



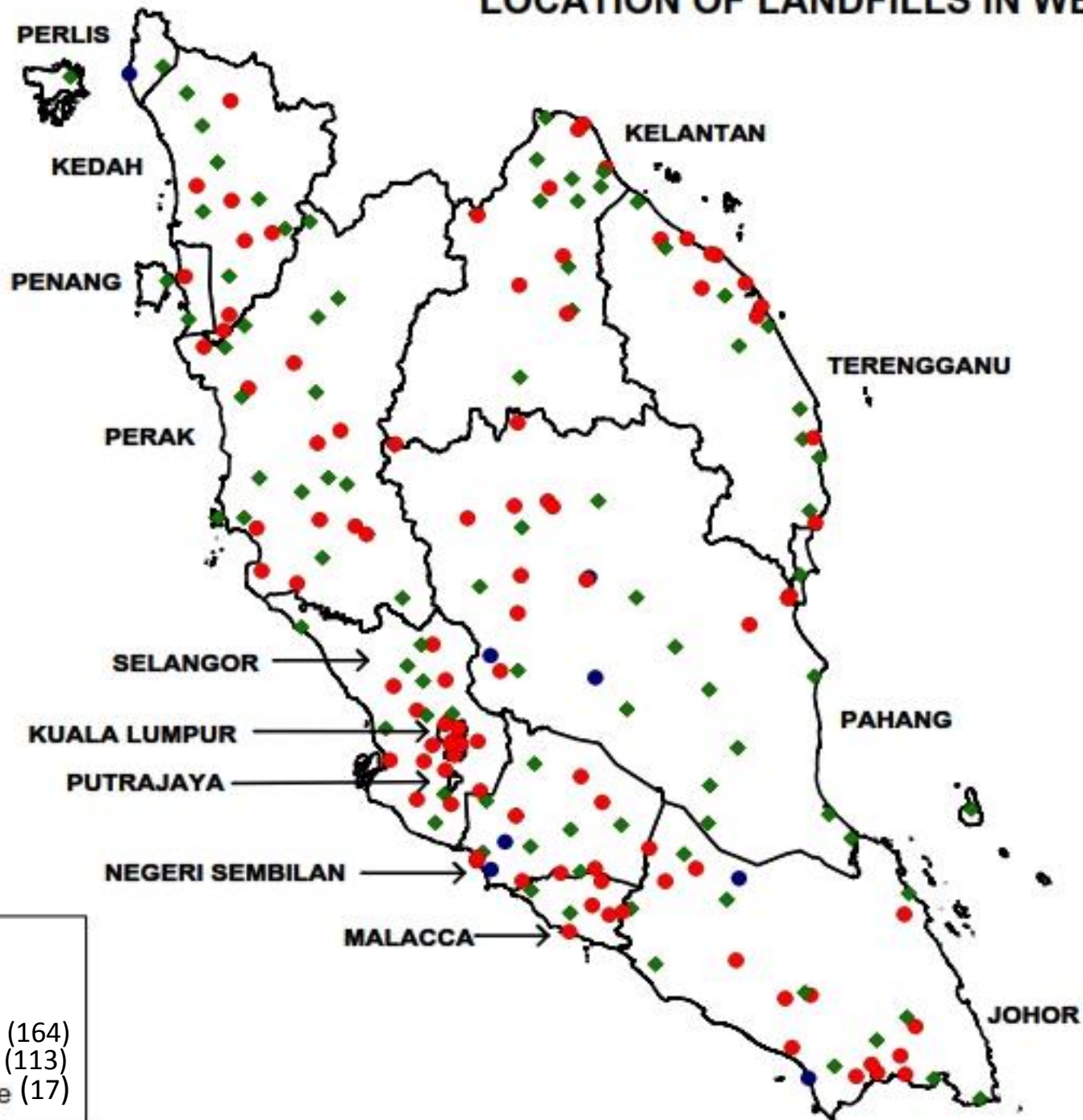
SAFE CLOSURE OF NON-SANITARY LANDFILL

From Environmental Threat To Opportunity

**DATUK ZAINI BIN MD NOR
CHIEF EXECUTIVE OFFICER
SOLID WASTE AND PUBLIC CLEANSING CORPORATION**



LOCATION OF LANDFILLS IN WEST MALAYSIA



LEGEND

Landfill

- ◆ Operating (164)
- Close (113)
- Safe Closure (17)

