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# Case Study: Management Instruments for Langat River Basin

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- Introduction
  - Malaysia
  - Langat River Basin
- Issues and Challenges
- Available Management Instruments
- What Next



# Introduction: Malaysia





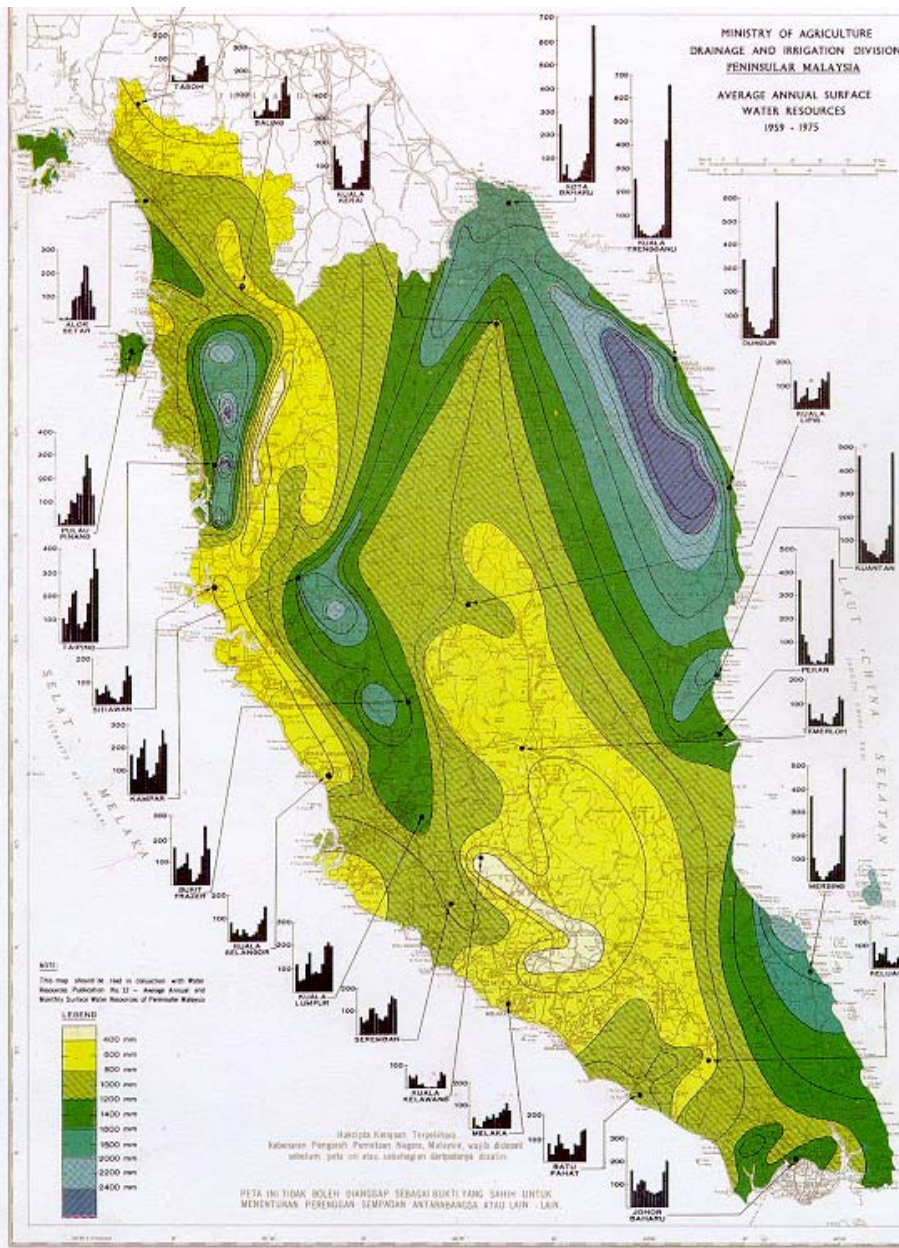
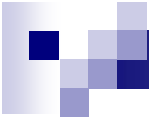
# Malaysia

- Peninsula States
- East Malaysian States

**Land Area ~330,000 km<sup>2</sup>**







## Mean Annual Runoff



# Introduction: Langat River Basin





# Langat River Basin

- Statistics

- Area = about 2350 km<sup>2</sup>
- Length = about 78 km long
- Width = from 20km to 52 km

- Location

- south of the densely populated Klang River Basin





# Langat River Basin

- Langat and its tributaries
  - originate from the headwaters in the hills and
  - flow through districts and urban centers such as Hulu Langat, Seremban, Sepang, Petaling, Perbadanan Putra Jaya, Federal Territory Kuala Lumpur, Klang, and Kuala Langat before reaching the Straits of Malacca
- Flows through 3 states
  - Selangor
  - Negeri Sembilan
  - the Federal Territory



# Some major commercial centres

- Kajang
- Bangi
- Dengkil
- Banting
- Teluk Garang

Panglima

- Semenyih
- Beranang
- Mantin
- Seremban
- Nilai
- Salak Tinggi





# Langat Basin in recent years

- Accelerated at a very rapid pace
  - the location of UKM
  - other training centers in Bangi
  - Multi Media Super Corridor
  - KLIA
  - Putrajaya
  - Cyberjaya



