

## MEMORANDUM

To: John Roberts and Kim Burns, The Natomas Basin Conservancy

From: Allison Shaffer and Jamie Gomes

Subject: The Natomas Basin Conservancy Endowment Fund Analysis and Hypothetical Scenario Planning; EPS #142118

Date: February 24, 2015

*The Economics of Land Use*



At the request of The Natomas Basin Conservancy (TNBC), Economic & Planning Systems, Inc. (EPS) has prepared an analysis of the Endowment Fund balance needed to generate enough revenue to manage the Natomas Basin habitat preserve in perpetuity without relying on the Natomas Basin Habitat Conservation Plan (NBHCP) mitigation fee revenue. In addition, the analysis includes an estimate of the year by which this fund balance could be achieved.

TNBC estimates the habitat could be managed on a "bare bones" basis for approximately \$2 million per year. It is not clear if covered species mitigation thresholds could be sustained at this level, but the mitigation land would receive a minimum level of care. Farm leases would provide an estimated \$500,000 per year in revenue to partially offset the costs, leaving \$1.5 million to be generated by the Endowment Fund. These amounts are all expressed in 2015 dollars.

Given these assumptions, the Endowment Fund balance needed to generate the \$1.5 million annually in perpetuity is shown below for three different investment-earning scenarios. The alternative investment earning rates of 3, 4, and 5 percent shown in the table are net of inflation and account management fees. Annual investment earnings rates from 3 to 5 percent are typical for most endowment funds.

Item	Formula	Investment Earnings Alternative (2015 \$)		
		Alt. 1	Alt. 2	Alt. 3
<b>Annual Investment Earnings</b>	<i>a</i>	3%	4%	5%
Annual Costs		\$ 2,000,000	\$ 2,000,000	\$ 2,000,000
Less Farm Revenue		(\$ 500,000)	(\$ 500,000)	(\$ 500,000)
<b>Net Annual Costs</b>	<i>b</i>	<b>\$ 1,500,000</b>	<b>\$ 1,500,000</b>	<b>\$ 1,500,000</b>
<b>Amount Needed in Endowment</b>	<i>b/a</i>	<b>\$ 50,000,000</b>	<b>\$ 37,500,000</b>	<b>\$ 30,000,000</b>

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For each of the three investment-earnings alternatives, **Table 1** estimates the year by which the required Endowment Fund balance will be achieved. Two different scenarios are shown in this table. **Scenario 1** is based on the assumption that fund balances from all other NBHCP fee funds, excluding the Supplemental Endowment Fund, will be transferred to the Endowment Fund and thus will contribute to reaching the required balance for managing the habitat in perpetuity. **Scenario 2** is based on the assumption that fund balances from all other NBHCP funds, including the Supplemental Endowment Fund, will be transferred to the Endowment Fund. Depending on the annual investment earnings rate and fund transfer assumptions, it is estimated that the required endowment amount would be achieved between 2017 and 2020. This assumes an end to the current building moratorium in calendar year 2015 and a normalized NBHCP fee payment schedule as provided for in the NBHCP Finance Model. In both scenarios, it is believed that state and federal wildlife agency approval would be required to effectuate the merging of funds and accounts.

For each scenario and investment earnings alternative, **Table 1** includes both the cumulative acres of development from 2015 through the year in which the required Endowment Fund balance is achieved and the NBHCP fund balances in that year. **Table 2** details the annual development and NBHCP fee fund balances from 2015 through 2024. The acres of development and fund balances are from the 2015 NBHCP Finance model and thus reflect the development, cost, and revenue assumptions used in that model.

To the extent that the actual annual development or investment earnings differ from the model assumptions, the year by which the required Endowment Fund funds are available could change. For example, a slower rate of development could result in the required Endowment Fund balance being achieved in a later year, and higher investment earnings rates could result in the required Endowment Fund balance being achieved earlier.

