G.M.E.P

OCTOBER 2026 EDITION

G.M.E.P Software User Guide

16 software tools · 3 fields · traceable calculations, ready-to-submit reports

Contaminated land
8 tools
EQRS, ECOTOX, HUMAN, MSP, TSN, Conceptual model, 3D_SSP

Hydrogeology
6 tools
Porchet, GEP, Drawdown (2 versions), Piezometers, ANC

Soil & land quality
2 tools
AGRESOL, FONCIER-SCAN

14-day free trial on all software
No credit card · no commitment · no automatic renewal

Bureau d'étude G.M.E.P · 9 rue de la Marne, 79400 Saint-Maixent-l'École, France
+33 6 07 73 72 33 · gmep.france@gmail.com

www.gmep-france.eu

Software designed by Eric Azulay

Contents

What's new in 2026 3

The range at a glance 4

Software that works together 5

Designed by a practitioner 6

01 EQRS Johnson & Ettinger (V7) 7

02 EQRS V9 + ECOTOX V9 10

03 EQRS V9 + ECOTOX V9 + HUMAN module (Tier 3) 13

04 MSP — Soil Pollution Source Modelling 15

05 TSN — Soil → Groundwater → Well Transfer 17

06 Conceptual Site Model — Source › Pathway › Receptor 20

07 3D_SSP — Integrated 3D Modelling 22

08 Porchet Test Modelling 24

09 GEP Modelling — Stormwater & French Water Law 26

10 Groundwater Drawdown — entry level and V15.87 28

11 Monitoring Piezometers (v2.9c) 31

12 ANC Sizing — On-site and small collective wastewater treatment 33

13 AGRESOL — Aggressiveness of groundwater and soil gas towards foundations 35

14 FONCIER-SCAN — Land prospecting and pollution risk 37

Regulatory and methodological references 39

Glossary 40

2026 prices 41

Contact 42

How to read this guide

Each software tool is presented on an identical sheet: purpose, target users, features, calculation notes, default parameters, links with the other tools, then an illustrative example and its interpretation. The numerical examples are textbook cases showing how the calculations work; they do not replace a site-specific study.

Software interfaces and reports are in French and apply French and European regulations, explained here for firms working outside France.

What's new in 2026

Changes since the September 2026 edition of the guide, which presented 11 applications.

October 2026

Three new software tools

AGRESOL (aggressiveness of groundwater and soil gas towards foundations), FONCIER-SCAN (land prospecting and pollution risk) and ANC Sizing (on-site wastewater treatment under NF DTU 64.1). A new « Soil & land quality » family is created. AGRESOL is included in all three Contaminated Land Packs.

20–21 Oct. 2026

EQRS update (V7, V9 ECOTOX, V9 HUMAN)

HQs summed by target organ (14 organs, 64 substances) for each receptor group; ELCR by cancer site and total ELCR compared with 10^{-5}; indoor air = sum of soil gas and groundwater contributions, with substance-specific α and H'; toxicity values selected according to the French DGS/DGPR note of 31 October 2014 (value derived by ANSES, then value selected by ANSES, then original database); ANSES values updated automatically every Monday (76 substances); new PDF page « Cumulative effects by target organ ». 74 automated checks run on every change. A detailed information note is available on the website.

7 Sept. 2026

Correction of the ADD calculation

The exposure duration ED was missing from the numerator of the ADD for non-threshold substances, which underestimated the ELCR (by a factor of 30 for adults, 6 for children, 25 for workers). The formula has been corrected and is covered by an automated test of 74 checks. Affected users were informed; earlier calculations can be re-run identically.

26 June 2026

Groundwater Drawdown V15.87

Geolocated reference aquifer (23 BDLISA aquifers), explicit hydrogeological regime, expected inflow calculation with safety factor, Lambert 93 ↔ WGS84 registration on the cadastre and IGN BDAlti. An entry-level version (Theis and Dupuit-Thiem) is offered at €1,100 excl. VAT/year.

2026

Porchet test

Hemispherical formula, adjustable safety factor and JSON export to GEP Modelling and ANC Sizing.

2026

Access

14-day free trial on all software, no credit card required. Monthly or annual subscriptions with no commitment or automatic renewal, and 2-year licence Packs.

The range at a glance

16 online software tools in three fields. They share the same interface, the same report layout and common exchange formats.

No.	Software	Field	Price (excl. VAT)
1	EQRS Johnson & Ettinger (V7)	Contaminated land	€245/month or €2,499/year
2	EQRS V9 + ECOTOX V9	Contaminated land	€395/month or €3,900/year
3	EQRS V9 + ECOTOX V9 + HUMAN module (Tier 3)	Contaminated land	€550/month or €5,200/year
4	MSP — Soil Pollution Source Modelling	Contaminated land	€250/month or €2,760/year
5	TSN — Soil → Groundwater → Well Transfer 2 offers: TSN with Hub'eau API and Soil → Groundwater → Well Transfer	Contaminated land	TSN with Hub'eau API: €1,100/year Soil → Groundwater → Well Transfer: €850/year
6	Conceptual Site Model — Source › Pathway › Receptor	Contaminated land	€850/year
7	3D_SSP — Integrated 3D Modelling	Contaminated land	€250/month or €2,400/year
8	Porchet Test Modelling	Hydrogeology	€550/year
9	GEP Modelling — Stormwater & French Water Law	Hydrogeology	€5,500/year
10	Groundwater Drawdown — entry level and V15.87 2 versions: entry level and V15.87	Hydrogeology	Entry level: €1,100/year V15.87 multi-layer + AI assistant: €1,500/year
11	Monitoring Piezometers (v2.9c)	Hydrogeology	€1,100/year
12	ANC Sizing — On-site and small collective wastewater treatment	Hydrogeology	€550/year
13	AGRESOL — Aggressiveness of groundwater and soil gas towards foundations	Soil & land quality	€1,250/year (included in the Contaminated Land Packs)
14	FONCIER-SCAN — Land prospecting and pollution risk	Soil & land quality	€2,500/year

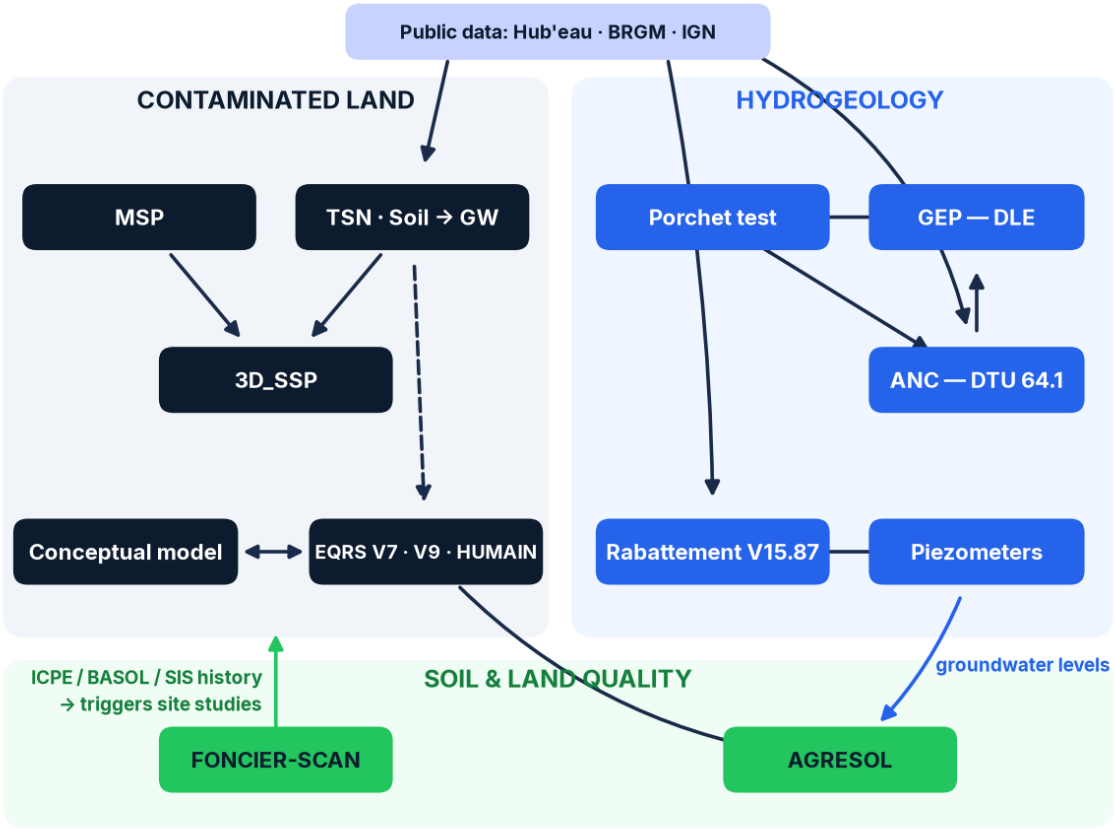
14 sheets describe 16 software tools: TSN and Groundwater Drawdown each come in two offers.

Use outside France

- **EQRS, ECOTOX, HUMAN, Conceptual model, 3D_SSP and MSP** — usable in any country: calculations rely on international models and toxicological databases; thresholds and parameters can be edited.
- **Piezometers and Porchet test** — usable anywhere, based on field measurements.
- **TSN, GEP, Groundwater Drawdown and ANC** — automatic data retrieval (BRGM, Hub'eau, IGN) covers France; elsewhere, data are entered manually.
- **AGRESOL** — based on the European standard EN 206, applicable across Europe.
- **FONCIER-SCAN** — relies on French public databases (cadastre, DVF, Géorisques).

Software that works together

Results from one tool feed the next directly through JSON files, without re-entry.



JSON files and public APIs: single data entry, consistency and traceability

Main links between the G.M.E.P software tools

Single entry boreholes, concentrations and tests are entered once and reused.	**Consistency** one set of assumptions from investigation to report.	**Traceability** each JSON export keeps the parameters and calculation version.	**Time saving** a complete study chain with no manual conversion.

Typical study chains

- **Contaminated land** — MSP → TSN → EQRS V9 + ECOTOX → Conceptual model → 3D_SSP and management plan → AGRESOL for foundations.
- **Stormwater** — Porchet test → GEP Modelling → Water Law application.
- **Wastewater** — Porchet test → ANC Sizing → SPANC report.
- **Works below the water table** — Groundwater Drawdown → Monitoring Piezometers during and after works → AGRESOL (groundwater levels at the foundations).
- **Land prospecting** — FONCIER-SCAN → if the plot is listed in an ICPE, BASOL or SIS database → contaminated land studies (MSP, EQRS, TSN).

Designed by a practitioner

G.M.E.P software is designed by Eric Azulay, environmental engineer, drawing on his practice of contaminated land studies, hydrogeology and regulatory applications. Each feature answers a question met in the field or during the review of a file.

The models used are published and recognised (Johnson & Ettinger, Domenico, Theis, Dupuit-Thiem, Montana, Porchet). Formulas are shown in the reports, default values are documented, and automated checks verify the calculations with every new version.

What the software brings day to day

- reproducible calculations, with assumptions and data sources cited;
- structured PDF reports, ready to attach to an application to French regulators (DREAL, DDT, ARS, SPANC);
- automatic retrieval of French public data (BRGM, Hub'eau, IGN, Géorisques);
- an online interface, with no installation, accessible from any computer.

Artificial intelligence in G.M.E.P software

Available today — Groundwater Drawdown V15.87

- assisted drafting of the hydrogeological context of the file, from BRGM and Hub'Eau data retrieved at the project location;
- identification of the reference aquifer and hydrogeological regime, with consistency checks on input parameters;
- help with reviewing the regulatory file before export.

The other tools rely on proven statistical methods: Monte Carlo simulations, sensitivity studies and back-calculation in EQRS.

Next step — predictive AI

Under development, not yet commercially available. Areas being explored:

- forecasting groundwater trends from piezometric time series;
- automatically cross-checking FONCIER-SCAN site history with contaminated land studies;
- flagging when a new ANSES toxicity value changes the result of a study already delivered.

TOOL 01

CONTAMINATED LAND

EQRS Johnson & Ettinger (V7)

Vapour intrusion into buildings — Johnson & Ettinger model (US EPA 2004)

Contaminated land | €245 excl. VAT/month or €2,499 excl. VAT/year | Usable in any country

Purpose

EQRS Johnson & Ettinger models vapour transfer from soil gas and groundwater into indoor air. It calculates a substance-specific attenuation factor α, the indoor air concentration, then hazard quotients (HQ) and excess lifetime cancer risks (ELCR) for adults, children (ADAF = 3) and workers. The database covers 74 substances (VOCs, PAHs, metals). EQRS stands for the French quantitative health risk assessment.

Target users

Contaminated land consultancies, regulators and health authorities, industrial operators, developers and land promoters.

Benefit

The calculation of α involves more than 20 building and soil parameters: the software chains them without re-entry and documents every assumption. The parametric study on 8 variables immediately shows which parameters drive the result.

Features

- **Multi-layer profile below the slab** — up to three soil layers, with a separate thickness for the groundwater pathway.
- **Combined sources** — indoor air = sum of soil gas and groundwater contributions, with substance-specific α and H'.
- **Cumulative effects by target organ** — hazard index (HI) per organ and receptor group, ELCR by cancer site.
- **Up-to-date TRVs** — selection hierarchy of the French DGS/DGPR note of 31/10/2014 (ANSES first) and automatic weekly update of ANSES toxicity values.
- **PDF report** — calculation notes, TRV tables, results by pathway and a « Cumulative effects by target organ » page.