Basin

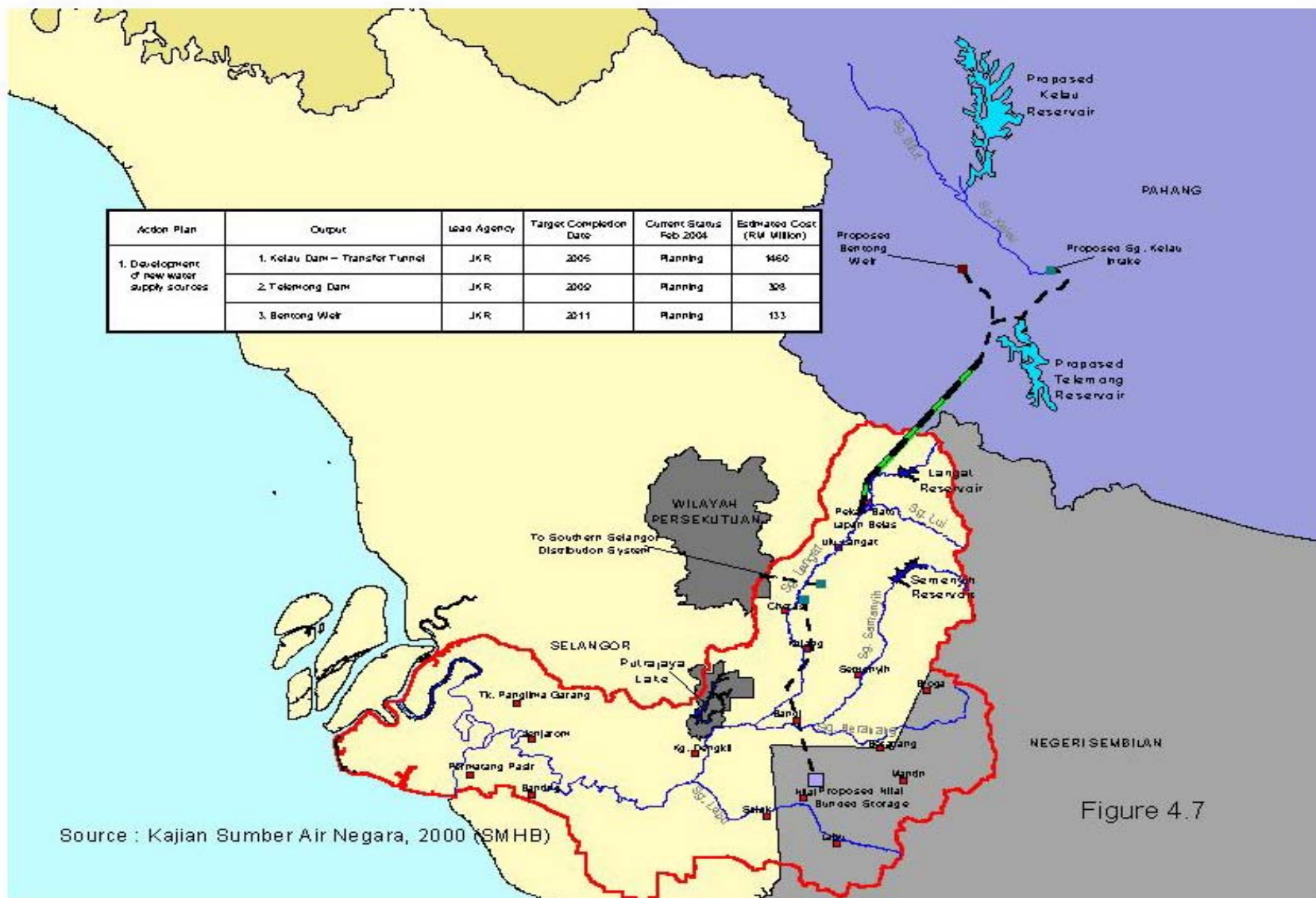


Figure 4.7



# Langat River Basin

## Administrative and Management Boundaries



# Langat River Basin Tributaries & Catchments



# Issues and Challenges



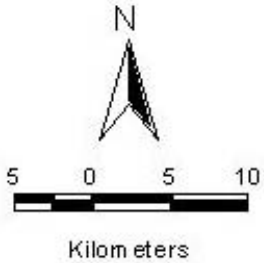


# Eleven (11) Key Concerns

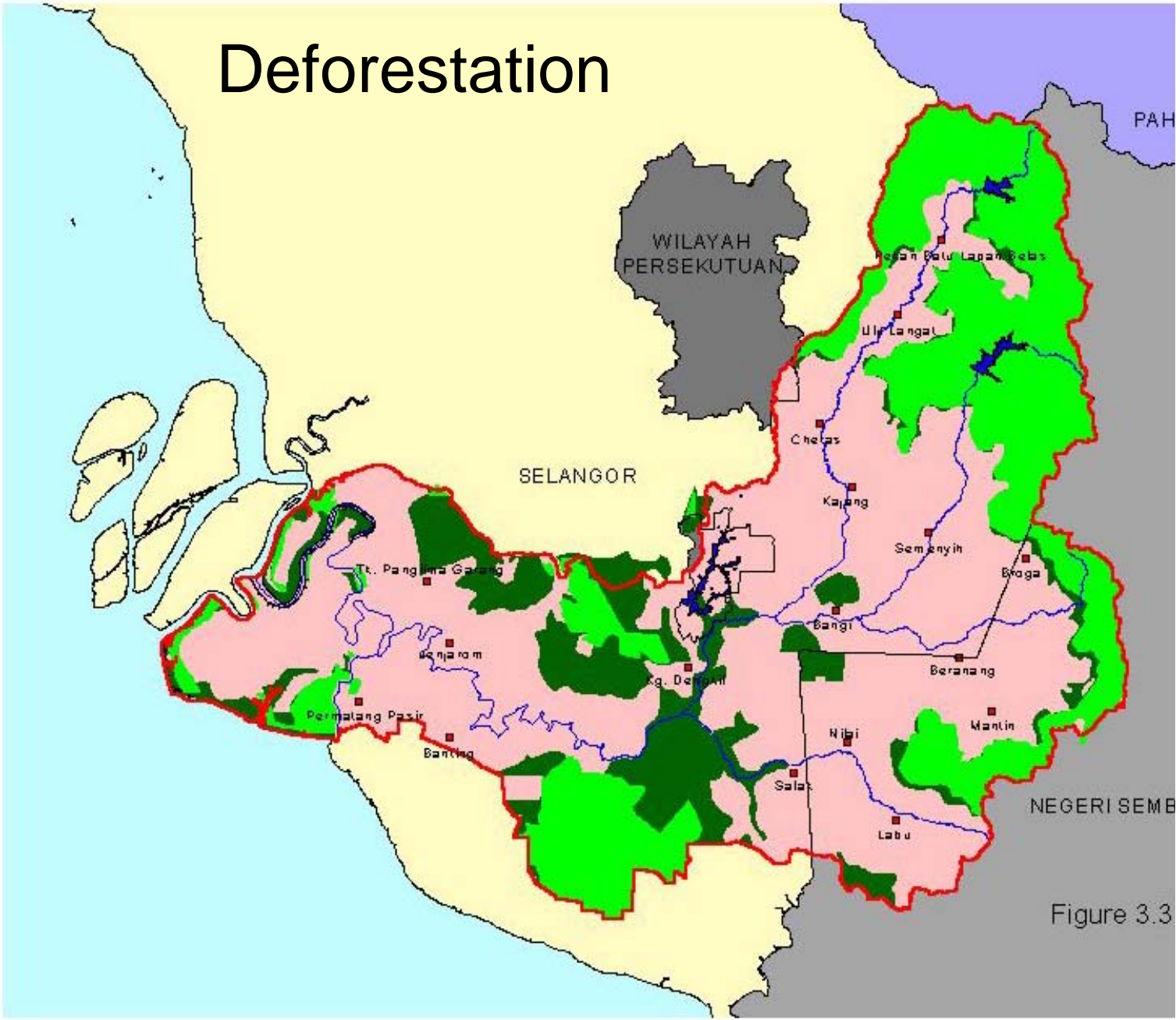
- Population Growth
- Land Use
- Deforestation
- Destruction of Biodiversity
- Pollution and Water Quality
- Flood Mitigation
- Water Resources Development
- Catchment Erosion
- Riparian Land
- Environmental Flows
- Institutional framework, capacity building and information management



# Deforestation



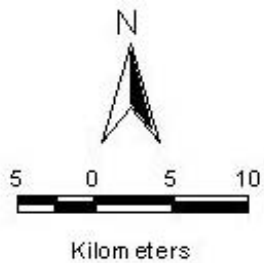
- LEGEND**
- Town
  - Reservoirs
  - Sg. Langat & Its Main Tributaries
  - Forest Areas (1992)
  - Forest Areas (1973)
  - Sungai Langat Basin



Key Map

Figure 3.3

# Land Use



## LEGEND

- Reservoirs
- Sg. Langat & Its Main Tributaries
- Town
- Existing Landuse
- Agriculture
- Commercial
- Cyberaya (Under Construction)
- Industry
- Institution
- Mining
- Open Space & Recreation
- Permanent Forest Reserved
- Putrajaya (Under Construction)
- Residential
- State Forest
- Transportation
- Vacant/Cleared Land
- Water Body
- Sungai Langat Basin

