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İşin Adı : Mersin-Adana-Osmaniye-Gaziantep Yüksek Standartlı Demiryolu Hattı
The Name of : İnşaatı ile Elektromekanik Sistemlerinin Temini
the Job : Construction of Mersin-Adana-Osmaniye-Gaziantep Hight Standard Railway
Line With Supply Of Electromechanical Systems

Rapor Adı
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SURFACE WATER AND WASTEWATER MANAGEMENT PLAN

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1.PURPOSE

The purpose of this plan is to inspect/ensure the conformity of drinking/utility water used in the project site with local and creditor standards.

2.SCOPE

The prepared plan covers the management of consumed water and all wastewater produced within the project boundaries.

3.REFERENCES

Turkish Environmental legislation

Environmental Law

Water Pollution Control Regulation

Regulation on the Protection of Water Resources

International Finance Corporation (IFC) Environment, Health and Safety General Guidelines

IFC Environmental, Health and Safety Guidelines – Toll Roads

Regulation on Water Intended for the Consumption

4. DUTIES AND RESPONSIBILITIES

4.1. Project Manager

Ensuring that the plan is prepared and implemented in accordance with local and lender standards.

Providing the necessary resources during the implementation of the plan.

4.2. HSE Manager

Preparation/preparation of the plan in accordance with local and creditor standards.

Revision of the plan according to changing conditions.

Supervising the implementation of the plan at the project site, ensuring that it is supervised by the HSE team employees. Informing the project management about the subject in case of nonconformity.



Guidance on water analysis and obtaining necessary permits.

Providing/having provided the trainings related to the plan to the subREC officials to the project employees

4.3. Headquarter E&S Manager:

Responsible for managing infrastructure and superstructure projects regarding environmental and social governance issues and member of the Executive E&S Committee on behalf of the REC

4.4. SubRECs and Employees

Responsible for complying with the rules conveyed by the REC HSE Unit and training its employees on the subject.

4.5 PIU (PROJECT IMPLEMENTATION UNIT)

- **PIU Department Manager (Superstructure / Civil Engineer)** will be responsible for overseeing the implementation of all health, safety and social measures, as specified within the disclosure package of the Project, and regular reporting to AYGM PIU.
- **PIU Physics Engineer** who is responsible for supervising health and safety for the Project.

4.6 Executive Environmental and Social Management Committee

- **Executive E&S Committee Project Manager (Department Head / Branch Manager /Head of Department)** will be ultimately responsible for overseeing the activities undertaken by the AYGM/TCDD specialists (listed below), overseeing the implementation of mitigation measures and management procedures specified within the disclosure package of the Project, and overseeing the preparation and implementation of a CESMP, which will be based on this ESMP.
- **Executive E&S Committee Environmental, Health and Safety, and Social (EHSS) Manager (Specialist / Engineer)** will be responsible for overseeing all matters that relate to environment, health, safety and social aspects of the Project. Also, s/he will be appointed to be responsible for supporting the implementation of the SEP, by conducting regular consultation with affected communities on any concern regarding



the Project. CLOs will also have responsibility for disseminating the Project disclosure package as described in the SEP. They will also conduct regular inspections of records relating to grievances received and their resolution. S/He will report regularly to AYGM PIU.

Further technical staff may be required during the course of the Project, who will be assigned internally by the AYGM, either by means of permanent or temporary basis until the completion of relevant tasks under the Project whilst they undertake their current responsibilities.

5. GENERAL RULES AND PRACTICES

In order to detect potential affects on groundwater, quality, flow and recharge, REC will undertake the following studies and investigations to inform the final design:

Foundation Risk Assessments and Piling Risk Assessments will be carried out for bridges, viaducts, overpasses, underpasses and cut and cover tunnels. They should be used to develop measures to protect groundwater resources as part of the design and during construction.