Calculation notes

ATTENUATION FACTOR (J&E;)

$\alpha = A \cdot e^{B} / [\, e^{B} + A + (A/C)\cdot(e^{B} - 1)\,]$ with $A = Deff \cdot Ab/(Qb \cdot L)$, $B = Qsoil \cdot Lf/(Df \cdot \eta \cdot Ab)$, $C = Qsoil/Qb$

INDOOR AIR

$Cin = \alpha_{gas} \cdot Cgas + \alpha_{gw} \cdot H' \cdot Cgw$

EXPOSURE CONCENTRATION

$EC = Cin \times Fi \times EF/365$

THRESHOLD SUBSTANCES

$HQ = EC / TRV$ $HI(organ) = \Sigma$ HQ of substances acting on that organ

NON-THRESHOLD SUBSTANCES

$ELCR = EC \times IUR \times ED / Tm$ (Tm = 70 years; criterion: total ELCR ≤ 10^{-5})

Default exposure parameters

Parameter	Symbol	Adult	Child	Worker	Unit
Body weight	BW	70	15	70	kg
Exposure duration	ED	30	6	25	years
Exposure frequency	EF	350	350	220	d/year
Fraction of time indoors	Fi	0.8	0.8	1.0	–
Building (L × W × H)	–	10 × 10 × 2.5			m
Air exchange rate	ER	0.45			h^{-1}

Links with other tools

Receives: soil gas and groundwater concentrations (site investigation, MSP, TSN). Feeds: Conceptual site model, AGRESOL (CVOCs in contact with foundations).

Illustrative example

TCE in soil gas: 5,000 µg/m³ at 3.0 m below the slab. α = 3.9×10^{-3}, hence Cin = 19.5 µg/m³. Adult resident: EC = 19.5 × 0.8 × 350/365 = 15.0 µg/m³. With the ANSES TRV (3.2 mg/m³): HQ = 0.005. With the ANSES IUR (1×10^{-6} (µg/m³)$^{-1}$): ELCR = 15.0 × 10^{-6} × 30/70 = 6.4×10^{-6}.

Interpretation

Taken alone, TCE remains below the thresholds (HQ < 1, ELCR < 10^{-5}). The sum of non-threshold substances (TCE, benzene, vinyl chloride, naphthalene, PCE) reaches 1.6×10^{-5} and exceeds the 10^{-5} criterion: this is the value of the cumulative calculation introduced in October 2026. Monte Carlo places the P95 of EC around 30 µg/m³.

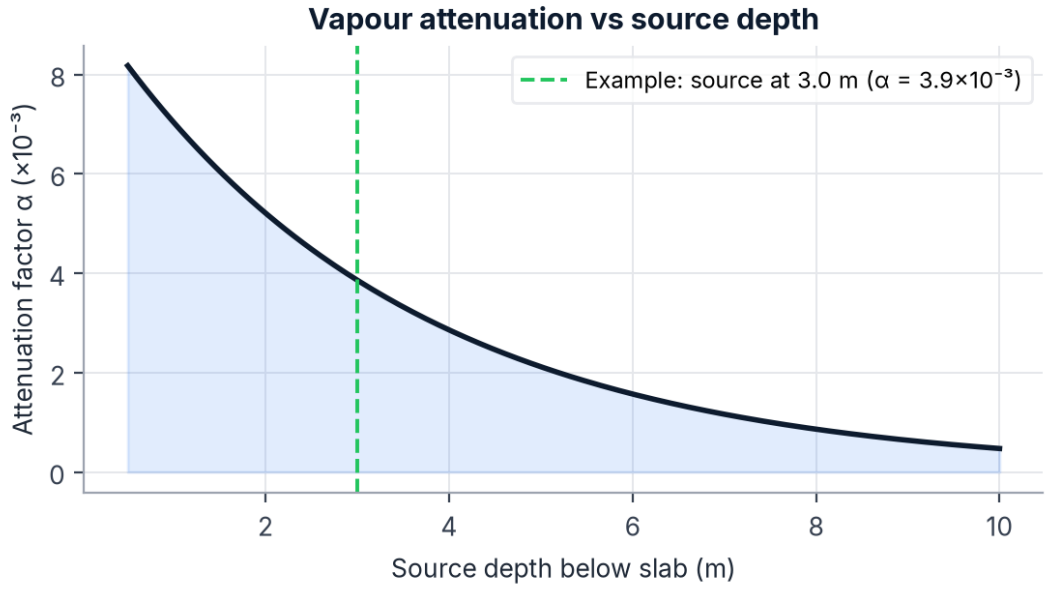


Figure — Vapour attenuation vs source depth

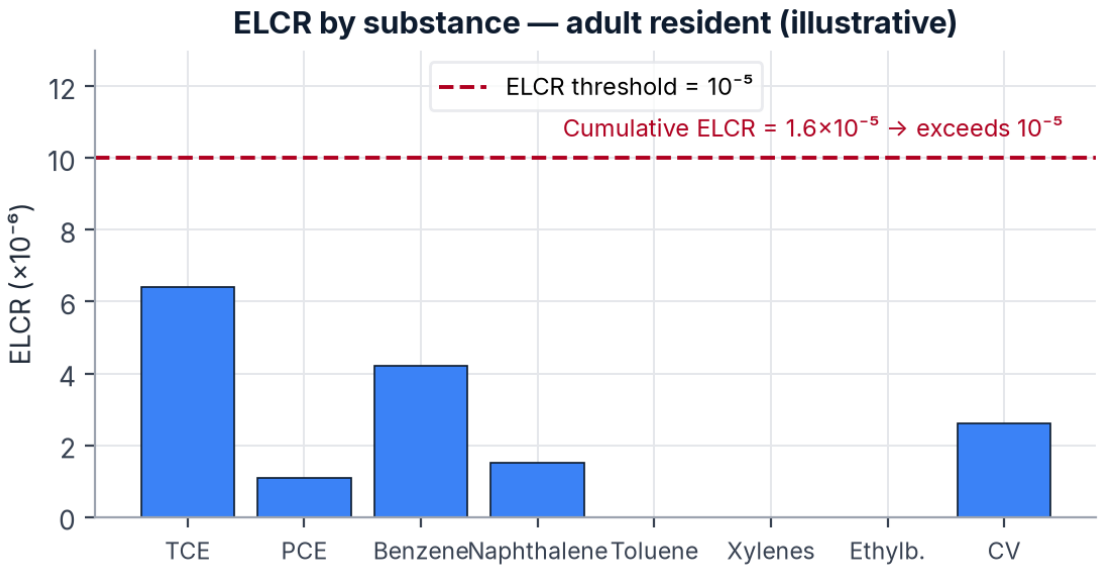


Figure — ELCR by substance and cumulative ELCR — adult resident

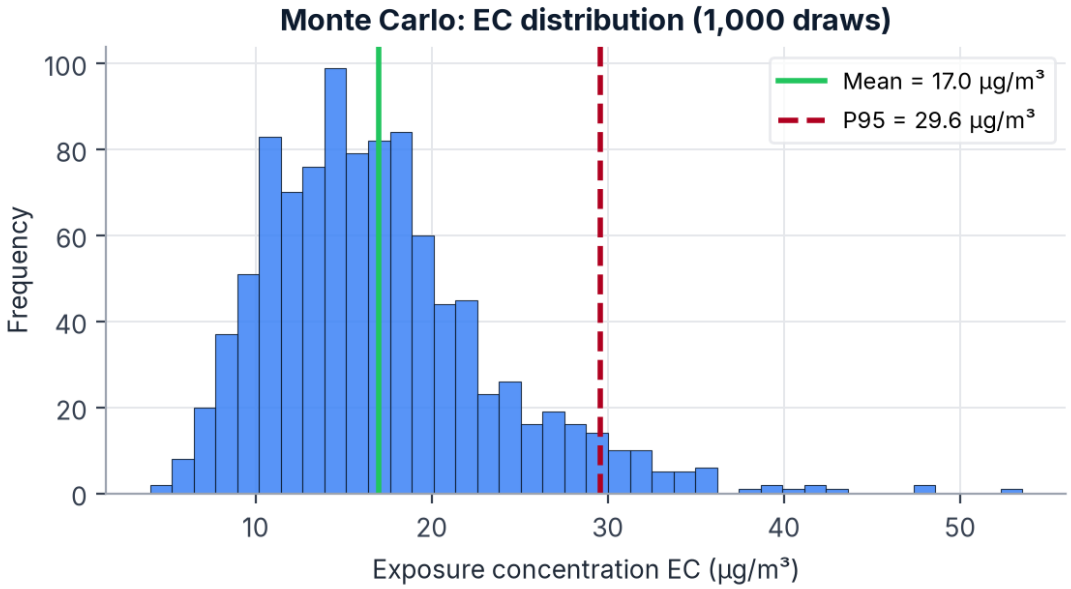


Figure — Monte Carlo distribution of the exposure concentration (1,000 draws)

TOOL 02

CONTAMINATED LAND

EQRS V9 + ECOTOX V9

Human health risk (HHRA) and ecological risk (ERA) in a single interface

Contaminated land | €395 excl. VAT/month or €3,900 excl. VAT/year | Usable in any country

Purpose

EQRS V9 calculates average daily doses (ADD) by ingestion, dermal contact and inhalation, HQs and ELCRs for 104 substances (70 core substances and 30 emerging ones, including the 20 PFAS of the 2020 EU Drinking Water Directive). The ECOTOX V9 module adds ecological risk using the PEC/PNEC ratio for 47 substances: Tier 1 on 7 sentinel receptors, Tier 2 on 5 vertebrate predators.

Target users

Contaminated land consultancies, environmental and health regulators, industrial operators, developers and local authorities.

Benefit

A single data entry for people and wildlife, 22 interactive tabs and a ready-to-submit 14-page PDF report. The 5 advanced modules (Monte Carlo, back-calculation, 70-year simulation, food chain, mixtures by organ) avoid the need for several tools.

Features

- **Tier 1 — 7 receptors** — plants, earthworms (Eisenia fetida), micro-organisms, fish, daphnia, algae, hyporheic macro-invertebrates.
- **Tier 2 — 5 predators** — robin, shrew, vole, heron, otter (food-chain transfers after Sample & Suter).
- **PNEC cascade** — INERIS → ECHA REACH (R.10) → US EPA Eco-SSL.
- **Back-calculation** — maximum acceptable concentration for a target HQ or ELCR.
- **Mapping** — OSM, IGN and BD ORTHO basemaps, Lambert 93 ↔ WGS84, plume ellipse.

Calculation notes

ADD SOIL INGESTION

$$ADD = Csoil \times IRs \times EF \times ED / (BW \times AT \times 365)$$

ADD DERMAL CONTACT

$$ADD = Csoil \times SA \times AF \times ABS \times EF \times ED / (BW \times AT \times 365)$$

HEALTH RISK

$$HQ = ADD / TRV \qquad ELCR = ADD \times CSF \quad (AT = 70 \text{ years})$$

ECOLOGICAL RISK TIER 1

$$RQ = PEC / PNEC$$ (< 0.1 negligible · < 1 low · ≥ 1 potential)

TIER 2 — PREDATOR

$$Dose = \Sigma (Ci \times IRi \times BAFi) / BW \quad \text{then} \quad RQ = Dose / TRV$$

Default exposure parameters

Parameter	Symbol	Adult	Child	Worker	Unit
Body weight	BW	70	15	70	kg
Exposure duration	ED	30	6	25	years
Exposure frequency	EF	350	350	220	d/year
Soil ingestion	IRs	30	100	50	mg/d
Water ingestion	IRw	2	1	1	L/d
Exposed skin area	SA	5,700	2,800	3,300	cm²

Links with other tools

Receives: soil and water concentrations (MSP, TSN). Feeds: Conceptual site model (human and ecological pathways), 3D_SSP, AGRESOL.

Illustrative example

Residential garden on lead-bearing made ground. Child Σ HQ = 0.42: a point of attention, below the threshold of 1. ECOTOX Tier 2: robin RQ = 0.8 (low), but earthworm RQ = 2.3 for cadmium (potential ecological risk).

Interpretation

Human health risk is acceptable, but the ecological assessment highlights cadmium for soil fauna. The remediation strategy can target this metal (containment of garden areas, clean cover), which a human health assessment alone would not have shown.

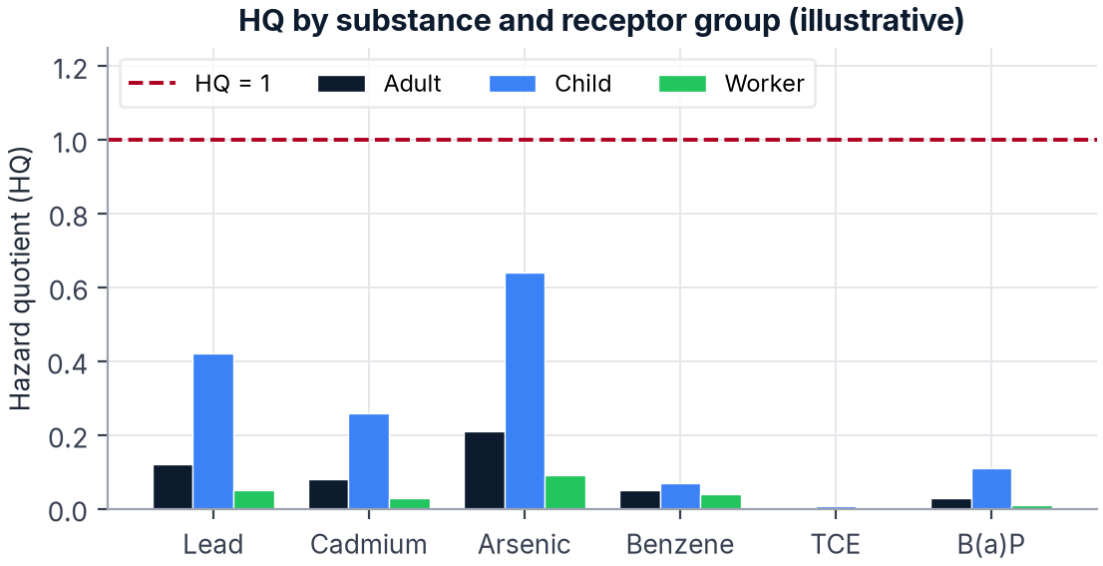


Figure — HQ by substance and receptor group

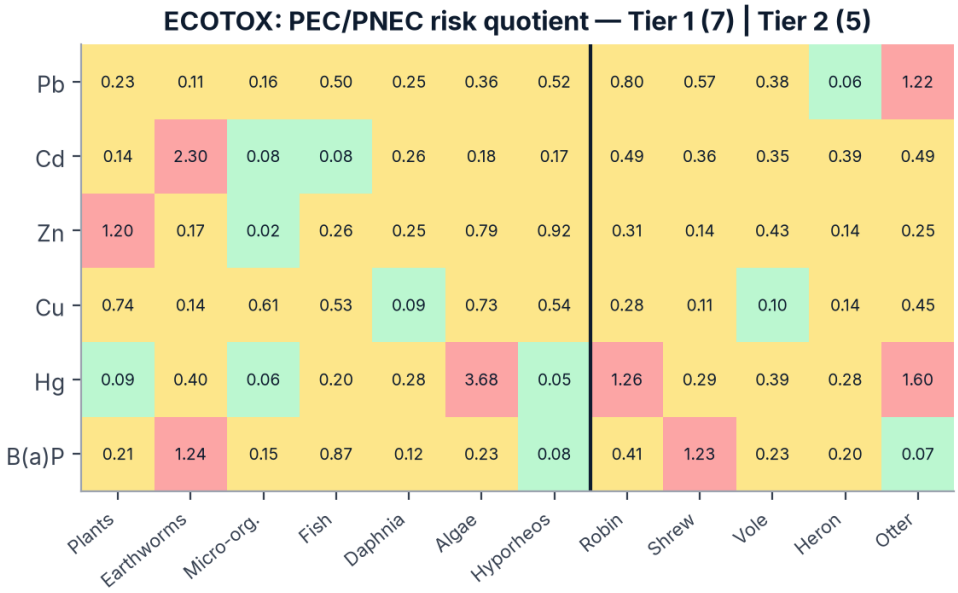


Figure — Ecological risk quotient matrix (Tier 1 and Tier 2)

