall maintain records to demonstrate the conformance to the requirements of the provincial agency.
- b) Records shall be maintained in English.
- c) Records may be in any medium - hardcopy or softcopy.
- d) These records shall be maintained for at least five years.

- e) These records shall be made available to the agency on demand.

**17. Confidentiality.**– (1) All information, documents and reports submitted by an applicant to the agency shall be utilized by the agency for the purpose of assessment and registration. These may also be used for research purpose. However, the identity of the registered firms would be masked for sensitive information related to business whenever it is appropriate to do so. In case an applicant wants the information to be kept confidential, a communication must be sent to the provincial agency citing reasons for the same. The agency reserves the right to take decision in this regard.

(2) The registered consultant shall have adequate arrangements consistent with governing laws to safeguard confidentiality of all information provided by its clients. These arrangements shall be extended to include organizations or individuals acting on its behalf and as its representatives.

**18. Updating of Regulations.**– (1) The provincial agency reserves the rights to amend its registration processes, procedures and fees, etc. as it may deem fit. Applicants are requested to refer to the updates on the website of the agency ([www.epa.punjab.gov.pk](http://www.epa.punjab.gov.pk)) before applying for registration.

**19. Professional Indemnity Insurance.**– (1) The agency encourages all registered environmental consultants to obtain their Professional Indemnity Insurance.

**20. Registers of registered consultants.**– (1) Separate Registers shall be maintained by the Agency for Consultants and Consulting Firms registered under Regulation 6 and 7 in the form setout in Schedule xxx and xxx, respectively.



## Categories of Environmental Consultants

#	Criteria	Category A	Category B	Category C
1	Staff	<p>Category A consultant shall have at least the following professionals:</p> <p>LEP            1  EP                4  AEP              4  SMS              As required</p> <p>These professionals must have completed at least 51 percent of any project EA.</p> <p>For each project, a staffing plan must be provided as well as a key person succession plan if a key staff person leaves the project.</p>	<p>Category B consultant shall at least have the following professionals:</p> <p>LEP            1  EP                3  AEP              2  SMS              As required</p> <p>These professionals must have completed at least 51 percent of any project EA.</p>	<p>Category B consultant shall at least have the following professionals:</p> <p>LEP            1  EP                1  SMS              As required</p> <p>These professionals must have completed at least 51 percent of any project EA.</p>
2	Experience	At least 5 approved EIA in the Sector within the past 5 years.	At least 5 EIA/IEE or equivalent level environmental documentation approved within the past 5 years.	
3	References	At least three overall firm references and three references for each LEP, EP, and SMS submitted. References for any subconsultant must also be provided. Current contact information must be provided.	At least three overall firm references and two references for each LEP, EP, and SMS submitted. References for any subconsultant must also be provided. Current contact information must be provided.	
4	Scope	Consultants in this category are eligible to under take all types of studies e.g., Environmental Impact	Consultants in this category are eligible to under take preliminary studies e.g., Initial Environmental	

		Assessments [EIAs], Strategic Environmental Assessments [SEAs], Environmental Surveys, Preliminary Environmental Reviews [PERs], Action Plans, Construction Environmental Management Plans [CEMPs], Operation Environmental Management Plan [OEMPs]) for industrial, development, and infrastructure projects falling within their core competency	Examinations [IEEs], Environmental Surveys, Preliminary Environmental Reviews [PERs], Action Plans, (i.e., excepting SEAs, EIAs) for industrial, development, and infrastructure projects falling within their core competency.	
5	Core Requirements	<ol style="list-style-type: none"> <li>1. Accreditation of environmental professionals</li> <li>2. Proof of registration with Federal Board of Revenue</li> <li>3. Quality Management System</li> <li>4. System for staff training regarding HSE</li> <li>5. SOPs for keeping records related to environmental assessment studies</li> </ol>	<ol style="list-style-type: none"> <li>1. Accreditation of environmental professionals</li> <li>2. Proof of registration with Federal Board of Revenue</li> <li>3. Quality Management System</li> <li>4. System for staff training regarding HSE</li> <li>5. SOPs for keeping records related to environmental assessment studies</li> </ol>	
6	Professional Trainings	Proof certification as applicable must be supplied with applications.	Proof certification as applicable must be supplied with applications.	

