Effluent Allocation Strategy

Policy Framework for Sustainable Water Resource Management

Prepared for: Mayor and City Council

I. Executive Summary

Treated effluent represents a reliable, drought-resilient, and locally controlled water resource. As the community continues to grow and diversify economically, the strategic allocation of effluent is critical to ensuring long-term water sustainability, economic vitality, and environmental stewardship.

This Effluent Allocation Strategy establishes guiding principles, allocation priorities, contractual standards, and oversight mechanisms to ensure that effluent is managed in a manner that protects the public interest and maximizes long-term community benefit.

II. Background

Effluent is a byproduct of wastewater treatment and is produced consistently regardless of hydrologic conditions. Unlike groundwater or surface water supplies, effluent production is directly tied to population and economic activity.

Effluent can be used for:

- Groundwater recharge and generation of long-term storage credits
- Industrial processes
- Agricultural irrigation
- Landscape irrigation
- Assured Water Supply compliance – Alternative Designation of Assured Water Supply

As regulatory frameworks such as Arizona's Assured Water Supply program administered by the Arizona Department of Water Resources continue to emphasize long-term sustainability, effluent becomes an increasingly valuable strategic asset.

III. Strategic Objectives

The City's Effluent Allocation Strategy shall support the following objectives:

1. **Long-Term Water Security**
   Preserve effluent as a sustainable supply to reduce groundwater dependency. The City intends to maximize the use of effluent through recharge and direct delivery.
2. **Focus on Recharge**
   The focal point and emphasis for current effluent use will be recharge. The City will attempt to generate Long-Term Storage Credits equal to permit thresholds (3,500 A/F).
3. **Economic Development Alignment**
   Support industries that provide long-term employment, capital investment, and tax base expansion.
4. **Regulatory Compliance**
   Ensure alignment with state and federal water regulations.
5. **Maximization of Public Value**
   Allocate effluent in a manner that delivers measurable public benefit by offsetting the use of groundwater for non-potable uses that include Municipal Golf Courses and City Parks. In addition, allocations will be made to individual developers and/or the private water utility operated by Arizona Water Company in the Alternative Designation of Assured Water Supply (ADAWS) program.
6. **Environmental Stewardship**
   Promote recharge, conservation, and sustainable reuse practices. Limit discharge volumes to the north branch of the Santa Cruz Wash.

IV. Allocation Priorities

Effluent shall be allocated based on the following priority tiers:

Tier 1 – Municipal and Regulatory Needs

- Aquifer recharge programs
- ADAWS or water supply compliance strategies
- Preservation of long-term water portfolio flexibility

Tier 2 – High-Value Economic Development

- Strategic industrial users with significant capital investment
- Projects that reduce potable water demand
- Job creation and wage levels
- Capital investment
- Community benefit agreements

Tier 3 – Commercial, Agricultural, and Landscape Use

- Golf courses and large-scale irrigation
- Non-potable landscape systems

These allocations should reflect market-based pricing and infrastructure cost recovery.

V. Allocation Criteria

All effluent allocation agreements shall be evaluated using objective criteria:

- Volume requested and duration of commitment
- Infrastructure cost and system capacity impacts
- Financial return to the City
- Risk allocation and termination protections
- Long-term community benefit
- Water conservation performance standards

VI. Contractual Standards

All effluent agreements shall:

- Be memorialized in written contracts approved by Council
- Include defined term limits
- Establish pricing structures (fixed, indexed, or market-based)
- Require infrastructure cost participation
- Include reversionary rights in the event of non-use
- Protect municipal priority rights in case of shortage
- Contain performance milestones where tied to development projects

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VII. Pricing Philosophy

Effluent pricing should reflect:

- Infrastructure delivery costs
- Replacement value
- Scarcity value
- Market comparables
- Long-term strategic value to the City

Pricing may differ based on:

- Use classification
- Volume commitments
- Duration of contract
- Economic development incentives approved by Council

The City retains the right to periodically reassess pricing models to reflect market conditions and policy objectives.

VIII. Infrastructure Planning and Capacity

Effluent allocation must align with:

- Treatment plant capacity
- Distribution infrastructure availability
- Recharge basin capacity
- Long-range water master planning

Capital improvement planning shall incorporate anticipated effluent commitments to avoid over-allocation.

IX. Risk Management

To protect the City's long-term interests:

- No single user shall control a disproportionate percentage of total effluent supply without Council review.
- Contracts shall include clawback or termination provisions.
- Long-term allocations should include adaptive management provisions.
- Effluent reserves may be established for future municipal needs.

X. Transparency and Governance

- All major effluent allocation agreements shall require public Council approval.
- Staff shall provide annual reporting on:
    - Total effluent production
    - Allocated volumes
    - Remaining capacity

    - Revenue generated
    - Long-term commitments

This ensures transparency, fiscal accountability, and policy oversight.

