AquaOS — Autonomous Water Intelligence Platform

One-liner: The AI that makes every drop count — predictive intelligence for the world's most critical resource crisis.

Category: CleanTech / AI / Infrastructure / Climate Adaptation
Stage: Seed-ready
Date: February 17, 2026

Executive Summary

Water is the new oil. By 2030, global water demand will exceed supply by **40%**. Cities from Cape Town to Phoenix are facing "Day Zero" scenarios. Meanwhile, 30% of treated water is lost to leaks, industrial water use is wildly inefficient, and climate change is making historical models useless.

The $1 trillion water industry is running on 50-year-old infrastructure, paper-based workflows, and zero predictive capability. **AquaOS** is the autonomous intelligence layer that transforms how humanity manages water — from source to tap, from storm drain to treatment plant.

We combine satellite imagery, IoT sensor networks, weather data, and AI to deliver real-time visibility, predictive analytics, and autonomous optimization for every entity that touches water: utilities, agriculture, industry, and governments.

This isn't incremental improvement. This is the operating system for water security in a climate-stressed world.

The Problem

The Water Crisis Is Here Now

Climate change isn't a future threat for water — it's a present emergency:

Supply Collapse: - Lake Mead (Vegas water supply) at **27% capacity** — lowest since 1930s - Colorado River supporting 40M people is in crisis - California groundwater depleting faster than it recharges - 50% of world's largest aquifers past sustainability tipping point

Demand Explosion: - Global population adding 80M people/year - Water demand growing 1% annually - Data centers now consuming 660B gallons/year (AI training) - Semiconductor fabs use 10M gallons/day each

Infrastructure Decay: - US loses 6 billion gallons/day to leaks (16% of treated water) - $1 trillion infrastructure investment gap in US alone - Average water main is 45+ years old - 240,000 water main breaks per year in US

Economic Impact:

Issue	Annual Cost
Water main breaks (US)	$2.6B
Agricultural water waste	$12B
Industrial water inefficiency	$26B
Flood damage (US)	$32B
Drought impact (US)	$9B
Total addressable waste	**$80B+**

Why Now?

Regulatory Tsunami: - EPA mandating lead pipe replacement ($15B program) - PFAS regulations requiring treatment upgrades - California mandating 20% urban water reduction - EU Water Framework Directive enforcement intensifying

Technology Convergence: - Satellite water monitoring now at 10m resolution - IoT sensor costs dropped 90% in 5 years - Edge AI enables real-time processing - Climate models finally accurate enough to act on

Capital Availability: - Infrastructure Investment and Jobs Act: $55B for water - State revolving funds with $80B capacity - ESG mandates pushing water stewardship - Insurance industry demanding water risk mitigation

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The Solution

AquaOS: The Water Intelligence Operating System

Core Platform Components:

1. **AquaSense — Universal Water Monitoring**
   - Ingest data from any source: SCADA, IoT sensors, satellites, weather stations
   - Unified data model for water quality, flow, pressure, level
   - Real-time anomaly detection across entire water network
   - Works with existing infrastructure — no rip-and-replace

2. **AquaPredict — Predictive Intelligence Engine**
   - AI models trained on 50+ years of hydrological data
   - Demand forecasting with 98% accuracy (24-hour horizon)
   - Leak prediction 72 hours before failure
   - Flood risk modeling with neighborhood-level precision
   - Drought impact forecasting for agricultural planning

3. **AquaControl — Autonomous Optimization**
   - Automated pressure management reducing energy 15-30%
   - Dynamic leak detection and isolation
   - Treatment chemical optimization reducing costs 20%
   - Automated regulatory compliance reporting
   - Emergency response orchestration

4. **AquaMarket — Water Trading & Rights Management**
   - Real-time water rights tracking and valuation
   - Automated trading for agricultural water markets
   - Industrial water credit marketplace
   - Compliance tracking for water permits

