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USAID Water Reuse and Environmental Conservation Project

Proposed Aqaba Integrated Waste Management Facility and Sanitary Landfill

08 May 2014
Implemented by AECOM

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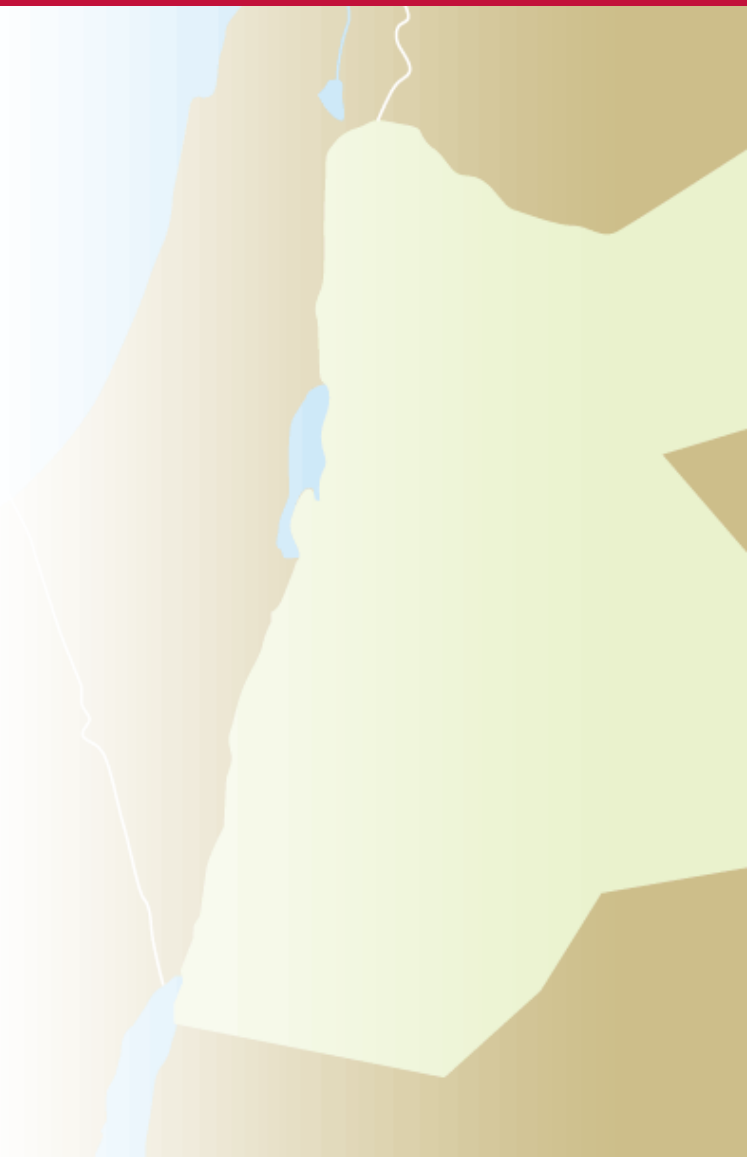
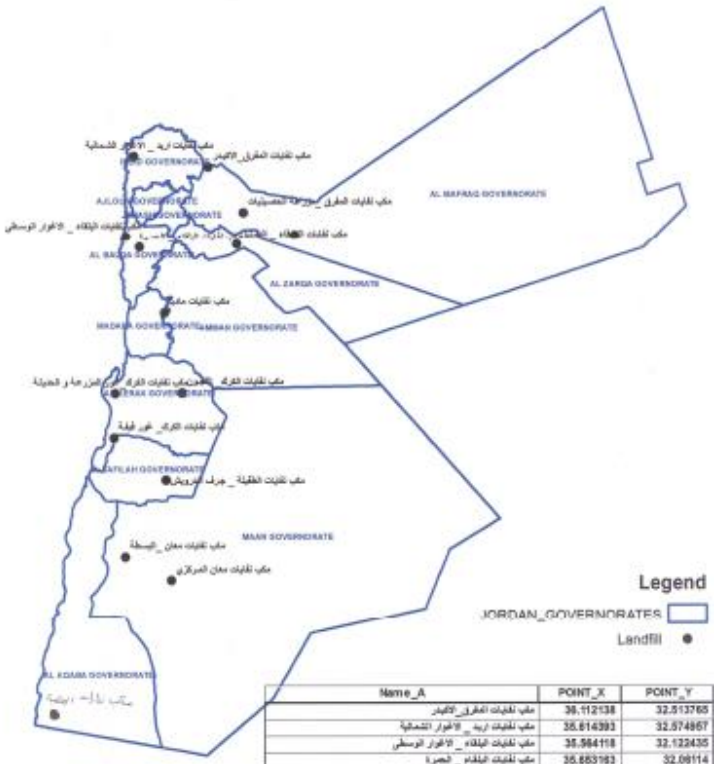
AGENDA