**Table 1**  
**NBHCP Fee Update**  
**Summary of Endowment Fund Requirement and Year Achieved (2015 \$)**

Item	Investment Earnings Alternative (2015 \$)		
	Alt. 1	Alt. 2	Alt. 3
Annual Investment Earnings Rate (2016+)	3%	4%	5%
Net Annual Costs to be Funded by Endowment	\$ 1,500,000	\$ 1,500,000	\$ 1,500,000
Amount Needed in Endowment	\$ 50,000,000	\$ 37,500,000	\$ 30,000,000
<b>Scenario 1: Balances Transferred to Endowment Fund From All Other Funds Except Supplemental Endowment</b>			
Year Required Endowment Amount Achieved	2020	2019	2018
Cumulative Acres of Development (2015 +)	1,931	1,301	672
<b>Fund Balances (Rounded)</b>			
Endowment	\$ 31,400,000	\$ 26,700,000	\$ 22,200,000
O&M/Admin	\$ 10,200,000	\$ 6,500,000	\$ 2,600,000
Land Acquisition	\$ 8,400,000	\$ 8,200,000	\$ 6,200,000
Restoration and Enhancement	\$ 300,000	\$ 800,000	\$ 1,100,000
<b>Total</b>	<b>\$ 50,300,000</b>	<b>\$ 42,200,000</b>	<b>\$ 32,100,000</b>
<b>Scenario 2: Balances Transferred to Endowment Fund From All Other Funds, Including Supplemental Endowment</b>			
Year Required Endowment Amount Achieved	2020	2019	2017
Cumulative Acres of Development (2015 +)	1,931	1,301	355
<b>Fund Balances (Rounded)</b>			
Endowment	\$ 31,400,000	\$ 26,700,000	\$ 19,700,000
O&M/Admin	\$ 10,200,000	\$ 6,500,000	\$ 1,800,000
Land Acquisition	\$ 8,400,000	\$ 8,200,000	\$ 5,200,000
Restoration and Enhancement	\$ 300,000	\$ 800,000	\$ 1,500,000
Supplemental Endowment	\$ 4,200,000	\$ 3,700,000	\$ 3,100,000
<b>Total</b>	<b>\$ 54,500,000</b>	<b>\$ 45,900,000</b>	<b>\$ 31,300,000</b>

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Table 2  
NBHCP Fee Update  
Revenue Available for Endowment Fund (2015 \$)