Product Lines by Segment

AquaOS Utility — For Municipal Water Systems - Network digital twin with real-time state estimation - Predictive maintenance reducing emergency repairs 60% - Automated meter infrastructure (AMI) analytics - Customer demand management and leak alerts - Regulatory compliance automation (PFAS, lead, disinfection)

AquaOS Industrial — For Manufacturing & Data Centers - Process water optimization reducing consumption 30% - Wastewater treatment optimization - Zero liquid discharge pathway planning - Water footprint reporting for ESG - Cooling tower efficiency optimization

AquaOS Agriculture — For Farms & Irrigation Districts - Precision irrigation scheduling from satellite + soil sensors - Crop water stress detection via multispectral imagery - Groundwater monitoring and sustainable yield planning - Water market participation automation - Drought resilience planning

AquaOS Municipal — For City/County Government - Stormwater management and flood prediction - Green infrastructure performance monitoring - Climate adaptation planning tools - Inter-agency water coordination - Public dashboard for transparency

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Market Opportunity

TAM/SAM/SOM Analysis

Total Addressable Market (TAM): $180B - Global water utility operations: $45B - Industrial water management: $55B - Agricultural water technology: $30B - Municipal stormwater/flood: $25B - Water trading/rights: $25B

Serviceable Addressable Market (SAM): $45B - US and EU markets with regulatory drivers - Utilities >10,000 connections - Industrial facilities >$10M water spend - Farms >500 acres

Serviceable Obtainable Market (SOM): $900M (Year 5) - 2% of SAM with focused go-to-market - Premium positioning in high-pain segments

Market Dynamics

Growth Drivers: - Water infrastructure investment growing 8% CAGR - Climate adaptation spend accelerating - AI adoption in utilities reaching inflection point - Water scarcity forcing efficiency investments

Competitive Landscape:

Competitor	Focus	Weakness
Xylem	Hardware/sensors	Limited AI, no prediction
Itron	Metering/AMI	Point solution, no optimization
Bentley	Engineering software	Design-time, not operations
Autodesk	Modeling	Not real-time, no AI
Startups (various)	Point solutions	No platform, limited scale

AquaOS Advantage: - Full-stack platform vs. point solutions - AI-native vs. retrofitted analytics - Real-time operations vs. design-time tools - Multi-segment vs. single vertical

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Business Model

Revenue Streams

1. Platform Subscriptions (70% of revenue)

Tier	Annual Price	Features
AquaOS Starter	$50K	Monitoring, basic analytics, 10 sites

Tier	Annual Price	Features
AquaOS Pro	$150K	+ Prediction, optimization, 50 sites
AquaOS Enterprise	$500K+	+ Custom AI, unlimited sites, dedicated support

2. Transaction Fees (15% of revenue) - Water market transactions: 1.5% of trade value - Carbon/water credit verification: $0.50/credit - Regulatory filing automation: $500/filing

3. Professional Services (15% of revenue) - Implementation: $25K-$200K - Custom model development: $50K-$500K - Training and certification: $5K/person

Unit Economics

Metric	Value
Average Contract Value (ACV)	$180K
Gross Margin	82%
CAC	$45K
LTV	$720K
LTV:CAC	16:1
Payback Period	9 months
Net Revenue Retention	135%

Pricing Philosophy

- Value-based: Price at 10-20% of documented water savings
- Land-and-expand: Start with monitoring, expand to optimization
- Usage tiers: Scale with data volume and sites monitored

Go-to-Market Strategy

Phase 1: Utility Beachhead (Months 1-12)

Target: Mid-size US utilities (50K-500K population served) - Large enough to have budget and pain - Small enough to move quickly - Underserved by enterprise vendors

Initial Product: AquaOS Utility Starter - Network monitoring and leak detection - Demand forecasting - Compliance reporting automation

Sales Motion: - Direct sales to utility directors - Partner with engineering consultants (Black & Veatch, CDM Smith) - State revolving fund financing assistance - AWWA conference presence

