State Water Resources Control Board

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SUBJECT: **CITY OF BRAWLEY ECONOMIC BENEFIT OF NONCOMPLIANCE OF AVOIDING THE IMPLEMENTATION AND OPERATION OF A WASTEWATER PRETREATMENT PROGRAM**

This memo is in response to your request of December 6, 2012 for a determination of The City of Brawley's (Brawley) economic benefit resulting from not implementing a Wastewater Pretreatment Program and instituting fines on industrial clients for not meeting sewage discharge effluent limits.

The results of this analysis are to be used to determine the minimum amount of the assessed liability in ACL Complaint No. R7-2013-0028 pursuant to California Water Code section 13268.

The Porter-Cologne Act requires that certain civil liabilities be set at a level that accounts for any "economic benefit or savings" violators gained through their violations. To establish the amount of civil liabilities, the Office of Enforcement uses a "Penalty Calculation Methodology" that addresses the economic benefit of noncompliance.[1]

Summary

The economic benefit of not having a wastewater pretreatment program and collecting fines from dischargers is $1,176,162. Procedures used to estimate the economic benefit of noncompliance is detailed in the following sections.

The BEN Model

The U.S. Environmental Protection Agency developed the BEN computer model to calculate the economic benefit a discharger derives from delaying and/or avoiding compliance with

[1] Water Quality Enforcement Policy, Office of Enforcement, State Water Resources Control Board, May 20, 2010, Page 9-21.

environmental regulations.[2] The next section describes the structure of the BEN model and details the procedures used in calculating the economic benefit of noncompliance.

Economic Benefit Overview

Economic benefit represents the financial gains that a violator accrues by delaying and/or avoiding expenditures to meet mandated pollution control requirements. Funds not spent on environmental compliance are available for other profit-making activities or, alternatively, a defendant avoids the costs associated with obtaining additional funds for environmental compliance. Economic benefit represents the amount by which a defendant is financially better off from not having complied with environmental requirements in the specified timeframe. The appropriate economic benefit calculation should represent the amount of money that would make the violator indifferent between compliance and noncompliance. If the civil penalty does not recover at least this economic benefit, then the violator will retain an economic gain and have no financial incentive to comply. Because of the precedent of this retained gain, other regulated companies may see an economic advantage in similar noncompliance, and the penalty will fail to deter potential violators. Economic benefit does not represent compensation to the enforcement agency as in a typical "damages" calculation for a tort case, but instead is the minimum amount by which the violator must be penalized so as to return it to the financial position it would have been in had it complied on time.

BEN Model Methodology

The economic benefit calculation must incorporate the economic concept of the "time value of money." Stated simply, a dollar today is worth more than a dollar tomorrow, because you can invest today's dollar to start earning a return immediately. Thus, the further in the future the dollar is, the less it is worth in "present-value" terms. Similarly, the greater the time value of money (i.e., the greater the "discount" or "compound" rate used to derive the present value), the lower the present value of future costs.

To calculate a violator's economic benefit, BEN uses standard financial cash flow and net present value analysis techniques, based on modern and generally accepted financial principles. First, BEN calculates the costs of complying on-time and of complying late, adjusted for inflation (price adjusted), depreciation, and tax deductibility. To compare the on-time and delayed compliance costs in a common measure, BEN calculates the present value of both streams of costs, or "cash flows," as of the date of initial noncompliance. BEN derives these values by discounting the annual cash flows at an average cost of capital throughout this time period.

BEN then subtracts the delayed-case present value from the on-time-case present value to determine the initial economic benefit as of the noncompliance date. Finally, BEN compounds this initial economic benefit forward to the penalty payment date at the same cost of capital to determine the final economic benefit of noncompliance. The BEN model focuses exclusively on the economic benefit from delayed and/or avoided costs (its analysis encompasses only the cost differential between compliance and noncompliance). BEN, thereby, employs a simplifying assumption that the finances of a violator’s compliant and noncompliant conditions are identical but for the compliance cost differential.