- USAID and GoJ goals
- Design Standards
- Facts and Figures
- Activities and progress
- Challenges
- Next steps



USAID AND GoJ GOALS

- Protect human health and safety
- Protect the environment



Name_A	POINT_X	POINT_Y
مكب نفايات المفرق_الاكيدر	36.112138	32.513765
مكب نفايات اربد _ الاغوار الشمالية	35.614393	32.574957
مكب نفايات البلقاء _ الاغوار الوسطى	35.564118	32.122435
مكب نفايات البلقاء _ الحمرة	35.653163	32.06114
مكب نفايات الزرقاء _ الضليل	36.299775	32.073856
مكب نفايات الطفيلة _ جرف الدرويش	35.818391	30.745607
مكب نفايات الكرك_ الجون	35.8312	31.236373
مكب نفايات الكرك_غور المزرعة و الحديثة	35.489596	31.233735
مكب نفايات الكرك_ غور فيفة	35.478482	30.983427
مكب نفايات المفرق_مزرعة الحصينيات	36.345342	32.256494
مكب نفايات معان _البسطة	35.551409	30.314161
مكب نفايات معان المركزي	35.851984	30.181559
مكب نفايات مادبا	35.815457	31.688093
مكب نفايات المفرق _ البادية الشمالية	36.686114	32.125508

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USAID AND GoJ GOALS

- Help communities generate income through recycling and energy recovery from waste
- Help mitigate climate change impacts through improved solid waste management practices
- Design to USEPA “Subtitle D” Standards
- Incorporate technology appropriate to local climate

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DESIGN STANDARDS

- USEPA Subtitle “D” - Intended to minimize waste moisture content
  1. Water leaches contaminants from waste
  2. Water could transport contaminants in environment
- Incorporates 7 systems to protect human health, safety and the environment

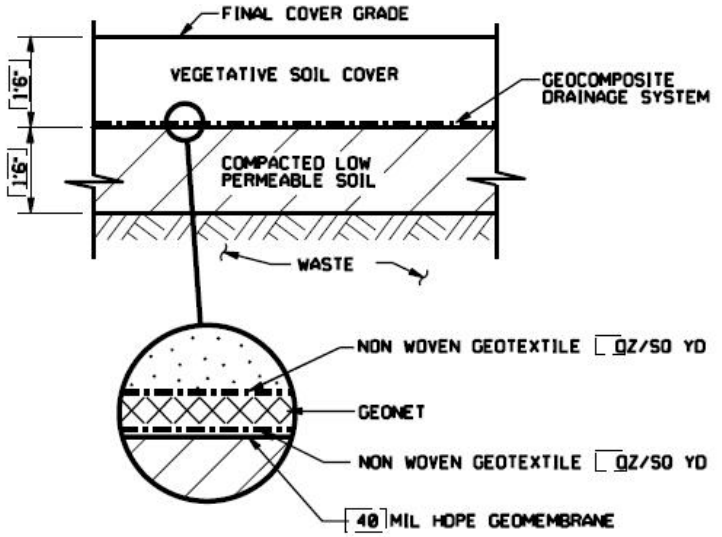
DESIGN STANDARDS

1. Final cover system
2. Surface water management system

– Both minimize moisture addition from precipitation by:

   a) Maximize run – off

   b) Minimize infiltration



FINAL COVER- (TYPE B COMPOSITE LINER)

