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Copy presented to: The Independent Pricing and Regulatory Tribunal (IPART)
The *EdwardsHanlon* approach to water reform

State Water Reform

Proposed Price Path from July 1 2005

Strategy for consideration

The presentation of this report is to highlight the urgent need for major infrastructure projects to commence, that are designed to augment the future supply of freshwater to our communities. The concepts, strategies and a future vision is presented in the hope that we as Australians can overcome some of the hardships attributed to droughts in this great land of ours. Therefore it is acknowledged that the concepts presented will turn the existing philosophy attributed to obtaining inland water to supplement the needs of coastal communities **“on its head”**.

The restructuring of the water tariff as proposed by Sydney Water, Gosford and Wyong water utilities.

The presentation of any bold radical new scheme is naturally going to attract its lion share of sceptics. The proposal to place more emphasis upon the concept of "pay by use" and hence increase the cost to consumers on the basis of kilolitres of water used will be no different. That said, it is the intention of this report to support this bold move by the water utilities, with the only additional conditions being the introduction of a sewage reduction program, major sewage recycling, implementation of the proposed desalination projects, consideration of a water crediting system for the States Water Utilities and a genuine move by Government to aid our communities West of Sydney.

To aid in such a development this report includes a number of concepts, strategy and vision that has already been presented to each of the three water Utilities for consideration.

It is the intension of this report to not only support the claims for tariff restructuring and increases in the actual cost of water, but to present a projected comparison in relation to the funding generated under the two schemes mentioned within this document.

This report is therefore designed to aid in enhancing discussion upon finding legitimate solutions to our water problems that can be implemented within the near future. Hence, we welcome all critics to let their voices and opinions be known. Hopefully this will lead to the implementation of actual solutions to addressing our water needs instead of the continued Band-Aid solutions.

If the tariff restructuring proposals by all three Water Utilities are to be up-held by the Pricing Tribunal, then consideration should be made to include the following elements;

- The creation and pursuit of a uniform State wide price per kilolitre of freshwater.
- The introduction of an aggressive sewage reduction and recycling program.
- The introduction of penalty unit pricing, if the water credit system is adopted.

It is noted that the addition of such strategies would not resolve our drought problems or address the financial hardship and job losses that flow on from the effects of droughts in regional NSW. To address these issues will take additional capital expenditure. However, the implementation of these additional strategies should aid in lessening the impact of droughts upon all stakeholders.

The creation and pursuit of a uniform State wide price per kilolitre of freshwater

Under the existing arrangement the price per kilolitre of freshwater is established on a basis of calculating the costs to produce each kilolitre of freshwater by each of the individual Water Utilities. The problem with this methodology is that it has created the situation where the cost of water varies from each Water Utility.

As demonstrated in both Gosford and Wyong Shire Councils submissions, this has created a unique situation where freshwater purchased from the Hunter Water Corporation at a retail price of 93.1 cents per kilolitre of freshwater has had to be on sold at the Gosford/Wyong retail price of 75.5 cents per kilolitre. Thereby creating the situation where obtaining additional freshwater to supplement the needs of our community is being conducted at a loss in actual revenue. This only results in additional funding targeted for other areas being redirected to supplement the losses being incurred.

To continue down this path would seem self defeating as the Councils would no doubt be placed in a position to seek the redress of the additional funding from either cutting costs or increasing their costs to consumers from other sources.

In addition to this situation each of the three water utilities have had their overall revenue reduced due to the drought. Although water restrictions have been reasonably effective in reducing the overall usage of freshwater via consumers, each of the three utilities has demonstrated that this has been achieved at a cost. The cost in each case has been lost revenue due to reduced sales of the freshwater product.

In the case of Wyong Council they have tabled \$1,119,000 in the 2003/2004 period and projected a further loss of \$2,444,000 in the 2004/2005 period, their estimated freshwater revenue being projected to be down by as high as 20% in 2005/2006 financial year.

In the case of Gosford Council they have projected losses in freshwater revenue of up to 24% upon the introduction of level three (3) water restrictions being implemented.

Sydney Water on the other hand being a far larger organisation has claimed that their overall income received during the 2003/2004 was some 6% less than that projected by the Pricing Tribunal's forward estimate of revenue for the same period. The reason for this decline in revenue is again attributed to the drought and reduced sales of freshwater. As found within the Sydney Water submission the revenue projected for the coming financial year is now anticipated to be less 4% than originally forecast.

As Sydney Water is the largest water utility operating within this State, it would seem logical for Sydney Water to now be recognised as the bench mark for water pricing. Notably the actual submission from Sydney Water incorporates evidence of the Pricing Tribunal's continued efforts to further reform Sydney Water's Operations to achieve greater efficiency.