## QUALIFICATION AND EXPERIENCE OF ENVIRONMENTAL PROFESSIONALS

Keeping in view the roles envisaged for the Environmental Professionals and the Subject Matter Specialists in these regulations, the qualification and experience requirements of the experts are detailed below.

### 1.0 Lead Environmental Professional

#### 1.1 Minimum Educational Qualification

- a) Bachelor's (4-year graduation) degree or equivalent in Engineering/ Architecture/ Environmental Planning/ Town Planning or in a field in any field closely related to the sector from an HEC (Higher Education Commission) recognized University/Institution.

or

- b) Master's (post-graduate) degree in Physical/Environmental/Life Sciences/ Social Sciences/ Economics/ Management from an HEC recognized University/Institution.

In exceptional cases, the Committee may increase or decrease the minimum educational qualification for a Lead Environmental Professional based on his/her experience.

#### 1.2 Minimum Experience

An LEP should have an overall knowledge of the sector/s applied for and a clear understanding of environmental, biotic, and socio-economic aspects related to those sectors. Minimum requirements of experience for an LEP are given as under:

##### 1.2.1 EA related

Minimum 7 years work experience related to EAs in one or more of the following:

- a) as an EA Team Leader
- b) as a Subject Matter Specialist assisting an EA team
- c) as a team member supporting a LEP
- d) in the role of appraisal of EAs as a regulator or an academician
- e) as a professional in an Environmental Protection or a concerned Agency/Department

EA related experience during teaching and/or PhD work may be considered, if found relevant.

##### 1.2.2 Sector specific (for each Sector applied for)

both of the following:

- a) 3 completed EAs\* in the Sector
- b) 2 years' experience in as an employee the Sector

An LEP should also be thoroughly aware of national and global environmental governance and be familiar with all relevant environmental protection rules, regulation, guidelines, and notifications and their amendments in the province.

## **2.0 Subject Matter Specialist**

### **2.1 Minimum Educational Qualification (General)**

- a) Bachelor's (4-year graduation) degree or equivalent in the discipline from an HEC recognized University/ Institution as mentioned against each area of specialization in Section 2.3 below.

or

- b) Master's (post-graduate) degree in Physical/ Environment/ Life Sciences/ Social Sciences/ Economics from an HEC recognized University/ Institution in a discipline as mentioned against specific areas of specialization in Section 2.3 below.

### **2.2 Minimum Experience (General)**

Each EA, depending on the type and size of the project and the depth /extent of its anticipated environmental impacts, will require input from different disciplines, e.g. Air quality, Water quality, Ecology, Biodiversity, Socio-economy, etc. To help Environmental Consultant firm select Subject Matter Specialists, the following are recommended.

**Category A** SMSs for Category A projects will need to have a minimum experience of 7 years in the subject area, of which at least 3 years shall be in the application of the knowledge in the area of expertise to EA.

**Category B** SMSs for Category B projects will need to have a minimum experience of 5 years in the subject area, of which at least 1 year shall be in the application of the knowledge in the area of expertise to EA.

**Category C** SMSs for Category C projects will need to have a minimum experience of 3 years in the subject area. Out of these 3 years, at least 1 year should be in the application of the knowledge in the subject area/s and the remaining could be in consultancy/teaching and the like in the stated area/s of expertise.

All SMSs shall have in-depth knowledge and understanding of relevant Acts & Rules pertaining to their areas of expertise.

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\* 'Completed' EIAs will mean those approved by the concerned regulatory agency or submitted to the regulatory agency for approval or those which have been put up for public consultation, if applicable (and public consultation is not complete for reasons not attributable to EIA consultants).

Qualification and specific experience requirements for different functional areas are given in Section 2.3 below.

## **2.3 Educational Qualification and Experience for Subject Matter Specialists**

### **2.3.1 Land Use**

#### **a. Specific Disciplines for Educational Qualification:**

Following degree/certificate from HEC recognized Universities/Institutions:

- i. Technical subjects – Postgraduate Degree in Civil Engineering / Physical Planning/ Town Planning/ Environmental Planning, Environmental Engineering, or
- ii. Science subjects – Postgraduate Degree in Remote Sensing or Geographic Information System, Environment Management, or
- iii. Postgraduate Degree in science subjects, including Geography, followed by specialized training in GIS/ Remote Sensing/Cartography (of not less than 2 months' duration).

