EMRAS 2
Working Group 1
Legacy Sites and NORM

NORM

Scenarios	Scenarios	Data	Assessed
Megalopolis	Greece	Yes	Yes
Kavala	Greece	Yes	No
Gela	Italy	Yes	No
Los Gigantes	Argentina	Yes	No
	Spain	Yes	Yes
Katowice a) Settling pond (covered) b) Settling pond (not covered) c) Pipeline with scale	Poland	private company own data	No
Sillamäe	Sillamäe	Yes	No
	Belgium	Yes	No
AREVA	France	Yes	No

Models available within group

- CROM
- PC-CREAM
- RESRAD-OFFSITE
- PRESTO
- COMPLY
- (Radon code) exhalation into buildings

Modelling tools available

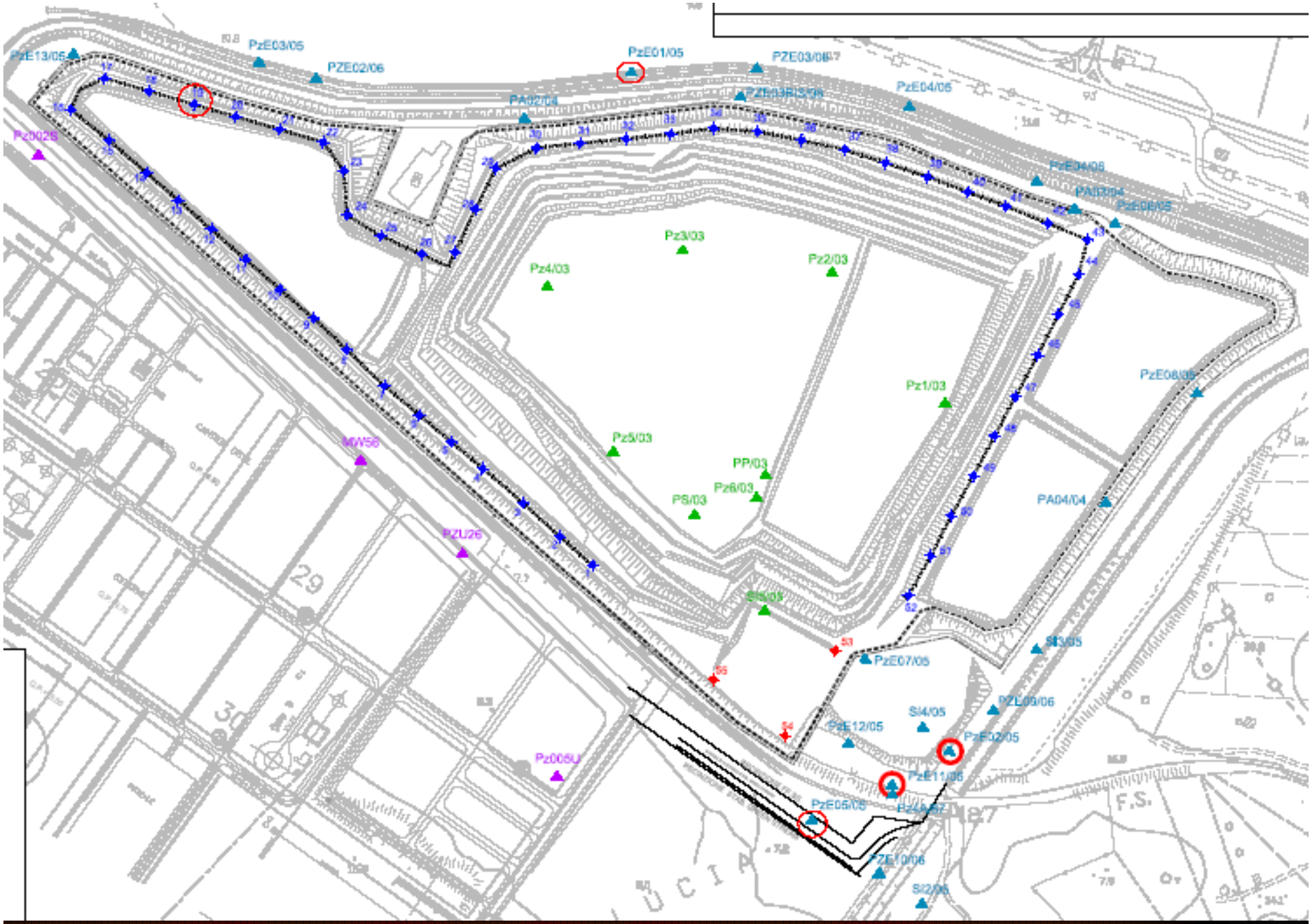
- AMBER
- ECOLEGO
- MODELMAKER

Assessment tools available

- ERICA

Application of Features Events ProcesseS Analysis

- Gela
- Kavala
- All other scenarios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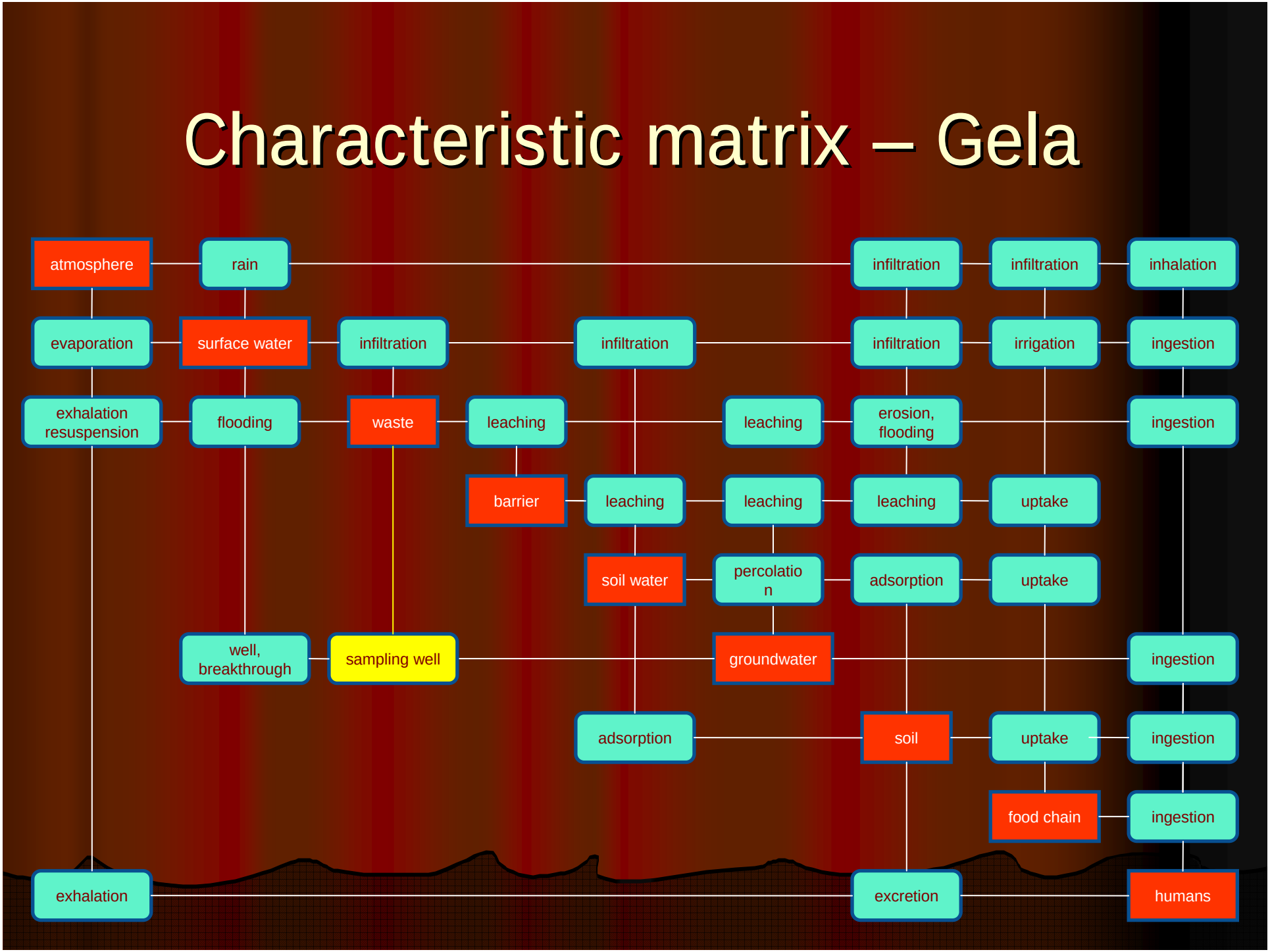
Gela

- Features – waste, surface water, ground water, soil types, rock types, atmosphere, plants, humans, engineered barriers
- Events – earthquake, flood, fire, intrusion
- Processes – leaching, groundwater flow, surface flow, erosion, resuspension, transfer to plants, irrigation
- Specific features:
  - Retaining wall around the site – penetrates about 3 m into the underlying clay
  - Leachate is returned from the downstream sampling wells to the top of the stack

Characteristic matrix – Gela



FEPS analysis

Waste repository		Derive matrix and feedback
Waste repository	- uncovered	Derive matrix and feedback
Gela		Derive matrix and feedback
Tailings dam		Derive matrix and feedback
Stack discharge		Derive matrix and feedback

Tasks and timetable

- Scenario descriptions – Jan 2010
- Scenario data – ongoing
- Outline of assessment methodology – Jan 2010
- Apply FEPS to all real scenarios – Jan 2010
- Preliminary modelling if available models are suitable – Jan 2010 - ongoing
- Model development (based on FEPS analysis) - ongoing
- Draft report sections as appropriate Jan 2010 – ongoing
- New scenarios - ongoing

Final outcomes

- Advice to regulators and operators
  - Assessment methodologies/Remediation strategies
    - Application to specific site
  - Most important transfer parameters
    - sensitivity analysis
  - Most important variables
  - Monitoring programs
    - Feedback from/to modelling
    - What to measure
    - Where to measure
  - Consistency with (existing) safety standards

Events – possible treatment

- Events (flood, earthquake) modify site characteristics
- Run model with and without modified characteristics
- Compare results