



May 18, 2018

**VIA EMAIL**

Mauricio E. Guardado,  
Jr., General Manager  
United Water Conservation  
District 106 N. 8<sup>th</sup> Street  
Santa Paula, CA 93060

**RE:** Stratecon Analysis of the structure of United Water Conservation District's Water Conservation Extraction Charges for FY 2018-2019

Dear Mr. Guardado:

You requested that Stratecon Inc. prepare an economic analysis regarding the structure of United Water Conservation District's ("United Water") Groundwater Extraction Charges for FY 2018-2019. This is the sixth year that Stratecon has addressed this issue with consistent analysis and factual support. Below, I briefly summarize the approach Stratecon developed five years ago, discuss how that approach is consistent with principles of cost-of-service rate-making and present information on United Water's cost of replenishment projects and activities.

Based on the economic principles, information and analysis presented below, I conclude that a ratio of the Municipal and Industrial rate per acre-foot of groundwater pumped to the Agricultural rate per acre-foot of groundwater pumped of at least 3.0 reasonably reflects the quantitative differences between hydrological impact of municipal and industrial pumping and land use versus agricultural pumping and land use in the eight interconnected basins within United Water.

**STRATECON APPROACH**

A reasonable rate structure considers the impact of pumping on the demand for United Water's replenishment projects and activities and the relative contribution of different types of land use decisions on direct recharge on overlying lands.

Figure 1 illustrates the relation between United Water’s Objective (addressing groundwater overdraft and ensuring reliable groundwater supplies) and undertaking replenishment activity within the context of groundwater pumping and land uses. Groundwater pumping generates United Revenues to cover the cost of replenishment activity. Groundwater pumping also contributes to groundwater overdraft, although the quantitative impact depends on the portion of applied groundwater that does not return as beneficial recharge to United Water’s basins. Natural recharge offsets groundwater overdraft from two sources: (i) recharge from streams and undeveloped lands, and (ii) recharge from overlying lands. The change in groundwater overdraft reflects the balance between the impact of groundwater pumping (adjusted for the return of applied groundwater to the basins) versus the impact of recharge from streams and undeveloped lands and from overlying lands.

As discussed in Stratecon’s letter regarding the charges for FY 2013-2014, there are three principles:<sup>1</sup>

***Principle 1:*** Fee for a water user class is the sum of a variable cost component and a fixed cost component

***Principle 2:*** Variable cost component is based on the variable cost of replenishment projects and activities to offset the impact of an acre-foot of groundwater usage on groundwater overdraft

***Principle 3:*** Fixed cost is apportioned by the share of demands for replenishment projects and activities by water user class, adjusted by a credit based on the differential contribution of a water user’s class to recharge from overlying lands.

As discussed more extensively in Stratecon’s 2013 letter, Principle 2 means that the variable cost component of the water rate equals United Water’s variable cost of replenishment projects and activities per acre-foot of groundwater usage adjusted for the portion of groundwater usage that beneficially returns to the basin for reuse. Principle 3 means that the fixed cost component of the water rate is an apportionment based on the share of demands for replenishment projects and activities by water user class (groundwater usage adjusted for reuse), adjusted by a credit based on United Water’s cost of replenishment projects and activities and the difference in average direct recharge per acre of a water use class and average direct recharge per acre district-wide.

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<sup>1</sup> “Stratecon Analysis of the structure of United Water Conservation District’s Water Conservation Extraction Charges”, letter dated June 11, 2013 from Rodney T. Smith, Ph.D. to Mr. Mike Solomon, General Manager, United Water Conservation District, pp. 5-7.

## CONSISTENCY WITH COST OF SERVICE PRINCIPLES

Stratecon’s approach is consistent with *Principles of Water Rates, Fees and Charges* (Manual of Water Supply Practices), American Water Works Association, Fifth Edition (hereinafter cited as “Principles”). The two most common methods are cost allocation under the “base-extra capacity” and “commodity-demand” methods.<sup>2</sup> “*In their respective ways, both methods of cost allocation recognize that the cost of serving customers depends not only on the total volume of water used but also on the rate of use, or peaking requirement.*”<sup>3</sup> Under either method, “it is useful to consider the distinctions between variable and fixed cost.”<sup>4</sup>

Under the Base-Extra Capacity Method, costs are separated into base costs and extra capacity costs. “Base costs are costs that tend to vary with the total quantity of water used plus those O&M expenses and capital costs associated with service to customers under average load conditions, without the elements of cost incurred to meet water use variations and resulting peaks in demand.”<sup>5</sup> “Extra capacity costs are costs associated with meeting rate of use requirements in excess of average.”<sup>6</sup>

Under the Commodity-Demand Method, costs are separated into commodity costs and demand costs. “Commodity costs are costs that tend to vary with the quantity of water produced.”<sup>7</sup> “Demand costs are associated with providing facilities to meet the peak rates of use, or demands, **placed** on the system by the customers.”<sup>8</sup>

While these two methods differ in their mechanics, they share common principles. For a water system, there are two dimensions about water demand that impact the cost of a system—volume and timing. Infrastructure must be sized to meet peak demand, not average demand. To the extent that water users have different peak demands, the cost of service will be different.

As we have discussed on many occasions, United Water is not a water utility. Instead, it undertakes projects to mitigate the effects of groundwater overdraft. For a parcel, the demand for United Water’s services reflects water use and land use decisions.