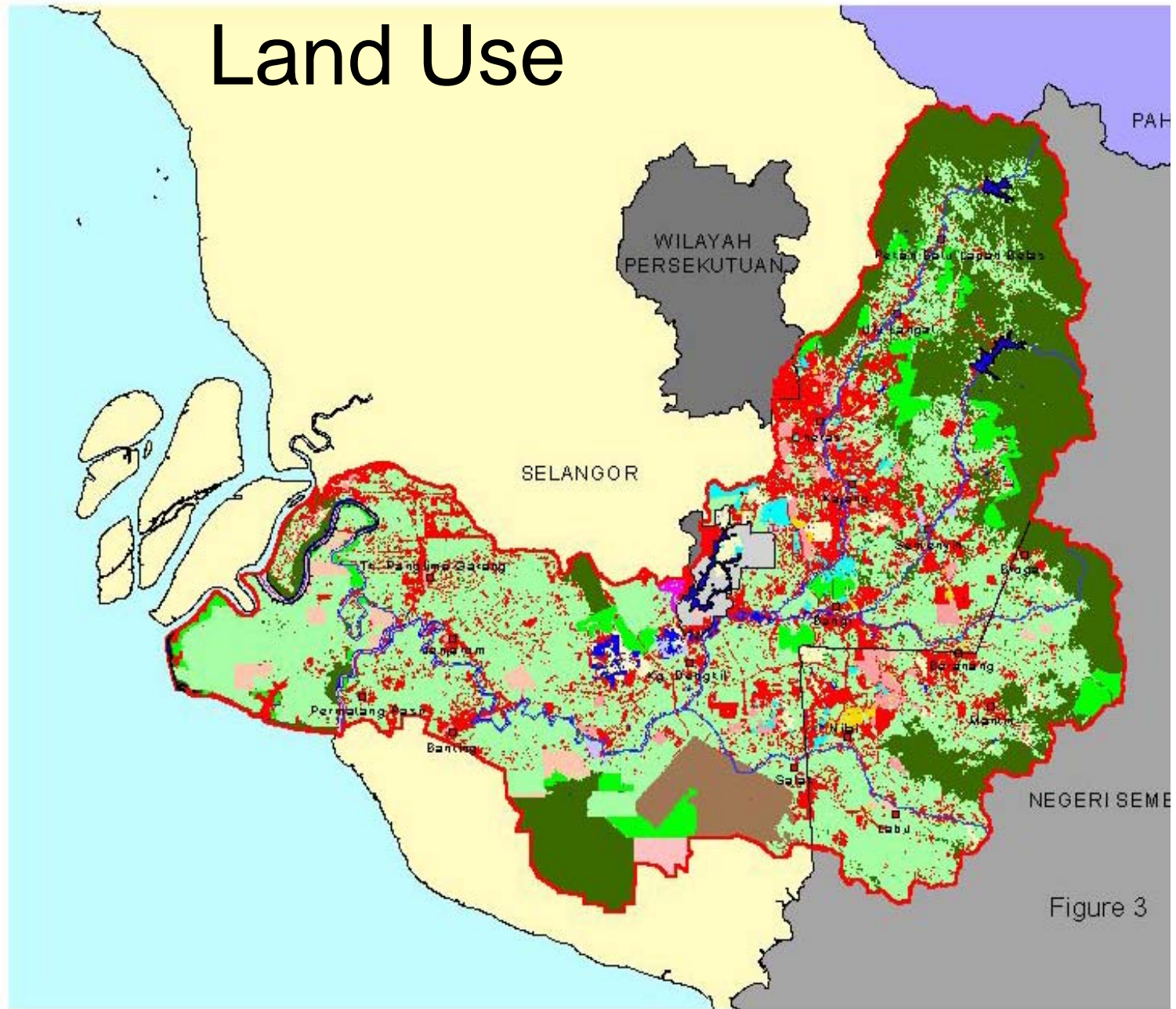


Figure 3

# Erosion\_Sg. Labu



[Back](#)



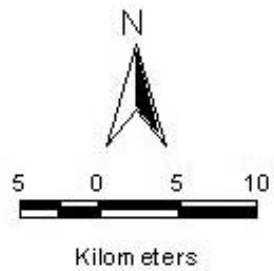
# Solid Waste\_Sg. Labu





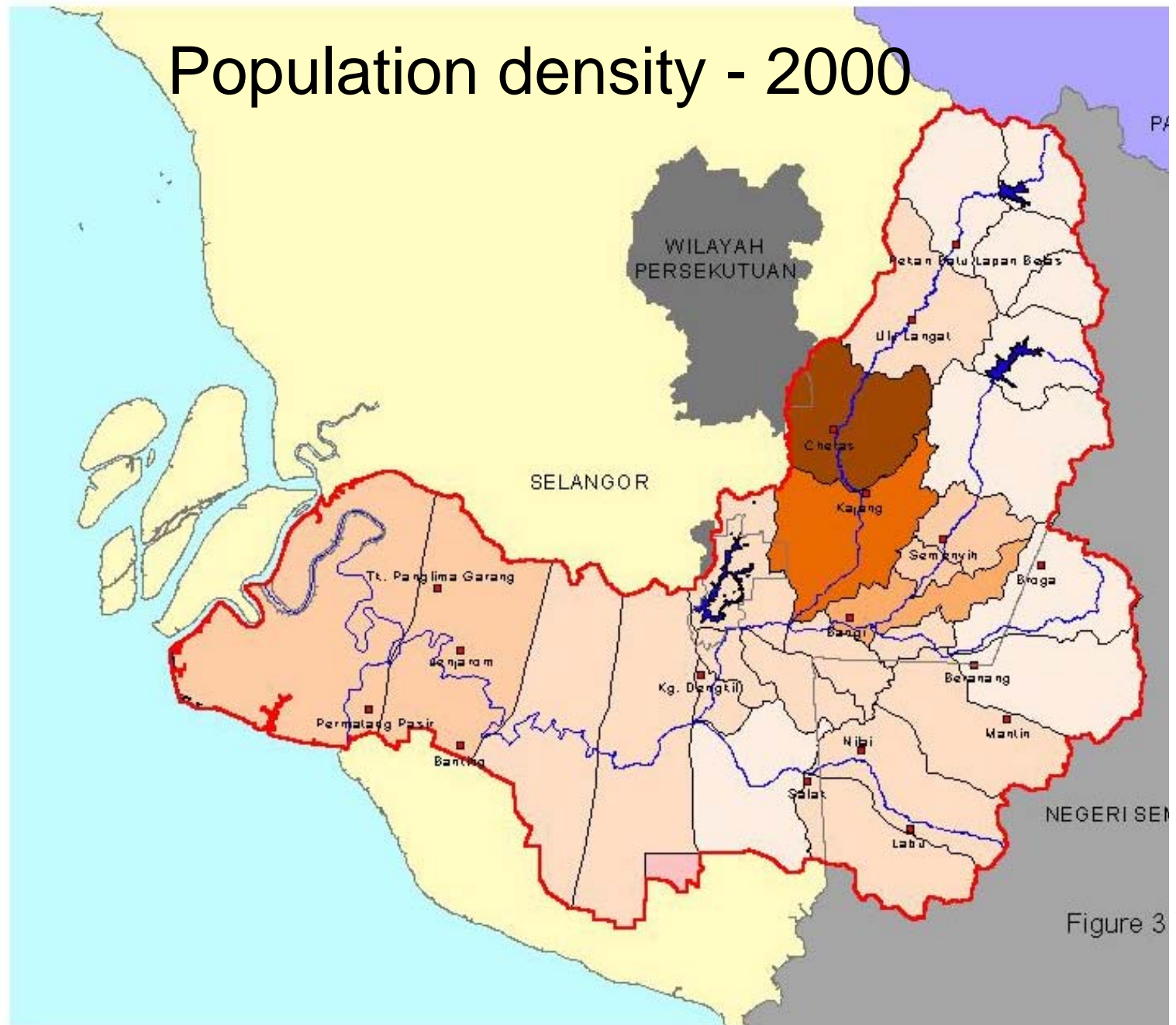
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LEGEND