With this in mind, it is proposed that the price of freshwater as established by Sydney Water now be set as the bench mark for the cost attributed to freshwater within this State. What is meant by this statement is that IPART now give serious consideration to moving towards such an outcome. Therefore what is proposed is that other water utilities such as Gosford, Wyong and Hunter Water Corporation be granted tariff restructuring increases at a higher rate than the Sydney Water proposal. By implementing such a strategy this would eventually lead to uniformity with the overall cost attributed to freshwater. As IPART already has the power to impose conditions attributed to efficiency targets, the benefits of allowing additional revenue to be generated via certain water utilities should be connected to actual improvements to their existing systems.

It is further proposed that IPART now give serious consideration to re-establishing the projected sales of freshwater from each water utility to that presented within each utility's submission. Should the unthinkable occur and normal rainfall patterns again return, allowing for the lifting of water restrictions, then it is proposed that IPART establish a new condition on each of the utilities. The new condition being that any additional revenue received through increased sales of water due to increased rainfall patterns is offset either against debt reduction or improvements to the existing system such as capital expenditure. Such a condition would certainly aid in achieving a sustainable resource and improve Government accountability and viability.

It is at this point that the strategy in relation to tariff restructuring as presented via each of the water utilities differs from that presented in the *EdwardsHanlon* approach.

The *EdwardsHanlon* approach

The introduction of an aggressive sewage reduction and recycling program.

It is proposed that a new aggressive sewage water reduction programme be pursued. However, this is not intended to replace the existing EPA pollution reduction programmes it is intended to complement them.

As IPART is aware, Sydney Water in June 2004 withdrew a sum of ninety (90) million dollars out of the water recycling project. It is alleged that this project had already cost the State Government around one hundred and ten (110) million dollars prior to this action.

In an attempt to counter this development a new scheme is now proposed. This scheme entails the establishment of targets that must be met by each of the Water Treatment Utilities by the end of each financial year, or face penalties for non compliance with established targets.

The proposed sewage water reduction program has as its primary goal the reduction of water flowing from sewage treatment plants into the Environment. Its objective is to seek up to a 43% reduction in sewage water discharge from sewage treatment plants over a twenty year period.

In order to achieve this level of reduction in discharge it will be vital to obtain the exact amount of discharge applicable to each of the sewage treatment plants operating within this State. The figures used in this document have been calculated from documents attributed to Sydney Water and the Environment Protection Authority.

Table 2.2: Consumption, yield and recycling across major systems (Note: Sydney Water documentation)

Area served	Estimated yield (GL per year)	Current consumption from piped supply (GL per year)	Current volume of effluent reused (GL per year)
Sydney–Illawarra	600 ^(a)	624 ^(b)	11 ^(b)
Newcastle–lower Hunter	73 ^(c)	73 ^(d)	5.3 ^(d)
Gosford–Wyong	30–47 ^(e)	35 ^(f)	0.008 ^(g)
Other urban systems	Unknown	285 ^(f)	4.1 ^(f)

Urban water discharge

Approximately 70% of water piped into urban areas is returned via sewerage systems to sewage treatment plants. Following treatment, almost all is discharged to creeks, rivers, estuaries or the ocean. There have been substantial reductions in the pollutant loads of many discharges to rivers and estuaries in recent decades, while the impacts of most ocean discharges on beaches have been largely addressed by constructing extended ocean outfalls (see [Water 5.6](#)). (Sydney water documentation- <http://www.sydneywater.com.au>).

The inclusion of the table 2.2 and associated statement regarding "Urban water discharge" is purely to demonstrate the accuracy of the calculations presented in the following tables.

The figure of \$600 per mega litre of water found within the tables can be attributed to the amount Gosford and Wyong Shires were prepared to pay for water from the Hunter (see page 19 option 1.5b in Technical Overview of Gosford-Wyong's Joint Water Supply Scheme"). Logically if Gosford and Wyong Shires were prepared to pay this amount for water, then this amount can be deemed the wholesale price of water. For the purpose of this presentation this figure is therefore deemed the wholesale price of water.

The first table is titled "Water discharge reduction program". IPART will note that a calculation in relation to the total discharge of sewage treatment water into the environment has occurred. The actual figures for each of the four examples (being Sydney-Illawarra, Newcastle, Gosford-Wyong and Other Urban Systems) can be attributed to the figures found in table 2.2 multiplied by a factor of 70%, as quoted in the above statement.