Now consider the three rate-making principles of Stratecon’s approach. Principle 1 (distinguish between variable and fixed cost) follows general water rate-making where it is useful to distinguish between variable and fixed cost. Principle 2 (variable cost component based on variable cost of replenishment to offset the impact of an acre-foot of groundwater pumping on

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<sup>2</sup> *Principles*, p. 50

<sup>3</sup> *Ibid* (emphasis added)

<sup>4</sup> *Principles*, p. 51.

<sup>5</sup> *Ibid*.

<sup>6</sup> *Ibid*.

<sup>7</sup> *Principles*, p. 57

<sup>8</sup> *Ibid* (emphasis added).

groundwater overdraft) is comparable to the “Commodity” component of the Commodity-Demand Method. Principle 3 (apportion fixed cost by water class share of net groundwater use—pumping less reuse—adjusted for the difference between direct recharge on water class lands from district average) is comparable to the Demand component of the Commodity-Demand Method. Principle 3 captures all dimensions of how pumping and land use decisions place a demand for United Water’s replenishment projects and activities.

### **United Water’s Cost of Replenishment Projects and Activities**

United Water is exploring projects and activities to address groundwater overdraft and to enhance groundwater supply reliability within its boundaries. As elsewhere in California and the western states generally, water agencies must make significant investments.

#### *Ferro/Rose Properties*

United Water acquired the Ferro/Rose properties in 2010 for a total cost of \$14 million. The acquisition included a total of 11,000 acre-feet of Fox Canyon Groundwater Management storage credits and an annual groundwater allocation of 1,000 acre-feet. United Water entered into an agreement with the City of Oxnard where Oxnard would use the storage credits and the annual allocation for nine years and pay United Water in accordance with a defined payment schedule. Those payments offset the cost of the property acquisition.

Stratecon has reviewed the *Agreement Between United Water Conservation District and the City of Oxnard for the Purchase of Supplemental Water* (dated 1<sup>st</sup> day of December 2009). Using a 5% annual interest rate, the present value of the monthly payments specified in the agreement is \$5.2 million with a valuation date of January 1, 2010.<sup>9</sup>

Starting in July 1, 2019, United Water will have control of the 1,000 acre-foot annual groundwater allocation. At that time, United Water will not utilize the allocation as an “in lieu” replenishment activity. By not pumping the groundwater allocation, United Water does not have to replenish pumping from that groundwater allocation. Assuming the pumping would have been for the historical use of the Ferro/Rose property (agriculture), 16% of the amount of groundwater pumped would be available for re-use in the basin.<sup>10</sup> Therefore, not using the groundwater

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<sup>9</sup> The interest rate assumption reflects the view that the long-term, risk-free interest rate is 4.5% (see *Project Evaluation II: Thoughts on Interest Rates*, Rodney T. Smith, Ph.D., Hydrowonk Blog, <http://hydrowonk.com/blog/2013/01/11/project-evaluation-ii-thoughts-about-interest-rates/>) and a reasonable assumption about the default risk of a water right is 0.5% (see *Project Evaluation III: Risk Premium and Risk Assessment*, Rodney T. Smith, Ph.D., Hydrowonk Blog, <http://hydrowonk.com/blog/2013/01/19/project-evaluation-iii-risk-premium-and-risk-assessment/>).

<sup>10</sup> Table B1 *Supplemental Technical Memorandum to Infiltration Potential of Precipitation Fall on Developed Lands and the Fate of Applied Groundwater within UWCD*, Staff, May 23, 2014.

allocation reduces United Water's replenishment needs by 840 acre-feet.<sup>11</sup>

What is United Water's cost of replenishment activity from this transaction? There are four steps to the calculation:

1. United Water's Net Acquisition Cost: Payment for land (\$14 million) less present value of Oxnard Payments (\$5,196,583) = \$8,803,407
2. Calculate costs per acre-foot of replenishment avoided: Divide net acquisition cost by 840 acre-feet = \$10,480 per acre foot
3. Adjustment for nine-year delay in receipt of groundwater allocation:<sup>12</sup>  $(1 + \text{interest rate})^9 = 1.55$
4. Capital Cost of Replenishment: \$16,244

Amortizing this capita cost over 35 years @ 5% interest yields an annual cost of replenishment activity of \$992 per acre-foot. Since the valuation date is January 1, 2010, I adjust this estimate by changes in the Consumer Price Index to 2018. According to the CPI calculator of the U.S. Department of Labor, Bureau of Labor Statistics, the adjustment is 1.14.<sup>13</sup> Therefore the annual cost of United Water's replenishment activity as of 2018, is \$1,131 per acre-foot.<sup>14</sup>

#### *Connecting Ferro/Rose Property to Freeman Diversion*

United Water is studying a project to connect the Ferro/Rose property to the Freeman Diversion. The objective is to intercept water during high flow periods where water would otherwise be lost to the ocean and convey water to the property for recharge. The capital cost of the connection is estimated at \$15 million. The anticipated average annual recharge is between 1,000 acre-feet and 1,500 acre-feet. Assuming a one-year construction period, the average annual capital cost of replenishment water from this project is \$820 per acre-foot.<sup>15</sup>

The cost of replenishment water from this project exceeds the average annual capital cost. In addition to capital costs, the project will incur operations and maintenance costs and the cost of replacement and renewals.

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<sup>11</sup>  $840 = (1-.16) \times 1,000$  acre feet.