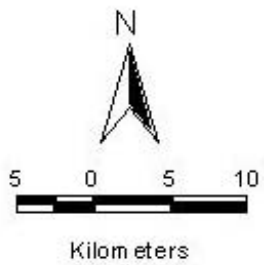
- Town
- Reservoirs
- ▬ Sg. Langat & Its Main Tributaries
- Population Density (2000)
- 20 - 200
- 201 - 400
- 401 - 600
- 601 - 1000
- 1001 - 1100
- 1101 - 1500
- 1500 - 2000
- 2001 - 3000
- 3001 - 5000
- ▬ Sungai Langat Basin



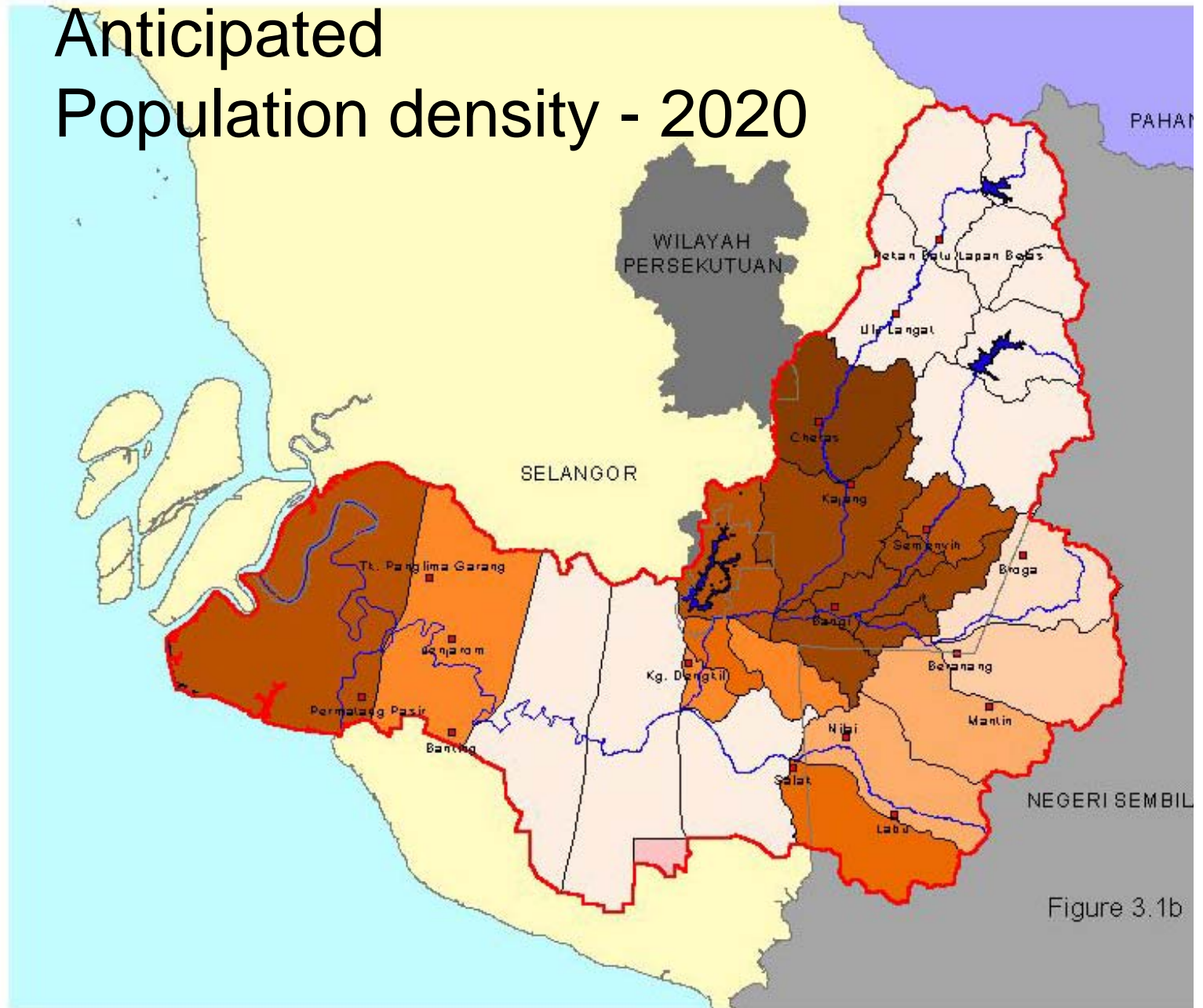
Key Plan

Figure 3

# Anticipated Population density - 2020



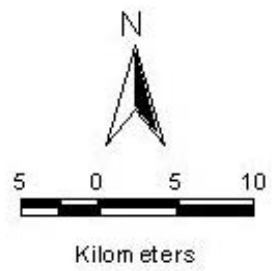
- LEGEND**
- Town
  - Reservoirs
  - ▲ Sg. Langat & Its Main Tributaries
  - Population Density (2020)
  - 20 - 200
  - 201 - 400
  - 401 - 600
  - 601 - 1000
  - 1001 - 1100
  - 1101 - 1500
  - 1501 - 2000
  - 2001 - 3000
  - 3001 - 5000
  - Sungai Langat Basin