The "Commencement of program" figure serves as the primary total for the scheme. All reductions in relation to the scheme are attributed to this figure. This means that the 43% figure of 248,976 attributed to Sydney-Illawarra in year 20, is a direct calculation of 43% of 436,800 (Commencement of program figure).

The logic behind this calculation is that to constantly adjust the figures to a new total at the end of each year will not result in a 43% overall reduction in discharge by year 20 based upon the "Commencement of program figure" used. It is anticipated that with an ever increasing population the total sewage figure will increase each year. Therefore the target figures to use should be based upon the level of actual sewage recycled each year. As an example, under the *EdwardsHanton* approach Gosford – Wyong would be anticipated to increase sewage recycling by 1,225 ML in the first year.

Water discharge reduction program						
Water reduction program	Total discharge of water from sewage systems				Total Discharge (ML)	Total Revenue (\$)
	Sydney - Illawarra	Newcastle	Gosford - Wyong	Other Urban Systems		
Commencement of program	436,800	51,100	24,500	199,500	711,900	\$427,140,000
Year 1 reductions 5% of total	414,960	48,545	23,275	189,525	676,305	\$405,783,000
Year 2 add 2% = 7% of total	406,224	47,523	22,785	185,535	662,067	\$397,240,200
Year 3 add 2% = 9% of total	397,488	46,501	22,295	181,545	647,829	\$388,697,400
Year 4 add 2% = 11% of total	388,752	45,479	21,805	177,555	633,591	\$380,154,600
Year 5 add 2% = 13% of total	380,016	44,457	21,315	173,565	619,353	\$371,611,800
Year 6 add 2% = 15% of total	371,280	43,435	20,825	169,575	605,115	\$363,069,000
Year 7 add 2% = 17% of total	362,544	42,413	20,335	165,585	590,877	\$354,526,200
Year 8 add 2% = 19% of total	353,808	41,391	19,845	161,595	576,639	\$345,983,400
Year 9 add 2% = 21% of total	345,072	40,369	19,355	157,605	562,401	\$337,440,600
Year 10 add 2% = 23% of total	336,336	39,347	18,865	153,615	548,163	\$328,897,800
Year 11 add 2% = 25% of total	327,600	38,325	18,375	149,625	533,925	\$320,355,000
Year 12 add 2% = 27% of total	318,864	37,303	17,885	145,635	519,687	\$311,812,200
Year 13 add 2% = 29% of total	310,128	36,281	17,395	141,645	505,449	\$303,269,400
Year 14 add 2% = 31% of total	301,392	35,259	16,905	137,655	491,211	\$294,726,600
Year 15 add 2% = 33% of total	292,656	34,237	16,415	133,665	476,973	\$286,183,800
Year 16 add 2% = 35% of total	283,920	33,215	15,925	129,675	462,735	\$277,641,000
Year 17 add 2% = 37% of total	275,184	32,193	15,435	125,685	448,497	\$269,098,200
Year 18 add 2% = 39% of total	266,448	31,171	14,945	121,695	434,259	\$260,555,400
Year 19 add 2% = 41% of total	257,712	30,149	14,455	117,705	420,021	\$252,012,600
Year 20 add 2% = 43% of total	248,976	29,127	13,965	113,715	405,783	\$243,469,800
						\$6,919,668,000

The total revenue payable figure can be attributed to a calculation of total discharge in mega litres multiplied by \$600 per mega litre of freshwater. As demonstrated, this amounts to a figure of 427 million dollars being generated within the commencing year of the scheme. IPART will note that in accordance with the reductions in discharge anticipated the revenue applicable should reduce over the twenty year period. *Despite the reductions the proposed new scheme will generate income in excess of six (6) billion dollars over the twenty year period that can be used for vital infrastructure projects.*

The introduction of penalty unit pricing, if the water credit system is adopted.

As with any program it is only successful if the associated penalties are sufficient enough to enhance the operators of the scheme to keep on target. The proposal of this scheme is to operate a unit based system. Each unit will approximately equal a mega litre of water and be of the value associated with the wholesale price of water (i.e. \$600). The proposed penalty for non compliance with the established targets is a penalty of four points for every mega litre of water discharged above the target figure applicable. In this scenario the State Government would be anticipated to take on this role.

Having such a penalty should encourage and enhance the ability of all sewage treatment facilities within the State, to engage in water reform activities such as using the recycled water for ovals, farming, environmental river flows, industry or other recycling activities.

In the case of Gosford and Wyong Councils there maybe an added opportunity to supply recycled water to each of Vales point and Eraring power stations. IPART are no doubt aware that similar uses of recycled water are being considered in Victoria. However, in the case of Gosford and Wyong, the pursuit of a desalination plant could also serve such a purpose.