#### **b. Specific experience:**

Demonstrable knowledge and experience in the following:

- i. Generation and analysis of data related to land use patterns
- ii. Developing land use map of urban, semi-urban, rural and mixed areas using GIS
- iii. GIS based land use analysis and development
- iv. Integration of land use related data and information for assessing environmental impacts of projects
- v. Adequate knowledge of Environmental Legislation in the country
- vi. Contribution to EA documentation
- vii. Understanding of policies, guidelines and the legislation related to Land Use

#### **c. Training (Preferable)**

Specialized training in site description, preparation of land use map, cartography, and Spatial Planning (GIS and other computer application, Remote sensing, etc.).

### **2.3.2 Air Pollution Monitoring. Prevention & Control**

#### **a. Specific Disciplines for Educational Qualification:**

Following degree/certificate from HEC recognized Universities/Institutions:

- i. Engineering – Postgraduate Degree in Environmental/ Chemical/ Mechanical/ Civil/ Mining, or
- ii. Science subjects – Postgraduate Degree in Environmental Sciences/ Environment Management/Environmental Studies/ Industrial Pollution Control/ Physics/ Chemistry.

**b. Specific Experience:**

**I. Air Pollution Monitoring**

Demonstrable knowledge and experience in the following:

- i. Meteorology - measurement of wind speed, wind direction, relative humidity, wet & dry bulb temperature, rainfall, etc.
- ii. Air quality monitoring, Suspended Particulate Matter, Respirable Particulate Matter - PM2.5 and PM10, SO<sub>x</sub>, NO<sub>x</sub>, CO, hydrocarbons, & other relevant parameters like VOCs, etc. including handling of relevant equipment.
- iii. Stack monitoring - Particulate Matter, SO<sub>x</sub>, NO<sub>x</sub>, & other relevant parameters.
- iv. Calculation of carbon footprints.
- v. Inventorization of Green House Gas emissions.

**II. Air Pollution Prevention & Control**

Demonstrable knowledge and experience in the following:

- i. Reduction in process emissions at source.
- ii. Reduction in fugitive emissions.
- iii. Design and installation of emission control systems involving:
  - Identifying & assessing quantum of emissions;
  - Identifying the most suitable control device, e.g. condensers, spray systems, scrubbers, cyclones, ESPs, bag filters, etc.;
  - Design of air pollution control systems and their efficiencies;
  - Interlocking control systems with production plants.
- iv. Adequate knowledge of Environmental Legislation in the country.
- v. Contribution to EA documentation.
- vi. Understanding of policies, guidelines and the legislation related to Air Pollution.
- vii. Knowledge of International Treaties related to emissions and preparing cost estimates for control systems.

**c. Training (Preferable)**

Specialized training in air pollution measurement, prevention, monitoring, air pollution or control equipment.

**2.3.3 Air Quality Modeling & Prediction**

**a. Specific Disciplines**

Following degree/certificate from HEC recognized Universities/Institutions:

- i. Engineering – Postgraduate Degree in Environmental/ Civil/ Chemical, or
- ii. Science subjects – Postgraduate Degree in Environmental Sciences/ Environment Management/ Environmental Studies/ Industrial Pollution Control/ Physics/ Chemistry/ Mathematics/ Statistics/ Atmospheric Sciences.

**b. Specific experience should include**

Demonstrable knowledge and experience in the following:

- i. Designing ambient air quality monitoring network for use in prediction (dispersion and receptor) modeling.
- ii. Developing micro-meteorological data for use in modeling.
- iii. Collecting and use of secondary data on meteorology like cloud cover, inversion related data, mixing heights, etc., for modeling.
- iv. Application of relevant air quality models in prediction of dispersion of pollutants, plotting of isopleths of ground-level concentrations representing incremental pollution levels, worst case scenarios on suitable maps showing both the sources of pollution as well as environmentally sensitive receptors. The models used shall be able to address source to receptor scenarios for point sources, area sources and line sources. The models shall also conform to the requirements of the agency.

It is also expected that the SMS has the following knowledge/experience:

- i. Adequate knowledge of Environmental Legislation in the country.
- ii. Contribution to EA documentation.
- iii. Understanding of international, national, and provincial policies, guidelines and the legislation related to Air Pollution.