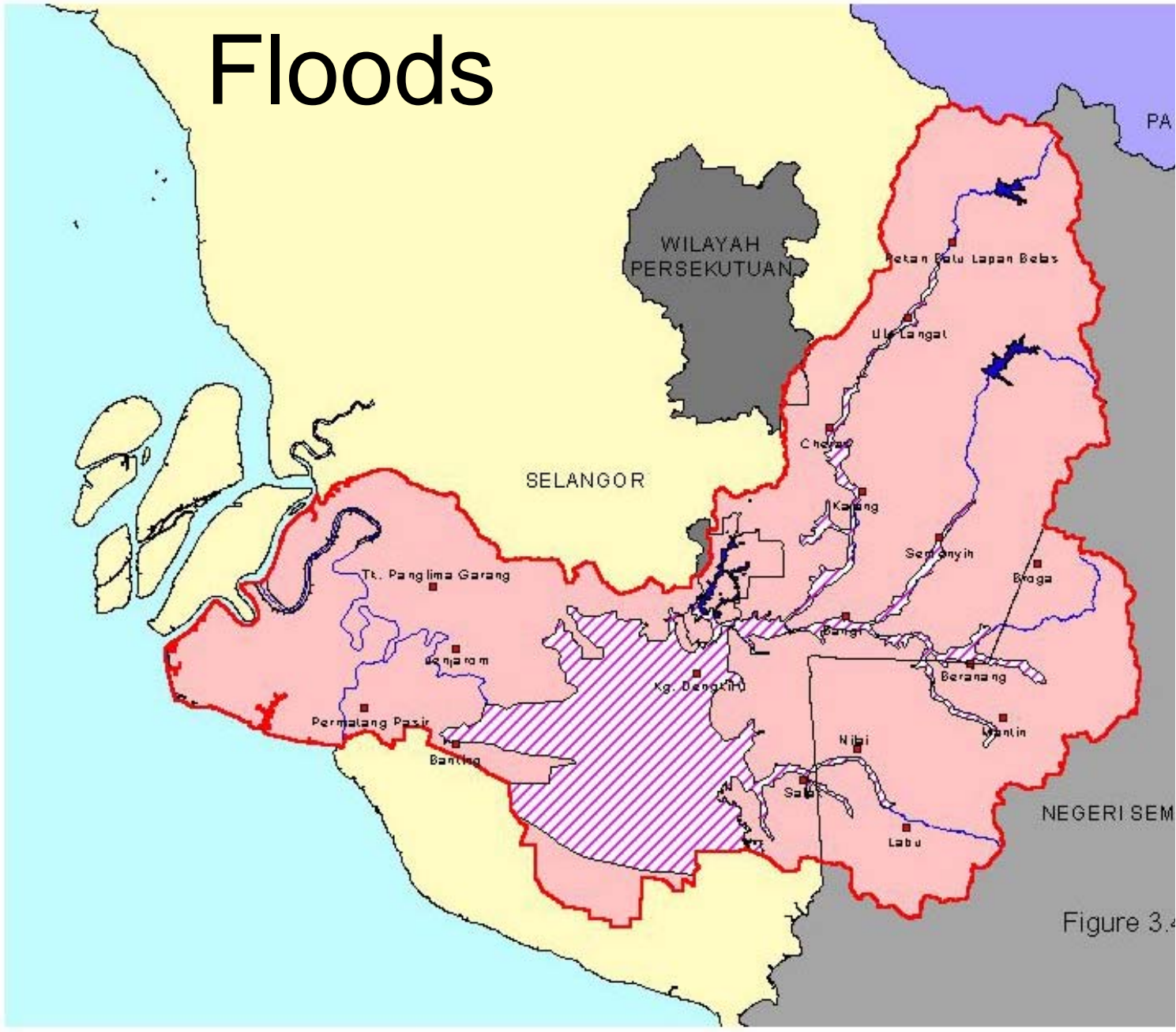
Key Map

Figure 3.1b

# Floods



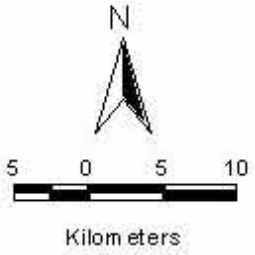
- LEGEND
- Town
  - Floodprone (Jan 1971)
  - Reservoirs
  - Sg. Langat & Its Main Tributaries
  - Sungai Langat Basin



