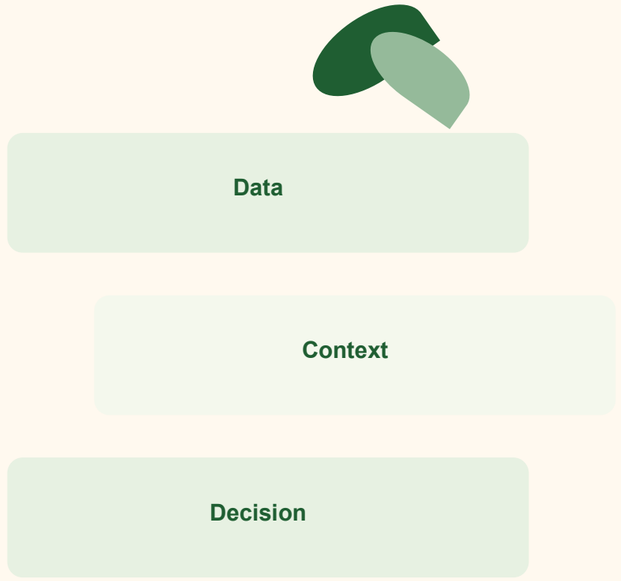
SMART CITIES VANCOUVER

Water Decisions Beyond the Dashboard

How AI Can Shape Urban Resilience



Ryan Gormican
AI Engineer, TensoAI

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MY LENS

The shared problem is decision timing.

A dashboard can be correct and still arrive too late.

OBSERVE

What is happening?

CONTEXTUALIZE

What changes its meaning?

PRIORITIZE

What deserves attention?

ACT

What can still change?

My role in this talk: translate an agritech decision pattern into an urban water discussion.

Not all variables transfer. The decision structure does.

CONTEXT

A water signal only becomes useful inside a context.

The same reading can point toward different actions depending on five conditions.

PLACE

Soil, slope, land cover, drainage, catchment and microclimate.

TIME

Season, forecast horizon, event timing, crop stage and response window.

STATE

Moisture, saturation, storage, flow and infrastructure capacity right now.

HISTORY

Baselines, prior failures, anomalies, previous actions and recovery time.

OBJECTIVE

Yield, flood risk, conservation, service goals, cost and acceptable risk.

Context turns measurements into decision relevance.

LOCAL WATER REALITY

B.C. water context has both excess and scarcity.

RAIN CITY STILL HAS DRY WINDOWS

Vancouver projects lower average summer rainfall and longer summer dry spells by 2050.

HEAVY RAIN STILL MATTERS

Rain City investments address runoff, combined sewer pressure, water quality and climate resilience.

CONTEXT DECIDES THE PRIORITY

The same region can need water retention, runoff management, irrigation restraint and infrastructure attention.

That is why “more water” and “less water” are incomplete questions.

The better question is: what does this water mean here, now, and for which objective?

Sources: City of Vancouver drought projections; City of Vancouver Rain City Strategy funding information.

B.C. AGRICULTURE

B.C. berries make context tangible.

WHY BERRIES

British Columbia berry production is concentrated in the Fraser Valley, and B.C. accounts for most Canadian highbush blueberry production.

WHY TIMING

Weather can affect bloom, ripening, harvest timing and fruit quality across varieties and regions.

WHY WATER

Moisture, drainage, soil condition and forecast pressure make water decisions contextual rather than single-signal.

THE POINT

A local crop turns abstract context into an operational decision.

Berries are useful here because the geography, crop biology, and water context all matter at once.

Sources: Agriculture and Agri-Food Canada fruit industry overview; Province of B.C. berry production guides.

BERRY DECISION

One “adequate moisture” signal can still leave choices open.

SIGNAL	→	PLACE	→	TIME	→	RISK	→	ACTION
Moisture adequate		Drainage + soil		Forecast + crop stage		Stress / saturation		Wait / irrigate / intervene

The measurement stays the same. The decision changes as context enters.