**c. Training (Preferable)**

Specialized course/training on air quality modeling, air pollution meteorology, atmospheric sciences and impact prediction.

**2.3.4 Water Pollution Monitoring, Prevention & Control**

**a. Specific Disciplines**

Following degree/certificate from HEC recognized Universities/Institutions:

- i. Engineering - Environmental/ Chemical/ Civil/ Mechanical, or
- ii. Science Subjects - Public Health/ Environmental Sciences/ Environment Management/ Environmental Studies/ Natural Resource Management/ Industrial Pollution Control/ Chemistry/ Biochemistry/ Biotechnology/ Toxicology/ Microbiology/ Hydrology/ Geo-hydrology.

**b. Specific experience should include**

**I. Water & Waste water Monitoring**

Demonstrable knowledge and experience in the following:

- i. Designing networks for water and wastewater.
- ii. Techniques and requirements of sampling of water and wastewater for EAs
- iii. Monitoring of water and wastewater quality.

**II. Water conservation and prevention & control of pollution**

Demonstrable knowledge and experience in the following:

- i. Water use auditing, water balance, water budgeting, water conservation, and developing schemes for cascading use (recycle, reuse) of water.
- ii. Identification, characterization and segregation of effluent streams.
- iii. Design/ Erection/ Performance evaluation of water/ effluent treatment systems for physical, chemical and biological treatment.
- iv. Water quality modeling for prediction of impacts of effluent discharge to receiving water bodies.
- vi. Adequate knowledge of Environmental legislation in the country.
- vii. Contribution to EA documentation.
- viii. Understanding of policies, guidelines and legislations related to Water Pollution.

**c. Training (Preferable)**

Specialized course/ training on water pollution & control technologies.

**2.3.5 Ecology and Biodiversity**

**a. Specific Disciplines**

Following degree/certificate from HEC recognized Universities/Institutions:

- i. Science subjects – Postgraduate Degree in Zoology/ Botany/ Forestry/ Environmental Sciences/ Ecology/ Natural Resource Management/ Subjects of Life Sciences and the like.

**b. Specific experience/ Skills**

Demonstrable knowledge and experience in the following:

- i. Knowledge of the application of taxonomy in resource inventory (flora and fauna) of the project area.
- ii. Conducting ecological/ wildlife surveys and preparation of status reports for endangered species of animals and plants.
- iii. Experience in providing guidance and support for conservation of species and habitats.
- iv. Adequate knowledge of Environmental Legislation process in the country.
- v. Understanding of multilateral agreements, international, national, and provincial policies, guidelines and legislations related to ecology biodiversity conservation.
- vi. Specialized training in the field of impact assessment and ecological monitoring.
- vii. Contribution to EA documentation

**c. Training (Preferable)**

Training on Ecosystem analysis and evaluation, Landscape ecology, Impact Assessment on ecology/ biodiversity



### 2.3.6 Noise and Vibration

#### a. Specific Disciplines

Following degree/certificate from HEC recognized Universities/Institutions:

- i. Engineering – Postgraduate Degree in Mining/ Mechanical/ Electrical/ Instrumentation/ Civil/ Environmental, or
- ii. Science subjects – Postgraduate Degree in Environmental Sciences/ Environment Management/ Environmental Studies/ Physics/ Geophysics/ Statistics or in any other subject covering noise/ vibration measurement, prediction & control

#### b. Specific experience should include

Demonstrable knowledge and experience in the following:

- i. Monitoring of noise/vibration levels using specific instruments, processing and analysis of data
- ii. Prediction of noise/vibration isopleths levels using relevant models in residential, sensitive (hospitals, educational institutions, etc.), commercial and industrial areas and noise due to community activities, urban traffic, highway traffic, railroads, aviation, commercial, and industrial activities.
- iii. Control of noise emanating from mining operations, vehicles, airport, industries, machines, community activities, highways, railways, etc. along with design and optimization of noise/vibration attenuation devices.

It is also expected that the SMS has the following knowledge/experience:

- i. Adequate knowledge of Environmental Legislation in the province and the country
- ii. Contribution to EA documentation
- iii. Understanding of policies, guidelines and the legislation related to Noise Pollution

#### c. Training (Preferable)

**Noise** Specialized training on measurement of noise levels, impacts on human health and behavior, noise modeling and prediction, protection devices against high noise levels, designing/review of noise reduction/control systems.