TOOL 03

CONTAMINATED LAND

EQRS V9 + ECOTOX V9 + HUMAN module (Tier 3)

Human dietary pathway: vegetables, eggs, milk, meat and fish produced on site

Contaminated land | €550 excl. VAT/month or €5,200 excl. VAT/year | Usable in any country

Purpose

The HUMAN module adds the human dietary pathway to EQRS V9 + ECOTOX V9: soil → plant → animal → human transfer for 47 substances (PFAS, PCBs and dioxins, metals, PAHs, BTEX, chlorinated solvents, pesticides). It applies the EFSA 2020 reference values for PFAS (TWI of 4.4 ng/kg bw/week for the sum of 4 PFAS) and sums HQs by target organ following INERIS guidance.

Target users

Contaminated land consultancies, health authorities, local authorities (allotments, livestock areas), industrial sites affected by PFAS.

Benefit

The first French software to integrate the human food chain into health risk assessment. Transfer factors are set per substance: no external spreadsheet is needed for the dietary pathway.

Features

- **Plant pathway** — soil → plant transfer factor TF (Blaine 2014).
- **Livestock pathway** — feed → tissue transfer factor BTF (Battelle 2019): eggs, milk, meat.
- **Aquatic pathway** — water → fish bioaccumulation factor BAF (Burkhard 2021).
- **4 receptor profiles** — adult, child, pregnant woman, angler.
- **Regulatory comparison** — maximum levels in food under Regulation (EU) 2023/915.

Calculation notes

CONCENTRATION IN VEGETABLES

$C_{veg} = TF \times C_{soil}$

CONCENTRATION IN ANIMAL PRODUCTS

$C_{animal} = BTF \times \Sigma (Q_{ingested} \times C_{matrix})$

CONCENTRATION IN FISH

$C_{fish} = BAF \times C_{water}$

DIETARY DOSE

$ADD_{diet} = \Sigma (C_{food} \times Q_{food} \times f_{home\text{-}grown}) / BW$

PFAS HAZARD QUOTIENT

$HQ = ADD_{diet} / (TWI / 7)$ with TWI = 4.4 ng/kg bw/week

Default parameters and example values

Parameter	Symbol	Example value	Unit
Home-grown vegetable intake	Qveg	0.15	kg/d
Home-produced eggs	Qegg	0.03	kg/d
Home-grown fraction	f	0.5	–
Sum of 4 PFAS in soil	Csoil	12	µg/kg
Simulation period	–	70	years

Links with other tools

Receives: soil and water data (MSP, TSN), receptors from the Conceptual site model. Option: dietary pathway added to the EQRS V9 organ-based cumulation.

Illustrative example

Vegetable garden and hen house on PFAS-contaminated soil. Adult dietary ADD = 1.54 ng/kg/d, i.e. HQ = 1.54 / 0.63 = 2.45. Child: HQ = 4.2. Angler: HQ = 4.8, 60% of which comes from fish.

Interpretation

All three profiles exceed 1. For the child, vegetables and eggs dominate; for the angler, fish does. Management measures therefore differ by receptor: targeted consumption advice rather than a general ban.

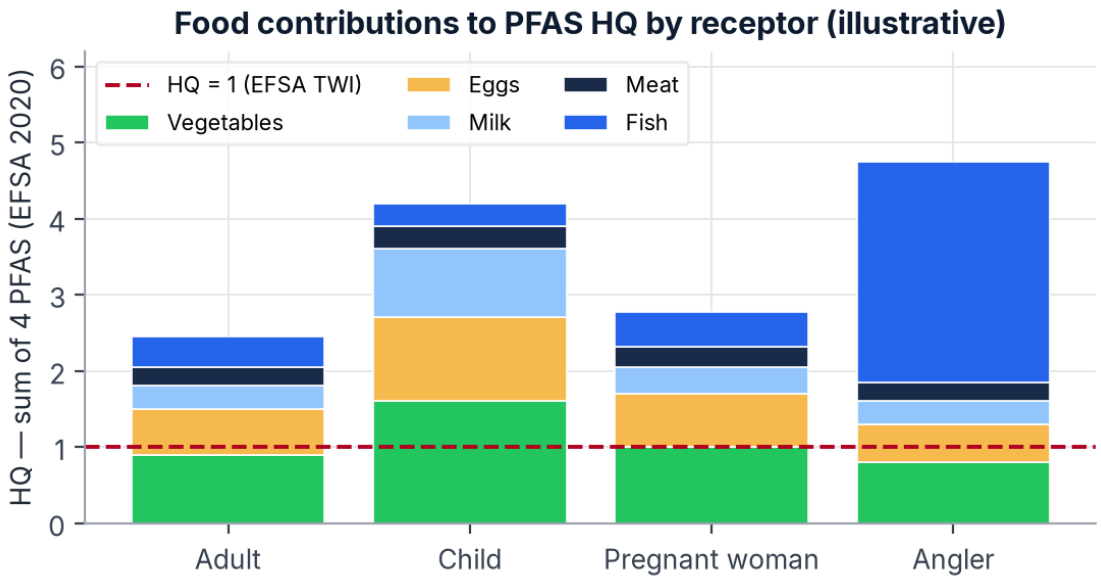


Figure — Food contributions to the PFAS HQ by receptor

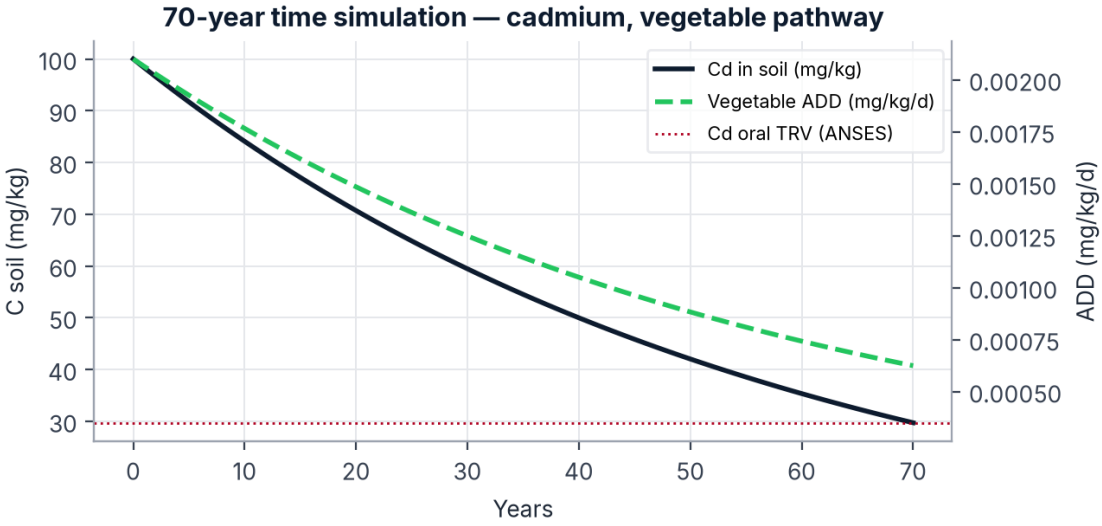


Figure — 70-year time simulation — cadmium, vegetable pathway

TOOL 04

CONTAMINATED LAND

MSP — Soil Pollution Source Modelling

Source characterisation, soil volumes and routing of excavated soils

Contaminated land | €250 excl. VAT/month or €2,760 excl. VAT/year

Usable in any country (French thresholds pre-set)

Purpose

MSP structures the characterisation of soil pollution sources: entry of boreholes and laboratory results, delineation of impacted footprints and depths, volume estimates and routing of excavated soils. It applies the French order of 12 December 2014 (acceptance at inert waste landfills, ISDI) and decree No. 2023-1408 (reuse of excavated soils), then produces a technical investigation report.

Target users

Contaminated land consultancies, clients and developers, earthworks contractors, environmental inspectorates.

Benefit

The step from laboratory results to volumes per disposal route is automatic and traceable: it is the quantified basis of the remediation strategy.

Features

- **Unlimited entries** — boreholes, coordinates, depths, lithology, results per substance.
- **Source delineation** — footprint, impacted depths and volume per source.
- **Comparison with references** — natural background values and landfill acceptance criteria.
- **Multi-source summary** — volumes, substances and disposal route across the same site.
- **JSON export** — direct transfer to 3D_SSP and archiving.

Calculation notes

SOURCE VOLUME

$V = A_{footprint} \times (z_{bottom} - z_{top})$

TONNAGE

$M = V \times \rho$ ($\rho \approx 1.8$ t/m³ by default)

ISDI ROUTING

$C_i \leq$ threshold of the order of 12/12/2014 for all substances → inert soils

EXCEEDANCE INDEX

$E_i = C_i$ / local natural background

Default parameters and example values

Parameter	Symbol	Example value	Unit
Number of boreholes	N	24	–
Lead substance	–	TPH C10-C40	–
Footprint of source S1	A	1,240	m²
Impacted depth	z	0 to 1.5	m
ISDI threshold TPH C10-C40	–	500	mg/kg DW

Links with other tools

Feeds: 3D_SSP (3D sources, management plan), TSN (source term to groundwater), EQRS (soil concentrations).

Illustrative example

Hydrocarbon source S1: footprint of 1,240 m² over 1.5 m, i.e. 1,860 m³ (about 3,350 t). Split: 760 m³ acceptable as inert (ISDI), 980 m³ non-hazardous (17 05 04) and 120 m³ hazardous (17 05 03*).

Interpretation

Only 6% of the volume requires a hazardous waste route, concentrated around borehole SC-04. Selective segregation during excavation greatly reduces management costs, and decree 2023-1408 allows reuse of part of the soils to be considered.

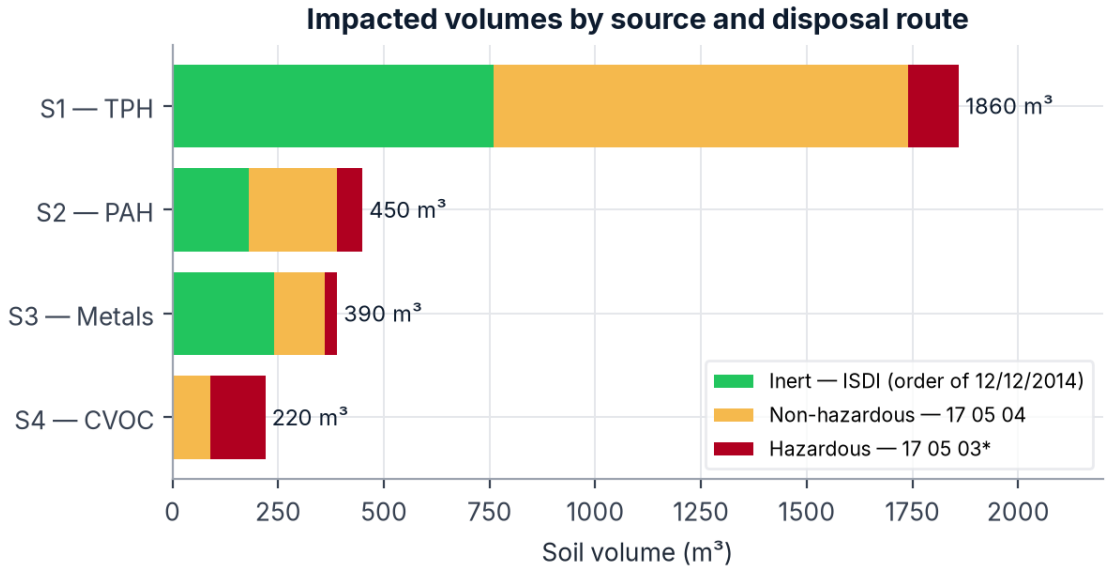


Figure — Impacted volumes by source and disposal route

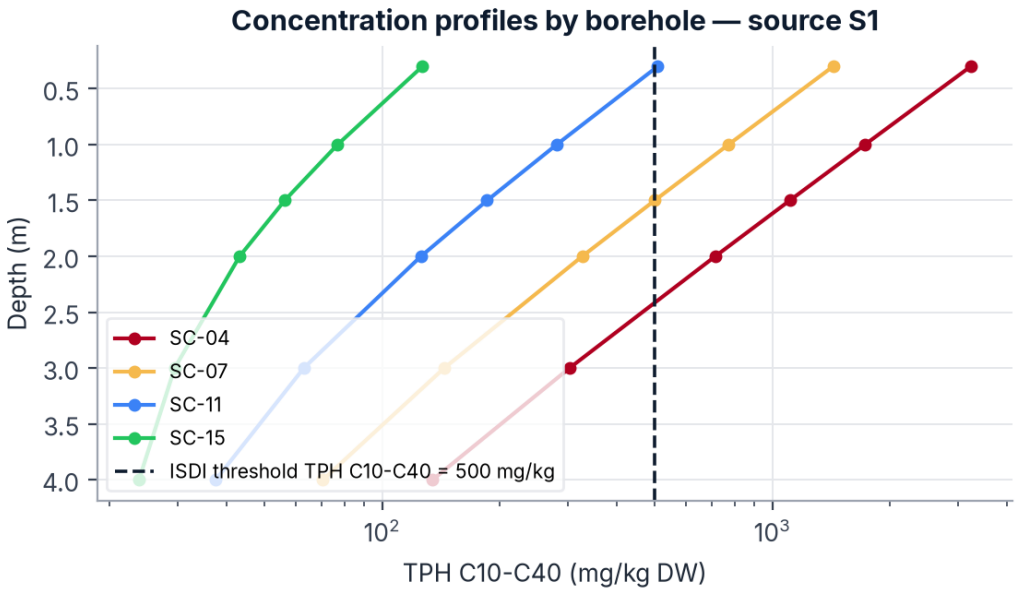


Figure — Concentration profiles by borehole — source S1

TOOL 05

CONTAMINATED LAND

TSN — Soil → Groundwater → Well Transfer

Impact of a contaminated site on drinking-water wells and boreholes — Domenico 1987