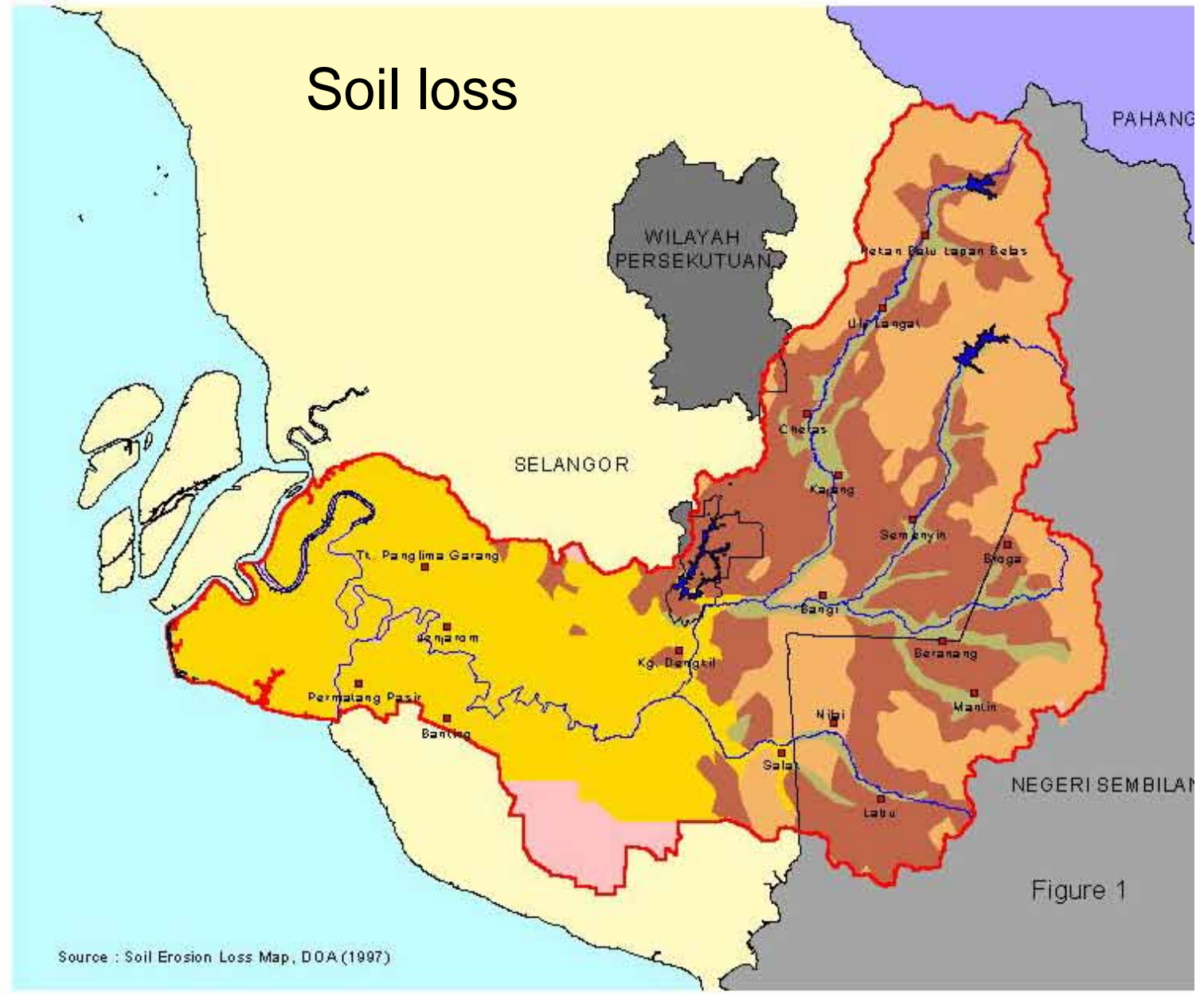
Key Map

Figure 3.4

# Soil loss

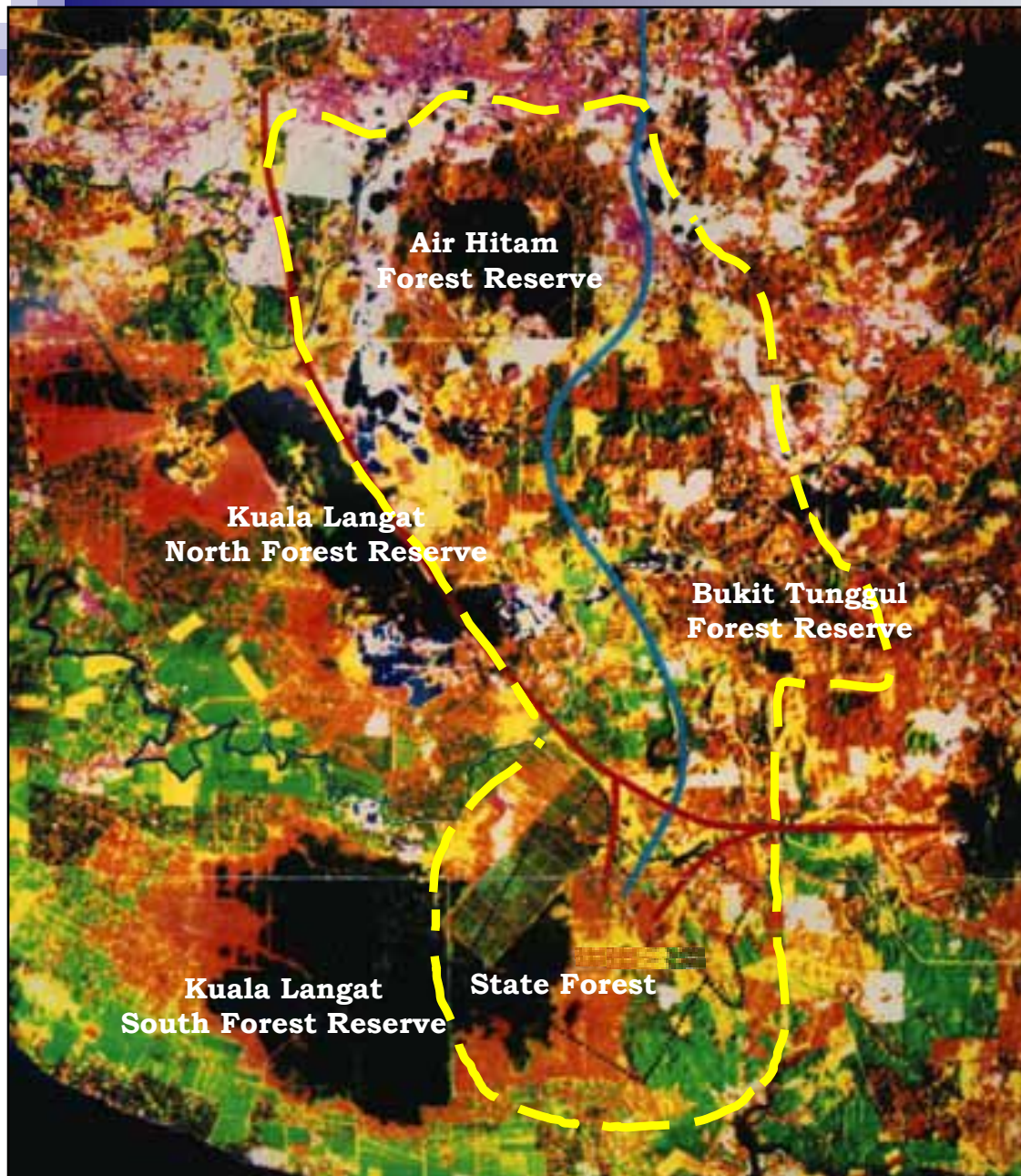


- LEGEND**
- Town
  - Reservoirs
  - △ Sg. Langat & Its Main Tributaries
  - Soil loss
  - High
  - Low
  - Moderate
  - Very High
  - Sungai Langat Basin



Source : Soil Erosion Loss Map, DOA (1997)

Figure 1



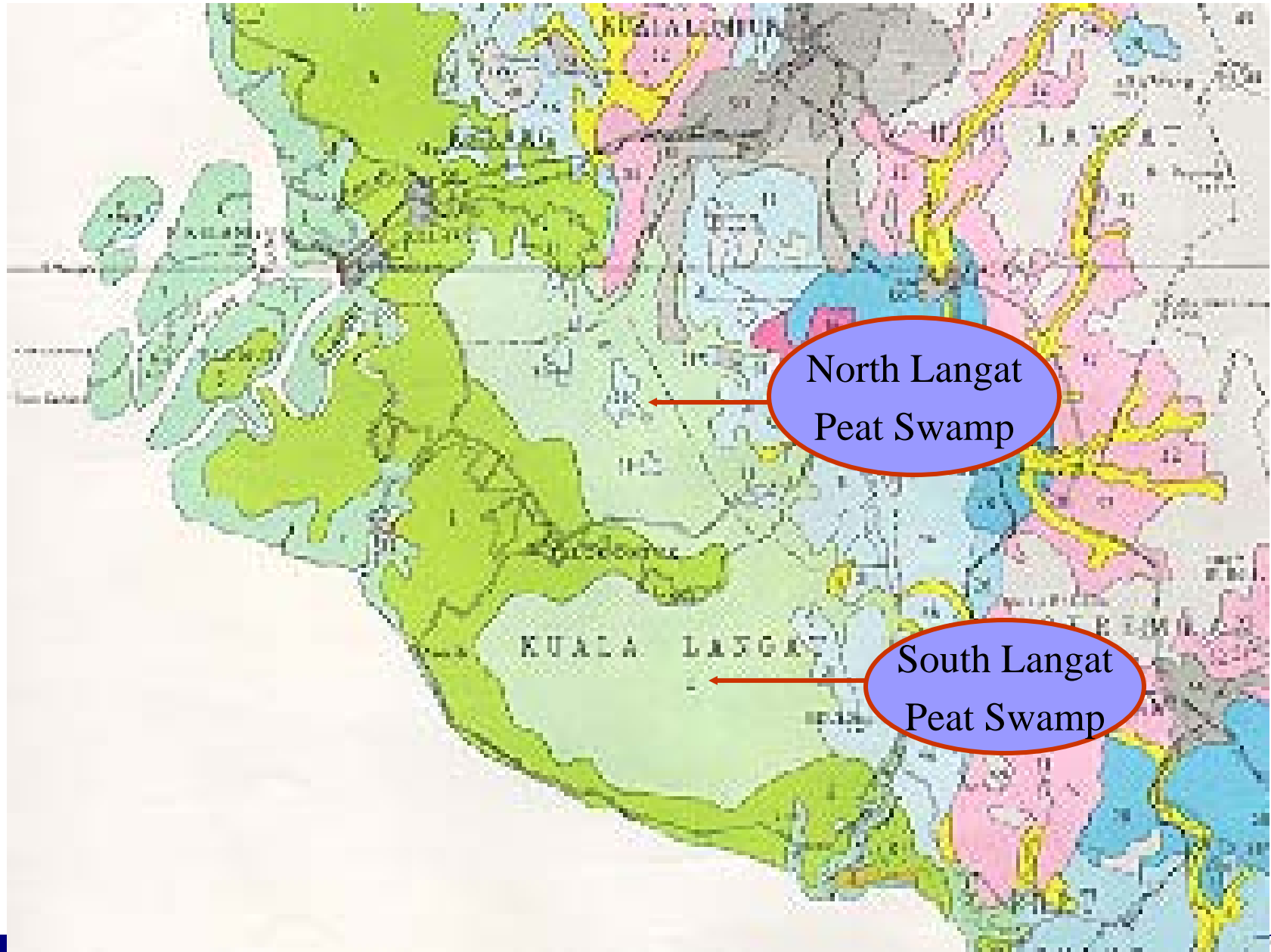
Forest Fire  
in drained  
peat swamps



Figure 3.7 *Satellite Image Of MSC (Taken In 1998)*  
National Hydraulic Research Institute of Malaysia, Ministry of Natural Resources and Environment (NRE)