Regarding spillage / leakage to surface water risks, these mitigation measures should be taken by REC and PIU:

- Accidental spills will be avoided through good practice and restriction of refueling near watercourses. Safe fueling and gasoline handling procedures will be practiced in the construction areas. If heavy equipment cannot be moved to appropriate fueling locations, an impervious surface (such as a drip-tray) will be used for refueling this equipment to prevent accidental releases to groundwater aquifers.
- Re-fueling of all plant, vehicles and machinery will be carried out at minimum 50 m of any watercourse, drain or channel leading to a water course.
- Hazardous materials will not be stored in excavated areas. Exposure to hazardous materials in open areas will be kept to a minimum in size and time.
- All temporary hazardous material or waste storage areas used during construction works will be connected to a closed impervious sump or wastewater treatment facility and/or bounded with secondary containment. Secondary containment structures will consist of berms, dikes, or walls capable of containing the larger of 110% of the largest tank or

25% of the combined tank volumes in areas where hazardous materials are handled such as fuel stores and loading areas, concrete mixing, hazardous material stores to prevent hazardous materials entering the site drainage.

- Oil separator will be used for silty/soiled water from construction activities and after silty/soiled water is brought to national and international discharge criteria will be discharged to suitable receiving environment.
- Scheduling of construction activities near water bodies during period of heavy rainfall will be considered. High sediment producing activities will be avoided as much as possible and exposed surfaces and stored materials covered/dampened as necessary to reduce erosion of sediments to surface water.
- Sensitive areas of rivers and drains will be protected from impact due to vehicles and other construction activities with appropriate fencing such as orange safety barrier fencing or other appropriate ways.
- Spills will be immediately contained on site and all contaminated materials including soils will be removed from the site for suitable treatment and disposal.
- Water quality measurements will be made at baseline measurement points, as well as other overlaps of the Project with water bodies and upstream + downstream of construction sites.
- All staff and subRECs will report any spill incidents, and these will be subject to investigation and close out remedial and preventive actions.
- Re-fueling of all plant, vehicles and machinery will be carried out at a minimum 50 m distance of any watercourse, drain or channel leading to a water course.
- Storage and handling of fuels, oils and other hydrocarbons through a controlled process, involving measures to prevent soil and water contamination. Those should include fuel and oil storage on sealed surfaces and within secondary containment.
- All sites near rivers will be protected by fencing and other means to prevent loss of construction materials, particularly hazardous materials.
- Movement of equipment inside rivers, streams, or on their banks, will be prevented except when it is unavoidable due to the construction of a structure or in an emergency situation.
- In the case of working on a water body/dam /river (construction of a bridge pillar):
- After ensuring the permit via State Hydraulic Works (DSİ) or any other relevant legal authority to hold the water (in particular, dry seasons will be chosen) and dry the location

for the construction for a period of 3-4 months, finalize the construction before the re-entry of water to the location.

- Training will be provided to machine operators regarding the sensitivities and working procedures, with attention to machine and equipment inspection for leaks prior to use, safe storage and handling of fuels/oils/hydrocarbons near the watercourse and/or precautionary measures to prevent contamination of soil and watercourse
- Construction Emergency Response Plan will be followed by all staff working on or near the river.

Regarding change in river water quality risk, these mitigation measures should be taken:

- In general, no significant water quality change in the river is expected, and possible sediment pollution should be prevented by means described in other sections. The sampling points' water quality analysis results will be monitored, and in case a Project-related event deteriorate the quality above the set limits, necessary measures will be taken up to temporary cease of construction works.
- Fuels and potentially hazardous construction materials will be stored in bunded areas with external cut-off drainage and fuel will be stored in double skinned tanks with 110% capacity.

Regarding the impacts on present infrastructure related to water, these mitigation measures should be taken:

- Any damage caused to surface water infrastructure such as supply systems, irrigation systems, flood defences and drainage ditches must be rectified by the REC with the approval of PIU.

Regarding the leakage to groundwater risk, these mitigation measures should be taken by REC and PIU:

- Fuelling and storage areas will be planned and designed with containment to prevent releases to ground.
- Accidental spills will be avoided through good practice and restriction of re-fueling near watercourses. Safe fueling and gasoline handling procedures will be practiced in the construction areas. Where the construction equipment cannot be moved to fueling points, an impervious surface (such as drip-trays) will be used during re-fueling of construction equipment to prevent accidental leakage to groundwater.
- Hazardous materials will not be stored in excavated areas.
- Exposure to hazardous materials in open areas will be kept to a minimum in size and time.