Contaminated land

TSN with Hub'eau API: €1,100 excl. VAT/year · Soil → Groundwater → Well Transfer: €850 excl. VAT/year

Automatic data in France; manual entry elsewhere

Purpose

TSN performs a Tier 1 analytical assessment of contaminant transfer from soil to groundwater and on to downgradient receptors, using the Domenico (1987) solution. The TSN version queries the French Hub'eau API to locate wells, boreholes and quality monitoring stations within 500 to 3,000 m automatically, and ranks them by criticality. 24 contaminants (CVOCs, BTEX, PAHs, PFAS, metals) and 24 soil types are pre-set.

Target users

Hydrogeologists, contaminated land consultancies, health and environmental regulators, industrial operators, developers.

Benefit

About 30 minutes for a screening assessment, where a MODFLOW or MARTHE model takes several weeks. The result tells you whether a full numerical model is needed.

Features

- **Native Hub'eau API** — wells, boreholes and quality stations within the study radius.
- **Distance-ring mapping** — 500 to 3,000 m rings, wind rose, flow azimuth.
- **Receptor criticality** — high, medium or low according to Cc(x) and distance.
- **Regulatory framework** — French water-law (IOTA, article R.214-1) logic applied natively.
- **Report** — Cc(x) curve, DAF, gradient, PDF editor and automatic conceptual model.

Calculation notes

DOMENICO (PLUME CENTRELINE)

$$C(x,t) = (C0/2)\cdot\exp[x/(2\alpha x)\cdot(1 - \sqrt{(1 + 4\lambda\alpha x/v')})]\cdot\mathrm{erfc}[(x - v't\cdot\sqrt{(1 + 4\lambda\alpha x/v')}) / (2\sqrt{(\alpha x\cdot v'\cdot t)})]\cdot\mathrm{erf}[Y/(4\sqrt{(\alpha y\cdot x)})]\cdot\mathrm{erf}[Z/(2\sqrt{(\alpha z\cdot x)})]$$

RETARDATION

$R = 1 + \rho b\cdot Kd / ne$ with $Kd = Koc \times foc$ and $v' = v / R$

DEGRADATION

$\lambda = \ln 2 / t_{½}$

DISPERSIVITIES

$\alpha x = 0.1\cdot x$ $\alpha y = \alpha x/10$ $\alpha z = \alpha x/100$

Default parameters and example values

Parameter	Symbol	Example value	Unit
Source concentration (TCE)	C0	1,000	µg/L
Effective groundwater velocity	v	30	m/year
Retardation factor	R	1.8	–
Half-life	t½	15	years
Source width × thickness	Y × Z	40 × 5	m
Distance to drinking-water well	x	500	m

Links with other tools

Receives: source term (MSP), Hub'eau receptors. Feeds: 3D_SSP (plume), EQRS (concentration at point of use), Conceptual site model (drinking-water receptor).

Illustrative example

TCE, C0 = 1,000 µg/L. After 30 years: 129 µg/L at 200 m and 8.1 µg/L at the drinking-water well 500 m away. After 10 years, the front has not reached the well (0.14 µg/L).

Interpretation

The well remains below the 10 µg/L quality limit (sum of TCE + PCE), but with a narrow long-term margin: the receptor is ranked as high criticality. Groundwater monitoring between source and well is justified, and a more detailed model can be run on this axis only.

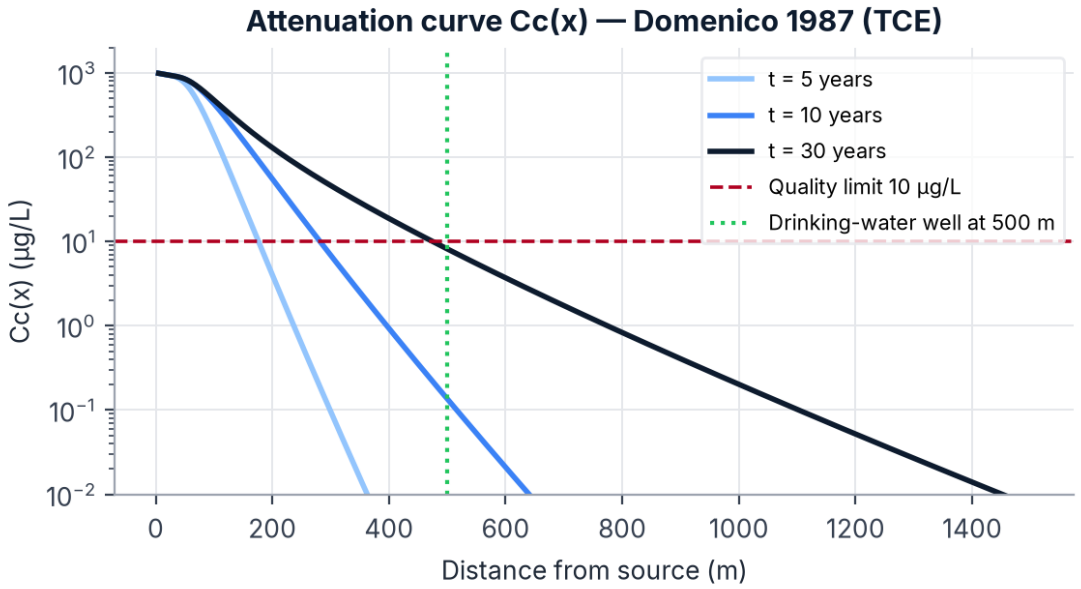


Figure — Attenuation curve Cc(x) at 5, 10 and 30 years

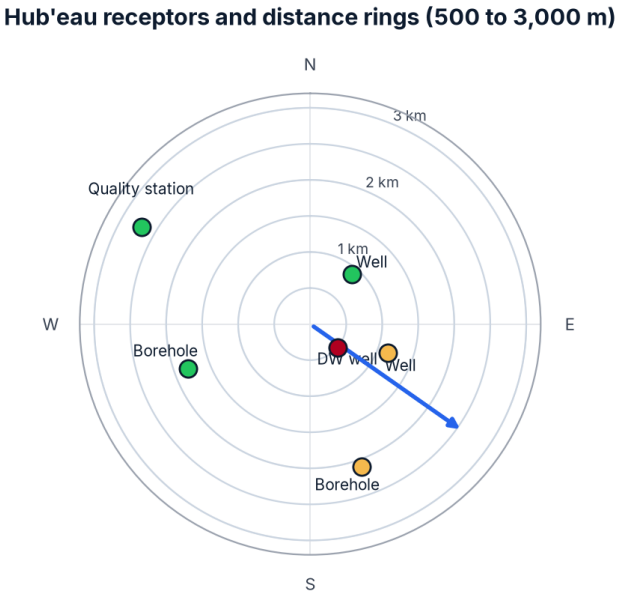


Figure — Hub'eau receptors by criticality and flow direction

TOOL 06

CONTAMINATED LAND

Conceptual Site Model — Source › Pathway › Receptor

Interactive conceptual model for site status assessment and remediation planning

Contaminated land | €850 excl. VAT/year | Usable in any country

Purpose

The Conceptual Site Model builds the source › pathway › receptor model underpinning any risk assessment. It is used for the French site status assessment (IEM) and remediation plan (PG) under the 2017 national methodology. It is natively linked to EQRS V9 (human pathways) and ECOTOX (ecological pathways).

Target users

Contaminated land consultancies, regulators and health authorities, industrial operators, developers; a clear support for non-specialist stakeholders.

Benefit

The model justifies the scope of the study before any calculation: retained and excluded pathways are explicit and traceable. The summary by receptor brings together the related EQRS results.

Features

- **Sources / media** — contaminated soil, groundwater, surface water, saturated soil, soil gas.
- **Pathways** — vapour intrusion, ingestion, dust, dermal contact, food chain, groundwater → well.
- **Receptors** — adults, children, workers, wildlife (ECOTOX), drinking-water wells (TSN).
- **Interactive SVG** — vector diagram in the INERIS/BRGM style, sharp at any scale.
- **Export** — PNG or PDF for inclusion in the report.

Calculation notes

EXPOSURE SCENARIO

Scenario = Source × Pathway × Receptor

RETENTION RULE

a pathway is retained if all three links exist; otherwise it is excluded with a justification

SUMMARY BY RECEPTOR

Σ (pathways × substances) → cumulative HI and ELCR from EQRS

Links with other tools

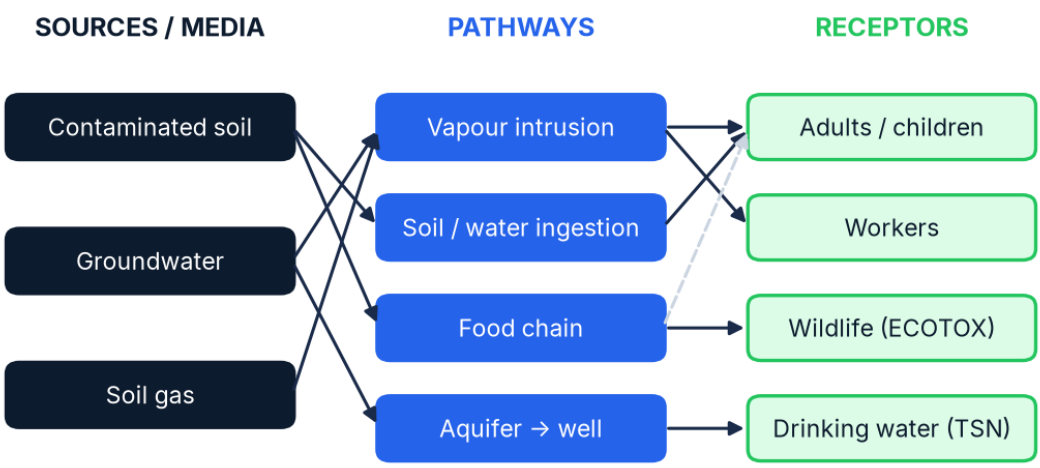
Two-way exchange with EQRS V7, V9 and HUMAN; receives the drinking-water receptor from TSN.

Illustrative example

Site with TCE in soil and benzene in groundwater: 6 scenarios retained (vapours → adults and workers, soil ingestion → children, food chain → wildlife, groundwater → well) and 1 scenario excluded (human food chain, no vegetable garden).

Interpretation

The model sets the list of EQRS calculations to run and the justification for excluded pathways. It then supports discussions with the regulator and the client.



Solid line: pathway retained — dashed: pathway excluded with justification

Figure — Source › pathway › receptor conceptual model generated by the software

TOOL 07

CONTAMINATED LAND

3D_SSP — Integrated 3D Modelling

Soil source, groundwater plume and structures combined in one 3D scene

Contaminated land | €250 excl. VAT/month or €2,400 excl. VAT/year | Usable in any country

Purpose

3D_SSP overlays the soil pollution source, the groundwater plume and site structures (buildings, roads, car parks, green areas) in a navigable 3D scene. It imports MSP and TSN data automatically, detects overlaps between structures and plume, and includes an excavated soil management module.

Target users

Owners, operators and developers; local authority technical services; third-party verification bodies; contaminated land consultancies.

Benefit

A clear view of the issues without specialised 3D software. The scene is used both to calculate volumes and to present the project to decision-makers.

Features

- **Multi-tool import** — JSON from MSP and TSN, format detection, built-in data editor.
- **Overlap detection** — structure / plume overlaps detected and flagged in the scene.
- **Management plan** — waste codes 17 05 04 / 17 05 03*, HP14 property, management costs.
- **Free camera** — rotation, zoom and slices by level (soil, groundwater, structures).
- **Deliverables** — PDF report and reusable JSON project.

Calculation notes

INTERPOLATION

$z(x) = \Sigma\, wi \cdot zi \,/\, \Sigma\, wi$ with $wi = 1 / di^{p}$ (IDW)

VOLUME PER LAYER

$V = \Sigma\, (Ai \times hi)$

OVERLAP

Aoverlap = Area(structure plume)

MANAGEMENT COST

Cost = Σ (Vroute × ρ × unit price of the route)

Default parameters and example values

Parameter	Symbol	Example value	Unit
Site area	A	6,000	m²
Modelled layers	nl	4	–
Imported sources (MSP)	–	1	–
Imported plume (TSN)	–	TCE	–
Structures	–	2 buildings	–

Links with other tools

Receives: MSP (sources, volumes) and TSN (plume). Feeds: management plan, presentation report.