**Vibration** Measurement, analysis and prediction of vibrations from mining operations, vibration studies in industrial operations, protection measures etc.

### 2.3.7 Socio-Economics

#### a. Specific Disciplines

Following degree/certificate from HEC recognized Universities/Institutions:

- i. Postgraduate Degree in Social Welfare/ Sociology/ Political Science/ Psychology/ Geography/ Anthropology/ Economics, or

- ii. Postgraduate Degree in Rural Development & Management/ Rural Economics/ Economic Sociology/ Demographic Studies/ any Sociology related subject

**b. Specific experience**

Demonstrable knowledge and experience in the following:

- i. Conducting baseline socio-economic surveys through interviews/ questionnaire/ focused group discussions
- ii. Carrying out social need assessment studies
- iii. Carrying out rehabilitation Resettlement & Rehabilitation studies for people displaced due to developmental projects
- iv. Assessment of social changes arising out of development projects
- v. Evaluation of socio-economic status of project affected people and areas
- vi. Demonstrated capacity to interact and develop rapport at community level will be an added advantage

It is also expected that the SMS has the following knowledge/experience:

- i. Adequate knowledge of EIA Legislation process in the country.
- ii. Contribution to EIA documentation.
- iii. Understanding of policies, guidelines and the legislation related to Socio-economy in the country.

**c. Training (Preferable)**

Training on Social Impact Assessment of development projects in Rural/ Urban areas.

**2.3.8 Hydrology, Ground Water & Water Conservation**

**a. Specific Disciplines**

Following degree/certificate from HEC recognized Universities/Institutions:

- i. Postgraduate Degree in Civil Engineering (Specialization in Surface/Ground Water Hydrology), or
- ii. Science subjects – Postgraduate Degree in Geology/ Applied Geology/ Geophysics/ Hydrology/ Surface Hydrology/ Hydrogeology/ Water resources Management.

**c. Specific experience should include**

Demonstrable knowledge and experience in the following:

- i. Analysis of surface hydrological data pertaining to flow fluctuation, estimation of flows at 10, 50 and 90 percentile levels; setting up and interpretation of gauging station readings, designing of ground water table measurement and monitoring network, computation of ground water recharge, flow rate and direction.
- ii. Plotting of groundwater contours.

- iii. Analysis and description of aquifer characteristics, e.g. permeability, transmissivity, storage coefficient, etc., estimation of groundwater potential and recharge phenomenon, determination of impact of withdrawal of groundwater.
- iv. Preparation of water budget for an area.

It is also expected that the SMS has the following knowledge/experience:

- i. Adequate knowledge of Environmental Legislation in the country.
- ii. Contribution to EA documentation.
- iii. Understanding of policies, guidelines and the legislation related to Ground Water.

**d. Training (Preferable)**

Specialized training/ course on impacts on hydrology & ground water.

**2.3.9 Geology**

**a. Specific Disciplines**

Following degree/certificate from HEC recognized Universities/Institutions:

- i. Postgraduate Degree in Mining Engineering, or
- ii. Science subjects – Postgraduate Degree in Geology/ Applied Geology/ Geophysics

**b. Specific experience should include**

Demonstrable knowledge and experience in the following:

- i. Geology and Geomorphological analysis/ description.
- ii. Stratigraphy/ Lithology.
- iii. Vibration analysis in relation to mining operations.
- iv. Preparing geological maps.
- v. Mining plan development incorporating environmental aspects like top soil preservation, waste dump management, reclamation/ rehabilitation of mined out areas' run off management, etc.
- vi. Environmental impacts of 3 phases of mining – exploration, exploitation and post mining stages.

It is also expected that the SMS has the following knowledge/experience:

- i. Adequate knowledge of Environmental Legislation in the country
- ii. Contribution to EA documentation
- iii. Understanding of policies, guidelines and the legislation related to Mining.

**2.3.10 Soil Conservation**

**a. Specific Disciplines**

Following degree/certificate from HEC recognized Universities/Institutions:

- i. Science subjects – Postgraduate Degree in Agricultural Sciences/ Soil Sciences/ Forestry/Chemistry/ Botany/ Natural Resource Management.