<sup>12</sup> The benefit of a groundwater allocation is deferred nine years. The interest rate is a measure of the time value of money.

<sup>13</sup> <http://www.in2013dollars.com/2010-dollars-in-2017?amount=100>

<sup>14</sup> \$1,131 per acre-foot  $\approx$  \$992 per acre-foot multiplied by 1.14.

<sup>15</sup> The capital cost per acre-foot is \$12,000 (\$15 million divided by 1,250). The accrued interest during the one-year construction period @ 5% interest increases the capital cost to \$12,600 per acre-foot. Amortizing this capital cost over 30 years @ 5% interest yields an annual cost of \$819.65 per acre-foot.

### *Desalination of Brackish Groundwater*

United Water is investigating the desalination of brackish groundwater as a source of replenishment water. I have reviewed information on the project which presents estimates for 2014 cost conditions.<sup>16</sup> The project proposes to treat brackish groundwater and deliver the treated water to agricultural water users. Such a project would provide in lieu water to offset groundwater pumping in the coastal plain areas that are directly impacted by the threat of seawater intrusion.

The annual O&M cost and capital recovery depends on the scale of the project (see table). For a 10,000 acre-foot per year capacity project, the annual cost ranges from \$1,111 per acre foot to \$1,278 per acre foot. For a 20,000 acre-foot per year capacity project, the annual cost ranges from \$998 per acre foot to \$1,130 per acre foot. Adjusting these 2014 cost estimates for the change in the Engineering New Record's Construction Cost price from 2014 through 2017 (9.5%), this project provides replenishment water at an annual cost in the range of \$1,217 per acre foot to \$1,399 per acre foot for a 10,000 acre foot per year design capacity, and in the range of \$1,093 per acre foot to \$1,238 per acre foot for a 20,000 acre foot per year design capacity.

#### **Range of Annual Cost for United Water's Brackish Desalination Project**

<i>Design Capacity (acre feet per year)</i>	<i>2014 Cost Estimate (\$/acre foot)</i>	<i>Updated Cost Estimate (\$/acre foot)</i>
10,000	\$1,111 to \$1,278	\$1,217 to \$1,399
20,000	\$998 to \$1,130	\$1,093 to \$1,238

### *Other Water Initiatives in Ventura County*

On June 6, 2016, the City Council for the City of Ventura adopted the "Water Rights Dedication and Water Resources Net Zero Fee Ordinance and Resolution, imposing an initial fee of \$26,457 per acre foot (per year of additional water demand)."<sup>17</sup> This policy requires development to secure the water rights necessary to serve a development project or pay the fee. Stratecon estimates that the fee for 2018 at \$28,204 per acre foot, reflecting the adjustments provided for in the ordinance (see Attachment 1). Amortizing this fee over a 35-year period at a 5% interest rate, this fee represents an annual charge of \$1,722 per acre foot.

The Fox Canyon Groundwater Management Agency levies a surcharge fee on the amount of groundwater pumping that exceeds extraction allocations.<sup>18</sup> The surcharge is \$1,315 per acre

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<sup>16</sup> *Brackish Water Treatment Feasibility Study*, United Water Conservation District, November 2014. *South Oxnard Plain Brackish Water Treatment Feasibility Study*, prepared for United Water Conservation District by Carollo Engineers, August 2014.

<sup>17</sup> Memorandum to Honorable Mayor and City Council from Mark D. Watson, City Manager, and Shana Epstein, Ventura Water General Manager, dated May 16, 2016 for Council action on June 6, 2016.

<sup>18</sup> For current surcharges, see <http://www.fcgma.org/semi-annual-extraction-statement/extraction-fees>.

foot for excess pumping up to 25 acre feet per year, \$1,565 per acre foot of excess pumping more than 25 acre feet per year and up to 1000 acre feet per year, and \$1,815/AF for excess pumping of more than 100 acre feet per year. The surcharges are “necessary to eliminate overdraft caused by excess pumping from the aquifer systems within the Agency and to bring the groundwater basins within the Agency to safe yield.”<sup>19</sup>

Casitas Municipal Water District administers the Ventura County 20,000 acre foot Table A Contract Amount for the State Water Project (“SWP”) on behalf of itself (5,000 acre feet), City of Ventura (10,000 acre feet) and United Water (5,000 acre feet). Casitas and Ventura lack a physical connection to the SWP; therefore, they have not exercised their entitlements.<sup>20</sup> Casitas identified a preferred pipeline project in 1987 with an estimated capital cost of \$109 million in 1987 (nearly \$200 million in 2016).<sup>21</sup> Adjusting this estimate by the increase in the Engineering News Record (“ENR”) Construction Cost Index since 2016, the estimated capital cost as of 2018 is \$213 million.<sup>22</sup> The average annual yield of a SWP Table A contract is about 60%.<sup>23</sup> Therefore, the capital investment cost of connecting to the SWP is \$23,690 per acre foot of expected supply. Amortizing this capital cost over 35-year term @ 5%, the annual capital cost equals about \$1,450 per acre foot. Assuming that capital replacement requires an annual sinking fund of 1% of initial capital investment, the annual replacement charge would be \$237 per acre foot. The current unit charge for Ventura’s expected water supply from the SWP for the delta water charge and transportation is \$1,453 per acre foot.<sup>24</sup> Therefore, connecting to the SWP and paying SWP charges yields a new water supply at an annual cost of \$3,140 per acre foot of expected annual water supply (see table).