Illustrative example

4 layers, 2,775 m³ of soil described: 1,470 m³ reusable or acceptable as inert, 1,130 m³ non-hazardous and 175 m³ hazardous. Overlap detected between the main building and the plume fringe.

Interpretation

Hazardous soils are concentrated in shallow made ground. The building / plume overlap justifies a vapour intrusion check with EQRS Johnson & Ettinger, or an adjustment of the layout.

3D scene: soil source (red), groundwater plume (blue), structures (grey)

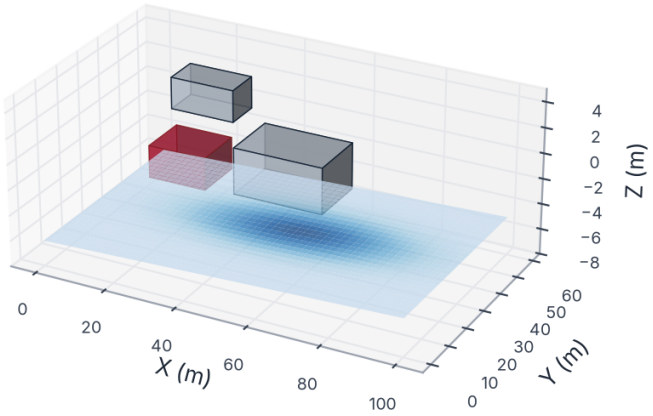


Figure — 3D scene: soil source, groundwater plume and structures

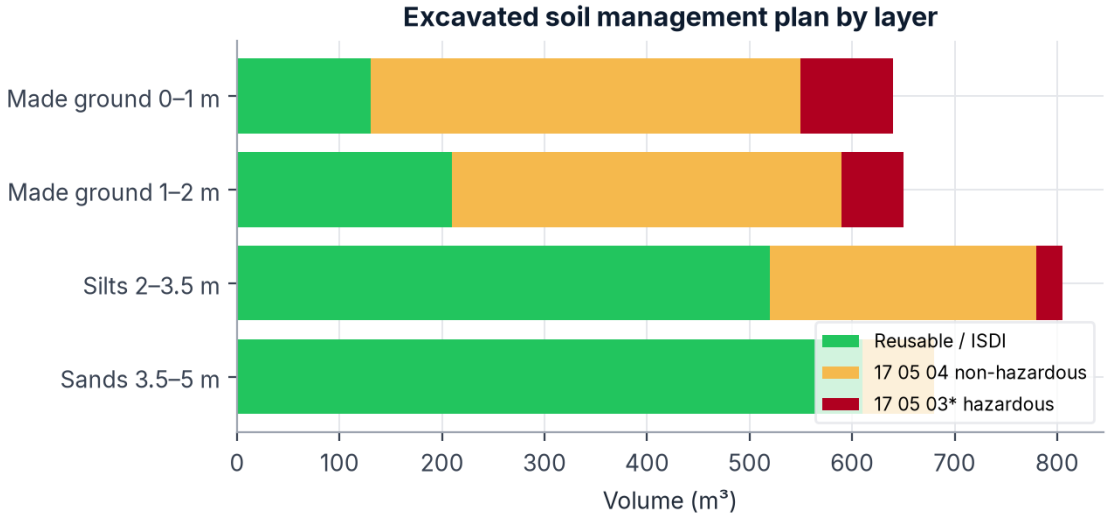


Figure — Excavated soil management plan by layer

TOOL 08

HYDROGEOLOGY

Porchet Test Modelling

In-situ permeability K using the hemispherical formula, compared with the GEP module

Hydrogeology | €550 excl. VAT/year | Usable in any country (field measurements)

Purpose

The software interprets Porchet infiltration tests (auger hole, known water volume, drainage time) to calculate permeability K with the hemispherical formula, then the design permeability Kdim. It compares Kdim with the theoretical value used by GEP Modelling.

Target users

Hydrogeologists, geotechnical engineers, stormwater and wastewater consultancies, local authorities.

Benefit

Guided field entry in centimetres, free of conversion errors. Agreement with the literature K is checked automatically, and the measured K prevails when the deviation stays within the expected order of magnitude.

Features

- **Unlimited entries** — reference, date, diameter, depth, facies, water volume, drainage time.
- **Kdim** — adjustable safety factor Cs (1.5 by default).
- **GEP agreement** — log10 deviation, consistent if |deviation| ≤ 0.5.
- **Multi-test summary** — summary table and agreement badges.
- **JSON export** — to GEP Modelling and ANC Sizing.

Calculation notes

INITIAL WATER HEIGHT

$H1 = V / (\pi \cdot R^2)$

PERMEABILITY (HEMISPHERICAL FORMULA)

$K = R / (2 \cdot t) \times \ln(1 + 2 \cdot H1 / R)$

DESIGN PERMEABILITY

$Kdim = K / Cs$

AGREEMENT WITH GEP

$deviation = \log10(Kdim\ field / Kdim\ GEP)$ → consistent if $|deviation| \leq 0.5$

Default parameters and example values

Parameter	Symbol	Example value	Unit
Hole diameter	D	15	cm
Water volume	V	4.5	L
Drainage time	t	2,030	s
Safety factor	Cs	1.5	–
Theoretical Kdim of the GEP module	–	1.7×10^{-5}	m/s

Links with other tools

Feeds: GEP Modelling (measured K / theoretical K) and ANC Sizing (JSON import of tests).

Illustrative example

R = 7.5 cm and H1 = 25.5 cm. K = 3.79×10⁻⁵ m/s, hence Kdim = 2.53×10⁻⁵ m/s, i.e. 91 mm/h. Deviation from GEP: log10(2.53/1.7) = +0.17.

Interpretation

Test P1 is consistent with the GEP module: the measured K is used for design. Test P3 (deviation −0.62) indicates a less permeable layer, to be investigated before fixing the location of the infiltration structure.

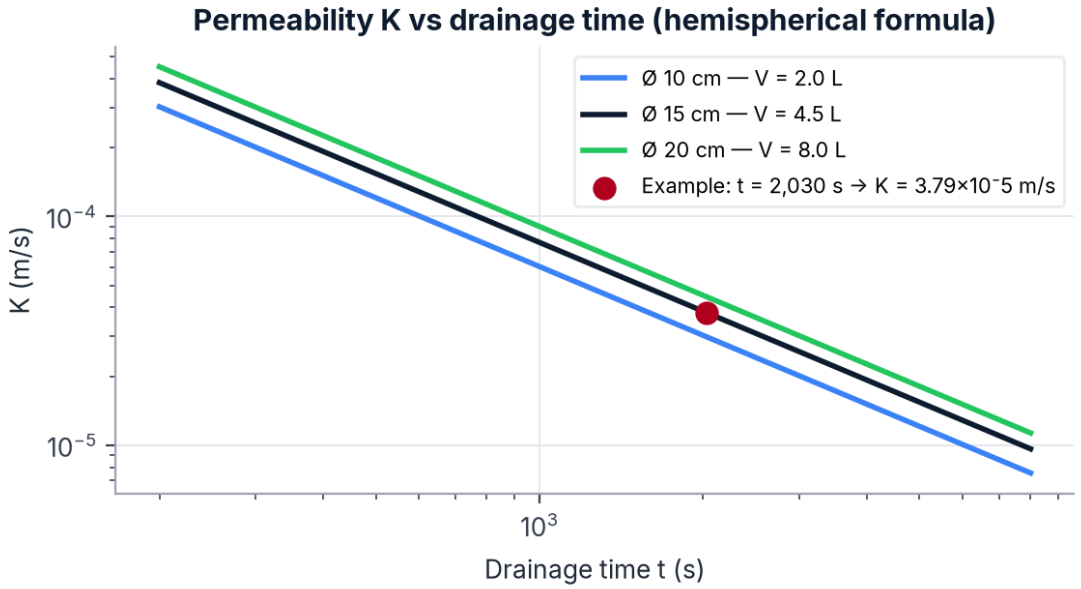


Figure — Permeability K vs drainage time

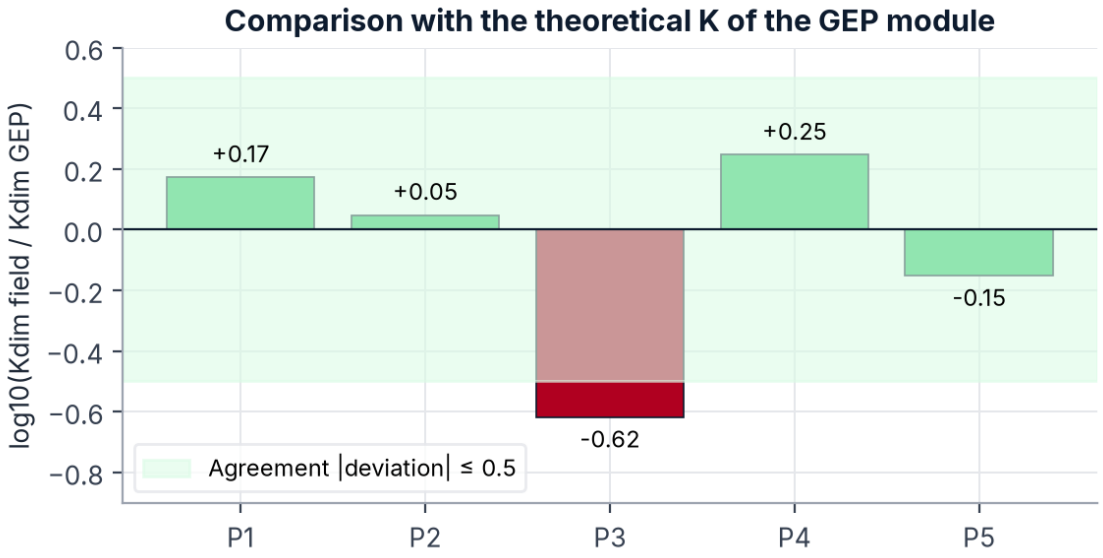


Figure — Agreement of tests with the theoretical K of the GEP module

TOOL 09

HYDROGEOLOGY

GEP Modelling — Stormwater & French Water Law

Sizing of stormwater structures, IOTA classification and French Water Law (DLE) applications

Hydrogeology | €5,500 excl. VAT/year | Automatic data in France; manual entry elsewhere

Purpose

GEP Modelling sizes detention and infiltration basins and the controlled discharge, determines the French IOTA permitting regime (article R.214-1 of the Environment Code) and produces the Water Law declaration (DLE, articles L.214-1 to L.214-6) as well as the stormwater management file with its technical note. It integrates the site's environmental history (SIS, BASOL, BASIAS, ICPE) to guide the choice between infiltration, detention and treatment.

Target users

Urban planning, civil engineering and environmental consultancies, developers, local authorities, industrial operators.

Benefit

From design storm to an application ready for the regulator, without re-entry. The « infiltration over industrial legacy » alert prevents mobilising surface contamination into groundwater.

Features

- **Sizing** — useful and critical volume, discharge rate, allowable flow, Montana coefficients by zone.
- **Automatic IOTA** — headings 2.1.5.0, 3.3.1.0, 3.2.2.0 and 1.1.1.0.
- **DLE report** — dynamic title block (reference, revision, prepared by, checked by).
- **Maps** — IGN Géoplateforme, BRGM, WFD water bodies, ZNIEFF, Natura 2000.
- **Porchet tests** — direct import of measurements and measured K / theoretical K comparison.

Calculation notes

INTENSITY (MONTANA)

$i(t) = a \cdot t^{(-b)}$ rainfall depth $h(t) = a \cdot t^{(1-b)}$

PEAK FLOW (RATIONAL METHOD)

$Qp = Ca \cdot i \cdot A$

RAINFALL METHOD

$V(t) = Ca \cdot A \cdot h(t) - Qf \cdot t$ $V_{useful} = \max V(t)$

INFILTRATION

$Qinf = Kdim \times Ainf$

IOTA 2.1.5.0

project area + intercepted catchment: 1 to 20 ha → declaration; ≥ 20 ha → authorisation

Default parameters and example values

Parameter	Symbol	Example value	Unit
Project area	A	15,650	m²
Runoff coefficient	Ca	0.58	–
Montana (T = 10 years)	a / b	5.286 / 0.660	mm, min
Allowable discharge	Qf	4.40	L/s
Kdim (Porchet test P1)	Kdim	2.53×10^{-5}	m/s

Links with other tools

Receives: Porchet tests, ANC export, BRGM data and SIS/BASOL/BASIAS history. Feeds: DLE application and stormwater note.

Illustrative example

1.57 ha project. 10-year storm: useful volume of 265 m³ for a critical duration of about 8.5 hours. 30-year storm: 371 m³. IOTA heading 2.1.5.0: declaration (project above 1 ha).

Interpretation

The basin is sized on the 10-year return period set by the regulator; the 30-year storm is used to check the overflow. With Kdim = 2.53×10^{-5} m/s, partial infiltration is possible if the site is not listed as SIS or former ICPE.