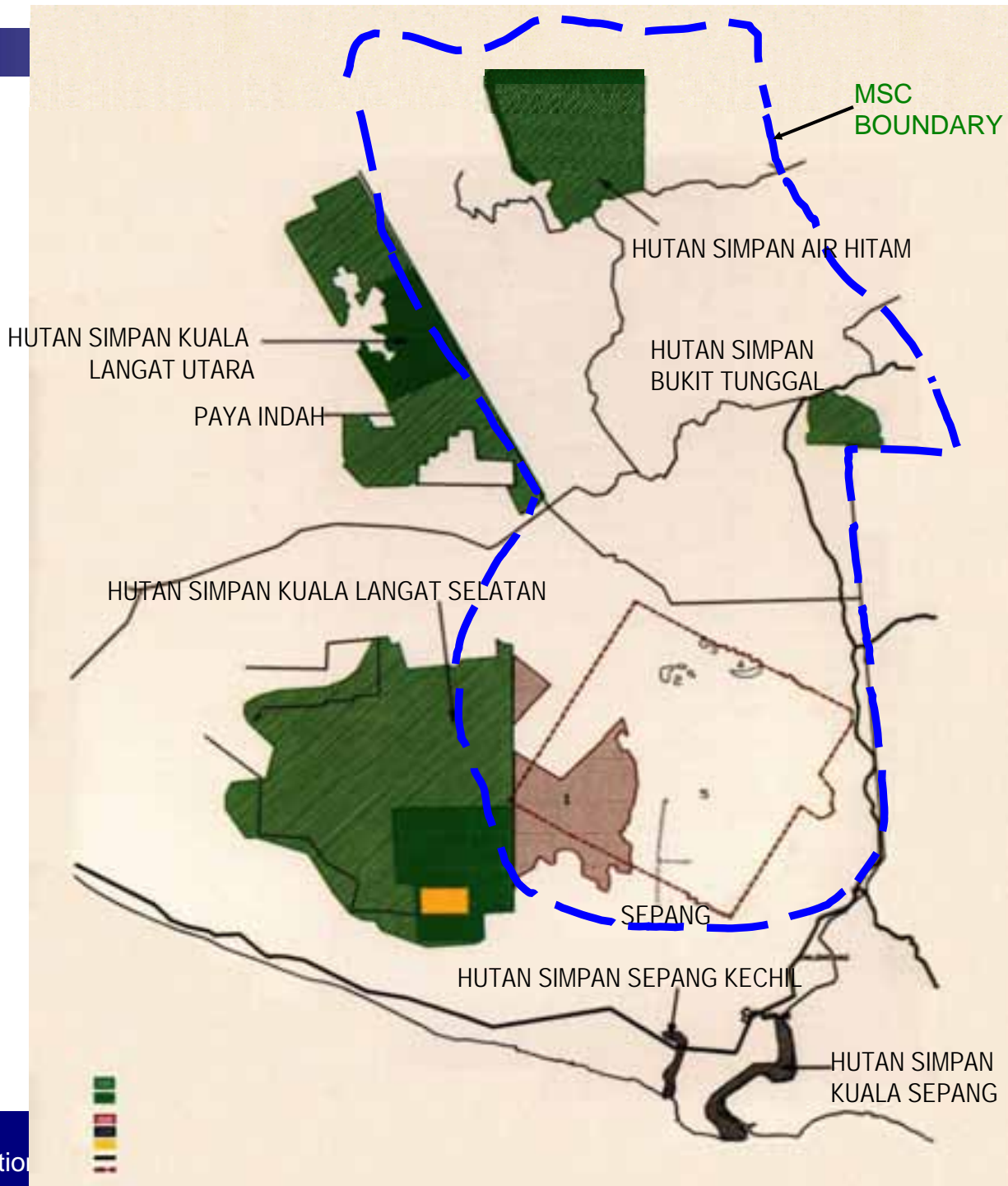




North Langkat  
Peat Swamp

South Langkat  
Peat Swamp





*Peat Forest and Swamp Areas in and Adjacent to MSC*

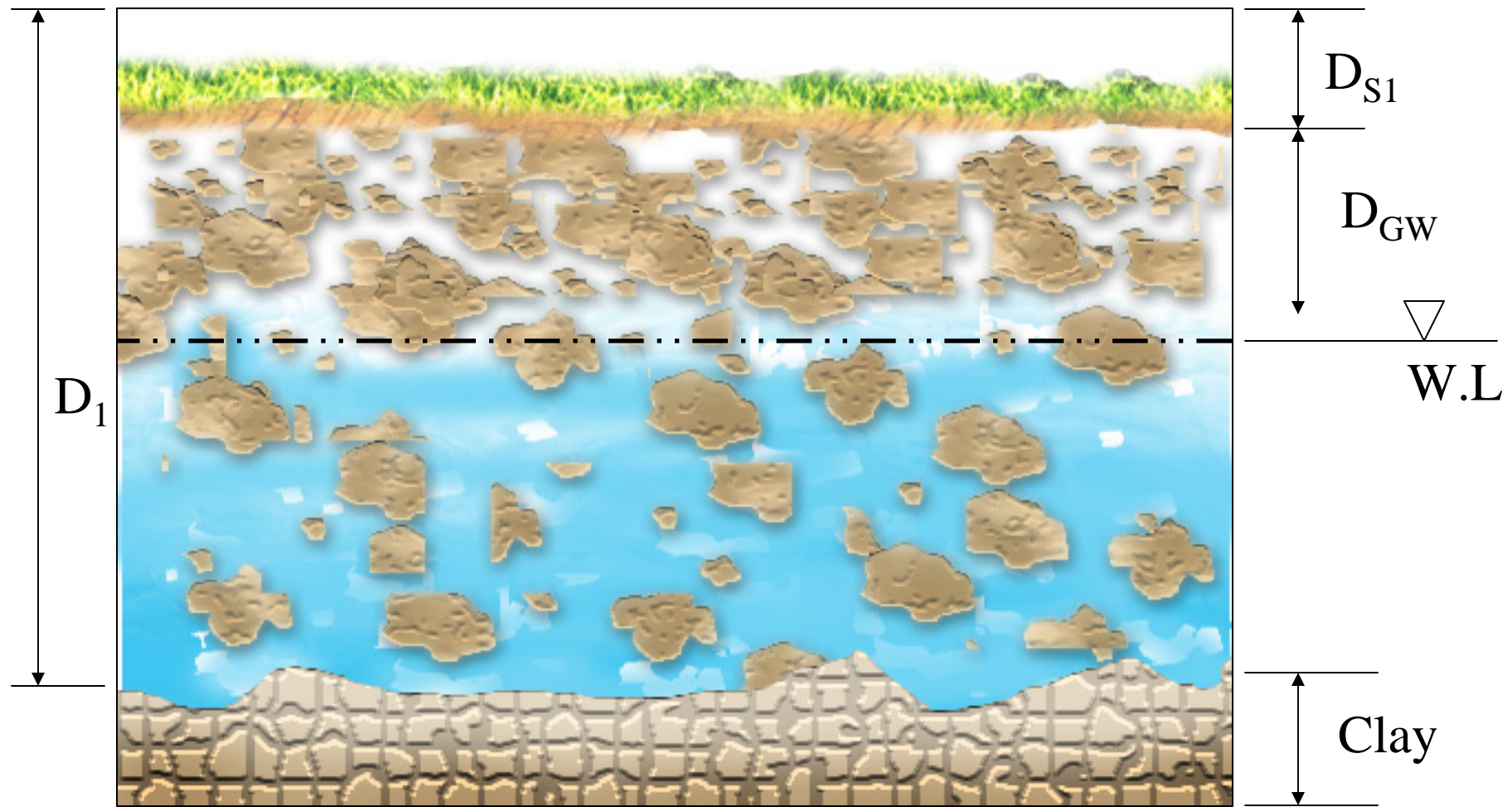


# Undrained Peat

Water level & ground surface



# Drained Peat





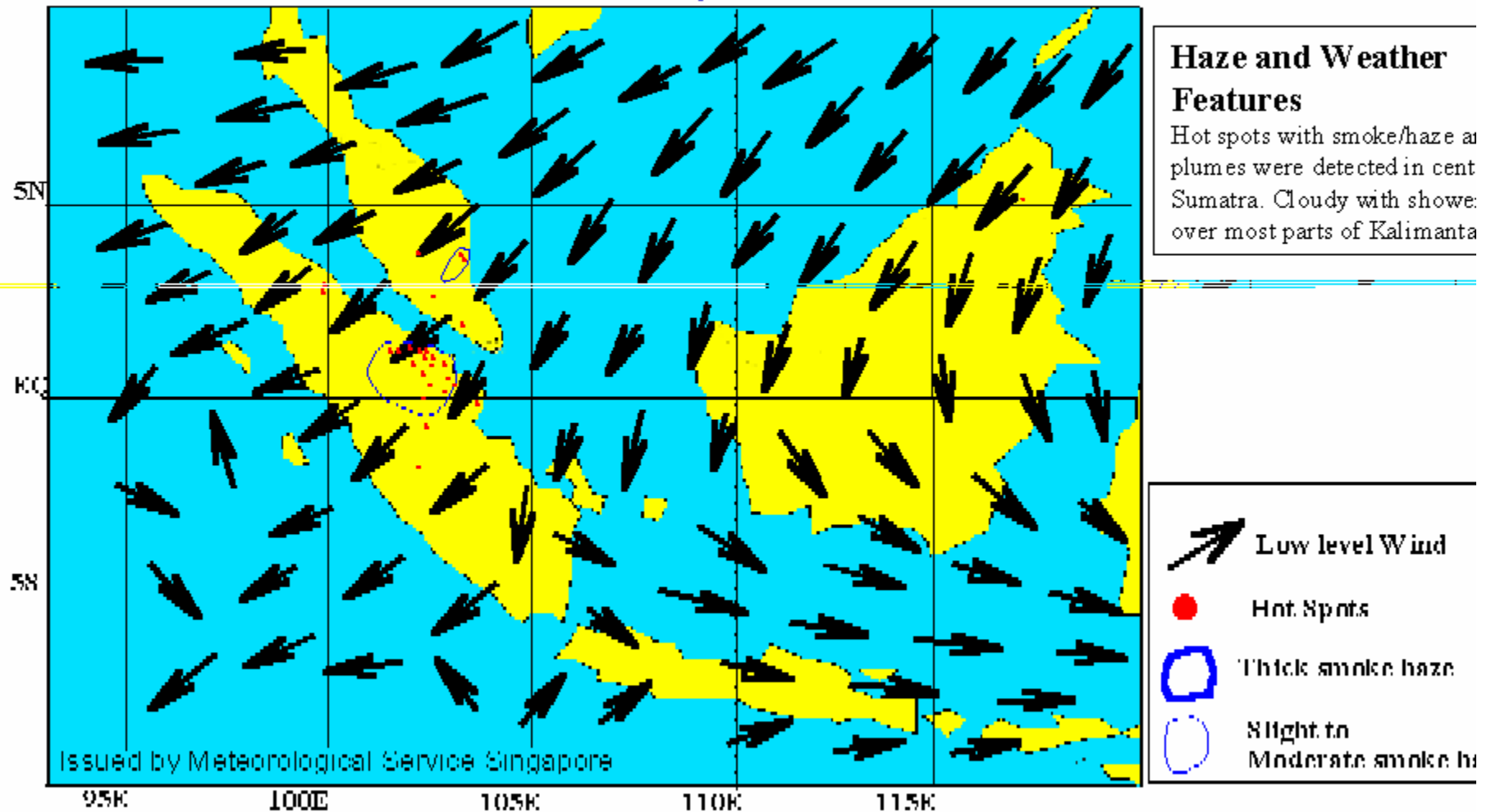
## Langat Forest Reserve, Selangor

Pictures on peat from STAR newspaper, Nov 1997



# Regional Surface Winds and Observed Smoke Haze/Hot Spots over Cloud-free Areas

Issued at 7:10 pm on 11 March 2002



# Available Management Instruments





# Policies, Legislations and Agencies

- Federal
- State



# Federal

- Federal Constitutions, 1957
  - Land and water a state matter, but where a river (*not river basin*) is trans-boundary and where there are conflicts, Federal Govt can intervene
- Over-arching policies, focus on economic developments
  - Visionary Scale: Vision 2020
    - A developed nation with the environment remaining pristine
  - Long Term: OPP –10 years Outline Perspective Plans
    - Development initiatives planned for 10 years
  - Medium Term: 5yr-development Plan, now in the 9<sup>th</sup>-5yrPlan
    - Detail development initiatives approved
  - Short Term: Annual Budget examination
    - Monitoring and enforcements
- Federal Agencies, to implement the policies
  - Sectoral Base
- NGOs
  - On the increase, supportive –generally, and increasing vocal



# State – 3 states

- Federal Territories of Putrajaya and Kuala Lumpur
  - Seemingly unlimited resources with own policies and objectives
- States of Selangor and Negeri Sembilan
  - Policies and Fundings
    - Own policy initiatives
    - Fundings depending on
      - federal allocation as per Constitution
      - Land and business taxes
  - Agencies
    - Cascading sectoral Federal Agencies
    - Local Authorities
    - Provincial Authorities – Mukim
    - Village Heads



# Selangor State has LUAS

## ■ LUAS or

- Selangor Waters Management Authority, enacted by State legislation in 1999

- LUAS has the authority and responsibility for the integrated management of all water resources in the state and hence possesses the legal authority to coordinate the development of the Sungai Langat river basin.
- Negeri Sembilan does not possess a similar body.



# What Next



# Langat River Basin Studies, 2002-3

- Implementation of the output of the study