Year	Fee per Acre	Fund Balances by Year (from NBHCP 2015 Fee Update Model - 2015 \$)									
		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
		budget amounts									
<b>Projected Development Acres</b>		5.0	100.0	250.0	316.6	629.6	629.6	629.6	629.6	629.6	629.6
<b>Endowment</b>											
Beginning Balance		\$ 16,133,950	\$ 16,595,005	\$ 17,663,955	\$ 19,696,624	\$ 22,204,081	\$ 26,730,406	\$ 31,392,520	\$ 36,194,498	\$ 41,140,535	\$ 46,234,953
Fee Revenue	\$6,211	\$ 31,055	\$ 621,100	\$ 1,552,750	\$ 1,966,558	\$ 3,910,202	\$ 3,910,202	\$ 3,910,202	\$ 3,910,202	\$ 3,910,202	\$ 3,910,202
Investment Earnings	3%	\$ 480,000	\$ 497,850	\$ 529,919	\$ 590,899	\$ 666,122	\$ 801,912	\$ 941,776	\$ 1,085,835	\$ 1,234,216	\$ 1,387,049
Costs		(\$ 50,000)	(\$ 50,000)	(\$ 50,000)	(\$ 50,000)	(\$ 50,000)	(\$ 50,000)	(\$ 50,000)	(\$ 50,000)	(\$ 50,000)	(\$ 50,000)
<b>Ending Balance</b>		<b>\$ 16,595,005</b>	<b>\$ 17,663,955</b>	<b>\$ 19,696,624</b>	<b>\$ 22,204,081</b>	<b>\$ 26,730,406</b>	<b>\$ 31,392,520</b>	<b>\$ 36,194,498</b>	<b>\$ 41,140,535</b>	<b>\$ 46,234,953</b>	<b>\$ 51,482,204</b>
<b>O&amp;M/Admin</b>											
Beginning Balance		\$ 4,946,014	\$ 2,724,709	\$ 1,569,248	\$ 1,829,275	\$ 2,641,704	\$ 6,507,686	\$ 10,171,166	\$ 13,861,919	\$ 17,477,055	\$ 21,010,487
Fee Revenue	\$10,352	\$ 101,758	\$ 1,035,151	\$ 2,587,878	\$ 3,277,549	\$ 6,516,907	\$ 6,516,907	\$ 6,516,907	\$ 6,516,907	\$ 6,516,907	\$ 6,516,907
Other Revenue		472,839	611,526	600,081	595,235	605,483	625,688	667,239	708,790	750,341	791,892
Investment Earnings	3%	\$ 110,000	\$ 81,741	\$ 47,077	\$ 54,878	\$ 79,251	\$ 195,231	\$ 305,135	\$ 415,858	\$ 524,312	\$ 630,315
Costs		(\$ 2,905,902)	(\$ 2,883,880)	(\$ 2,975,009)	(\$ 3,115,232)	(\$ 3,335,659)	(\$ 3,674,346)	(\$ 3,798,528)	(\$ 4,026,418)	(\$ 4,258,128)	(\$ 4,493,772)
<b>Ending Balance</b>		<b>\$ 2,724,709</b>	<b>\$ 1,569,248</b>	<b>\$ 1,829,275</b>	<b>\$ 2,641,704</b>	<b>\$ 6,507,686</b>	<b>\$ 10,171,166</b>	<b>\$ 13,861,919</b>	<b>\$ 17,477,055</b>	<b>\$ 21,010,487</b>	<b>\$ 24,455,829</b>
<b>Land Acquisition</b>											
Beginning Balance		\$ 2,547,144	\$ 2,647,144	\$ 3,926,558	\$ 5,244,355	\$ 6,201,187	\$ 8,197,709	\$ 8,443,641	\$ 8,696,950	\$ 8,957,858	\$ 9,226,594
Fee Revenue	\$12,000	\$ 60,000	\$ 1,200,000	\$ 3,000,000	\$ 3,799,501	\$ 7,554,730	\$ 7,554,730	\$ 7,554,730	\$ 7,554,730	\$ 7,554,730	\$ 7,554,730
Investment Earnings	3%	\$ 40,000	\$ 79,414	\$ 117,797	\$ 157,331	\$ 186,036	\$ 245,931	\$ 253,309	\$ 260,908	\$ 268,736	\$ 276,798
Costs		\$ 0	\$ 0	(\$ 1,800,000)	(\$ 3,000,000)	(\$ 5,744,243)	(\$ 7,554,730)	(\$ 7,554,730)	(\$ 7,554,730)	(\$ 7,554,730)	(\$ 7,554,730)
<b>Ending Balance</b>		<b>\$ 2,647,144</b>	<b>\$ 3,926,558</b>	<b>\$ 5,244,355</b>	<b>\$ 6,201,187</b>	<b>\$ 8,197,709</b>	<b>\$ 8,443,641</b>	<b>\$ 8,696,950</b>	<b>\$ 8,957,858</b>	<b>\$ 9,226,594</b>	<b>\$ 9,503,392</b>