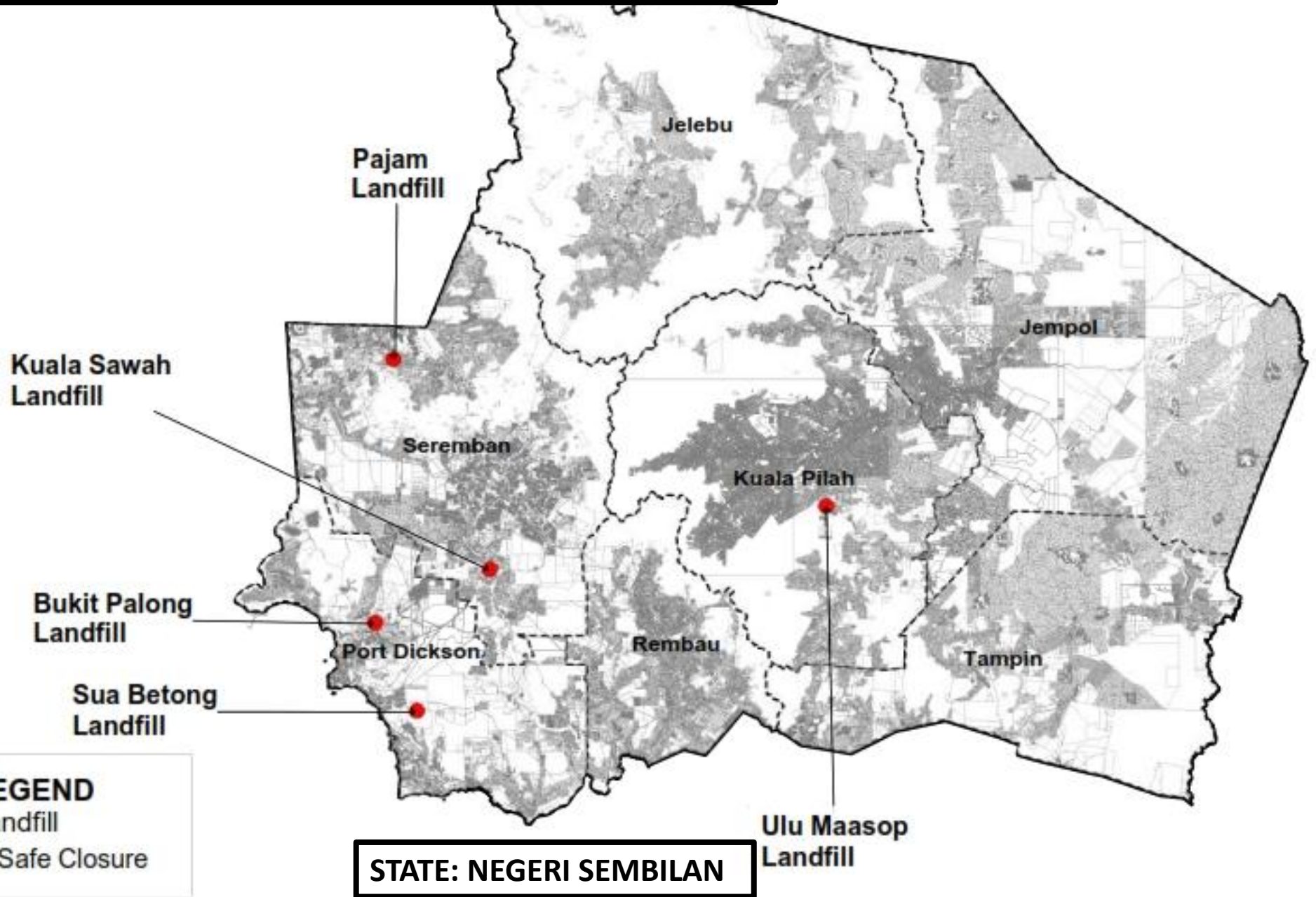
SITE SELECTION FOR SAFE CLOSURE

1st Priority – Nearby river side



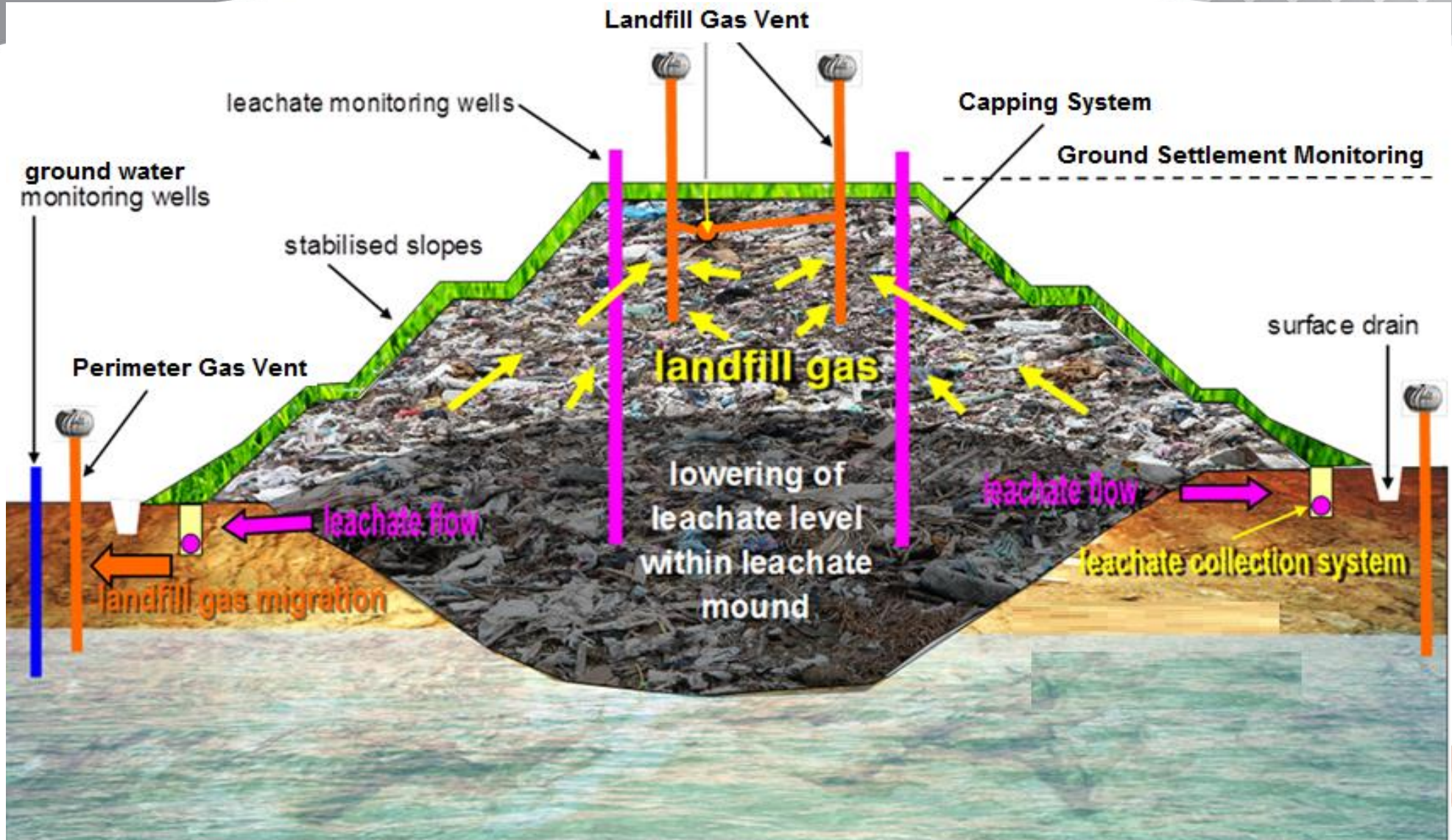
SITE SELECTION FOR SAFE CLOSURE

2nd Priority – Near Residential Area

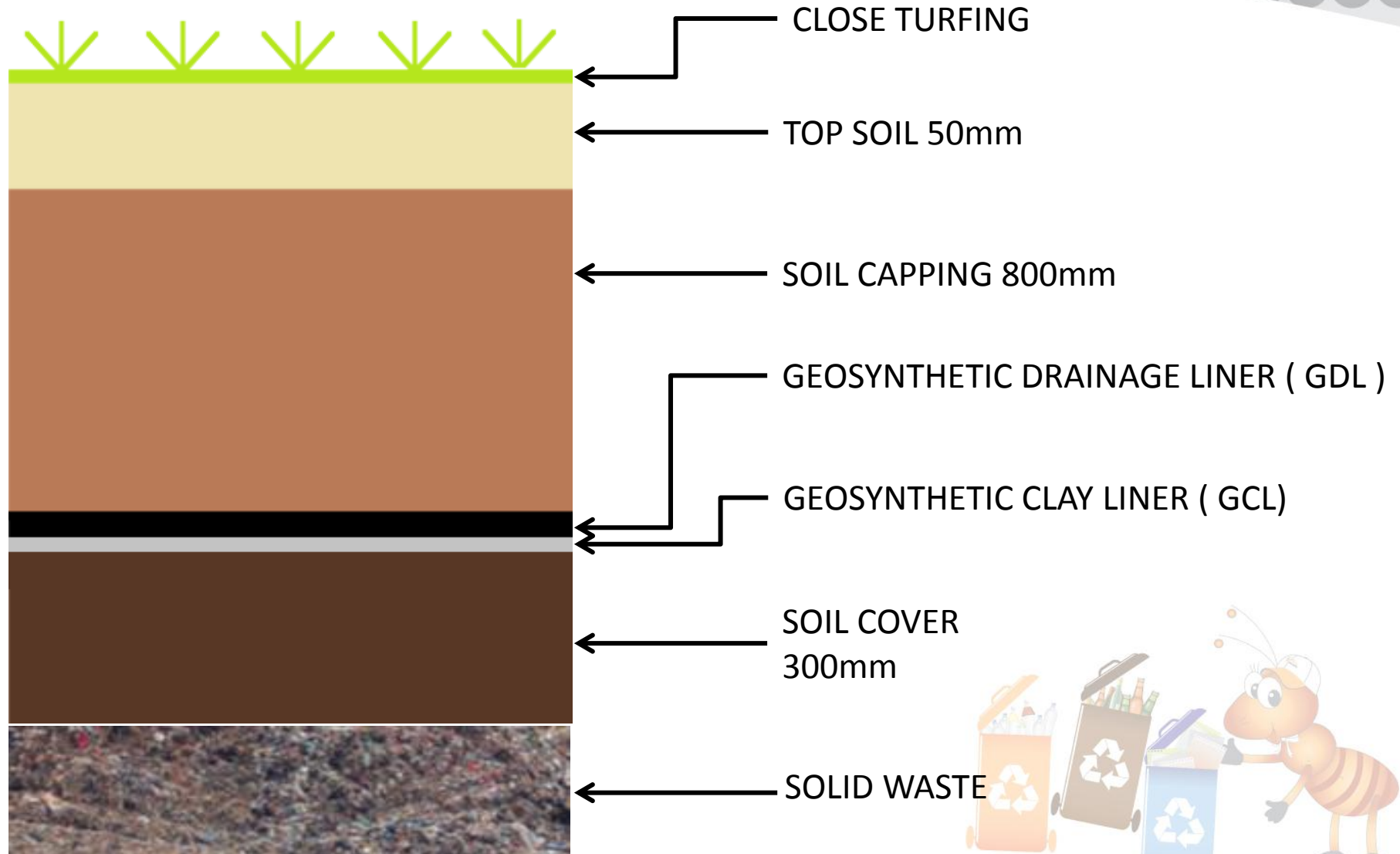


LANDFILL SAFE CLOSURE

Scope of work



SAFE CLOSURE CAPPING SYSTEM



CONSTRUCTION OF LANDFILL GAS VENT



CONSTRUCTION OF LEACHATE COLLECTION SYSTEM



LAYING OF LINER SYSTEM



LAYING OF GEOSYNTHETIC CLAY LINER (GCL)



LAYING OF GEOSYNTHETIC DRAINAGE LINER (GDL)



CONSTRUCTION STAGES



COMPACTION OF SOIL CAPPING



RIVER BANK PROTECTION
sand -bag embankment



BEACH PROTECTION
amour-rock embankment



CONSTRUCTION OF LEACHATE POND



TREATMENT OF COLLECTED LEACHATE

By Mobile Leachate Treatment Plant (MLTP)