Regarding the alteration of groundwater level risk, these mitigation measures should be taken by REC and PIU:

- The use of groundwater resources will be subject to approval by the local Authority (State Hydraulic Works). The Authority may allow the extraction wells to be drilled and used if the groundwater supply is sufficient. These approvals are based on the availability of the water source. Where the use of ground water is as water source for the construction works (including Project facilities), all permits will be secured before the use.
- Excessive drawdown below the groundwater level will not be conducted.
- Groundwater level will be regularly monitored from existing groundwater wells located near the construction site. Groundwater use shall not exceed the permitted level.

Regarding resource efficiency, these mitigation measures should be taken by REC and PIU:

- Considering the increased demand on water for construction activities, the REC shall adopt measures that avoid or reduce water usage so that the project's water consumption does not have significant adverse impacts on resources. These measures include, but are not limited to,
 - the use of additional technically feasible water conservation measures within the construction activities,
 - the use of alternative water supplies, water consumption offsets to reduce total demand for water resources to within the available supply
- The REC will avoid the release of pollutants or, when avoidance is not feasible, minimize and/or control the intensity and mass flow of their release according to the mitigation measures given in this ESMMP. This applies to the release of pollutants to air, water, and land due to routine, non-routine, and accidental circumstances with the potential for local, regional, and transboundary impacts.
- The material stockpiles open to air will be dampen in dry and windy weathers to prevent dust generation and material lose via winds.

Regarding the damage risk to fresh ecosystem, these mitigation measures should be taken by REC and PIU:

- Temporary culverts proposed for river and stream crossings as mitigation measure to protect sensitive aquatic habitats will be designed to allow fish crossing both high and low flows (i.e. bottomless culverts).
- Construction work (bridge structures, drainage, temporary crossings and temporary works for structures) on rivers/streams and its tributaries between April and June will be avoided.

- The natural structure of the riparian vegetation which forms the spawning and sheltering area for many aquatic organisms, will be preserved where possible.
- Vegetation clearance works will be planned and executed to avoid damage to the riparian vegetation.
- To avoid any increase of the turbidity levels, sediment traps will be used, excavated materials will not be deposited or stored in or near freshwater features.
- The bottom structure of the river crossing zone will be restored to its natural state by laying the same material shortly after the work is completed.

5.1. Utilization Water and Quality

It will be used by taking into account the parameters determined in the following local regulations. The quality of domestic water will be tested by taking samples by the accredited institution on a monthly basis. It will be noted whether the test result is within the following ranges. (Regulation on Water Intended for the Consumption)

5.2. Wastewater management

Wastewater effluents of the construction campsites will be discharged to the nearby wastewater treatment plant of the municipality. Analysis of the wastewater according to the parameters required in the Water Pollution Control Regulation will be monitored during construction period.

5.3. Land Preparation and Construction

Reduction Measures for Surface and Groundwater Quality

- Refueling of equipment and vehicles will not be carried out at excavation sites.
- The location of water resources will be taken into account in the selection of temporary storage areas for oil, fuel and chemicals.
- Waste oils will be stored in tanks/containers located on waterproof surfaces.
- Secondary containment (on concrete surfaces) will be provided for all storage tanks/barrels containing chemicals such as diesel fuels or hazardous liquid waste.
- Where necessary, absorbent materials will be kept in storage areas. The volume of containment structures for storing fuel, oil or other chemicals will be greater than the volume of sufficiently contained liquid.