XI. Strategic Reserves Policy

The City has elected designate a percentage of annual effluent production as a strategic reserve to support:

- Economic development opportunities
- Future ADAWS requirements
- Regulatory compliance adjustments
- Drought mitigation strategies

XII. Periodic Review

This Effluent Allocation Strategy shall be reviewed by Council every year or sooner if significant regulatory, economic, or supply conditions change.

XIII. Conclusion

Effluent is not merely a byproduct of wastewater treatment - it is a strategic water asset that directly supports economic growth, long-term sustainability, and community resilience.

The Mayor and City Council affirm their commitment to responsible stewardship of public resources while positioning the community for long-term prosperity and water security.

XIV. Economic Sector-Based Allocation Framework (20/40/40 Model)

Purpose

To ensure balanced and sustainable community growth, the City has elected to institute an economic sector-based effluent allocation model that strategically distributes available effluent resources between industrial development and residential housing growth.

The City has also elected to separate and account for treated effluent volumes prior to and following the implementation of the ADAWS program, which is anticipated in March, 2026.

This framework recognizes that long-term economic vitality requires both employment-generating industries and a stable residential base to support workforce housing, commercial services, and overall community stability.

Policy Allocation Structure

Subject to municipal priority needs (Tier 1 allocations described previously), the City shall allocate available effluent capacity as follows:

- **20% Allocation to the Strategic Reserve specifically through recharge and generation of long-term storage credits**
- **40% Allocation for Industrial and Employment-Based Growth**
- **40% Allocation for Residential Housing Growth**

This allocation applies to effluent capacity designated for growth and development beyond municipal/regulatory obligations.

A. Industrial Allocation (40%)

Effluent reserved for industrial growth shall prioritize:

- Strategic industrial users with significant capital investment
- Water-intensive industries that reduce potable water demand
- Job creation and wage levels
- Capital investment
- Community benefit agreements

The industrial allocation is intended to:

- Strengthen the City's employment base
- Increase assessed valuation
- Support long-term fiscal sustainability
- Reduce groundwater reliance through reclaimed water substitution
- Attract capital-intensive investment

Projects requesting allocation from the industrial allocation shall demonstrate:

- Job creation metrics
- Wage benchmarks
- Capital investment thresholds
- Efficient water use technology
- Long-term operational commitment

B. Residential Allocation (40%)

Effluent reserved for residential growth shall support:

- Subdivisions requiring Alternative Designation of Assured Water Supply (ADAWS)
- Recharge programs supporting housing development
- Master-planned communities with unique amenities

This allocation is intended to:

- Ensure housing supply keeps pace with employment growth
- Promote balanced community development
- Support long-term population sustainability
- Provide water portfolio stability for residential consumers

Residential allocation requests shall be evaluated based on:

- Housing unit counts
- Affordability components (if applicable)
- Phasing schedules
- Infrastructure cost participation
- Long-term recharge commitments

C. Flexibility and Adaptive Management

The 20/40/40 allocation model is intended to guide long-term planning, not restrict strategic Council discretion. Therefore:

- The Council may authorize adjustments if market conditions, regulatory changes, or community priorities warrant modification.
- Unused allocation within one sector may be temporarily reassigned upon Council approval, provided long-term balance is maintained.
- Annual reporting shall identify utilization rates by sector to ensure transparency and accountability.

D. Strategic Rationale

This balanced allocation model:

- Prevents over-concentration of effluent in a single sector.
- Protects against economic volatility.
- Ensures housing supply aligns with employment growth.
- Maintains long-term fiscal equilibrium.
- Positions the City to compete for both major industrial users and sustainable residential expansion.

By formally recognizing both industrial expansion and residential housing growth as co-equal drivers of community prosperity, the City reinforces its commitment to thoughtful, balanced, and sustainable development.

XV. Allocation Triggers

A. Allocation Triggers

To ensure the 20% Reserve, 40% Industrial, and 40% Residential effluent allocation model remains balanced, measurable, and responsive to growth patterns, the following quantitative triggers shall apply.