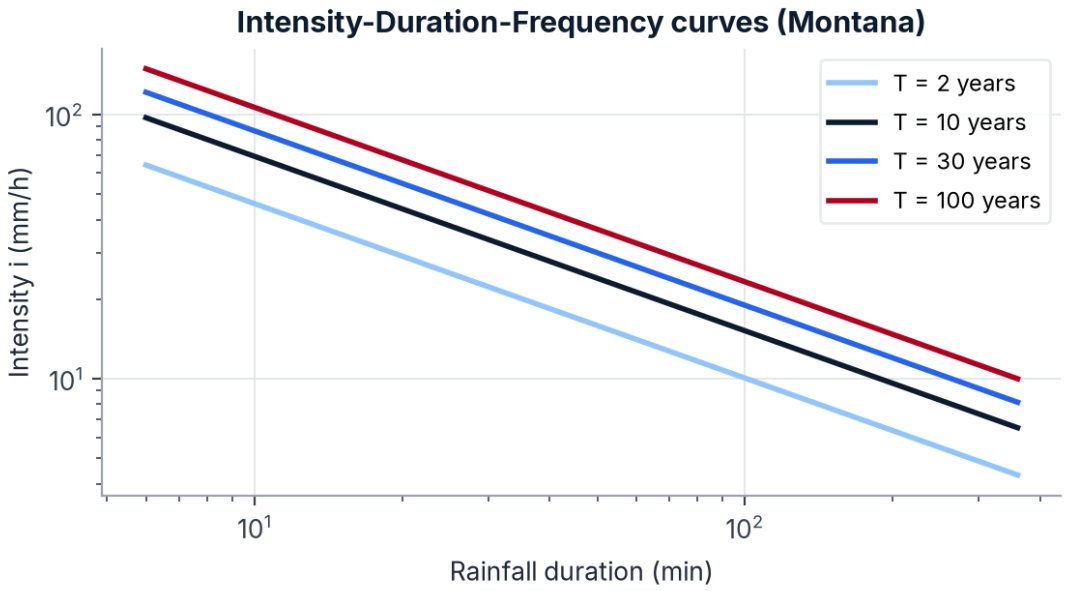


Figure — Intensity-duration-frequency curves (Montana)

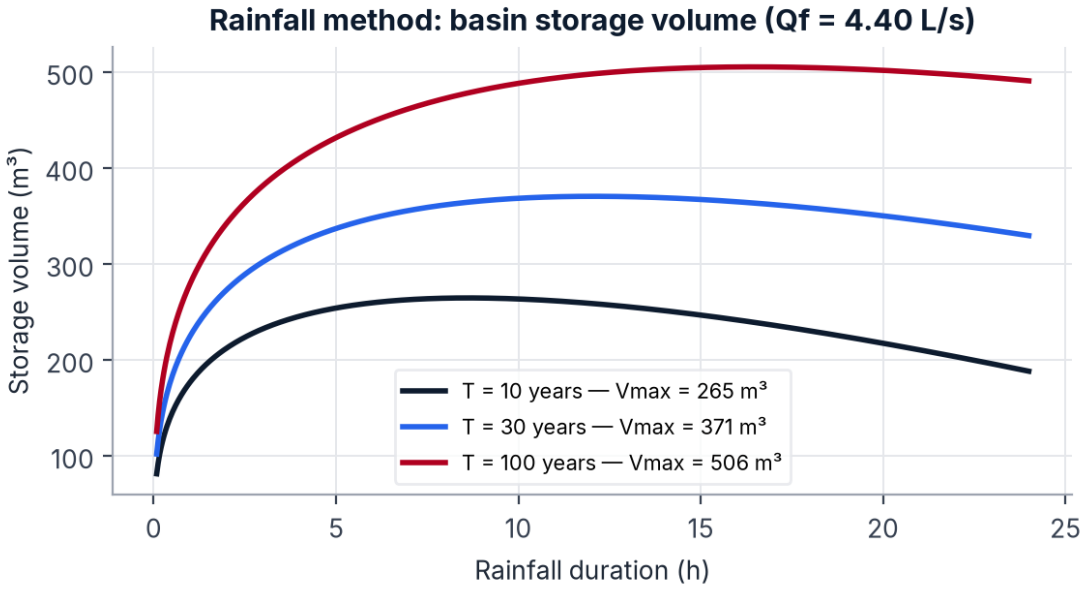


Figure — Basin storage volume by the rainfall method

TOOL 10

HYDROGEOLOGY

Groundwater Drawdown — entry level and V15.87

Theis, Dupuit-Thiem and multi-layer Forchheimer/Dupuit, IOTA classification and 27-page regulatory file

Hydrogeology | Entry level: €1,100 excl. VAT/year · V15.87 multi-layer + AI assistant: €1,500 excl. VAT/year

Automatic data in France; manual entry elsewhere

Purpose

The software calculates the drawdown caused by a pumping test or dewatering: Theis (transient), Dupuit-Thiem (steady state) and, in V15.87, multi-layer Forchheimer/Dupuit with leakage between layers. It determines the IOTA regime, locates the abstraction on an OpenStreetMap basemap in Lambert 93 and produces a 27-page PDF file ready for the French water authority (DDT).

Target users

Hydrogeologists, geotechnical engineers, foundation and underground works contractors, developers, operators of abstraction wells.

Benefit

13 hydrogeological substrates and 15 French départements with a water balance are pre-set. In V15.87, the AI assistant drafts the hydrogeological context of the file from BRGM and Hub'Eau data retrieved automatically.

Features

- **Geolocated aquifer (V15.87)** — 23 BDLISA aquifers by Lambert 93 extent, presence status displayed.
- **Hydrogeological regime** — catchment aquifer or deep aquifer (adjustable 10 m threshold).
- **Expected inflow** — flow to be expected for an underground car park, raft or shaft.
- **Geographic registration** — cadastre, altitude and IGN BDAlti topography consistent with Lambert 93.
- **Regulatory file** — calculation note, map, IOTA classification and water balance.

Calculation notes

THEIS (CONFINED AQUIFER)

$s = Q / (4\pi T) \cdot W(u)$ $u = r^2 \cdot S / (4 \cdot T \cdot t)$

COOPER-JACOB (U < 0.05)

$s \approx 2.3 \cdot Q / (4\pi T) \cdot \log(2.25 \cdot T \cdot t / (r^2 \cdot S))$

DUPUIT-THIEM (STEADY STATE)

confined: $s = Q / (2\pi T) \cdot \ln(R/r)$ unconfined: $H^2 - h^2 = Q / (\pi K) \cdot \ln(R/r)$

RADIUS OF INFLUENCE

$R \approx 1.5 \cdot \sqrt{(T \cdot t / S)}$

EXPECTED INFLOW

$Q = (K \cdot i \cdot e \cdot L + \text{recharge}) \times 1.8$ (default safety factor)

Default parameters and example values

Parameter	Symbol	Example value	Unit
Pumping rate	Q	120	m^3/h
Pumping duration	t	72	h
Transmissivity	T	1.2×10^{-2}	m^2/s
Storage coefficient	S	1×10^{-3}	–
Well radius	rw	0.15	m

Links with other tools
Receives: BRGM, Hub'Eau and IGN data; readings from the Piezometers software for monitoring during and after works.

Illustrative example

After 72 h of pumping at 120 m^3/h: drawdown of 4.32 m at the well, 1.75 m at 50 m and 1.14 m at 200 m. Calculated radius of influence: about 2.6 km. Volume abstracted: 8,640 m^3.

Interpretation

The volume stays below the declaration threshold of heading 1.1.2.0 (10,000 m^3/year); the borehole falls under heading 1.1.1.0 (declaration). This classification must be confirmed if the site lies in a water allocation zone (ZRE). Neighbouring wells within 200 m must be inventoried.

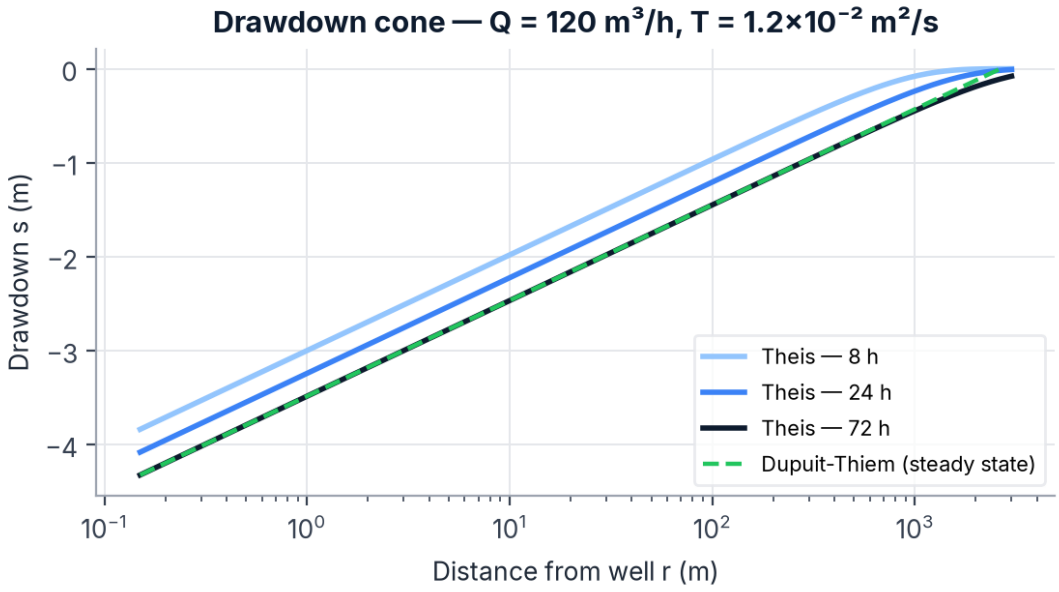


Figure — Drawdown cone at 8, 24 and 72 h — Theis and Dupuit-Thiem

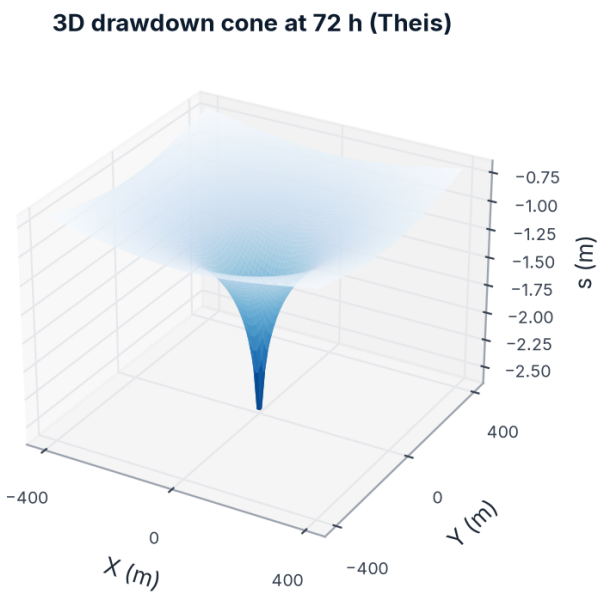


Figure — 3D drawdown cone at 72 h

TOOL 11

HYDROGEOLOGY

Monitoring Piezometers (v2.9c)

Piezometer network monitoring: readings, time series, alerts and survey summaries

Hydrogeology | €1,100 excl. VAT/year | Usable in any country (field measurements)

Purpose

The software centralises the inventory of site piezometers, monitoring rounds and their history. Each water depth entered is converted into a groundwater level, compared with the well's thresholds and included in the survey summary.

Target users

Contaminated land and hydrogeology consultancies, industrial operators, clients of dewatering works, monitoring network managers.

Benefit

The reference level is entered only once: conversion errors in the field disappear. Threshold exceedances are flagged as soon as data are entered.

Features

- **Well record** — coordinates, reference level, depth, screen, aquifer, condition.
- **Monitoring rounds** — water depth, operator, measurement conditions.
- **Time series** — history by well and comparison between wells.
- **Alerts** — high and low thresholds per piezometer.
- **Export** — readings and time series, JSON import/export of the network.

Calculation notes

GROUNDWATER LEVEL

h = reference level − measured water depth

CHANGE BETWEEN ROUNDS

Δh = hn − hn−1

HYDRAULIC GRADIENT

i = Δh / L (flow direction perpendicular to contours)

ALERT

h < low threshold or h > high threshold → well flagged

Default parameters and example values

Parameter	Symbol	Example value	Unit
Wells monitored	N	12	–
Reference level Pz-04	Zr	85.22	m NGF
Water depth Pz-04	p	4.82	m
Low threshold Pz-07	–	77.0	m NGF

Links with other tools

Complements Groundwater Drawdown for monitoring during and after works; provides the gradient and flow direction used by TSN, and the groundwater levels used in AGRESOL.

Illustrative example

Round of 14 readings: Pz-04 at 80.40 m NGF (4.82 m below the reference), down 0.37 m over one year. Pz-07 drops below its 77.0 m NGF low threshold.

Interpretation

The general decline follows the seasonal cycle, but the steeper drop at Pz-07 at the end of the period indicates a local influence (pumping, drainage). The alert justifies checking the well and nearby abstractions.