[2] BEN Version 4.7.0 was developed under the direction of Jonathan Libber, BEN/ABEL Coordinator, Office of Enforcement and Compliance Assurance, U.S. EPA. Technical assistance provided to EPA by Industrial Economics, Incorporated (IEc), Cambridge, MA.

Pollution control expenditures can include: (1) capital investments (e.g., pollution control equipment); (2) one-time nondepreciable expenditures (e.g., setting up a reporting system, or acquiring land); and (3) annually-recurring costs (e.g., operating and maintenance costs, or groundwater monitoring costs). Each of these expenditures can be either delayed or avoided. BEN's baseline assumption is that capital investments and one-time nondepreciable expenditures are merely delayed over the period of noncompliance, whereas annual costs are avoided entirely over this period. BEN does allow, however, analysis of any combination of delayed and avoided expenditures.

BEN calculates the violator's discount/compound rate based on entity type and financial information from the date of noncompliance to the penalty payment date. As noted above, the discount/compound rate quantifies the time value of money. BEN discounts and compounds all cash flows at the cost of capital, averaged over the time period from the noncompliance date to the compliance or penalty payment date, whichever is later. To calculate an average discount/compound rate for a trust, BEN uses the cost of debt for a privately owned entity.

BEN derives a violator's economic benefit in several steps. First, BEN price adjusts compliance costs from the cost estimate date to the date when they would have been expended had the violator complied on time (on-time scenario) and to the date when they will be expended as the violator comes into compliance (delay scenario). Next, BEN uses these costs to compute the total cost of complying on-time and of complying late, adjusted for inflation, depreciation, and taxes. BEN also calculates the present value of both scenarios as of the date of initial noncompliance, so that they can be compared in a common metric. Then, BEN subtracts the delayed scenario present value from the on-time scenario present value to determine the initial economic benefit as of the noncompliance date. Finally, BEN compounds[3] this initial economic benefit forward to the penalty payment date.

All costs must be price adjusted to the date of noncompliance using an inflation index. Inflation indices are more precise than an annual inflation rate, but they require an index value for every relevant month. Therefore, BEN contains a database of monthly index values for several price indices from 1987 to 2029. Annual updates keep indices current and add future values. For projected future inflation, BEN extrapolates each cost index forward in time at a forecasted rate, based upon projections from industry groups and government agencies.

Revenue Gained from Noncompliance

The BEN model has three categories of avoided or delayed costs: 1) capital investment; 2) one-time nondepreciable expenditures; and 3) annual recurring costs. In this case, costs are not germane, but the revenue gained by not establishing and maintaining a wastewater pretreatment program represents an economic benefit of noncompliance. Monetary penalties were assessed dischargers for not meeting influent standards that would have been met if a wastewater pretreatment program existed. A wastewater pretreatment process consists of one or more treatment devices designed to remove sufficient pollutants from wastewaters to allow an industry to comply with Brawley's Wastewater Pretreatment Ordinance No. 2001-08. Instead of entering avoided annual costs in the BEN model, the amount of the penalties collected from the discharger are entered. Since the revenue collected is different in each year, a separate

[3] Compounding is the process of adding earned interest to the principal so that, from that moment on, the interest that has been added also earns interest. The alternative is simple interest where interest is not added to the principal. The use of compounding interest is standard practice in finance and economics.

BEN model run must be made for each year. BEN will then calculate the net present value, or the economic benefit of not conducting a pretreatment program.[4]

National Beef Wastewater Violations and Penalty Payments

National Beef's violations of Brawley's Wastewater Pretreatment Ordinance No. 2001-08 began in November of 2008. However, payments to Brawley began in 2009 and continue to the present (Table 1). Four dates or time periods are associated with each payment, the violation period, the invoice date, the check date and the date of receipt. Payments were aggregated annually by the date the payment was received by Brawley.

Wastewater penalties were $58,000 in 2009, $160,000 in 2010, $300,000 in 2011, and $160,000 in 2012. The four year total is $678,000.

