NWFP Environmental Protection Agency

Environmental Guidelines

Small to Medium Size Water Supply Schemes

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1. Introduction

Water supply projects have concern for the environment and health. The selection of an appropriate technical system for water supply entails a careful process based on technical, environmental, health, social, institutional, financial and economic considerations.

Support to water supply services in an urban center always requires a thorough exploration of the existing situation. In relation to technical and environmental issues, this calls for an inventory of existing sources, technical systems and the environmental impacts.

1.1 Scope of the Guidelines

These guidelines are applicable to small to medium size water supply projects costing less than Rupees ten million. It includes the following type of projects:

- Natural water supply projects
- Water distribution systems

1.2 How to use these Guidelines

The project proponent (the local government, municipal government, city government, the cantonment board, NGO, or private organization) is obliged to use these guidelines. The project proponent has to fill in an environmental impact assessment form. The following steps are to be taken in this regard:

Step 1: Provide information on project [use **Section I**]

Step 2: Determine Applicability (*Are you sure that IEE or EIA is not required?*) [use **Section II**]

Step 3: Describe the physical, biological and social environment [use **Section III**]

Step 4: Assess potential impacts and applicable mitigation measures [use **Section IV**]

Step 5: Provide undertaking to the EPA on mitigation measures and compliance [use **Section V**]

Completed form is to be submitted to the NWFP Environmental Protection Agency for evaluation. NWFP EPA may request for additional information or decide to undertake visit to the proposed project site in order to assess the environmental impact of the proposed project.

1.3 Glossary

Act means the Pakistan Environmental Protection Act, 1997

Contamination introduction of impurities in the environment

Ecosystem a biological community plus the surrounding physical environment

Endangered Species a species in danger of becoming extinct

Environment means (a) air, water and land; (b) all layers of the atmosphere; (c) all organic and inorganic matter and living organisms; (d) the ecosystem and ecological relationships; (e) buildings, structures, roads, facilities and works; (f) all social and economic conditions affecting community life; and (g) the inter-relationships between any of the factors in sub-clause (a) to (f).

Environmental Assessment a technique and a process by which information about the environmental effects of a project is collected, both by the developer and from other sources, and taken into account by the planning authority in forming their judgments on whether the development should go ahead.

Impact on Environment means any effect on land, water, air or any other component of the environment, as well as on wildlife harvesting, and includes any effect on the social and cultural environment or on heritage resources.

Mitigation Measure means a measure for the control, reduction or elimination of an adverse impact of a development on the environment, including a restorative measure.

Regulations means the Pakistan Environmental Protection Agency Review of Initial Environmental Examination and Environment Impact Assessment Regulations, 2000

Standpipe A vertical pipe for the conveyance of water, gas, etc., to a higher level

Soil Erosion physical removal of soil, either by wind or by running water

Sedimentation Deposition of material in the form of sediment, as a geological process, or in a liquid in a tank, centrifuge, etc

Soakway a pit into which wastewater flows in order to drain slowly out into the surrounding soil

2. Project Profile

2.1 Project Description

Water supply projects are of different types: pond and spring improvements, hand-dug wells, small diameter boreholes, wells with hand pumps, small dams and seasonal impoundments, complex water systems, including well or surface water source pump, storage tank and distribution to stand posts, individual yard taps or connections, extension of existing urban waterlines into un-served or under-served suburban zones.

2.2 Environmental Aspects

Site Selection

- Damage to sensitive ecosystems or endangered species

Construction of Buildings and structures

- Damage to sensitive ecosystems or endangered species
- Erosion and sedimentation

Hand-dug wells, Seasonal Ponds, Improved Springs, Ground-level Catchment and Similar Structures

- Contamination of water with human pathogens
- Contamination of water with animal manure
- Creation of pools of stagnant water

Wells

- Creation of pools of stagnant water
- Change in groundwater flow
- Saltwater intrusions
- Deplete of aquifer (groundwater)
- Can cause land subsidence (usually impact from many wells)

2.3 Mitigation Options

Site Selection

- Survey for, and avoid wetlands and other ecologically sensitive sites in the project area