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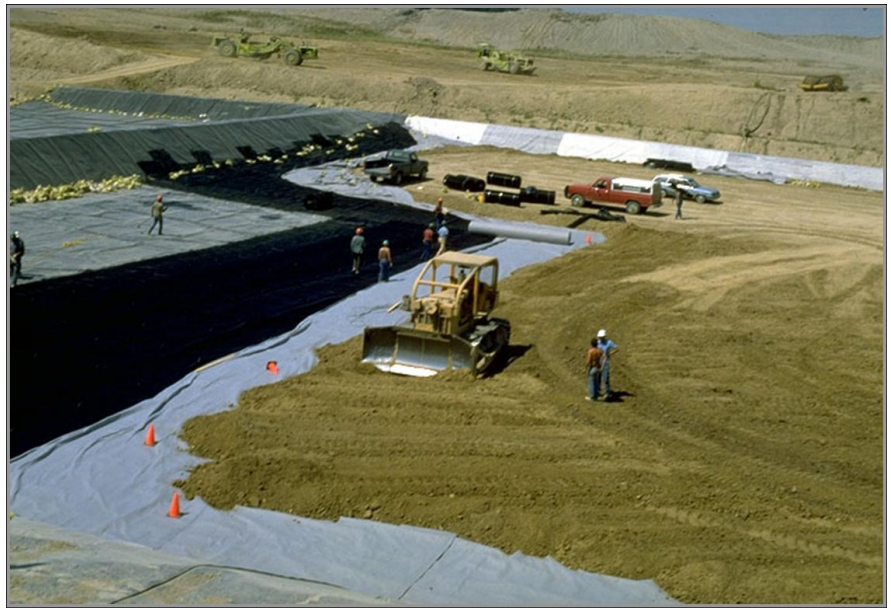
DESIGN STANDARDS

3. Leachate collection system removes liquid from landfill
4. Base liner minimizes potential for liquid to leak out of landfill into the environment



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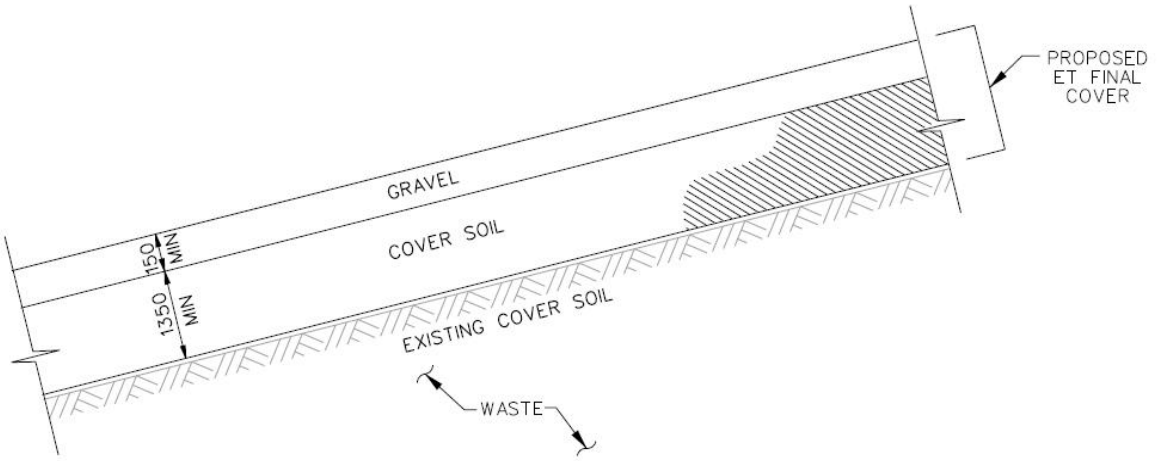
DESIGN STANDARDS

5. Landfill gas collection system minimizes escape of air pollutants to atmosphere
6. Access control system minimizes unauthorized disposal
7. Monitoring system verifies performance of other systems and compliance with regulations