[4] The BEN Help System, Overview: Economic Benefit: Context, Theory and Methodology. "Sales can be entered as a "cost" in BEN, which will then calculate the profit's after-tax net present value."

Table 1. National Beef Wastewater Violations Penalty Payments, City of Brawley, 2009-2012.

Violation Period	Detail	Received	Amount	Totals
2009				
Oct-09		10/19/2009	$58,000	
	2009 Total			**$58,000**
2010				
Mar-10		5/3/2010	$60,000	
Jun-10	$40,000			
Aug-10	$5,000			
Total:	$45,000	11/3/2010	$45,000	
Jul-10		11/15/2010	$50,000	
Nov-10		12/27/2010	$5,000	
	2010 Total			**$160,000**
2011				
Dec-10		2/28/2011	$45,000	
Jan-11		3/7/2011	$50,000	
Feb-11		3/21/2011	$60,000	
Mar-11		5/18/2011	$60,000	
Apr-11		6/13/2011	$30,000	
May-11		6/28/2011	$25,000	
Jun-11		7/26/2011	$30,000	
	2011 Total			**$300,000**
2012				
Nov-11		1/12/2012	$5,000	
Dec-11		2/14/2012	$20,000	
Jan-12		3/7/2012	$5,000	
Feb-12		4/6/2012	$10,000	
Apr-12		6/11/2012	$5,000	
May-12		7/3/2012	$30,000	
Jun-12		7/24/2012	$20,000	
Jul-12		9/10/2012	$25,000	
Aug-12		9/24/2012	$20,000	
Sep-12		11/13/2012	$20,000	
	2012 Total			**$160,000**
			Total:	**$678,000**

Source: City of Brawley, Accounting Detail Reports: Wastewater Collection,Other Revenues, Other Fines and Penalties; General Fund, Due from Other Governments, 2/1/2012.

The Economic Benefit of Noncompliance

The economic benefit of noncompliance is estimated by making separate BEN model runs for each annual payment total, and the annual cost of operating the pretreatment program that was not implemented. The pretreatment cost not expended by Brawley represents an economic benefit to Brawley.

Table 2, column 2 presents the revenue for the four years of penalties that were aggregated in Table 1. The last row of Table 2 lists the $100,000 annual cost for the management and operation of a wastewater pretreatment program.

Dates necessary to estimate the economic benefits of are also presented in Table 2. The Payment Estimate date (column 3) is used to establish when the value of the transaction took place or, in the case of the pretreatment program, when the cost estimate was made. These dates are used by BEN to account for the effect of inflation when calculating the time value of money.

The BEN model also requires a noncompliance and a compliance date. When estimating the net present value of revenue gained by noncompliance, these dates represent the extent of the revenue or cost. The Penalty Payment data is the used to calculate the time value of the revenue or cost.

The total benefit of noncompliance is estimated at $1,176,162.

Table 2. National Beef Wastewater Violations Penalty Payments, City of Brawley, 2009-2012.

		Date of				
	Penalty/Cost Amount	Payment Estimate	Beginning	Ending	Penalty Payment	Benefit of Noncompliance
2009 National Beef Penalty Revenue	$58,000	10/19/2009	1/1/2009	12/31/2009	5/1/2013	$68,487
2010 National Beef Penalty Revenue	$160,000	5/3/2010	1/1/2010	12/31/2010	5/1/2013	$182,490
2011 National Beef Penalty Revenue	$300,000	5/18/2011	1/1/2011	12/31/2011	5/1/2013	$328,268
2012 National Beef Penalty Revenue	$160,000	7/3/2012	1/1/2012	12/31/2012	5/1/2013	$166,816
Annual Cost of Pretreatment Program[1]	$100,000	2/20/2013	1/1/2009	12/31/2012	5/1/2013	$430,100
		Total				**$1,176,162**

Source: BEN Version 4.7.0, 12/19/13

[1] Colorado River Regional Water Quality Control Board staff, 2/19/2013.

CC: Gail Linck, Office of Research, Planning and Performance