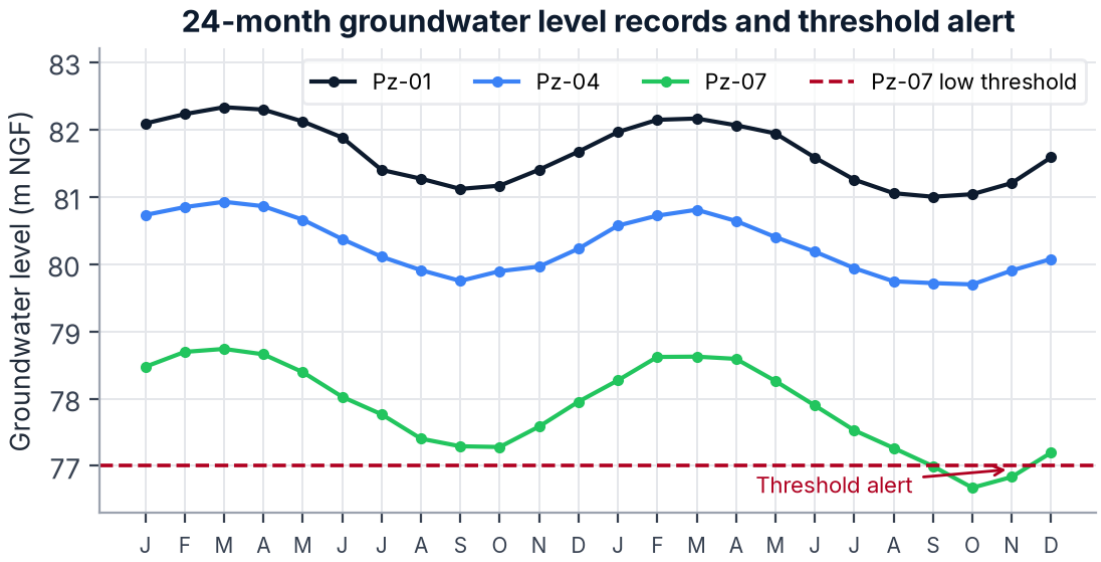


Figure — 24-month groundwater level records and threshold alert

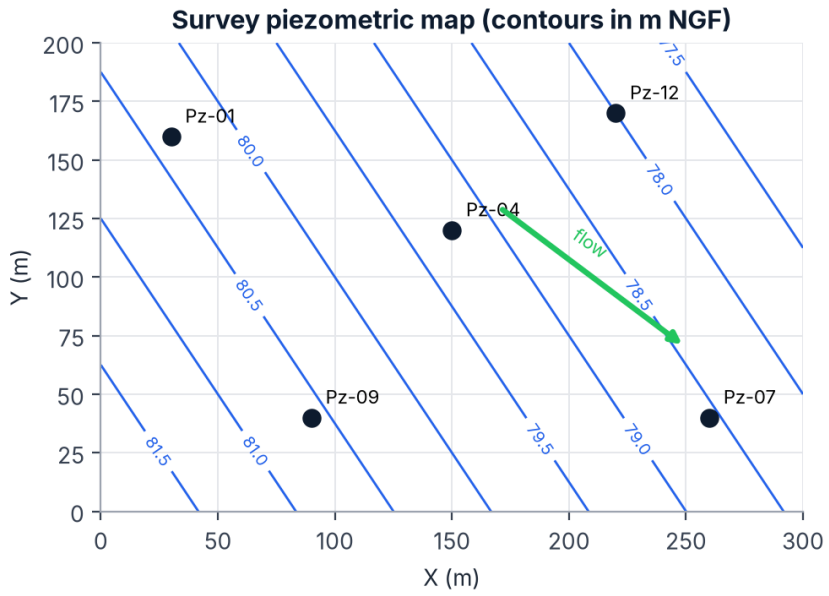


Figure — Survey piezometric map

TOOL 12

HYDROGEOLOGY

ANC Sizing — On-site and small collective wastewater treatment

From in-situ soil to the selected system, under NF DTU 64.1 — report ready for the SPANC

Hydrogeology | €550 excl. VAT/year | Automatic data in France; manual entry elsewhere

Purpose

The software determines whether infiltration into the natural soil is possible by cross-checking the measured Kdim (Porchet tests), the theoretical permeability of the facies and the geological formation published by BRGM at the test location. It then selects the treatment system and sizes it under the French standard NF DTU 64.1, and checks groundwater vulnerability.

Target users

Wastewater consultancies, SPANC (French public on-site sanitation services), geotechnical engineers, builders and private or collective clients.

Benefit

The triple check measured / theoretical / geological map secures the choice of system. The report cites and links the regulatory framework, ready for review.

Features

- **Porchet import** — direct JSON or manual entry, multi-layer soil profile, 24 geological facies.
- **Competent SPANC** — identified automatically from the postcode of the tests.
- **Vulnerability** — 35 m rule, groundwater depth, Hub'eau and BRGM wells within 3 km.
- **Systems** — trenches, soakaway bed, undrained or drained sand filter, mound, pumping station.
- **Deliverables** — PDF report, system diagram, JSON export to GEP.

Calculation notes

CONVERSION

Kdim (mm/h) = Kdim (m/s) × 3.6×10^{6}

NF DTU 64.1 CLASSES

> 500 very permeable · 50–500 permeable · 30–50 moderate · 15–30 poor · < 15 mm/h impermeable

TRENCHES (PERMEABLE SOIL)

L = 45 m up to 5 PE, then + 9 m per additional PE

TRENCHES (MODERATE SOIL)

L = 50 m up to 5 PE, then + 10 m per additional PE

DISTANCE TO WELLS

no installation within 35 m of a drinking-water abstraction

Default parameters and example values

Parameter	Symbol	Example value	Unit
Selected Kdim (Porchet)	Kdim	2.53×10^{-5}	m/s
System capacity	–	5	PE
Field / BRGM facies	–	Granitic sand	–
Nearest well	d	> 35	m

Links with other tools

Receives: Porchet tests (JSON), BRGM and Hub'eau data. Feeds: GEP Modelling; uses Domenico attenuation (as in TSN) for receptors.

Illustrative example

Kdim = 2.53×10^{-5} m/s, i.e. 91 mm/h: permeable soil. Field facies and BRGM map agree (granitic sand). Selected system: infiltration trenches, 45 m for 5 PE. No well within 35 m.

Interpretation

Infiltration into the natural soil is possible. If Kdim were below 15 mm/h or a continuous clay layer lay below the trench base, the software would conclude that infiltration is not possible and would size a drained vertical sand filter.

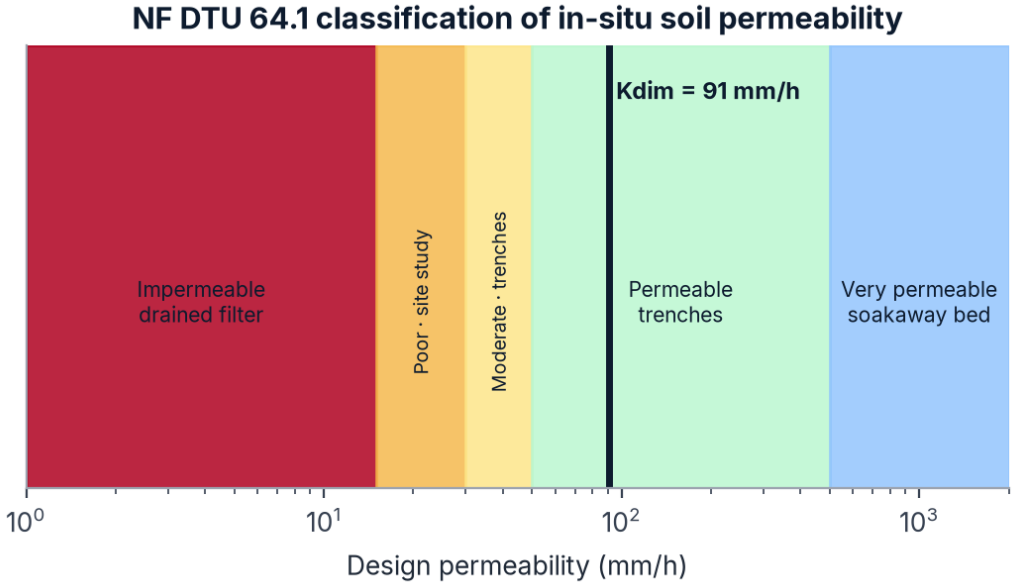


Figure — Permeability classification under NF DTU 64.1

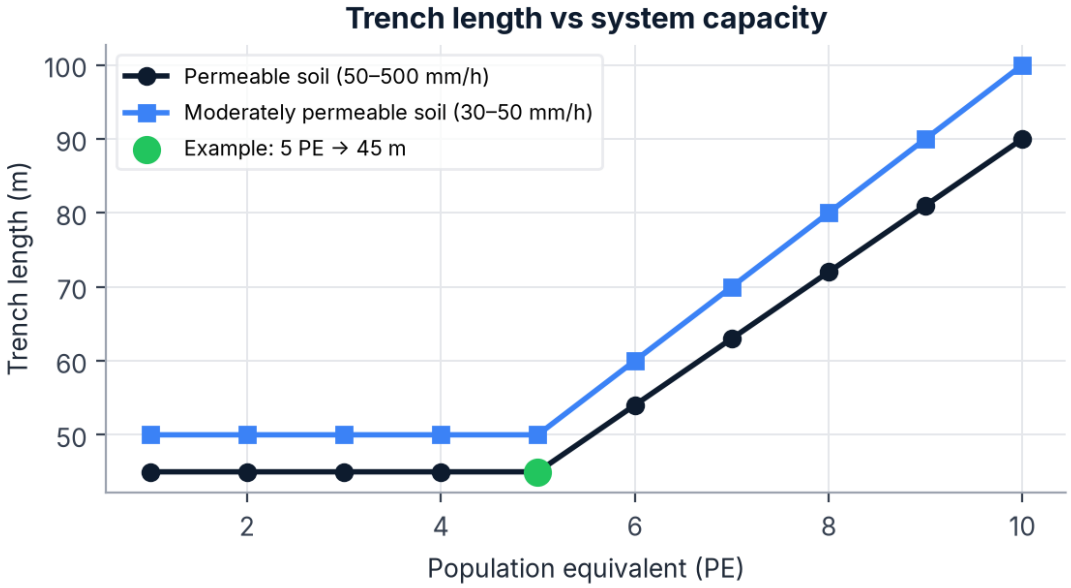


Figure — Trench length vs system capacity

TOOL 13

SOIL & LAND QUALITY

AGRESOL — Aggressiveness of groundwater and soil gas towards foundations

XA exposure classes at each structure — EN 206+A2 (French annex NF EN 206/CN) and FD P18-011

Soil & land quality | €1,250 excl. VAT/year (included in the Contaminated Land Packs)

Usable in any country (European standards)

Purpose

AGRESOL links the results of a contaminated land study (groundwater, soil gas, soil) to the chemical exposure classes of the standard, at each pile, micropile, ground beam or raft. It considers pH, aggressive CO_2, sulfates, magnesium, ammonium, sulfides and pyrite, H_2S, acidity produced by CVOC degradation and the effects of remediation (soil vapour extraction, air sparging, persulfate ISCO).

Target users

Contaminated land consultancies, geotechnical engineers, structural engineers, civil engineering contractors, clients of sites under remediation.

Benefit

Pollution data already collected are used directly for concrete selection: the tool shows the class at each depth, the governing parameter and the margin to the limits.

Features

- **Groundwater chemistry** — table 2 of EN 206+A2/CN; import of laboratory reports (PDF, CSV, XLSX).
- **Soil gas and CVOCs** — H_2S, CO_2, PCE, TCE, cis-DCE, vinyl chloride and groundwater buffering capacity.
- **Acid soils and sulfides** — pyrite, reduced sulfur, Baumann-Gully acidity (FD P18-011).
- **Remediation effects** — oxidant gradient (O_2, redox potential) around piles, layer by layer.
- **G.M.E.P report** — summary, foundation section, classes, monitoring points; BRGM data.

Calculation notes

PYRITE OXIDATION

$FeS_2 + 15/4\ O_2 + 7/2\ H_2O \rightarrow Fe(OH)_3 + 2\ SO_4^{2-} + 4\ H^+$

COMPLETE DECHLORINATION OF PCE

1 mol of PCE releases up to 4 mol of HCl

SELECTED CLASS

Class = max(class of each agent measured or calculated at the structure)

EN 206+A2/CN limits (water)

Agent (water)	XA1	XA2	XA3	Unit
pH	6.5 to 5.5	5.5 to 4.5	4.5 to 4.0	–
Aggressive CO_2	15 to 40	40 to 100	> 100	mg/L
Sulfates SO_4^{2-}	200 to 600	600 to 3,000	3,000 to 6,000	mg/L
Magnesium Mg^{2+}	300 to 1,000	1,000 to 3,000	> 3,000	mg/L
Ammonium NH_4^+	15 to 30	30 to 60	60 to 100	mg/L

Links with other tools

Receives: results from EQRS, contaminated land investigations, remediation monitoring (SVE, sparging) and groundwater levels from the Piezometers software (water-table fluctuation at the foundations). Included in all three Contaminated Land Packs.

Illustrative example

Most exposed pile, groundwater treated by air sparging: pH 6.4, aggressive CO_2 11 mg/L, sulfates 320 mg/L. Class at the pile: XA1, governing parameters sulfates and pH. O_2 at 1 m from the injection point exceeds 2 mg/L in the sands.

Interpretation

AGRESOL is an assessment tool: it reports the classes matching the measured and modelled chemistry. The choice of class, concrete, cover and construction details remains with the geotechnical engineer, the structural engineer and the contractor.