With the introduction of a sewage water reduction program and its associated end of year targets, an opportunity exists to introduce a further scheme in relation to "water credits".

Just as the USA has a "carbon credit scheme", it is now possible to consider a "water credit scheme". This report thus far has established a penalty unit price figure and a wholesale water price figure both attributed to \$600. This amount is therefore deemed the wholesale "unit price per mega litre of water" and hence all calculations within this report will be based upon this figure.

Therefore in relation to the proposed sewage reduction program, should any sewage treatment facility reduce its overall discharge of sewage water into the environment by a figure greater then the established end of year target attributed to total recycled sewage water, then it is proposed that for each mega litre of water saved a single water credit will be earned. This will then present the sewage treatment facility with three viable options to consider.

1. The sewage treatment facility could redeem its water credits from the State Government receiving a payment for every water credit earned.
2. The sewage treatment facility could retain the credits for future use in case it could not meet the established targets, thereby reducing the potential payment of future penalty rates.
3. The sewage treatment facility could on sell the credits to another sewage treatment facility, obtaining a price higher then the wholesale unit price of water. The funding received via helping another facility avoid penalty charges could then be reinvested into further improvements to their own system. It would be anticipated that market forces would deem what price was received for such water credits.

In relation to Sydney Water, this could aid in producing an atmosphere of competition amongst each of the sewage treatment facilities, and enhance the overall efficiency of each facility.

It is noted that further legislation changes will be necessary for the proposed water reduction program and associated yearly targets, together with the concept behind "water credits". However, IPART may already have the ability for the establishment of the new levy as a component or condition attributed to the tariff restructuring proposal put forward by each of the three Water Utilities.

As water is such a huge issue in Country NSW, it is anticipated that the Country sewage treatment facilities will be eager to earn the water credits and hence claim the associated rewards. For Country NSW such rewards will enable any returned money to be reinvested into other endeavours for either improved services or capital expenditure.

It is further proposed that any funding received from the water reform program be directed to infrastructure projects that will aid in augmenting the supply of freshwater to our communities.

The role of the Environment Protection Authority (EPA)

One issue that has been identified in relation to one component of this strategy is the comparison with the current EPA pollution licenses.

Notably a proposed sewage water reduction scheme will also entail a reduction in pollution content. However, the new scheme should be viewed as complementing the existing EPA schemes by eroding the ability to simply dump pollutants into the environment via increasing the water content and hence diluting the pollutants to a level that meets the EPA licensing agreements. Besides it is proposed that the new levy only be applied to sewage treatment facilities.

Therefore the EPA would maintain their role in relation to environmental licences and hence pollution breaches via sewage treatment facilities would now not only attract payment of the new levy but could attract fines under existing pollution controls. This combined effort should enhance efforts to reduce effluent flows directly into our river and estuary environments.

The following points are included for information purposes;

- Under our proposal any recycled sewage water used for irrigation, environmental river flows or industry will not attract the new levy and would be deemed a component of the total recycled sewage water.
- As the EPA already has the ability to prosecute polluters and test discharge points for waste content, the uptake of such a new scheme should be palatable to the existing bureaucracy.

Projected comparison in relation to the funding generated under the two schemes mentioned

As noted, Sydney Water has put forward a proposal to pursue a compounding strategy based upon a factor of 6% p.a. for four years. Although the introduction of such a strategy would seem more palatable to the community than that of the proposals contained within the *EdwardsHanlon* approach, hopefully someone has presented IPART with a comparison of the two schemes based upon the same twenty year period. For the purpose of this report a copy of a document designed to compare the two strategies is included.

The title of the Table applicable is "Comparison between the Compounding Strategy and the proposed new levy. IPART will note that for the purpose of this example the compounding strategy has been based upon 6% increases each year for the next twenty years in the case of Sydney Water, and with respect to the Gosford and Wyong proposals, 18% increases each year for four years and then 6% increases until year 20.