1. Baseline Allocation Capacity

For planning purposes, the City shall annually establish:

- Total average daily effluent production (MGD)
- Existing contractual commitments (MGD)
- Total average effluent discharged to north branch of the Santa Cruz Wash

- Available growth allocation capacity (MGD)

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2. Industrial Allocation Triggers

Industrial allocation from the reserved 40% shall require one or more of the following thresholds:

- **Minimum Capital Investment:** $100 million
- **Minimum Employment Threshold:** 200 full-time jobs
- **Minimum Wage Benchmark:** At or above 110% of county median wage
- **Water Efficiency Standard:** Demonstrated potable water offset of at least 75% through effluent substitution
- **Minimum Term Commitment:** 5-year operational agreement
- **Infrastructure Investment:** Direct delivery/conveyance infrastructure constructed or expanded by developer

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3. Residential Allocation Triggers

Residential allocation from the reserved 40% shall require:

- Subdivision or master plan approval
- Demonstrated compliance with Assured Water Supply requirements administered by the Arizona Department of Water Resources
- Phased development schedule tied to infrastructure completion
- Recharge infrastructure development and construction
- Build-out schedule

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4. Rebalancing Trigger Mechanism

The City shall conduct an annual sector allocation audit. Council may, at their discretion, temporarily reassign unused allocation capacity to maintain economic equilibrium.

B. Strategic Conclusion

By incorporating measurable triggers into the effluent allocation framework, the City ensures that:

- Water resources are allocated based on objective economic performance.
- Growth remains balanced between employment and housing.
- Public resources generate long-term financial return.
- Infrastructure investments align with sustainable community expansion.
- Elected officials retain oversight through defined review thresholds.

This approach transforms effluent from a passive utility byproduct into an actively managed economic development instrument that supports both industrial competitiveness and responsible residential growth.

10-Year Effluent Allocation Projection Model

Base Volume Year: 2024

Initial Available Effluent Supply: 6,301Acre-Feet

I. Key Planning Assumptions

To create a realistic projection, the following baseline assumptions are used:

- **Annual Growth Rate:** 1.6%
- **Municipal/Regulatory Reserve:** 20%
- **Growth Allocation Pool:** 80%
- **Sector Split:** 40% Industrial / 40% Residential

II. 10-Year Summary – 1.6% Growth Scenario

Growth Allocation Increase Over 10 Years:

- Effluent production grows from 6,301 AF to approximately 7,268 AF.
- Total growth capacity added over 10 years: **~927 AF**
- Industrial allocation capacity increases from 2,520 AF to 2,907 AF.
- Residential allocation capacity increases from 2,520 AF to 2,907 AF.
- Sector allocation increases by ~387 AF per sector over 10 years

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IV. Residential Capacity Translation (1.6% Scenario)

To translate residential allocation into housing units.

Using 0.20 AF per dwelling unit:

- 2024: 2,520 AF ≈ 12,000 units

- 2033: 2,907 AF ≈ 14,00 units

Net 10-year additional residential capacity ≈ 1,900 units equivalent

This assumes full dedication to residential ADAWS/recharge support.

V. Industrial Capacity Translation (1.6% Scenario)

Industrial allocation grows from:

- **2,520 AF (2024) → 2,907 AF (2033)**

- Limits rapid large-scale industrial recruitment unless supported by reallocation.
- Requires more deliberate phasing of major water-intensive projects.
- Increases importance of water efficiency and recycling requirements.
- The allocation provides significant flexibility for strategic economic recruitment.

VI. 10-Year Effluent Allocation Projection (2024–2033)

Year	Total Effluent Supply (AF)	20% Reserve (AF)	40% Housing Allocation (AF)	40% Industrial Allocation (AF)
2024	6,301	1,260	2,520	2,520
2025	6,402	1,280	2,561	2,561
2026	6,504	1,301	2,602	2,602
2027	6,608	1,322	2,643	2,643
2028	6,714	1,343	2,686	2,686
2029	6,821	1,364	2,728	2,728
2030	6,930	1,386	2,772	2,772
2031	7,041	1,408	2,816	2,816
2032	7,154	1,431	2,862	2,862
2033	7,268	1,454	2,907	2,907

VII. Strategic Observations

1. Maintains a steadily increasing **strategic water reserve**, which is important for long-term water security and regulatory flexibility.
2. Adds nearly **1,000 AF of new effluent supply over the decade** even under conservative growth.
3. Large early allocations would consume future capacity more rapidly.
4. The 20% municipal reserve becomes more critical in slower-growth conditions.
5. Economic recruitment strategy should align closely with long-term effluent forecasts.
6. To maintain long-term sustainability, staff should report annually.
7. This scenario emphasizes the importance of:
    - Water reuse optimization
    - Industrial efficiency standards
    - Phased development agreements

VIII. Policy Observations

Under a 1.6% growth rate:

- By 2033, growth allocation increases by approximately 30% compared to 2024.
- The City must manage effluent as a constrained strategic asset.
- Growth naturally expands the effluent supply, increasing long-term allocation capacity.
- Maintaining the 20% municipal reserve protects regulatory flexibility.
- The 40/40 model preserves employment-housing balance.
- Major industrial allocations above 500 AF annually should require enhanced fiscal and water portfolio analysis.
- Annual forecasting updates become more critical to prevent overcommitment. Annual monitoring is critical.