Construction of Buildings and Structures

- Train and monitor workers
- Gather data on soil type, slope and topography to determine the potential for significant erosion
- Use silt screens, straw bales or similar erosion control measures
- Avoid damaging vegetation
- Re-vegetate areas damaged during construction
- Use proper bedding materials for pipes

Hand-dug wells, Seasonal Ponds, Improved Springs, Ground-level Catchment and similar Structures

- Include focus on proper use and maintenance of the improvement as part of behavior change and education program
- Construct spigot or similar system that prevents people from touching impounded water with their hands or mouths
- Use fencing or equivalent that will keep live stock from grazing uphill or up gradient of the water supply improvement
- Do not allow animals to drink directly from the water source
- Monitor drains and soakways and keep them clear of debris
- Monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures
- Put in place a system for regulating use, such as a local warden or appropriate pricing.
- Give the community training in operating the improvement
- Monitor water levels in wells or impoundment structures to detect overdrawing

Wells

- Don't let animals graze or be watered up-gradient from wellhead
- Monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures.
- Put in place a system for regulating use, such as a local warden or appropriate pricing
- Include a focus on proper use and maintenance of the improvement as part of the behavior change and education program
- Provide impervious layers around the water well to avoid contamination from the surface
- Monitor water levels

Standpipes

- Ensure that spilled water and rainwater drain to a soakway or equivalent structure and do not accumulate and create stagnant standing water
- Monitor and repair leaks from cracked containment structures, broken pipes, faulty valves and similar structures.

Environmental Assessment Checklist

Section I: Project Description

File No _____ (To be filled by EPA)

Date _____

General Information

1. Project Name or Title_____
2. Project Proponent (Department or Organization) _____
3. Address _____
4. Telephone _____
5. Fax _____
6. E-mail _____
7. Representative of the Proponent_____
8. Designation _____
9. Name of the person who conducted this assessment _____
10. Designation _____
11. Qualification_____

Project Information

12. Project Location_____
13. Cost of the Project_____
14. Period of construction (start and end dates) _____

Proposed Activity

15. Number and type of major construction equipment that will be used _____
    _____
    _____
16. The total construction material (cement, pipes, bricks, gravel sand, steel, etc.) that will be utilized? _____
    _____
    _____
17. Will any new land be acquired?_____
    If yes, please specify

The total area:_____

Present ownership of land _____

What is the present use of the land? _____

How the land will be acquired (Through Land Acquisition Act or direct purchase)? _____

When the compensation will be paid? _____

18. In case of state land, are there any squatter settlements on the land? _____

If yes, please specify

Number of settlements _____

Will any compensation be paid? _____

When the compensation will be paid? _____

19. Is construction work during the night planned? _____
20. How many trees are likely to be removed? _____
21. Water supply type _____
22. Number of households that will be served _____
23. Brief Project Description _____

_____

_____

Please attach a map of the proposed scheme

24. Type, diameter and length of pipe-work _____
25. Source of water _____
26. Distance of water source from community_____
27. Supply capacity of water source (m^3/day) _____
28. Design capacity of the water supply scheme (m^3/day) _____

Section II: Screening

1. Is the proposed scheme or part of the scheme in an ecologically sensitive area?

☐ Yes ☐ No

2. Is the proposed scheme going to cost Rupees five million or more?

☐ Yes ☐ No

If the answer to any of the above questions is yes, then the project would require an initial environmental examination or an environment impact assessment. Refer to the Pakistan Environmental Protection Agency Review of Initial

Environmental Examination and Environment Impact Assessment Regulations, 2000 for appropriate category.

Section III: Environmental Profile

1. Describe the terrain of the project area: ☐ Flat or Level (Slope < 3%)
   ☐ Level to moderately steep (Slope 3%-30%)
   ☐ Moderately steep to mountainous (Slope > 30%)

(In case the proposed scheme will pass through terrain in which the slope varies, indicate the maximum slope)

2. Is there any site of cultural importance (graveyard, shrine, mosque, archeological site) within 100 m of the proposed scheme?