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<sup>19</sup> See Resolution 2013-03 of the Fox Canyon Groundwater Management Agency, “A Resolution Adopting Tiered Groundwater Extraction Surcharge Rates,” p. 1.

<sup>20</sup> “Final Urban Water Management Plan and Agricultural Water Management Plan 2016 Update,” *Casitas Municipal Water District*, June 2016 (hereinafter cited as “Casitas Urban Water Management Plan”), pp. 92-93.

<sup>21</sup> *Casitas Urban Water Management Plan*, p. 93.

<sup>22</sup> See Attachment 1 for discussion of the increase in the ENR Construction Cost Index of 3.7% for 2017 and 2.8% through May 2018. \$213 million = \$200 million multiplied by 1.037 multiplied by 1.028.

<sup>23</sup> The State Water Project Draft Water Capability Report 2017,” California Department of Water Resources, December 2017, average annual yield of 2,571 thousand acre feet (p.21) and total Table A Water Delivery Amounts for SWP Contractors of 4,172,786 AF (p.15).

<sup>24</sup> Management of the California State Water Project,” California Department of Water Resources, Bulletin 132-16, Table B-24.

### Annual Cost of Connecting to SWP

<i>Item</i>	<i>\$/Acre Foot</i>
Pipeline Connection	\$1,450
Pipeline Replacement	\$237
SWP Charges	\$1,453
Total	\$3,140

#### *United Water's Cost of Replenishment Projects and Activities*

Based on the information discussed above, Stratecon concludes that a reasonable estimate of United Water's annual costs of replenishment projects and activities is about \$1,100 per acre foot. This estimate is consistent with the cost of the acquisition of the Ferro/Rose property and the updated estimated cost of desalination of brackish groundwater. The cost is below other water initiatives in Ventura County, such as Ventura's Water Resources Net Zero Fee and the surcharges levied by the Fox Canyon Groundwater Management Agency. Connecting to the SWP and subscribing to California WaterFix will be even more expensive propositions.

### Ratio of Municipal & Industrial to Agricultural Water Conservation Extraction Fees

Stratecon's model for calculation of the ratio of Municipal & Industrial to Agricultural Water Conservation Extraction fees requires three types of information:

- Revenue requirement for the extraction fees
- Estimated groundwater pumping
- Hydrologic conditions

The key information used in the Stratecon model is the following:

- Revenue Requirement:<sup>25</sup> \$15,807,931
- Groundwater pumping:<sup>26</sup> agricultural (221,730 acre-feet) and municipal & industrial (49,860 acre feet) including in lieu deliveries
- Hydrologic Conditions:<sup>27</sup>
  - Reuse of groundwater by agricultural water users: 24.1%

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<sup>25</sup> The number in the text is the sum of Zone A groundwater revenues and in lieu charges and Zone B groundwater revenues and in lieu extraction charges. Data from spreadsheet "All Revenues 2018-2019", tab "GW", Tab "OH", Tab "PV, Tab "PTP".

<sup>26</sup> *Ibid.*

<sup>27</sup> The best available information regarding the long-term reuse of groundwater and recharge on overlying lands of groundwater users has remained unchanged from last year. See *Supplemental Technical Memorandum to Infiltration Potential of Precipitation Fall on Developed Lands and the Fate of Applied Groundwater within UWCD*, Staff, May 23, 2014.



- Reuse of groundwater by municipal & industrial water users: 14.8%
- Overlying recharge for lands in agricultural use: 0.56 acre-feet per acre
- Overlying recharge for lands in municipal & industrial use: 0.35 acre-feet per acre
- Lands in agricultural use: 80,078 acres
- Lands in municipal & industrial use: 40,918 acres

Figure 2 shows the threshold annual cost of United Water's replenishment projects and activities per acre foot where a reasonable ratio of municipal & industrial groundwater extraction charge to agricultural extraction charge exceeds 3.0 depending on the proportion of recharge on overlying lands beneficially reaching United Water's eight interconnected basins. For the three assumptions Stratecon has used in prior years (50%, 75% and 90%), the threshold annual costs are below the annual cost of United Water's projects and activities. Even if the proportion of recharge beneficially reaching United Water's was even lower (35%), the threshold annual cost \$1,581 per acre foot is below Fox Canyon's surcharge for an owner pumping more than 100 acre feet per year of excess groundwater. Given United Water's annual cost of replenishment projects and programs, United Water's board could reasonably set the ratio at least equal to the minimum ratio allowed under statutory law.

### **Conclusion**

United Water undertakes replenishment projects and activities to address the groundwater overdraft within its jurisdiction. The scale of projects and activities depends on the amount of groundwater pumping, the opportunities for reuse of pumped groundwater and land use decisions that impact the amount of potential rainfall and runoff that recharges the interconnected basins within United Water. Stratecon's analysis of the reasonable ratio of municipal & industrial water extraction fees to agricultural extraction fees incorporates key conditions that impact the scale of replenishment activity United Water must undertake to address groundwater overdraft. The information and analysis presented above supports a ratio of at least 3.0.