This is an illustrative decision pattern, not farm-specific guidance.

AI REPORTS

AI reporting is one place I use this directly.

WEATHER

Forecasts, heat, rainfall, ET0 and event timing.

IRRIGATION

Amount, need, timing and recent action history.

SOIL

Moisture, depth, deficits and local conditions.

VEGETATION

Crop status, stress signals and growth context.

RISK

What deserves attention before the window closes.

The report is useful when it preserves the local story, not just the measurements.

DECISION TENSION

AI matters when present state and future state disagree.

CURRENT STATE

The system looks safe based on what is measurable right now.

FUTURE STATE

Forecast, timing or recent history suggests risk could rise soon.

DECISION CONTEXT

The objective decides whether the risk deserves immediate attention.

AI joins the signals, exposes the tradeoff, explains uncertainty, and ranks urgency.

Human judgment sets the objective, accepts the tradeoff, and owns the action.

ARCHITECTURE

The transferable piece is context in the middle.

SENSE	FUSE	CONTEXTUALIZE	PRIORITIZE	ACT	LEARN
weather meters sensors	align time place	history anomalies risk	urgency tradeoffs confidence	human / system response	what changed afterward?

Raw feedback becomes useful when context turns it into priority.

CONFIDENCE

Context also changes how confident a system should be.

LOW FRICTION

Clear signal, low risk, obvious action. Automate or summarize confidently.

MEDIUM FRICTION

Signals disagree. Explain why the priority changed and show uncertainty.

HIGH FRICTION

High consequence, poor confidence, or ambiguous objective. Escalate to people.

Good AI support does not remove uncertainty. It makes uncertainty usable.

TRANSFER

The domain changes. The contextual questions survive.

Agritech signal	Urban analogue to explore
Soil moisture	Soil / green-infrastructure moisture
Crop evapotranspiration	Vegetation + landscape water demand
Field microclimate	Street / block microclimate
Irrigation scheduling	Park + landscape scheduling
Crop stress / disease risk	Vegetation stress + maintenance risk
Season response	Resilience + resource planning

Transfer the decision structure. Let local expertise define the operations.

VANCOUVER CONTEXT

Vancouver already treats rainwater as a resilience system.

STRATEGY

Rain City work connects rainwater to climate resilience, water quality, ecosystems and aging grey infrastructure.

TARGET

The design goal is to capture and treat 48 mm of rainfall per day, representing about 90% of rain that falls on the city.

INFRASTRUCTURE

Natural infrastructure works with grey infrastructure to slow, hold, filter and infiltrate rainwater.

This is already a contextual water system. AI’s role would be to help surface priority and uncertainty inside it.

Sources: City of Vancouver Rain City Strategy materials; STEP Rain City Strategy webinar description.

URBAN SCENARIO

The same rain forecast can create different priorities.

SITE A

High impervious surface + known runoff concerns.

SITE B

Green-infrastructure asset with available storage.

SITE C

Recent maintenance issue or blocked inlet history.

SITE D

Lower risk now, but monitor as conditions change.

AI ranks attention. People decide intervention.

Sources: City of Vancouver Rain City Strategy materials; Green Infrastructure Design Guidance.

HUMAN JUDGMENT

Human judgment is where accountability stays.

AI CAN

connect signals
flag uncertainty
rank urgency
explain why

PEOPLE MUST

define objectives
approve tradeoffs
override when needed
own consequences

THE SYSTEM SHOULD

show sources
log decisions
escalate ambiguity
learn from outcomes

AI organizes context. Accountable experts define the decision boundary.

Urban resilience needs contextual decisions.

Environment → Data → Context → AI → Judgment → Action → Environment

My perspective from agritech: AI earns its place when it helps people see what matters now, why it matters here, and what can still change.

Thank you

Ryan Gormican · AI Engineer, TensoAI