<b>Restoration and Enhancement</b>											
Beginning Balance		\$ 1,719,646	\$ 1,756,081	\$ 1,937,477	\$ 1,539,207	\$ 1,097,870	\$ 778,807	\$ 273,838	\$ 356,585	\$ 441,815	\$ 529,602
Fee Revenue	\$1,287	\$ 6,435	\$ 128,714	\$ 321,785	\$ 407,540	\$ 810,332	\$ 810,332	\$ 810,332	\$ 810,332	\$ 810,332	\$ 810,332
Investment Earnings	3%	\$ 30,000	\$ 52,682	\$ 58,124	\$ 46,176	\$ 32,936	\$ 23,364	\$ 8,215	\$ 10,698	\$ 13,254	\$ 15,888
Costs		\$ 0	\$ 0	(\$ 778,179)	(\$ 895,054)	(\$ 1,162,331)	(\$ 1,338,665)	(\$ 735,799)	(\$ 735,799)	(\$ 735,799)	(\$ 735,799)
<b>Ending Balance</b>		<b>\$ 1,756,081</b>	<b>\$ 1,937,477</b>	<b>\$ 1,539,207</b>	<b>\$ 1,097,870</b>	<b>\$ 778,807</b>	<b>\$ 273,838</b>	<b>\$ 356,585</b>	<b>\$ 441,815</b>	<b>\$ 529,602</b>	<b>\$ 620,023</b>
<b>Total Available Revenue for Endowment Fund</b>											
Endowment		\$ 16,595,005	\$ 17,663,955	\$ 19,696,624	\$ 22,204,081	\$ 26,730,406	\$ 31,392,520	\$ 36,194,498	\$ 41,140,535	\$ 46,234,953	\$ 51,482,204
O&M/Admin		\$ 2,724,709	\$ 1,569,248	\$ 1,829,275	\$ 2,641,704	\$ 6,507,686	\$ 10,171,166	\$ 13,861,919	\$ 17,477,055	\$ 21,010,487	\$ 24,455,829
Land Acquisition		\$ 2,647,144	\$ 3,926,558	\$ 5,244,355	\$ 6,201,187	\$ 8,197,709	\$ 8,443,641	\$ 8,696,950	\$ 8,957,858	\$ 9,226,594	\$ 9,503,392
Restoration and Enhancement		\$ 1,756,081	\$ 1,937,477	\$ 1,539,207	\$ 1,097,870	\$ 778,807	\$ 273,838	\$ 356,585	\$ 441,815	\$ 529,602	\$ 620,023
<b>Total</b>		<b>\$ 23,722,939</b>	<b>\$ 25,097,239</b>	<b>\$ 28,309,461</b>	<b>\$ 32,144,843</b>	<b>\$ 42,214,608</b>	<b>\$ 50,281,164</b>	<b>\$ 59,109,952</b>	<b>\$ 68,017,264</b>	<b>\$ 77,001,637</b>	<b>\$ 86,061,448</b>
<b>Supplemental Endowment</b>											
Beginning Balance		\$ 2,655,219	\$ 2,727,864	\$ 2,852,600	\$ 3,060,428	\$ 3,309,735	\$ 3,732,065	\$ 4,167,065	\$ 4,615,114	\$ 5,076,605	\$ 5,551,941
Fee Revenue	\$529	\$ 2,645	\$ 52,900	\$ 132,250	\$ 167,495	\$ 333,038	\$ 333,038	\$ 333,038	\$ 333,038	\$ 333,038	\$ 333,038
Investment Earnings	3%	\$ 80,000	\$ 81,836	\$ 85,578	\$ 91,813	\$ 99,292	\$ 111,962	\$ 125,012	\$ 138,453	\$ 152,298	\$ 166,558
Costs		(\$ 10,000)	(\$ 10,000)	(\$ 10,000)	(\$ 10,000)	(\$ 10,000)	(\$ 10,000)	(\$ 10,000)	(\$ 10,000)	(\$ 10,000)	(\$ 10,000)
<b>Ending Balance</b>		<b>\$ 2,727,864</b>	<b>\$ 2,852,600</b>	<b>\$ 3,060,428</b>	<b>\$ 3,309,735</b>	<b>\$ 3,732,065</b>	<b>\$ 4,167,065</b>	<b>\$ 4,615,114</b>	<b>\$ 5,076,605</b>	<b>\$ 5,551,941</b>	<b>\$ 6,041,537</b>
<b>Adjusted Total Available Revenue for Endowment Fund (with Sup. Endowment)</b>		<b>\$ 26,450,803</b>	<b>\$ 27,949,839</b>	<b>\$ 31,369,889</b>	<b>\$ 35,454,578</b>	<b>\$ 45,946,673</b>	<b>\$ 54,448,229</b>	<b>\$ 63,725,066</b>	<b>\$ 73,093,870</b>	<b>\$ 82,553,578</b>	<b>\$ 92,102,985</b>

Source: TNBC and EPS

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