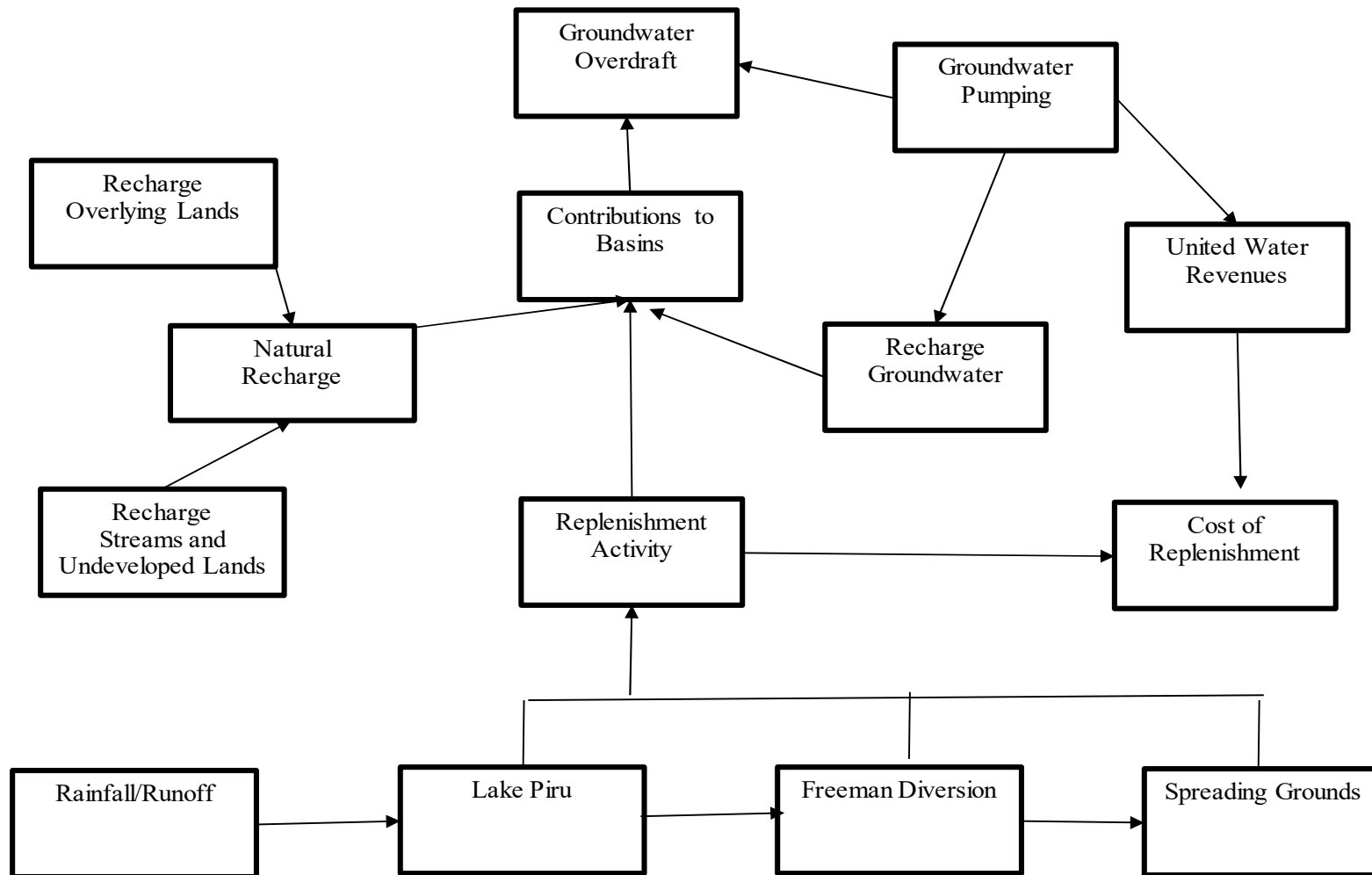
Thank you for the opportunity to work with United Water. We find the district and its staff first rate and extremely knowledgeable about the hydrology of the area. If you have any questions regarding our work or have any additional information we should consider in reaching our opinion, we will be delighted to accommodate your requests.