Table 1. Comparison between the Compounding Strategy and the proposed new levy (Edwards-Hanlon approach)

Gosford - Wyong with 17,500 ML consumed						Gosford - Wyong under the new projected ML consumed					
Price per kilolitre of water			Income raised (\$)			Price per kilolitre of water			Income raised (\$)		
Year	Compounding Strategy	Proposed Levy	Edwards-Hanlon approach	Compounding Strategy	Proposed Levy	Year	Compounding Strategy	Proposed Levy	Edwards-Hanlon approach	Compounding Strategy	Proposed Levy
0	\$0.76					0	\$0.76				
1	\$0.89	\$0.42	\$1.18	\$4,756,500	\$14,700,000	1	\$0.89	\$0.42	\$1.18	\$3,158,996	\$9,762,900
2	\$1.05	\$0.40	\$1.15	\$10,369,170	\$13,965,000	2	\$1.05	\$0.40	\$1.15	\$6,997,412	\$9,274,755
3	\$1.24	\$0.39	\$1.15	\$16,992,121	\$13,671,000	3	\$1.24	\$0.39	\$1.15	\$12,262,485	\$9,079,497
4	\$1.46	\$0.38	\$1.14	\$24,607,202	\$13,377,000	4	\$1.46	\$0.38	\$1.14	\$19,094,459	\$8,884,239
5	\$1.55	\$0.37	\$1.13	\$27,891,134	\$13,083,000	5	\$1.55	\$0.37	\$1.13	\$21,460,507	\$8,688,981
6	\$1.64	\$0.37	\$1.12	\$31,139,503	\$12,789,000	6	\$1.64	\$0.37	\$1.12	\$23,968,520	\$8,493,723
7	\$1.74	\$0.36	\$1.11	\$34,593,373	\$12,495,000	7	\$1.74	\$0.36	\$1.11	\$26,627,019	\$8,298,465
8	\$1.85	\$0.35	\$1.10	\$38,254,475	\$12,201,000	8	\$1.85	\$0.35	\$1.10	\$29,445,016	\$8,103,207
9	\$1.96	\$0.34	\$1.10	\$42,135,244	\$11,907,000	9	\$1.96	\$0.34	\$1.10	\$32,432,089	\$7,907,949
10	\$2.08	\$0.33	\$1.09	\$46,246,058	\$11,613,000	10	\$2.08	\$0.33	\$1.09	\$35,588,407	\$7,712,691
11	\$2.20	\$0.32	\$1.08	\$50,609,290	\$11,319,000	11	\$2.20	\$0.32	\$1.08	\$38,994,680	\$7,517,433
12	\$2.33	\$0.32	\$1.07	\$55,231,347	\$11,025,000	12	\$2.33	\$0.32	\$1.07	\$42,652,357	\$7,322,175
13	\$2.47	\$0.31	\$1.06	\$60,130,728	\$10,731,000	13	\$2.47	\$0.31	\$1.06	\$46,563,488	\$7,126,917
14	\$2.62	\$0.30	\$1.05	\$65,324,071	\$10,437,000	14	\$2.62	\$0.30	\$1.05	\$50,740,871	\$6,931,659
15	\$2.78	\$0.29	\$1.04	\$70,829,016	\$10,143,000	15	\$2.78	\$0.29	\$1.04	\$55,218,105	\$6,736,401
16	\$2.95	\$0.28	\$1.04	\$76,664,257	\$9,849,000	16	\$2.95	\$0.28	\$1.04	\$59,999,574	\$6,541,143
17	\$3.12	\$0.27	\$1.03	\$82,849,612	\$9,555,000	17	\$3.12	\$0.27	\$1.03	\$65,177,530	\$6,345,885
18	\$3.31	\$0.26	\$1.02	\$89,406,089	\$9,261,000	18	\$3.31	\$0.26	\$1.02	\$68,817,144	\$6,150,627
19	\$3.51	\$0.26	\$1.01	\$96,355,954	\$8,967,000	19	\$3.51	\$0.26	\$1.01	\$74,166,554	\$5,955,369
20	\$3.72	\$0.25	\$1.00	\$103,722,811	\$8,673,000	20	\$3.72	\$0.25	\$1.00	\$79,836,930	\$5,760,111
Estimate of potential income generated under each scheme				\$1,029,300,754	\$229,761,000	Estimate of potential income generated under each scheme				\$799,190,761	\$152,594,127

Note: At present the compounding proposal is based upon 18% increases for a period of four years.
The above calculations are based upon projecting the compounding strategy over a 20 year period.

For the purpose of the above calculations the following information is included.

- The compounding strategy is based upon the proposals put forward by both Gosford and Wyong Councils. The figures represent 18% increases in the cost of freshwater per kilolitre of water projected over four (4) years, followed by 6% increases each year from then after.
- The 17,500 ML figure represents Gosford selling 17,500 ML of freshwater per year and Wyong Council doing likewise. This combined figure of 35,000 ML of freshwater per year is attributed to Table 2.2: Consumption, yield and recycling across major systems (Note: Sydney Water documentation).
- The income raised under our proposed scheme uses the \$600 levy figure multiplied by the initial total sewage processed figure. As per Sydney Water this figure is attributed to around 70% of the total freshwater sold. Hence, for the purpose of this example this figure amounts to 24,500 ML in the first year. Multiply this figure via the sewage produced reaches the \$14,700,000 total.
- The new projection figures use the same water consumption totals as projected in each of the Gosford and Wyong submissions. For 2005/06 Wyong = 11,420 and Gosford = 11,825, combined = 23,245 ML of water sold in the first year. For the purpose of this example the combined consumption figures have been used for the next three years. The final years figure has then represented the projected yearly sales volume for each year from this time onwards.