- Hazardous materials will not be stored in excavation areas. Supervision will be used during the handling of all hazardous materials. Sealed containers and other containment techniques will be used when handling hazardous materials.
- All wastewater discharges from all components of the construction must comply with the relevant legal requirements. Treated water will be reused where possible and appropriate.
- All building components and associated building-source wastewater will be discharged into the local/municipal sewer network or treated or collected on-site before being discharged into the appropriate receiving environment and transported by tanker for disposal at local sewage treatment plants.
- Quarry pond dredging activities will be designed for quarries and implemented to minimize sinking, taking into account potential impacts on surface and groundwater resource flow and availability.
- Where water quality characteristics allow, rainwater will also be managed as a resource to meet the Project's water needs whenever possible.
- Prior to discharge, drains from excavations will be collected and treated to remove contaminants in accordance with relevant legal requirements.
- Perimeter drains will be constructed around all work areas to collect potentially contaminated runoff and divert it to a settling tank system prior to discharge in accordance with required permits.
- Direct discharge of contaminated runoff from work sites will not be permitted.
- Channels, containers and sandbag barriers will be used to allow direct flow of the collection system.
- To keep roads and other surfaces free of dust, a broom rather than a wash will be used.
- Biodegradable cleaning tools will be used to remove asphalt residues.
- In order to ensure a proper and effective construction process, maintenance and inspection of all facilities and structures will be carried out regularly, especially during heavy rainfall.
- Deposits will be regularly removed and (if not contaminated) sprinkled on the site or disposed of at an appropriately licensed facility.
- During construction, the Emergency Preparedness and Response Plan will be implemented.
- Exposure of open ground areas will be kept to a minimum in terms of size and duration.

Mitigation Measures for Surface Water Bodies and Channels

- Where and when possible; The construction of bridges, viaducts, retaining walls and other structures will take place during the seasonal months when there is little water.
- Fences will be used in sensitive rivers and drains for protection.
- During construction, isolation techniques such as beaming or diversion will be used during downstream work to limit exposure of moving sediments to running water.
- To protect the small drains in the construction areas, these areas will be covered with metal plates that can be passed over the construction machinery.
- For stream crossings, work will be done over embankments on the channel and avoiding direct interference with the watercourse unless the existing embankment reinforcement needs to be replaced. Works will be carried out during periods of low flow. The duration of downstream activities will also be restricted.
- Grass from adjacent areas to cover the soil surface, use of erosion control covers or mats and other relevant soil erosion prevention measures will be implemented after the earthwork is completed.
- Groundwater from the drain will be discharged to a nearby surface waterway.
- Turbidity should be monitored and a settling tank will be installed if necessary.

Monitoring of Water Quality, Wastewater and Stormwater Management

- An independent monitoring program will be implemented to evaluate the effectiveness of management strategies and mitigation measures. The recommended scope of monitoring activities, which can be revised during the Project process to the extent necessary, is as follows:
 - Water quality in certain water sources (by accredited laboratories)
 - will be monitored (quarterly) in selected settlements.
 - The water resources and amount to be supplied through the project will be monitored and water supply permits will be checked.
 - Environmental permits for package domestic wastewater treatment plant discharges, wastewater disposal agreements/channel connection permits with municipalities and the capacity of package domestic waste treatment plant will be controlled/monitored.
 - Evacuation/disposal volumes will be monitored.
 - Waste water management practices in concrete plants will be monitored.



- In addition, daily general site observation will be made by the Environmental Unit to provide basic information on the construction progress depends on the site organization, etc. Monthly coordination meetings with the project management will be held by the Environmental Unit to provide feedback on environmental issues and present the main findings regarding monitoring processes.
- In addition to independent monitoring; Experts working in various organizations, including the Ministry of Environment and Urbanization, the Ministry of Health, the Ministry of Labor and Social Security and the provincial organizations of these institutions, can supervise the activities. The timing and frequency of these inspections will be determined by the relevant organizations.
- If non-compliance is detected as a result of monitoring and audit activities, all work to eliminate the non-compliance will be carried out by the Project Sponsors.

6. MONITORING, ASSURANCE AND VERIFICATION

Key success indicators (KPIs) of this procedure will be monitored, verified and evaluated by the relevant parties in accordance with their responsibilities set forth in the E&S Governance document, within the scope of the MAOG-RECU-GB-GNL-IS-PRG-0007-0 HSE Monitoring, Assurance and Verification Procedure.

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