Sincerely,

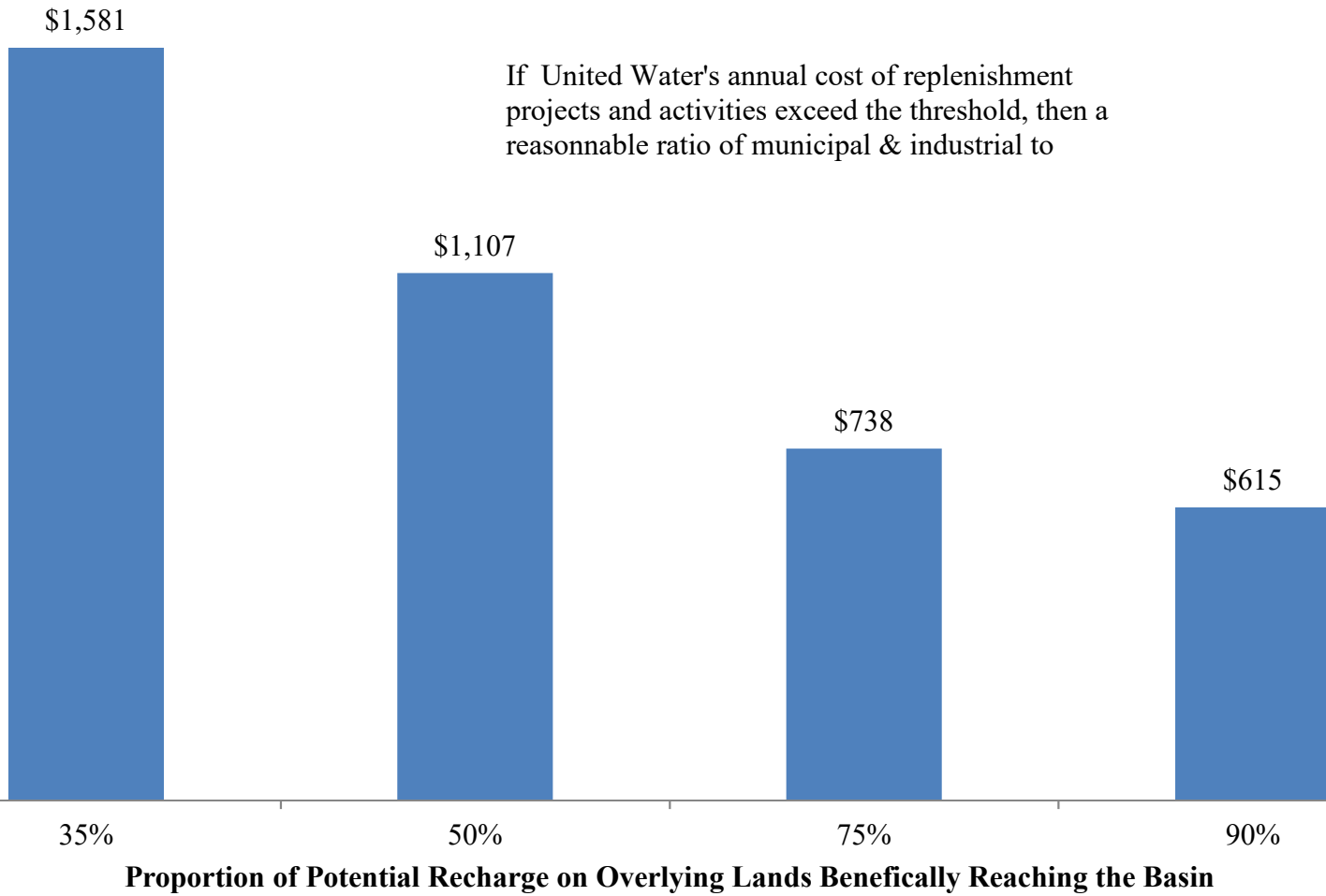


Rodney T. Smith, Ph.D.  
President

**Figure 1**  
**United Water's Objective and Sources of Revenues and Costs**



**Figure 2**  
**Threshold Annual Cost of Replenishment Projects and Activities by**  
**Proportion of Potential Recharge on Overlying Lands Beneficially Reaching the Basin**  
**(\$/AF)**



## Attachment 1 City of Ventura's Water Rights Dedication and Water Resources Net Zero Fee Ordinance

This ordinance requires development to secure the water rights necessary to serve a development project's water needs or pay the Water Resources Net Zero Fee.<sup>28</sup> On May 16, 2016, the City Council a resolution setting the fee at \$26,457 per acre foot of new water demand.<sup>29</sup> "Effective on July 1 of each year, the fee amount will be adjusted to account for inflationary costs, as a percent increase or decrease using the ENR Construction Index for Los Angeles for the month of May in that year, or the most recent month for which the ENR Construction Index for Los Angeles is available, compared to the index amount in the same respective month of the previous year."<sup>30</sup> According to Ventura Water's Frequently Asked Questions, "the net zero fee will be reevaluated at intervals of no greater than every five years or at the same time that water rates are revisited for adjustments, whichever occurs first."<sup>31</sup>

Research on Ventura Water's website was unable to find any documentation of the Net Zero Fee set in 2017 or to be set for 2018. Since annual adjustments are based on the Engineering News Record "Construction Index" until Ventura Water revisits its water rates, Stratecon uses readily available data from the Engineering News Record ("ENR") website to indicate the potential magnitude of annual increases in Ventura Water's Net Zero Fee.

The first major point is that the Net Zero Fee will increase faster than inflation. For example, the compound annual growth rate in ENR's Construction Cost Index was higher than the compound annual growth rate in the Consumer Price Index ("CPI") for the period 2000-2017 for May to May annual comparisons (see Figure 1-A).<sup>32</sup> The compound annual growth rate in the ENR Construction Cost Index (3.2%) exceeds the compound annual growth rate in the CPI (2.1%) by 1.1%, or 110 basis points.<sup>33</sup> This finding is consistent with Stratecon's earlier

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<sup>28</sup> Memorandum to Honorable Mayor and City Council from Mark D. Watson, City Manager, and Shana Epstein, Ventura Water General Manager, dated May 16, 2016 for Council action on June 6, 2016.

<sup>29</sup> Resolution No. 2016-027, A RESOLUTION OF THE COUNCIL OF THE CITY OF SAN BUENAVENTURA, CALIFORNIA, ESTABLISHING A WATER RESOURCE NET ZERO FEE IN ACCORDANCE WITH SECTION 22.180.040 OF CHAPTER 22.180 OF DIVISION 22 OF THE SAN BUENAVENTURA MUNICIPAL CODE. <https://www.cityofventura.ca.gov/DocumentCenter/View/6019> Section 5 sets the net zero fee at \$26,467 per acre foot.