- In the case of the *EdwardsHanton* approach the same figure used for total water consumption in year one becomes the "Commencement of Program" figure. Hence, the reductions in sewage are based upon this figure. IPART will note that in this example increased sewage output due to the projected increases in overall sewage totals rises from 16,272 ML to 16,533 ML in the second year. However, this does not affect the targeted recycled sewage totals. For this example Gosford and Wyong would be anticipated to be recycling approximately 813.6 ML of sewage in the first year. This represents 16,272 mega litres of sewage being processed x 5% being recycled. In year two the actual figure attributed to total sewage increases to 16,533 ML a year. However, the anticipated recycled sewage figure should only increase by an addition 2% of the original "Commencement of Program" figure, resulting in a new total of 1,139 ML of sewage being recycled in the second year of operation.

The obvious thing for IPART to note is that the income projected under the compounding strategy over twenty years is around three times that projected under the our proposal. Although this may seem to be excellent news, IPART will also note that the bulk of the income produced under the compounding strategy will not eventuate until some years down the track. Therefore it is assumed that the Utilities will be obtaining additional funding for major Infrastructure projects from another source, perhaps borrowing additional funds against forward projection income, or alternatively delaying the actual implementation of the major projects thus far being mooted.

The second thing to note is that under our proposal, the bulk of the income is achieved in the early years of the scheme, thereby allowing for the development of the necessary major Infrastructure projects.

Another point that maybe of interest to IPART, is that under the compounding strategy the actual cost attributed to water continues to climb. Whereas under our strategy it climbs significantly in the initial period but longer term provided the full strategy is implemented the actual cost to consumers reduces. In this regard IPART will note that by year twenty not taking into account any "CPI" increase or other factors, the cost per Kilolitre of water under the Compounding Strategy will be almost triple that of our proposal.

A further point to note is that under our strategy the likelihood of total ownership of the necessary Infrastructure to address our community's water needs will be achievable far sooner, with the less likelihood of Utilities having to borrow additional funding to achieve the necessary infrastructure required to make the improvements proposed.

The Desalination Proposals

It should be noted that Wyong Council has proceed down the path of implementing a desalination plant; this forward thinking should be rewarded.

The following points relate to the proposed desalination plants;

- The concept is to have a portion of the funding attributed to tariff restructuring directed to implementing such proposals.
- Upon completion of each Plant, it is proposed that a tendering process would hopefully obtain interest from the Private Sector to run the actual operation, under a long term lease agreement. It is not the intension of this scheme to replace one government bureaucracy with that of another, eg Sydney Water or Gosford/Wyong Joint Water Authority.
- Consideration be made to link the brine discharge to the existing ocean outfalls.

- The proposed desalination plants are to augment and enhance the supply of fresh water.
- A proportion of the funding obtained under the tariff restructuring should be directed to purchasing the freshwater processed via the proposed desalination plants. If the private sector is to become involved then long term contracts should be designed for the purchase of the freshwater. The jurisdiction for overseeing such agreements needs to be considered as a possible future role for IPART.

The Sewage reduction program

The following strategies relate to the introduction of a sewage reduction program.

- As noted within the Sydney Water proposal, there exists major concerns in relation to the possibility of future competition with "sewage mining", as depicted within the Sydney Water proposal. IPART would be familiar with the current litigation action being pursued by the organisation known as Services Sydney. Under the *EdwardsHanlon* proposal water Utilities like Sydney Water need not be concerned with the impact of possible competition occurring in the near future. Instead of working against the private sector it is proposed to work with the private sector in attempting to achieve an overall goal of sewage recycling that will benefit all stakeholders. Just like Telstra, Sydney Water has an established network. It is therefore proposed that in the case of Sydney Water they consider allowing the private sector to link up to their existing system.
- The strategy would be to have Sydney Water extract the solids from the sewage and then pay a private sector organisation for further processing of the sewage water, achieving a desired level associated with drinkable freshwater. This processed water would then be available to be on sold to either industry, Councils or discharged into the environment.
- It is further proposed in the case of Sydney Water that they consider building additional infrastructure pipelines that would link the private sector treatment facilities to that of the Hawkesbury/Nepean and Georges Rivers. Such pipelines could then be leased back to the private sector enabling a corridor of opportunity to supply the recycled water to other industry and adjoining Councils. The added benefit of such a proposal is that for every mega litre of water discharged into the environment via recycling, could lead to one less mega litre of water being discharged for environmental flows (hence saving additional water).
- The State Government could consider paying such private sectors a fee per mega litre of water discharged into the environment.