   ☐ Yes ☐ No

   If yes, please describe?_____

3. How many sensitive receptors (schools, colleges, hospitals, and clinics) are within 100 m of the proposed scheme?_____

   Please describe?_____

4. Are there signs of soil erosion or landslide anywhere in the project area?

   ☐ Yes ☐ No

   If yes, please describe (where, nature)? _____
   _____

5. Is there any surface water body (river, canal, stream, lake, wetland) within 250 m of the proposed scheme?

   ☐ Yes ☐ No

If yes, describe each water body:

Name (including type, ie, river, canal or stream)	**Dimensions**	**Status and Uses** (Is it polluted? Is domestic or other wastewater discharged to it? What are its uses, eg, agriculture, domestic, industrial, washing, fishery

6. Is there any groundwater well within 500 m of the proposed scheme?

☐ Yes ☐ No

If yes, describe each well:

Type (Dug well, tube well, hand pump)	**Location** (Village and distance from the scheme)	**Depth and Yield**	**Uses** (Drinking, agriculture, domestic, industrial, washing, livestock)

7. What are the present sources of potable water?_____
_____
8. How is the wastewater presently disposed? _____
_____
9. Are water-borne diseases common in the area?

☐ Yes ☐ No

10. How are the general hygienic conditions of the project area?

☐ Generally clean
☐ Fair
☐ Poor

11. Is there any bad odor in the project area?

☐ Yes ☐ No

What is the source of the odor?_____

12. What is the total population of the area?_____

13. What are the main sources of income of the community?_____
    _____
14. What is the average household size? _____
15. What proportion of the houses in the area are *pukka, semi-pukka, and* kutcha? _____
16. What is the literacy rate in the area?_____

Section IV: Impact Assessment

Potential Negative Environmental Impacts	*Tick, if relevant*	*Mitigation Measures*	*Tick, if proposed*	*Monitoring*
Damage to sensitive ecosystem	☐	Wetlands and other ecologically sensitive sites in the project area will be avoided	☐	
Erosion and sedimentation	☐	Silt screens, straw bales or similar erosion control measures will be used	☐	
		Damage to vegetation will be avoided	☐	
		Areas damaged during construction will be revegetated	☐	
		Proper bedding materials will be used for pipes	☐	
Alteration in natural flow of rainwater runoff	☐	Riprap (cobbled stone), gravel or concrete will be used as needed to prevent erosion of drainage structures	☐	
Creation of stagnant water pools	☐	Contouring will be undertaken to ensure proper flow	☐	
Water contamination	☐	Leaks from cracked containment structures, broken pipes, faulty valves and similar structures will be monitored and repaired	☐	
		Animals will not be allowed to drink directly from the water source	☐	
		No major sewerage line will constructed within 50 m of the source	☐	

Continued…

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Potential Negative Environmental Impacts	*Tick, if relevant*	*Mitigation Measures*	*Tick, if proposed*	*Monitoring*
Water supply exhaustion	☐	Water levels will be monitored	☐	
		Water levels in wells or impoundment structures will be monitored to detect overdrawing	☐	
Change in groundwater flow	☐	Water levels in wells or impoundment structures will be monitored to detect overdrawing	☐	
Saltwater intrusion		Water levels in wells or impoundment structures will be monitored to detect overdrawing	☐	
Depletion of aquifer	☐	Water levels in wells or impoundment structures will be monitored to detect overdrawing	☐	
Creation of stagnant water pools	☐	Ensure that spilled water and rainwater drain to a soakway or equivalent structure and do not accumulate and create stagnant standing water (Soakways)	☐	

Section V: Undertaking

I, _____ (*full name and address*) as proponent for _____ (*name, description and location of project*) do hereby solemnly affirm and declare:

1. The information on the proposed project and the environment provided in Forms I, II and III are correct to the best of my knowledge
2. I fully understand and accept the conditions contained in the Guidelines for _____
   (*name, number and version of the guidelines*)
3. I undertake to design, construct and operate the project strictly in accordance with the project described in Form I, submitted with this undertaking.
4. I undertake to implement all mitigation measures and undertake monitoring stated in Form IV, submitted with this undertaking.

Date _____ Signature _____

Name _____

Designation _____

(with official stamp/seal)

Witnesses:

	Signature	Name	Address
1	_____	_____	_____
2	_____	_____	_____