**b. Specific Experience should include**

Demonstrable knowledge and experience in the following:

- i. Sampling, analysis and characterization of soil
- ii. Assessment of fertility/productivity of soil
- iii. Assessment of impact of gaseous, liquid & solid pollutants on soil
- iv. Management of soil salinity
- v. Remediation of soil pollution/contaminated soils

It is also expected that the SMS has the following knowledge/experience:

- i. Adequate knowledge of EIA Legislation process in the country
- ii. Contribution to EIA documentation
- iii. Understanding of policies, guidelines and the legislation related to the subject area

**c. Training (Preferable)**

Assessment of soil contamination and remediation techniques

**2.3.11 Risk Assessment & Hazard Management**

**a. Specific Disciplines**

Following degree/certificate from HEC recognized Universities/Institutions:

- i. Engineering – Postgraduate Degree in Chemical/ Mechanical/Fire Engineering/ (Mining - For Mining EAs only)
- ii. Science subjects - Toxicology/ Chemical Technology/ Industrial Safety/ Chemistry or in subjects dealing with identification, assessment and management of risk and hazards
- iii. Others - Post graduate diploma (1 year or above) in Industrial Safety from an HEC University/ recognized Institute after graduation in engineering or post graduation in a science subject

**b. Specific experience**

Demonstrable knowledge and experience in the following:

- i. Identification of Hazards & Hazardous Substances
- ii. Risks and Consequences Analysis using latest software
- iii. Preparation of Impact Diagrams
- iv. Vulnerability Assessment
- v. Preparation of Onsite Emergency Preparedness Plan
- vi. Preparation of Offsite Disaster Management Plan

It is also expected that the SMS has the following knowledge/experience:

- i. Adequate knowledge of EA Legislation process in the country
- ii. Contribution to EA documentation
- iii. Understanding of policies, guidelines and the legislation related to emergency response, off-site and on-site emergency plans, safety and occupational health, etc.

### **2.3.12 Solid & Hazardous Waste Management**

#### **a. Specific Disciplines**

Following degree/certificate from HEC recognized Universities/Institutions:

- i. Engineering – Postgraduate Degree in Chemical/ Civil/ Environmental/ (Mining - For Mining EIAs only), or
- ii. Science subjects – Postgraduate Degree in Chemical Technology/ Chemistry/ Toxicology/ Environmental Sciences/ Natural Resource Management/ Natural Science

#### **b. This Specialty comprises three parts**

- i. Municipal Solid wastes
- ii. Non hazardous industrial solid wastes
- iii. Hazardous wastes including Biomedical Waste (MSW) (ISW) (HW)

#### **c. Specific Experience/ Skills should include**

- i. For Municipal Solid wastes
  - a) Methodologies for segregation and collection of MSW
  - b) Methodologies of gainful utilization of MSW
  - c) Designing of landfill sites for safe disposal of MSW
  - d) Familiarity with MSW Rules
- ii. For Non-hazardous industrial solid wastes
  - a) Recycling and reuse of solid wastes
  - b) Handling and disposal methodologies of high volume non-hazardous solid wastes
- iii. For Hazardous wastes
  - a) Knowledge of Hazardous Wastes (Management, handling and trans-boundary movement) Rules, Basal Convention and other relevant legislations
  - b) Identification of Hazardous wastes
  - c) Neutralization, stabilization, treatment, storage and disposal of Hazardous wastes
  - d) Designing of Hazardous Waste Treatment, Storage, and Disposal, Facilities (TSDF)

It is also expected that the SMS has the following knowledge/experience:

- i. Adequate knowledge of Environmental Legislation in the country
- ii. Contribution to EA documentation
- iii. Understanding of policies, guidelines and the legislation related to Municipal and Industrial Solid and Hazardous Waste Management

SMSs having experience on all the three above shall be considered for SMS-SHW (Solid & Hazardous wastes). Those having experience in a specific area out of above, may be considered for the respective field, e.g.: SMS(HW), SMS(MSW), etc.

#### **d. Training (Preferable)**

Training on identification, inventorization, collection, handling, storage, treatment and disposal of Hazardous wastes/ Solid wastes/ Municipal Solid wastes

**General Note:**

Training shall be relevant to the sector/s for environmental professionals and area/s of expertise for SMSs. The duration of the training should be a minimum of 5 days and conducted/organized by HEC recognized Universities, Research Institutes, Professional Bodies, or other recognized organizations.