One point to note with the final proposal is that the State Government will not be short of funding for such a proposal. It is noted that the State Government already achieves funding via selling bulk supplies of water to Sydney Water, attracts payments in the form of Environmental discharge licenses and receives a dividend from Sydney Water each financial year.

Long term the vision is that Coastal Water Utilities maybe placed in a position of having excess fresh water supplies. Therefore, provision needs to be made to encourage the on-sale of excess fresh water to further in-land Water Utilities at an established wholesale price or less than wholesale price of water. In relation to Sydney Water, this could lead to Warragamba dam having sufficient water to supply the needs of people from the Bathurst area.

The following are the long term goals that can be attributed to the strategy if implemented.

1. Deposit some of the brine discharge at the point of ocean outfalls. Thereby counter attacking the flow of fresh water into the ocean, hence improving the breakdown of sewage. Note: Shark bay in WA is three times the salt content of the open ocean and has a thriving population of marine life.
2. Supply enough fresh water to meet the demands of the Sydney community from the five coastal dams and the proposed large scale desalination plant, freeing up the demand of water from Warragamba.
3. Warragamba dam could commence to divert its water back inland and aid our farmers and communities in the Bathurst area.
4. The proposed Welcome Reef dam is supported, with the only change being diversion of the water inland, instead of using this as a future supply for Sydney.
5. All Water Utilities be encouraged to on-sell excess water to inland Councils at a wholesale unit price. This should encourage other Councils to get involved with building pipelines to inland dams and weirs. This may even encourage private enterprise to get involved with such proposals, which would only enhance to uptake of the concepts proposed.
6. A pipeline to the mouth of the Georges and Hawkesbury Rivers via the sewage treatment system for recycled freshwater and environmental flows.
7. The incorporation of a bench price for a mega litre of water to be applied to all commercial water syphoning activities. The levy being payable to the appropriate Local Government. This would aid in generating additional income for local councils to use in infrastructure projects or even road improvement (hence aiding in reducing our road toll).

It may pay to reflect upon reporter Quentin Dempsters' presentation of our current water crisis.

"Negligible falls in the dam catchment have already resulted in compulsory water restrictions for the 4 million residents of greater Sydney (Broadcast: 23/04/2004 - Reporter: Quentin Dempster ABC)".

In another recent news article attributed to the Central Coast Express Advocate (9 Sept 2004), the Boral organisation are reported to be using water in the range of 50 million litres a year for the production of sand mining. If a water fee was to be applicable to the syphoning of ground, river, and creek water extraction for Commercial use based upon mega litre use, then this would supply Local Government with an alternative source of income to be used for other endeavours.

In relation to the Central Coast, it has a finite area available for the construction of new dams or even new weirs, which place the Central Coast in a unique position as we are not supported by a multitude of coastal dams yet, have a growing population. This is the reason that the Central Coast would be the ideal location for the development of a pilot scheme.

Tariff restructuring

The introduction of such a levy that justifies increasing the actual cost attributed to a kilo litre of water could be likened to increasing the cost of fuel. Notably upon fuel increasing in price it ultimately leads to a reduction in the overall consumption of the product as consumers strive to only use what is required. With this in mind, it is anticipated that the impact upon consumption for freshwater by consumers should reduce if the tariff is permitted to increase to the levels projected by the *EdwardsHanlon* approach.

IPART will note that Sydney Water already has in place considerable mechanisms established to aid less fortunate consumers. However, should a shift to pay by use be adopted then such an outcome could disadvantage certain groups. The following strategies are designed to address these issues.

- What ever percentage increase in the price of water that IPART agrees to implement, provision is made to implement a similar subsidised component. As an example, should the price of freshwater per kilo litre of water be permitted to increase by a factor of 15%, then a subsidised figure of 12.5% should be considered for those less fortunate (such as those in possession of a Commonwealth Health Care Card, Pensioners etc).
- The secondary group identified as being disadvantaged are those with large families on low incomes. IPART will note that contained within the Sydney Water submission is an example attributed to the anticipated additional water that is used by such large families. To consider imposing restrictions or additional consumption fines against heavy users will only disadvantage such families. It is therefore proposed that provision is also considered to establish a link with the per person usage as tabled by Sydney Water. It is further proposed that each of the Water Utilities establish a mechanism whereby such affected families can apply for assistance in relation to a similar subsidy as requested above. Notably this should be done on a case by case situation, with both family income and household membership being factors to consider.

