BEST PRACTICES UNDER IWMP IN JAMMU & KASHMIR

PRESENTATION BY DR. G. H. SHAH
C.E.O. J&K SLNA
INTRODUCTION

- WATER CONSERVATION IS ONE OF THE THRUST AREAS OF IWMP.
- AT MANY TIMES/SEASONS THE AVAILABILITY OF WATER IS BEYOND REQUIREMENT, WHEREAS IN CERTAIN PERIODS THE AVAILABILITY IS TOO LOW. SUCH SITUATIONS LEAD TO LOW PRODUCTIVITY.
- STORAGE OF WATER IN PONDS/TANKS IS AN ESTABLISHED PRACTICE IN INDIA.
WATER STORAGE TANKS—CHANGING TRENDS

• Initially water storage tanks were dug and used for water storage.

• Seepage/percolation of water in such tanks is an established fact.

• Lining of tanks has been tried from time to time to reduce percolation. Bricks, stones, cement, concrete etc. have been tried for lining of tanks.

• One of the latest concepts of lining tanks is geo membrane lining.
GEO-MEMBRANE/GEO-TEXTILE

- GEO MEMBRANE IS A LDPE FILM
- GEO TEXTILE IS A PLASTIC FABRIC
- LDPE FILM (GEO MEMBRANE) IS LAID ON THE TANK, WHICH STOPS PERCOLATION OF WATER.
OUR EXPERIENCE OF GEO MEMBRANE

AT LARKIPORA VILLAGE OF DISTRICT ANANTNAG (IWMP-1-2011-12) A TANK WAS LINED WITH GEO MEMBRANE. THIS WAS A TRIAL TO ASSESS FEASIBILITY OF GM.

THE FOLLOWING FINDINGS WERE OBSERVED.

• ALL THE SURROUNDING LAND WAS CONVERTED TO VEGETABLE CULTIVATION.

• FRUIT PLANTS HAVE BEEN PLANTED.

• IRRIGATION FACILITY THUS CREATED HELPED TO INCREASE PRODUCTIVITY OF SURROUNDING ORCHARDS.

• WATER FOR ANIMALS IS AVAILABLE THROUGHOUT.
FLOW CHART FOR GEO MEMBRANE LINING

- IDENTIFY SITE FOR WATER STORAGE TANK.
- WORK OUT DIMENSIONS OF TANK.
- DIG TANK AS PER APPROVED DESIGN ENSURING APPROPRIATE SIDE SLOPE KEEPING SOIL TYPE INTO CONSIDERATION.
- MAKE INNER SURFACES SMOOTH AND FREE FROM PEBBLES.
- LAY GEO MEMBRANE. HOWEVER, IF SURFACE IS NOT SMOOTH THEN PLACE GEOTEXTILE ON THE SURFACE AND THEN LINING OF GEO MEMBRANE.
- LAY THE TOP EDGES OF MEMBRANE UNDER A REASONABLE DEPTH OF SOIL TO AVOID ANY DAMAGES.
- THE TANK IS READY FOR WATER STORAGE.
ADVANTAGES OF GEO-MEMBRANE

• SEEPAGE/PERCOLATION IS COMPLETELY STOPED.
• CARRYING OF GEO MEMBRANE IN HILLY AREAS IS CONVENIENT COMPARED TO OTHER LINING MATERIAL LIKE BRICKS, CEMENT ETC.
• CONCRETE LINING GENERALLY DEVELOPS CRACKS AFTER SOME YEARS WHEREAS THERE IS NO SUCH THREAT IN GEO MEMBRANE.
• TIME SAVING IS ONE MAJOR ADVANTAGE. ANY SIZE OF TANK CAN BE LINED WITHIN 1 OR 2 DAYS.
• THIS LINING IS MUCH CHEAPER/ECONOMICAL THAN OTHER TYPES OF LININGS. IT IS NEARLY HALF OF THE COST OF CEMENT LINING
<table>
<thead>
<tr>
<th>S.N</th>
<th>Item</th>
<th>Concr.</th>
<th>Geo Mem</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Earthwork in bulk excavation in trenches exceeding 1.5 M depth -13.72X15.24X2.13 M 446 CM Av.(Manual) @ Rs.240.45/CM</td>
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<td>145000</td>
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<tr>
<td>2</td>
<td>Concreting-75 CM @ Rs.3552.50/CM in M:10</td>
<td>266000</td>
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<td>3</td>
<td>Carriage of materials from source to dumping site (35 Km away)</td>
<td>44000</td>
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<td>4</td>
<td>Head load from dumping site @ 200 M (Avg)</td>
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<tr>
<td>5</td>
<td>Laying and placing including carriage of Geo-membrane (LDPE) sheet 1000 micron thickness @ Rs. 285/SM</td>
<td>Nil</td>
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<tr>
<td>6</td>
<td>Unforeseen items (piping and outlet source) including sign board and documentation</td>
<td>5000</td>
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<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>476000</strong></td>
<td><strong>282000</strong></td>
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MAJOR CONCERNS/REMEDIAL MEASURES

• INTENTIONAL MECHANICAL DAMAGE TO GEO MEMBRANE LINING AT ISOLATED PLACES IS A THREAT.

• REMEDY FOR SUCH THREATS IS TO BURRY THE TOP EDGES UNDER SUFFICIENT LAYER OF SOIL.

• FENCE THE TANK AREA.
CONCLUSION

GEO MEMBRANE IS ONE OF THE TECHNOLOGIES FOR LINING OF WATER STORAGE TANKS. THIS TECHNOLOGY IS SIMPLE, ECONOMICAL, AFFORDABLE AND TIME SAVING. IT IS MORE USEFUL IN AREAS WHERE CARRAIGE OF MATERIAL FOR LINING LIKE SAND, CEMENT, BRICKS ETC. IS COST INTENSIVE.
THANKS