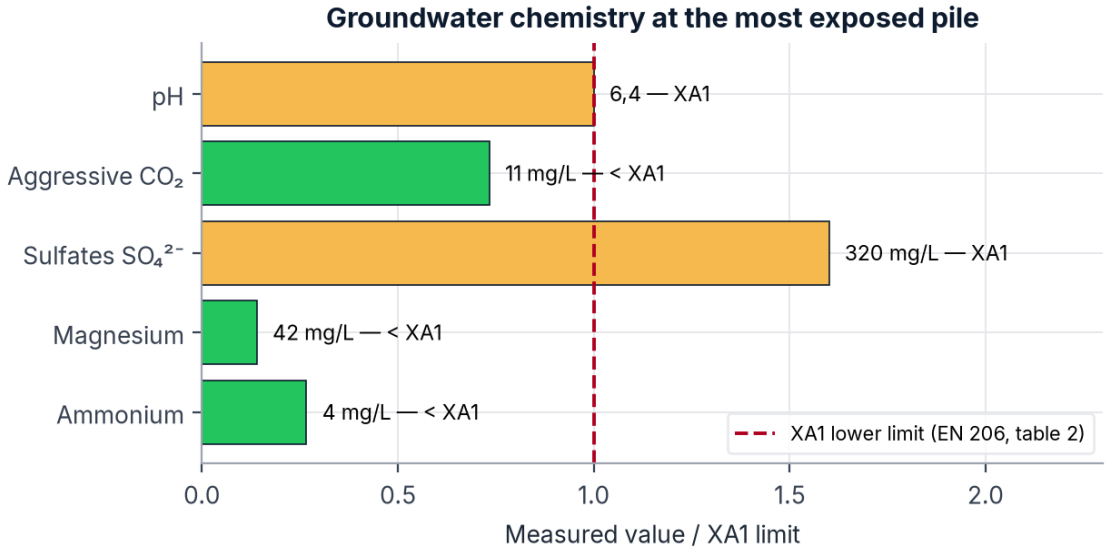


Figure — Groundwater chemistry relative to XA1 limits

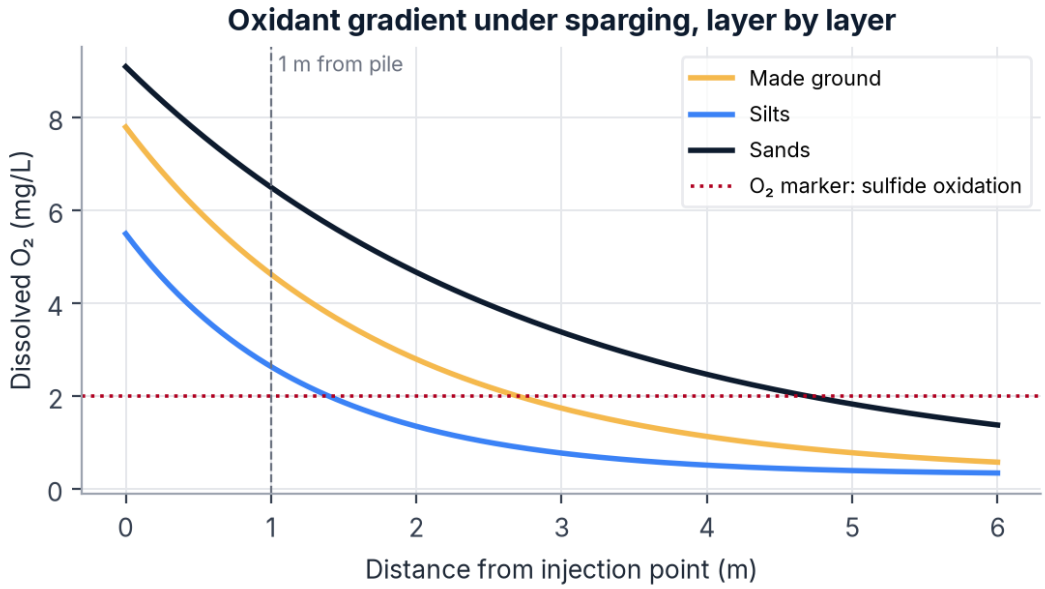


Figure — Oxidant gradient under sparging, by layer

TOOL 14

SOIL & LAND QUALITY

FONCIER-SCAN — Land prospecting and pollution risk

Plots of 2,000 to 10,000 m² and their environmental history, before commitment

Soil & land quality | €2,500 excl. VAT/year | France (national public databases)

Purpose

FONCIER-SCAN is a land prospecting software for the development teams of developers, land promoters and retail brands. Starting from a French urban area of more than 20,000 inhabitants and the target programme, it identifies plots in or next to business parks, mixed development zones (ZAC) and roundabouts at town entrances, then rates each one with a score from 0 to 100.

Target users

Development teams of developers, land promoters and retail brands (housing, quick-service restaurants, food retail).

Benefit

Site search and environmental risk appraisal are carried out together, on the same map. The tool flags and documents the risk; it does not replace a pollution investigation or a soil survey, but indicates when to commission them.

Features

- **3 programmes** — housing and residences (3,000–4,000 m²), quick-service restaurants (2,000–5,000 m²), food retail (5,000–10,000 m²).
- **Qualification** — cadastral reference, Lambert 93, NGF altitude, local plan (PLU) zoning, aerial photo.
- **Environmental history** — ICPE, BASIAS, BASOL, CASIAS and SIS, with distance to the project and link to the record.
- **Price** — DVF transaction price reference.
- **Speed** — 9 public databases queried, about 3 minutes per urban area.

Links with other tools

Trigger for contaminated land studies: when a plot is listed in an ICPE, BASOL or SIS database, it points to an investigation (MSP, EQRS, TSN). It does not itself model pollution or water.

Illustrative example

Niort urban area, « housing and residences » programme: 40 qualified plots, including 10 priority sites (score ≥ 70) and 32 located on an entrance roundabout.

Interpretation

Plots with an ICPE, BASOL or SIS history are downgraded but remain visible: they may still be suitable provided the cost of an investigation and possible remediation is included in the project budget.

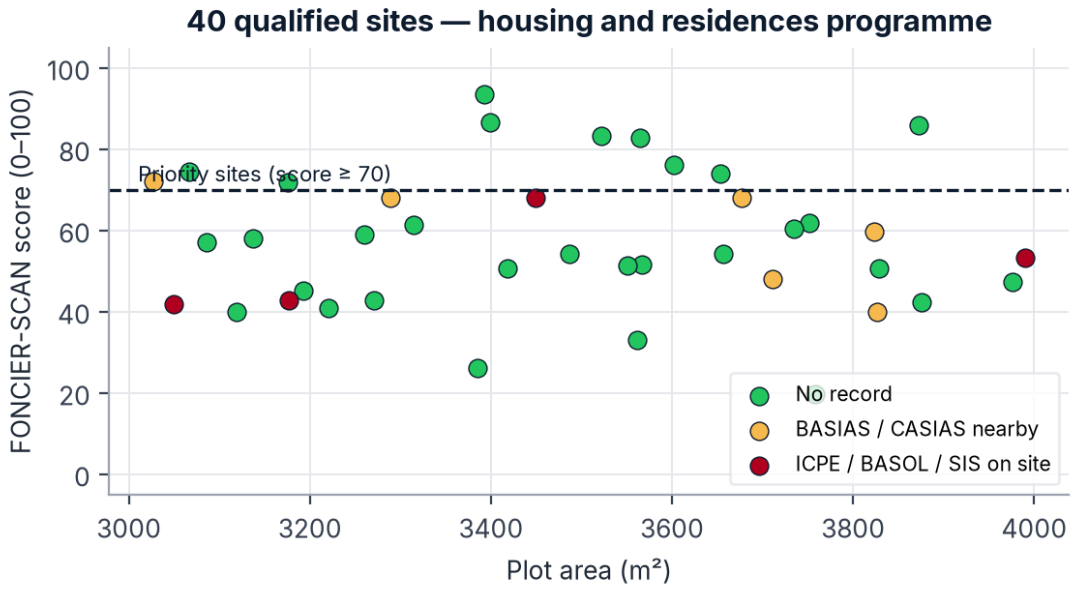


Figure — Qualified plots: area, score and environmental history

Regulatory and methodological references

French texts are given with their original title or an English description.

Contaminated land

- French national methodology for the management of contaminated sites and soils, Ministry for the Ecological Transition, April 2017.
- Note DGS/EA1/DGPR/2014/307 of 31 October 2014 on the selection of toxicity reference values.
- ANSES — toxicity reference values (database updated continuously).
- US EPA (2004). User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings (Johnson & Ettinger model).
- INERIS DRC-09-103096-09387C — cumulative effects by target organ.
- EFSA (2020). Risk to human health related to the presence of PFAS in food — TWI of 4.4 ng/kg bw/week.
- Regulation (EU) 2023/915 on maximum levels for certain contaminants in food.
- Sample B.E. & Suter G.W. — ORNL/TM-13391, wildlife exposure models.
- Domenico P.A. (1987). An analytical model for multidimensional transport of a decaying contaminant species. J. Hydrol. 91.

Waste and excavated soils

- French order of 12 December 2014 on acceptance conditions for inert waste at storage facilities (ISDI).
- French decree No. 2023-1408 of 29 December 2023 on traceability and recovery of excavated soils.
- Regulation (EU) 2017/997 — hazardous property HP14 « ecotoxic ».
- French guide on off-site recovery of excavated soils from potentially contaminated sites (Ministry, 2020).
- EN ISO 10381-5 — soil quality, sampling of urban and industrial sites.

Water and hydrogeology

- French Law No. 2006-1772 of 30 December 2006 on water and aquatic environments (LEMA).
- French Environment Code, articles L.214-1 to L.214-6 and R.214-1 (IOTA nomenclature).
- French order of 11 January 2007 on quality limits and references for water intended for human consumption.
- Directive (EU) 2020/2184 and French order of 30 December 2022: sum of 20 PFAS ≤ 0.10 µg/L in drinking water, applicable from 1 January 2026.
- French order of 7 September 2009 as amended (7 March 2012) on technical requirements for on-site wastewater treatment.
- NF DTU 64.1 — installation of on-site wastewater treatment systems.

Concrete and foundations

- EN 206+A2 and French annex NF EN 206+A2/CN — concrete: specification, performance, production and conformity (table 2, XA classes).
- FD P18-011 — definition and classification of chemically aggressive environments.

Public data queried

- BRGM (BSS, BD Charm-50, BDLISA), Hub'eau API, IGN Géoplateforme (BD ALTI, BD ORTHO), Géorisques (ICPE, BASIAS, BASOL, CASIAS, SIS), cadastre, DVF.

Glossary

Acronyms used in the software, mostly from French regulations.

ADAF Age-Dependent Adjustment Factor applied to the child ELCR for mutagenic substances.

ADD Average daily dose (DJE in the French software), mg/kg/d.

AEP Drinking-water supply (French: alimentation en eau potable).

AT Averaging time (ED for threshold effects, 70 years for non-threshold effects).

BAF / BTF / TF Bioaccumulation factor (water → fish), transfer factor to animal products and soil → plant transfer factor.

BASIAS / BASOL / CASIAS French inventories of former industrial sites and of contaminated sites requiring public action.

CVOC Chlorinated volatile organic compounds (PCE, TCE, DCE, vinyl chloride…); COHV in French.

DLE French Water Law declaration (Déclaration Loi sur l'Eau).

DDT French departmental water and planning authority.

DREAL / ARS French regional environmental authority / regional health agency.

DTU French unified technical document (construction standard).

DVF French open database of property transaction prices.

ELCR / IUR Excess lifetime cancer risk (ERI) / inhalation unit risk (ERU).

EQRS French quantitative health risk assessment (HHRA).

GEP Stormwater management (gestion des eaux pluviales).

HI Hazard index: sum of the HQs of substances acting on the same target organ.

HQ Hazard quotient (QD in French).

ICPE French classified installations for environmental protection (permitted industrial sites).

IEM / PG French site status assessment / remediation and management plan.

IOTA Works and activities subject to the French Water Law nomenclature.

ISCO In-situ chemical oxidation.

ISDI / ISDND / ISDD French landfills for inert / non-hazardous / hazardous waste.

Kdim Design permeability (measured permeability divided by a safety factor).

NGF French national levelling datum.

PE Population equivalent (EH in French).

PEC / PNEC Predicted environmental concentration / predicted no-effect concentration.

PFAS Per- and polyfluoroalkyl substances.

RQ Ecological risk quotient (PEC/PNEC).

SIS French soil information sectors.

SPANC French public on-site sanitation service.

SSP Contaminated sites and soils (sites et sols pollués).

TRV Toxicity reference value (VTR in French).

TSN Soil-to-groundwater transfer (transfert sol → nappe).

TWI Tolerable weekly intake.

XA1 / XA2 / XA3 Chemical attack exposure classes (slight, moderate, high) under EN 206.

2026 prices

Prices excluding VAT (French VAT 20%). Subscriptions with no commitment or automatic renewal, secure payment by Stripe.

Software	Monthly (excl. VAT)	Annual (excl. VAT)
EQRS Johnson & Ettinger (V7)	€245	€2,499
EQRS V9 + ECOTOX V9	€395	€3,900
EQRS V9 + ECOTOX V9 + HUMAN (Tier 3)	€550	€5,200
MSP — Pollution sources	€250	€2,760
3D_SSP — 3D modelling	€250	€2,400
TSN with Hub'eau API	–	€1,100
Soil → Groundwater → Well Transfer	–	€850
Conceptual site model	–	€850
AGRESOL	–	€1,250
FONCIER-SCAN	–	€2,500
Porchet Test Modelling	–	€550
GEP Modelling — Stormwater & Water Law	–	€5,500
Groundwater Drawdown — entry level	–	€1,100
Groundwater Drawdown V15.87	–	€1,500
Monitoring Piezometers v2.9c	–	€1,100
ANC Sizing	–	€550

Packs — 2-year licence per workstation

Pack	Included software	Price excl. VAT (2 years)
Contaminated Land Essential	EQRS J&E; V7, Conceptual model, 3D_SSP, MSP, TSN, AGRESOL	€9,800 i.e. €4,900/year
Contaminated Land Standard	EQRS V9 + ECOTOX V9, Conceptual model, 3D_SSP, MSP, TSN, AGRESOL	€11,500 i.e. €5,750/year
Contaminated Land Premium	EQRS V9 + ECOTOX V9 + HUMAN, Conceptual model, 3D_SSP, MSP, TSN, AGRESOL	€12,800 i.e. €6,400/year
Hydrogeology & Wastewater	Porchet test, GEP Modelling, Groundwater Drawdown, Piezometers, ANC Sizing	€9,800 i.e. €4,900/year

The first workstation is ordered online; additional workstations are quoted on request. VAT treatment for customers outside France follows EU rules.

14-day free trial

Every software tool can be tried free of charge for 14 days, with no credit card, from www.gmep-france.eu. All features are available during the trial.

Contact

A question about a tool, a demonstration or a multi-workstation quote? Bureau d'étude G.M.E.P will answer you directly, in French or English.

Address	Bureau d'étude G.M.E.P 9 rue de la Marne, 79400 Saint-Maixent-l'École, France
Phone	+33 6 07 73 72 33
E-mail	gmep.france@gmail.com
Website	**www.gmep-france.eu** — detailed sheets, free trial, online ordering
SIREN	753 097 625 (French company registration number)

Get started in three steps

- choose a tool on www.gmep-france.eu and start the 14-day free trial;
- import a real dataset or start from the example provided;
- generate the PDF report and compare it with your own calculations.

Eric Azulay — Creator of the G.M.E.P software

This guide is also available in French on www.gmep-france.eu, France Environnement and LinkedIn.

The numerical examples in this guide are illustrative. Prices are those in force in October 2026 and may change; the website prevails.