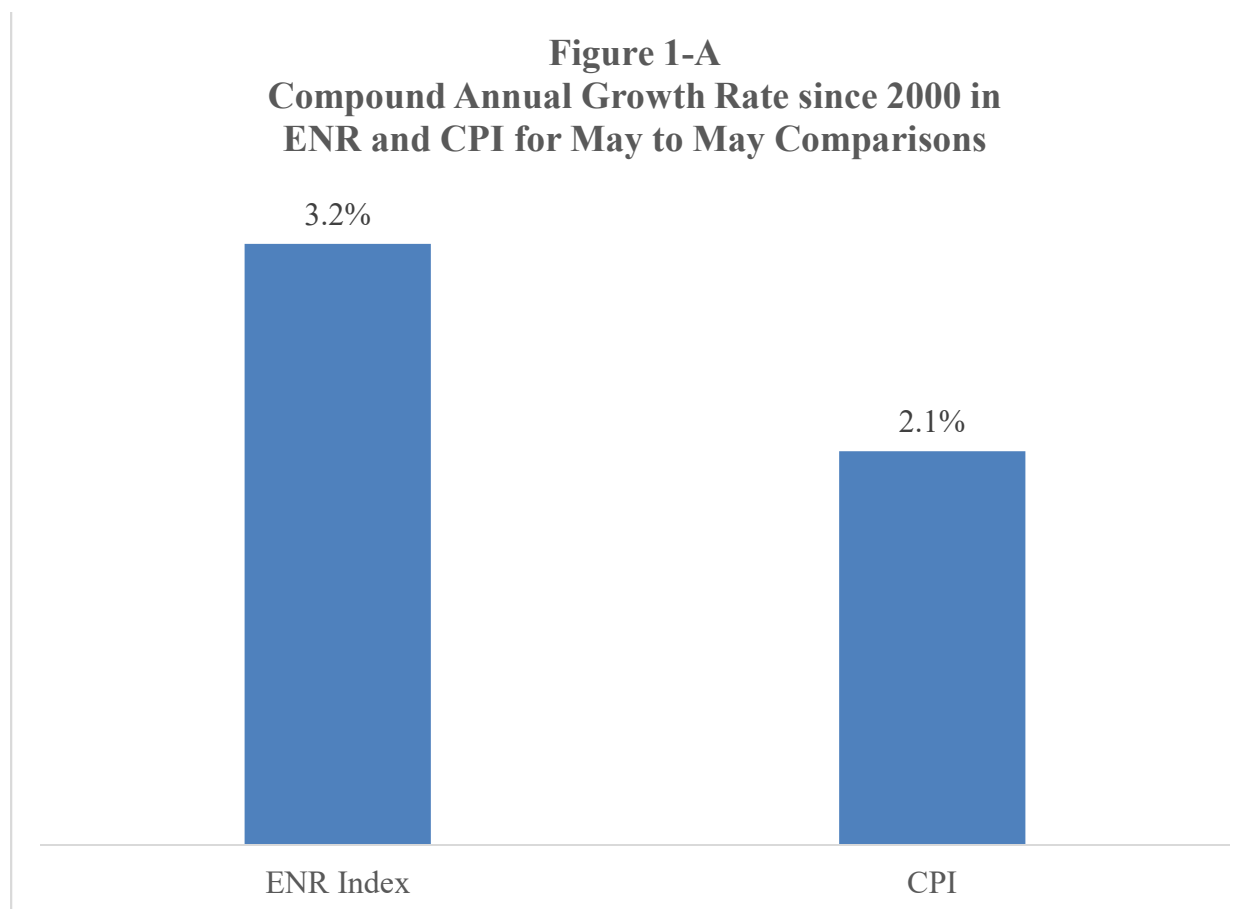
<sup>30</sup> *Ibid.*

<sup>31</sup> "Water Rights Dedication and Water Resources Net Zero Policy, Frequently Asked Questions", <https://www.cityofventura.ca.gov/DocumentCenter/View/5640>, Question 10, p. 3.

<sup>32</sup> Data for ENR Construction Cost Index from ENR website, [https://www.enr.com/economics/historical\\_indices/construction\\_cost\\_index\\_history](https://www.enr.com/economics/historical_indices/construction_cost_index_history). Data on CPI from U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Databases, All Urban Consumers (Current Series), March 2018, Table 24. Historical Consumer Price Index for All Urban Consumers (CPI-U): U. S. city average, all items-Continued, Table 24. Historical Consumer Price Index for All Urban Consumers (CPI-U): U. S. city average, all items-Continued, <https://www.bls.gov/cpi/tables/supplemental-files/historical-cpi-u-201803.pdf>.

<sup>33</sup> One basis point equals 1/100<sup>th</sup> of 1%.

analysis concluding that capital/constructions costs in the water industry (as measured by Bureau of Reclamation Cost Indices) grow faster in inflation by 1.1%, or 110 basis points.<sup>34</sup>