DESIGN STANDARDS

- Jordan's dry climate provides opportunity for equal performance at lower cost
- Example: Evaporative cover system



EVAPO-TRANSPIRATION (ET) FINAL COVER SYSTEM 4
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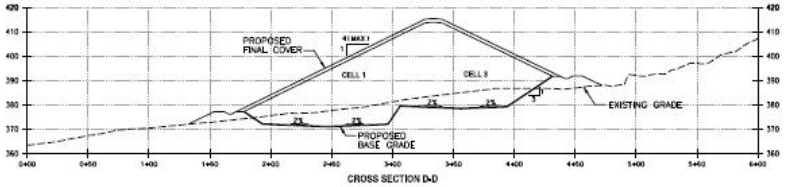
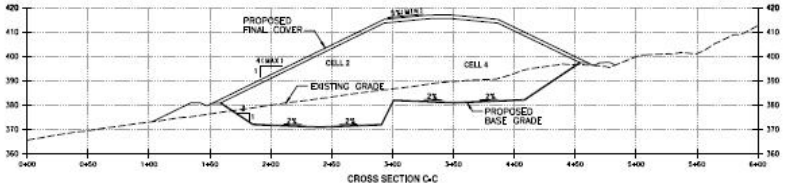
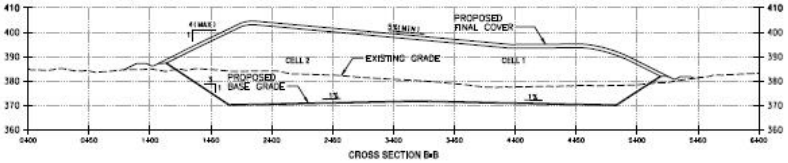
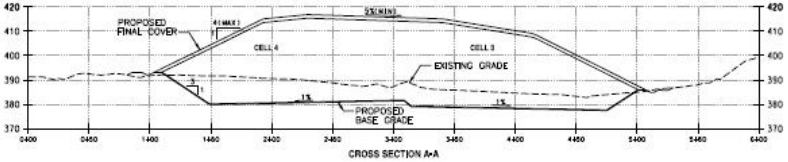
FACTS AND FIGURES

- Provide 20-years of solid waste disposal capacity
- 2,123,000 m^3 total volume with recyclable materials recovery
- 14 km southeast of Aqaba (25 km by road)
- Adjacent to existing landfill









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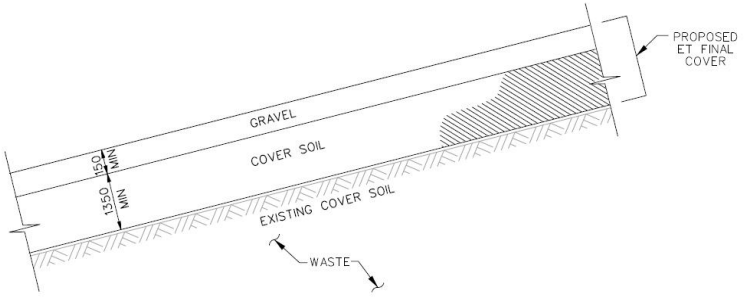
FACTS AND FIGURES

Landfill Design Features

- Evaporative cover
- Composite base liner
- Leachate collection



EVAPO-TRANSPIRATION (ET) FINAL COVER SYSTEM 4
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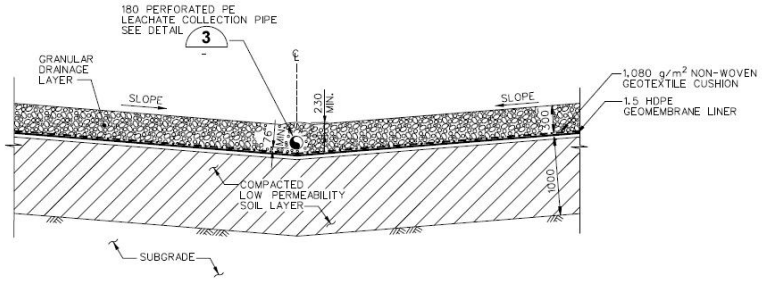

NOTES:

1. COMPACTED LOW PERMEABILITY SOIL LAYER SHALL BE COMPACTED TO A MAXIMUM HYDRAULIC CONDUCTIVITY OF K=1x10⁻⁷ CM/SEC.
2. GRANULAR DRAINAGE LAYER SHALL HAVE A MINIMUM HYDRAULIC CONDUCTIVITY OF K=1x10⁻¹ CM/SEC.