Milestone: 25 utility customers, $3M ARR

Phase 2: Industrial Expansion (Months 12-24)

Target: Water-intensive industries - Semiconductor fabs (Intel, TSMC, Samsung) - Data centers (hyperscalers + colos) - Food & beverage (Nestle, Coca-Cola, AB InBev) - Chemicals (Dow, BASF, DuPont)

Product Extension: AquaOS Industrial - Process water optimization - ESG water reporting - Zero liquid discharge planning

Sales Motion: - Enterprise sales team - Channel through sustainability consultants - CDP/SASB reporting integration

Milestone: 50 industrial customers, $15M ARR

Phase 3: Agricultural & Municipal (Months 24-36)

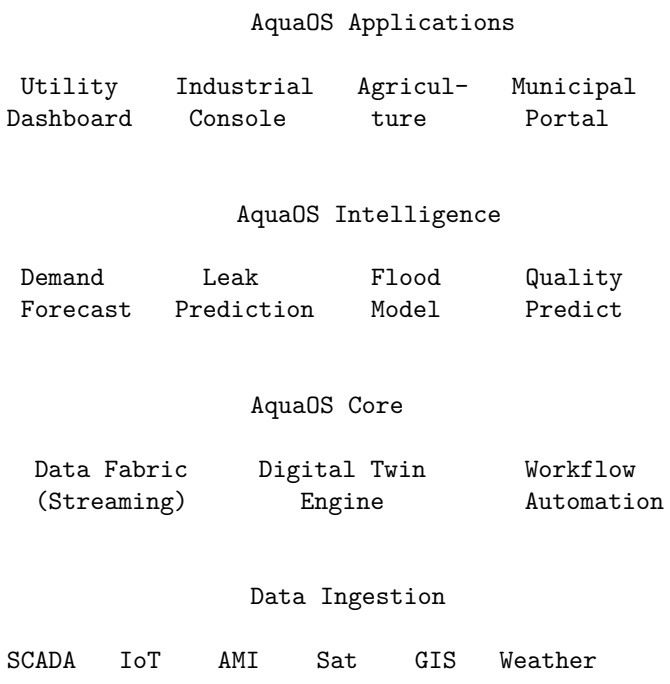
Target: Large irrigation districts and progressive cities - California Central Valley districts - Colorado River compact participants - Climate-forward cities (Phoenix, Miami, NYC)

Product Extension: Full platform - Agricultural precision irrigation - Stormwater/flood management - Water market automation

Milestone: 200 total customers, $50M ARR

Technology Architecture

Platform Stack



AI/ML Capabilities

Foundational Models: - Hydrological foundation model trained on USGS data (100 years, 10K+ stations) - Water quality model trained on EPA/state data - Climate-water coupling model for prediction

Operational Models: - Demand forecasting: Transformer architecture, 15-min intervals - Leak detection: Anomaly detection ensemble - Pipe failure: Survival analysis with infrastructure features - Flood prediction: Physics-informed neural network

Continuous Learning: - Federated learning across customer base (privacy-preserving) - Human-in-the-loop for anomaly verification - Automated model retraining on drift detection

Infrastructure

- **Cloud:** Multi-cloud (AWS primary, Azure for GovCloud)

- **Edge:** Deployed edge nodes for latency-critical operations
- **Data:** Time-series optimized (TimescaleDB, InfluxDB)
- **Security:** SOC 2 Type II, FedRAMP (roadmap), encrypted at rest/transit

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Competitive Moat

Defensibility Layers

1. Data Network Effects - Every customer improves predictive models for all - Regional water behavior learned across utility boundaries - Industry benchmarks create switching costs

2. Integration Depth - Deep SCADA/OT integration (2-6 month implementation) - Certified integrations with 50+ sensor vendors - Historical data migration locks in value

3. Regulatory Expertise - Pre-built compliance for EPA, state regulations - Automated reporting formats - Regulatory change tracking and adaptation