RIMBA TERJUN LANDFILL, JOHOR BEFORE SAFE CLOSURE



RIMBA TERJUN LANDFILL JOHOR AFTER SAFE CLOSURE



KUALA PERLIS LANDFILL, PERLIS BEFORE SAFE CLOSURE



KUALA PERLIS LANDFILL, PERLIS AFTER SAFE CLOSURE



LADANG CEP 1 LANDFILL, JOHOR BEFORE SAFE CLOSURE



LADANG CEP1 LANDFILL, JOHOR AFTER SAFE CLOSURE



OTHER SITES, AFTER SAFE CLOSURE



JABOR JERANGAU LANDFILL, PAHANG



SUA BETONG LANDFILL, NEGERI SEMBILAN



KUALA SAWAH LANDFILL, NEGERI SEMBILAN



ENVIRONMENTAL MONITORING



Analysing Landfill Gas



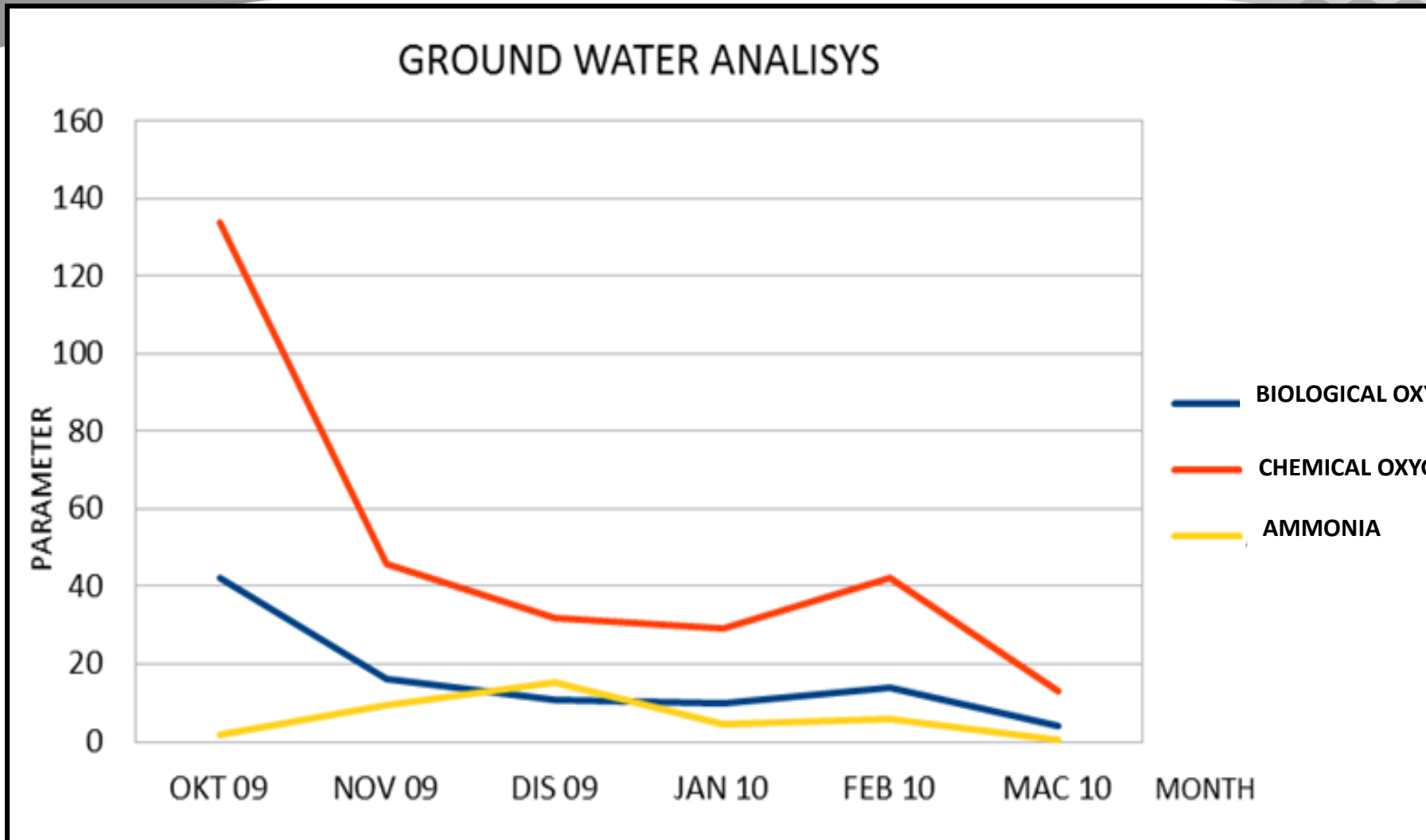
Leachate Sampling



Ground Settlement Monitoring



IMPROVEMENT OF GROUND WATER QUALITY



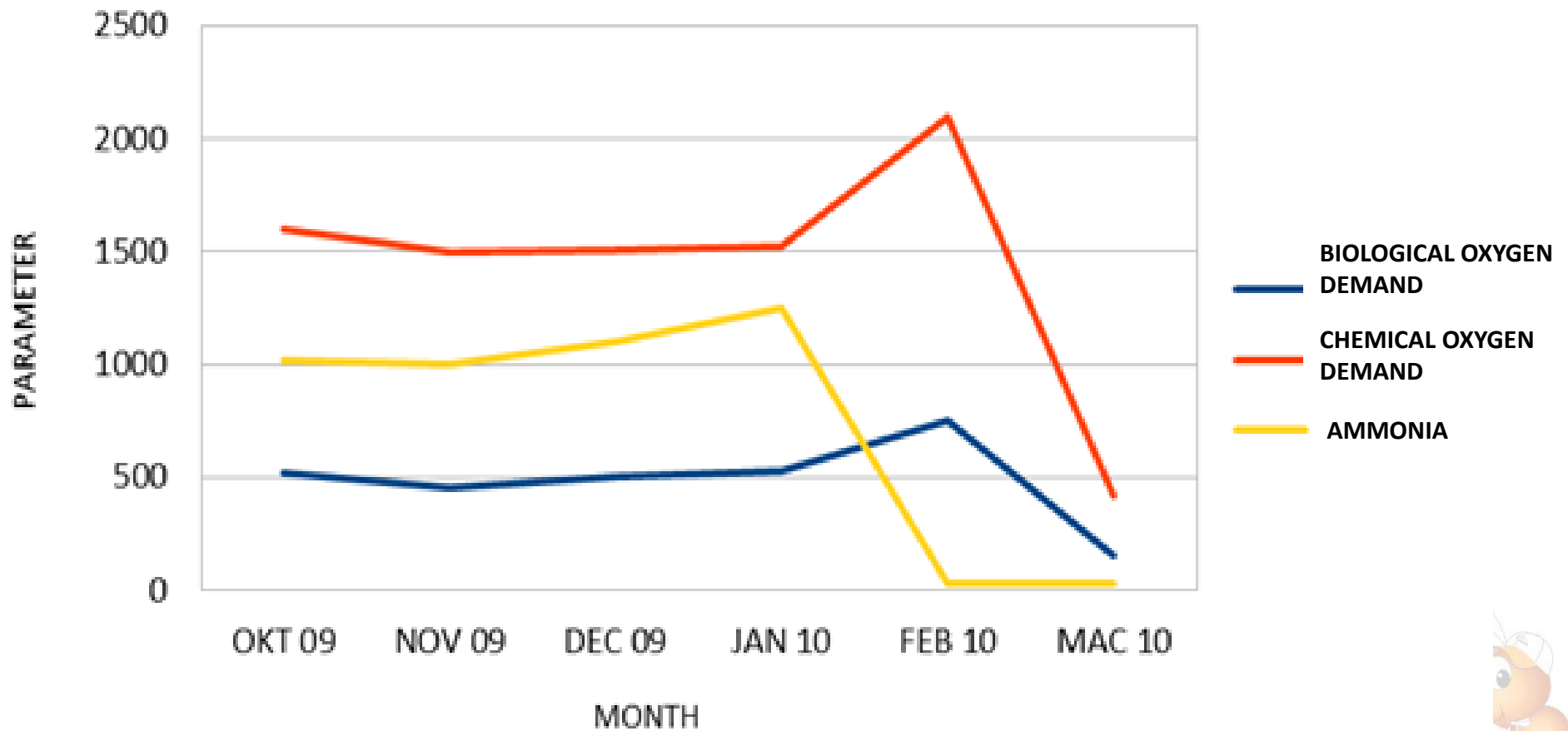
STATE: NEGERI SEMBILAN



IMPROVEMENT OF LEACHATE PARAMETER



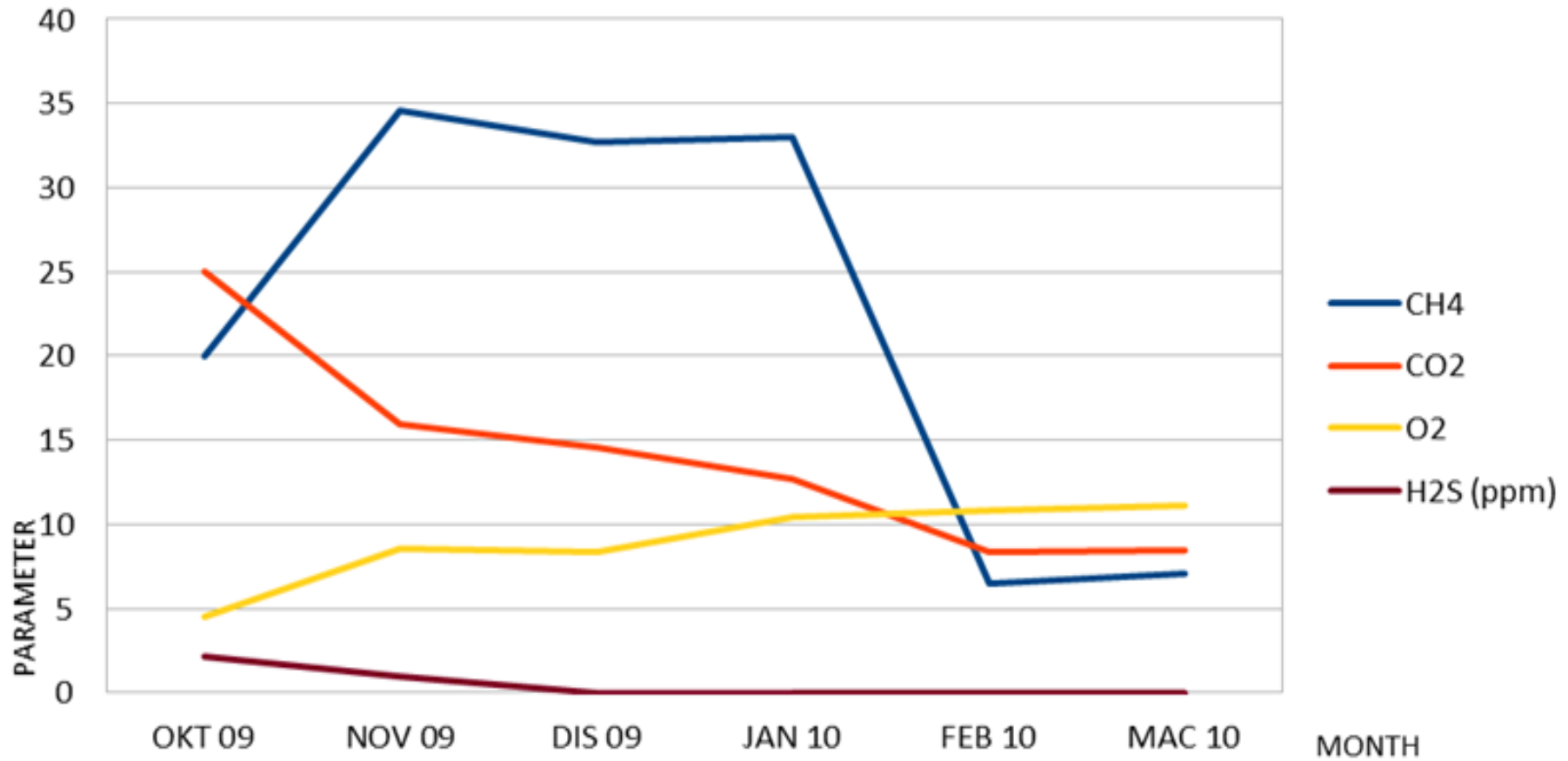
LEACHATE ANALYSIS



LANDFILL GAS GENERATION



GAS ANALYSIS



PAJAM LANDFILL

From contaminated land to renewable energy park (solar farm)



Before closure



After safe closure



Solar panel



PAJAM RENEWABLE ENERGY PARK

Solar Farm



- Generate 8MW of electricity
- Sold to national power provider since March 2012.
- Already generates at least RM11 million annually
- Provide jobs opportunities



KUALA PERLIS LANDFILL

Renewable energy park (under construction)



RIMBA TERJUN LANDFILL Recreational Park





THE END