COMPOSITE LINER SYSTEM AND LEACHATE COLLECTION SYSTEM (TYP) 1
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FACTS AND FIGURES

Potential sources of income

- Landfill gas collection for energy
- Recyclable materials recovery
  - Improve efficiency and
  - Improve worker safety

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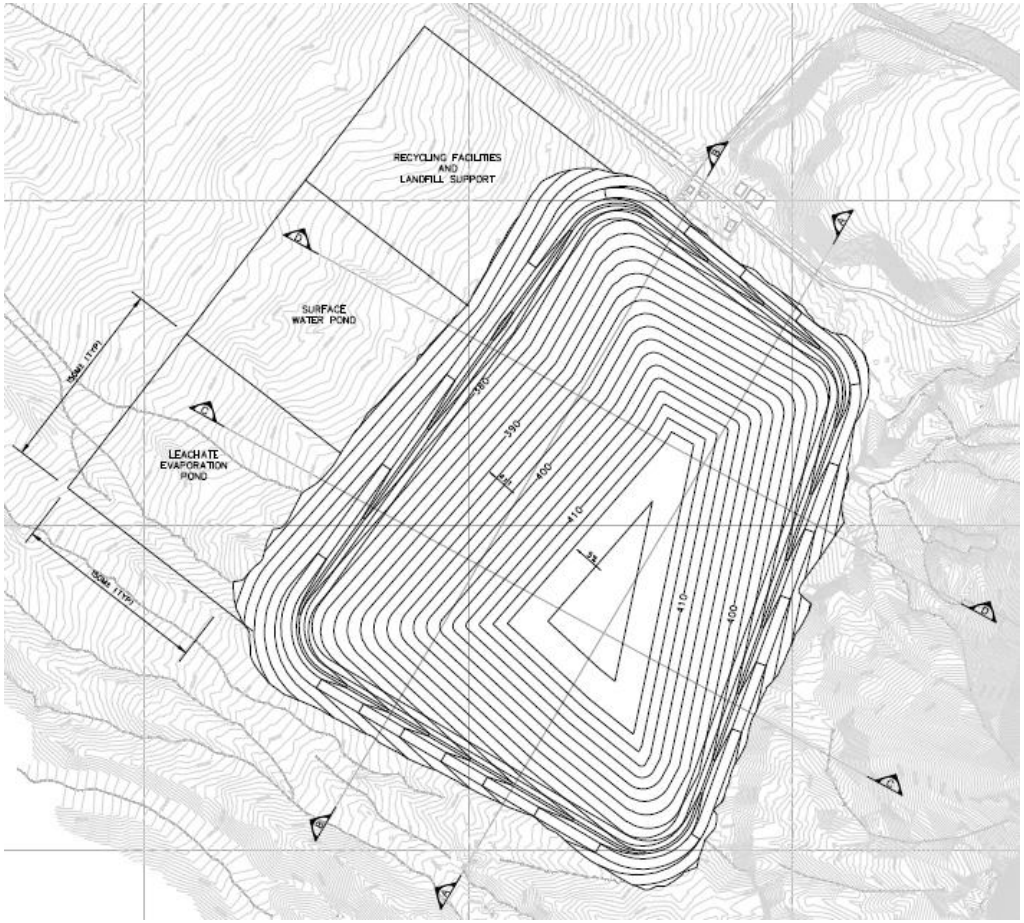
ACTIVITIES & PROGRESS

Completed:

- Needs assessment
- Topographic survey
- Geotechnical investigation
- Waste characterization
- Feasibility study
- Conceptual design