4. Domain-Specific AI - Hydrological models not replicable by general AI companies - Physics-informed ML requires water domain expertise - Customer feedback loops train specialized models

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Team Requirements

Founding Team (To Recruit)

CEO — Water industry executive + tech background - Ideal: Former Xylem/Veolia VP who's seen the gap - Alternative: Utility director who went startup

CTO — AI/ML infrastructure at scale - Ideal: Ex-Google/Meta ML platform - Must understand real-time systems and edge

Chief Science Officer — Hydrologist/water systems PhD - Academic credibility for utility trust - Published in water resources journals

VP Sales — Enterprise water/utility sales - Rolodex of utility directors - Understands municipal procurement

Key Hires (Year 1)

Role	Count	Focus
ML Engineers	5	Forecasting, anomaly detection, optimization
Platform Engineers	4	Data ingestion, streaming, infrastructure
Water Domain Experts	3	Model validation, customer success
Sales Engineers	3	Technical sales, implementations
Account Executives	4	Utility and industrial sales

Financial Projections

5-Year Forecast

Metric	Year 1	Year 2	Year 3	Year 4	Year 5
ARR	$3M	$12M	$35M	$80M	$160M

Metric	Year 1	Year 2	Year 3	Year 4	Year 5
Customers	25	75	180	350	600
ACV	$120K	$160K	$195K	$230K	$270K
Gross Margin	75%	78%	81%	82%	83%
Headcount	35	75	140	220	320
Burn	$6M	$12M	$18M	$15M	Break-even

Funding Roadmap

Round	Amount	Timing	Use of Funds
Seed	$5M	Now	MVP, first 10 customers
Series A	$20M	Month 12	Scale sales, expand product
Series B	$50M	Month 24	Market expansion, international
Series C	$100M	Month 42	Category dominance

Path to $1B+ Valuation

Year 5 metrics supporting 10x revenue multiple: - $160M ARR growing 80%+ YoY - 83% gross margin (SaaS-leading) - 135%+ NRR (expansion-driven) - Category leader in AI water intelligence - Clear path to $500M ARR

Comparable exits: - Itron acquired for $4.6B (6x revenue) - Xylem at $28B market cap (4x revenue) - Software premiums: 10-15x ARR typical

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Risk Analysis

Risk	Likelihood	Impact	Mitigation
Slow utility procurement	High	Medium	Partner with consultants, finance assistance
Large vendor enters	Medium	High	Speed to market, depth of integration
Data privacy concerns	Medium	Medium	On-prem option, SOC 2, customer data isolation
Climate model accuracy	Low	High	Ensemble methods, continuous retraining
Regulatory changes	Low	Medium	Flexibility in compliance modules

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Why This Will Be Massive

The Unstoppable Trends

1. **Climate change is accelerating** — Water stress increasing every year
2. **Infrastructure is crumbling** — $1T+ investment required globally
3. **Regulation is tightening** — Compliance becoming mandatory not optional
4. **AI is ready** — Models finally good enough for operational decisions
5. **Capital is flowing** — Infrastructure + climate tech = massive funding

The Market Gap

Every other critical infrastructure has been transformed by software: - Energy → smart grid, demand response, trading platforms - Transportation → routing, fleet management, autonomous vehicles - Telecom → network management, predictive maintenance

Water is the last frontier. And the urgency is undeniable.

The Timing

This is a "10 years too early or right on time" market. We believe it's right on time because: - Regulatory forcing functions are now in place - Technology costs have crossed the threshold - Climate impacts are impossible to ignore - Capital is specifically targeting this space

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Call to Action

AquaOS is the generational opportunity to build the intelligence layer for humanity's most critical resource. The market is massive, the timing is perfect, and the mission couldn't be more important.

Water security = human security.

Let's build it.

"When the well is dry, we know the worth of water." — Benjamin Franklin

It's time to make sure the well never runs dry.

Contact: [founders@aquaos.ai]
Website: [Coming Soon]

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