- Commissioned by the DID to Consultant
  - Objectives: *The formulation of a comprehensive IRBM plan encompassing five main component plans of*
    - Catchment Management and Monitoring Plan
    - River Corridor Development and Management Plan
    - Water Resources Development and Management Plan
    - Flood Mitigation Master Plan
    - Environmental Management Plan
- Completed report submitted in 3 volumes
  - Volume 1 – Main Report
  - Volume 2 – Component Plans
  - Volume 3 – Technical Studies





# Eleven (11) Key Concerns

- Population Growth
- Land Use
- Deforestation
- Destruction of Biodiversity
- Pollution and Water Quality
- Flood Mitigation
- Water Resources Development
- Catchment Erosion
- Riparian Land
- Environmental Flows
- Institutional framework, capacity building and information management





# Langat Basin Management - 1

## ■ Key Issues

- Lack of integrated approach to planning on the basis of river basins
- Lack of coordination or centralised authority
- Lack of social development and awareness
- Lack of regulations and awareness
- Data and information sharing among agencies and stakeholders





# Langat Basin Management - 2

## ■ Key Options

- Partnership and participation
- Spearheaded by an appropriate agency
- Giving the integrated plan a meaningful geographical focus for successful implementation
- Management on a sound scientific basis
- Capacity Building
- Formulation of RBMIS-Sungai Langat river basin as a basis for the implementation of an integrated data sharing mechanism





# IRBM Plan Implementation

## ■ 7 Major Outputs and activities

- Reduction of Man-made Land Degradation and Soil Erosion
- Arrest Habitat Loss/ Degradation and Rehabilitate, Conserve and Enhance Bio-diversity
- Prevention of Water Quality Degradation and Improvement of Water Quality
- Regulation of Water Demand and Development of New Water Supply Sources
- Mitigation of Severity of Floods and Reduction of frequency of flooding
- Sustainable Use and Management of River System and River Corridors
- Initiation, development and implementation of an effective governance and management support system



# Current Status





# Current Status

- In the coming CapNet Training of Trainers
  - On River Basin Management
    - Time: April 2008
    - Location: South Africa



Thank you