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CHALLENGES

- Implementing aggressive recyclable materials recovery
- Committing to increased cost of higher standard of environmental protection provided by proposed design
- Developing methods to increase revenue and offset increased costs

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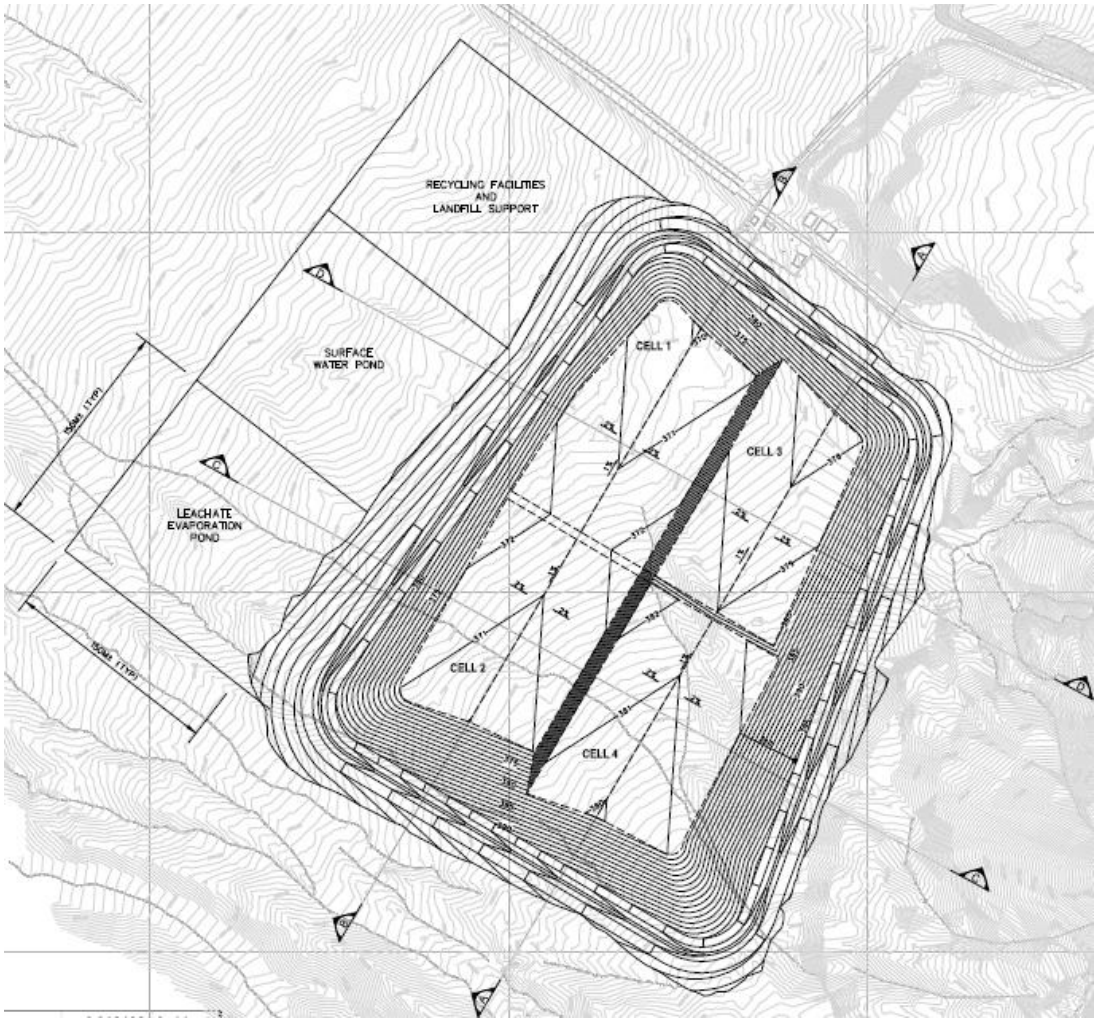
NEXT STEPS

- Final design
- Engage potential stakeholders
- Implementation