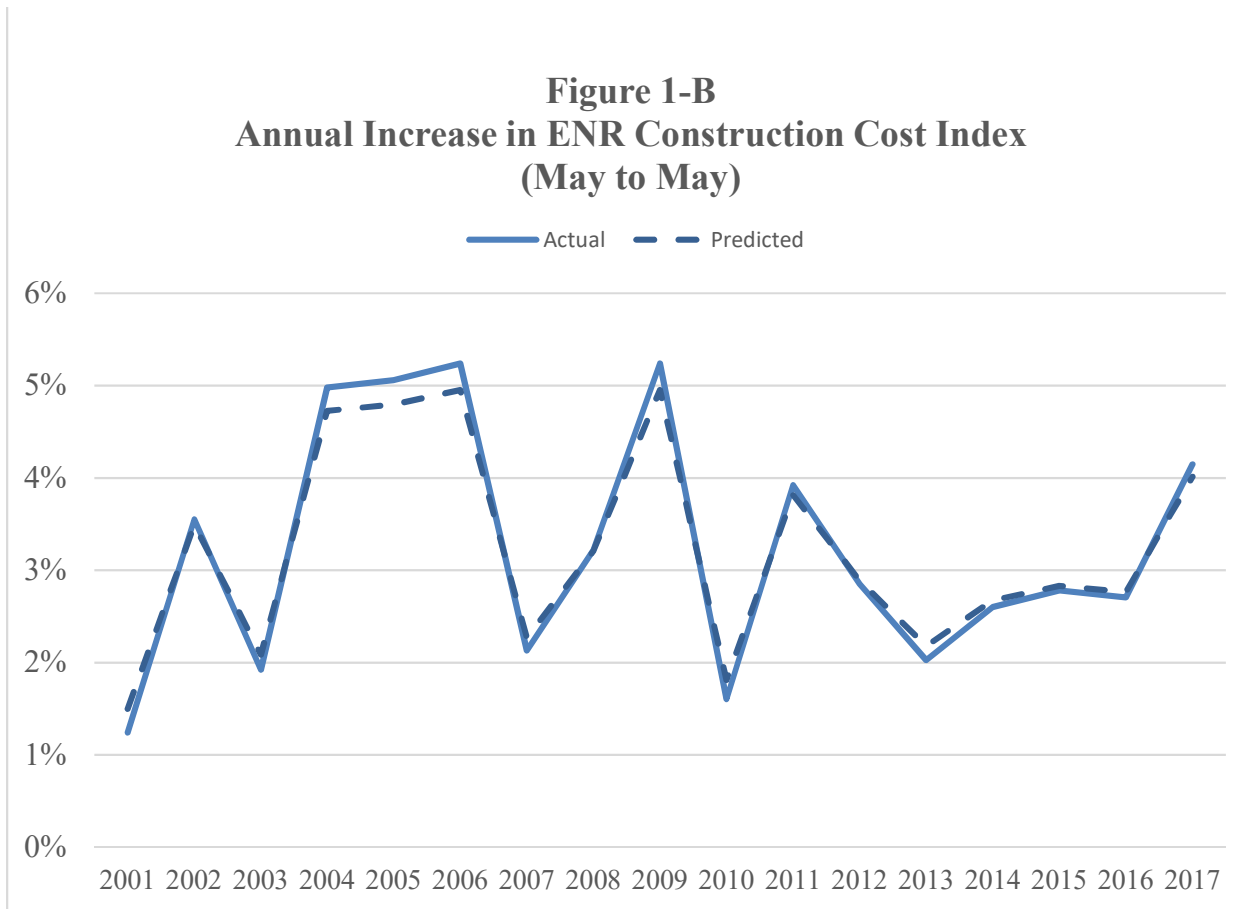
The estimated Net Zero Fee for 2018 reflects the \$26,457/AF fee set in May 2016 plus two annual adjustments: (i) the increase in the ENR Construction Index from May 2016 to May 2017, and (ii) the increase in the ENR Construction Index from May 2017 to May 2018. The first adjustment is 3.7%, the increase in the May 2017 published value (10,692) over the May 2016 published value (10,315). Since there is available data only through March 2018, one needs to estimate the second adjustment based on available information.

Stratecon studied the historical relationship between the annual increases in the ENR Construction Cost Index for the month of May and the month of March (most recently available data). Using the actual annual increase in the index for March closely tracks the actual annual increase in the index for May (see Figure 1-B).<sup>35</sup> Given that the annual increase from March

<sup>34</sup> See “Project Evaluation I: Don’t Underestimate Capital Investment,” Rodney T. Smith, *Hydrowonk Blog*, <http://hydrowonk.com/blog/2013/01/02/project-evaluation-i-dont-underestimate-capital-investment/>.

<sup>35</sup> The estimated equation is: Annual Increase in May = .0043 + 0.8639\*Annual Increase in March. The estimated “coefficient” for the Annual Increase in March is statistically significant (t-statistic 6.25, P-value of 1.55 E-05). The predicted value of the Annual Increase in ENR Construction Cost Index (May to May explains 72% of the actual Annual Increase in ENR Construction Cost Index (May to May).

2017 to March 2018 in the ENR Construction Price Index was 2.7%, the predicted increase in the ENR index from May 2017 to May 2018 is 2.8%.<sup>36</sup>



Based on the above analysis, Stratecon estimates that Ventura Water’s Net Zero Fee as of June 1, 2018 is \$28,204 (see table).

<i>Item</i>	<i>Amount</i>	<i>Comment</i>
May 2016	\$26,457	Specified in ordinance
2017 Increase	3.7%	Actual May to May Increase
2018 Increase	2.8%	Predicted May-May Increase based on March-March increase
June 1 2018 Fee	\$28,204	$\$28,024 = \$26,457 * (1 + 3.7%) * (1 + 2.8\%)$

<sup>36</sup> The increase in the March 2018 published index (10,959) over the March 2017 published index (10,667) is 2.7%. Predicted increase in ENR index from May 2017 to May 2018 = .0043 + 0.8639\*2.7% = 2.8%