Example Summary WQAP EMMP Matrix

XXX WASH PROJECT

SITE: XXX

*Environmental Mitigation/ Enhancement Plans for Established WASH Projects*

WATER QUALITY ASSURANCE PLAN

**Activity:** Water Supply

**Adverse Impact:** Inadequate Water Quality

**Sites:**  Water Pans: *Location XXXX*. Boreholes: *Location XXXX*. Pipeline Extension: *Location XXXX*.

 Rock Catchments: *Location XXXX*. RWH Tanks: *Location XXX.*

| Source Type | Mitigation Plan | Evidence of mitigation measure | Follow up/ frequency | Responsible persons/ organizations |
| --- | --- | --- | --- | --- |
|  | Construction Stage |  |  |  |
| Water Pans | 1. Construct cattle troughs away from the water pan site
2. Provide a cutoff trench for any storm water flowing in from any nearby farms, markets, trading centers etc
3. Construct a suitable silt trap to control siltation of the reservoir
4. Construct the embankment with gentle and well compacted slopes to prevent any soil erosion of the walls during rainy seasons
5. Plant appropriate grass, other groundcover and/or trees on the embankment and its sorrounding catchments respectively
6. Provide adequate dead storage below the intake chamber to minimize siltation of the draw pipe
7. Fence round the water pan site
8. Ensure all spilled oils and fuels are properly disposed
9. Properly dispose off all waste/ unwanted matter from the reservoir
10. Install an appropriate water treatment unit
 | Installation, completion reports, photos | After construction and every three months | Contractors, community and IP |
| Boreholes | 1. Install durable pipe casings
2. Ensure proper disposal of waste materials from the drillings pit to prevent any seepage to the ground water
3. Proper development of the pit to remove any unwanted material occurring during drilling process
4. Take water samples for physiological, chemical, bacteriological and arsenic water quality testing in an approved government laboratory.
5. Fence round the borehole and pump house sites
6. Ensure all spilled oils and fuels are properly disposed by removing affected soil
7. Provide appropriate treatment system to remove identified chemical impurities
 | Installation, completion reports, photos water quality reports, photos, design drawings for treatment units | During construction, after construction and after every three months | Contractors, IP, community |
| Pipeline Extension | 1. Avoid swampy areas in installation of the pipes or else use galvinized iron (GI) pipes in swampy areas to prevent any cracks of pipes and an eventual pipe water contamination
2. Cover all the installed pipes/ refilling the excavated trenches with soil
3. Conduct physio-chemical and bacteriological water quality tests at the end point of the pipeline extension to ascertain any contamination in the line
4. Provide appropriate water treatment system
 |  Installation, completion reports, photos,water quality reports, photos | During and after construction and after every three months | IP, relevant ministry, community |
| Rock catchments | 1. Fence all round the developed rock catchments
2. Cart away or remove all waste matter from the rock catchments
3. Construct diversion trenches in the upstream of the rock catchments to prevent any outside storm water from flowing inside
4. Conduct water quality analyses and provide appropriate treatment system
 | Installation and water quality reports, photos | During and after construction and after every three months | Community, contractor |
| Rain water harvesting (RWH) Tanks | 1. Provide an overflow pipe
2. Provide a Wash out pipe at the bottom of the tank
3. Construct a suitable water collection chamber and provide adequate drainage for spilled water
4. Conduct water quality analyses
5. Sensitize the users on the need to boil drinking water
 | Installation and water quality reports, photos | During and after construction and after every three months | Contractor, community |
| Shallow wells | 1. Take water samples for chemical, bacteriological and arsenic water quality testing in an approved government laboratory
2. Fence round the shallow well
3. Provide proper drainage of spilled water
 |  Installation and water quality reports, photos | During and after construction and after evry three months | IP, community |
|  | Operation Stage |  |  |  |
| Water Pans | 1. Avoid entry of people and animals into the reservoir
2. Maintain plant grass and trees on the embankment and its sorrounding catchments respectively
3. Avoid cultivation of the catchments area
4. Provide hygiene and sanitation facilities at least 50m away from the reservoir, pref. Downslope.
5. Undertake water quality tests (physiochemical and bacteriological) on quarterly basis
6. Conduct routine maintenance of rainwater catchment pan and water treatment system.
 | Water quality reports, photos | After every 3 months | Community, IP |
| Boreholes | 1. Undertake water quality tests (physiochemical and bacteriological) on quarterly basis
2. Maintenance of the borehole equipment and treatment unit
3. Provide hygiene and sanitation facilities at least 50m away from the borehole at an approriate site
4. Community senstization on proper handling of water after drawing it
 | Water quality reports, photos | After every 3 months and yearly | IP |
| Pipeline Extension | 1. Undertake water quality tests (physiochemical and bacteriological) on quarterly basis
2. Ensure immediate repairs of leakages to prevent any contamination of pipe water
 | Water quality reports | After every 3 months, continuous | IP, community |
| Rock catchments | 1. Remove any silt matter deposited in the catchments after and before the rainy season
2. Replace the filter media placed in the catchments after some time to maintain proper filtration
3. Undertake water quality tests (physiochemical and bacteriological) on quarterly basis
 | water quality reports | After every 3 months and yearly | Community, IP |
| RWH Tanks | 1. Empty and clean the tank using chlorine twice a year
2. Ensure the roof catchments is free from any foreign matter at all times
3. Provide a cover lid in the inspection chamber
 | Reports from the users | 6 months, continuously, after construction | School heads |
| Shallow wells | 1. Undertake immediate repairs of any cracks on the well cap
2. Undertake water quality tests (physiochemical and bacteriological) on quarterly basis
3. Provide a diversion trench for any storm water to protect the well cap
 | Visual inspection of works, review water quality reports | After construction and after every 3 months | Community, IP |

***NB****: Indicate if a water quality feasibility study has been conducted by a consultant and design plans are being developed for the recommended treatment units for all water sources. Installation of the treatment systems will be undertaken in the course of the year.*