The Sydney – Illawarra Comparison

Sydney - Illawarra						Sydney - Illawarra under the new projected ML consumed					
Year	Price per kilolitre of water			Income raised (\$)		Year	Price per kilolitre of water			Income raised (\$)	
	Compounding Strategy	Proposed Levy	Edwards/Hanlon approach	Compounding Strategy	Proposed Levy		Compounding Strategy	Proposed Levy	Edwards/Hanlon approach	Compounding Strategy	Proposed Levy
0	\$1.01					0	\$1.01				
1	\$1.07	\$0.42	\$1.43	\$37,814,400	\$262,080,000	1	\$1.07	\$0.42	\$1.43	\$28,730,944	\$199,180,600
2	\$1.13	\$0.40	\$1.41	\$77,697,664	\$248,976,000	2	\$1.13	\$0.40	\$1.41	\$58,202,225	\$189,221,750
3	\$1.20	\$0.39	\$1.40	\$120,365,924	\$243,734,400	3	\$1.20	\$0.39	\$1.40	\$96,309,739	\$185,238,144
4	\$1.28	\$0.38	\$1.39	\$165,423,479	\$238,492,800	4	\$1.28	\$0.38	\$1.39	\$138,965,723	\$181,254,528
5	\$1.35	\$0.37	\$1.38	\$213,163,288	\$233,251,200	5	\$1.35	\$0.37	\$1.38	\$179,057,162	\$177,270,912
6	\$1.43	\$0.37	\$1.38	\$263,767,485	\$228,009,600	6	\$1.43	\$0.37	\$1.38	\$221,554,688	\$173,287,296
7	\$1.52	\$0.36	\$1.37	\$317,407,934	\$222,768,000	7	\$1.52	\$0.36	\$1.37	\$266,522,865	\$169,303,680
8	\$1.61	\$0.36	\$1.36	\$374,266,810	\$217,526,400	8	\$1.61	\$0.35	\$1.36	\$314,384,121	\$165,320,064
9	\$1.71	\$0.34	\$1.35	\$434,537,219	\$212,284,800	9	\$1.71	\$0.34	\$1.35	\$365,011,264	\$161,336,448
10	\$1.81	\$0.33	\$1.34	\$498,423,852	\$207,043,200	10	\$1.81	\$0.33	\$1.34	\$418,676,036	\$157,352,832
11	\$1.92	\$0.32	\$1.33	\$566,143,688	\$201,801,600	11	\$1.92	\$0.32	\$1.33	\$475,560,694	\$153,369,216
12	\$2.03	\$0.32	\$1.33	\$637,926,704	\$196,560,000	12	\$2.03	\$0.32	\$1.33	\$535,850,432	\$149,385,600
13	\$2.15	\$0.31	\$1.32	\$714,016,707	\$191,318,400	13	\$2.15	\$0.31	\$1.32	\$599,774,034	\$145,401,984
14	\$2.28	\$0.30	\$1.31	\$794,572,109	\$186,076,800	14	\$2.28	\$0.30	\$1.31	\$672,524,572	\$141,418,368
15	\$2.42	\$0.29	\$1.30	\$880,186,636	\$180,835,200	15	\$2.42	\$0.29	\$1.30	\$739,340,142	\$137,434,752
16	\$2.57	\$0.28	\$1.29	\$970,791,246	\$175,593,600	16	\$2.57	\$0.28	\$1.29	\$815,464,646	\$133,451,136
17	\$2.72	\$0.27	\$1.28	\$1,066,853,121	\$170,352,000	17	\$2.72	\$0.27	\$1.28	\$896,195,621	\$129,467,520
18	\$2.88	\$0.26	\$1.27	\$1,168,678,709	\$165,110,400	18	\$2.88	\$0.26	\$1.27	\$981,690,114	\$125,483,904
19	\$3.06	\$0.25	\$1.27	\$1,276,613,830	\$159,868,800	19	\$3.06	\$0.25	\$1.27	\$1,072,365,617	\$121,500,288
20	\$3.24	\$0.25	\$1.26	\$1,391,025,060	\$154,627,200	20	\$3.24	\$0.25	\$1.26	\$1,168,461,050	\$117,516,672
Estimate of potential income generated under each scheme				\$1,396,976,000	\$4,096,310,400	Estimate of potential income generated under each scheme				\$1,040,707,493	\$3,113,496,904

Note: At present the compounding proposal is based upon 6% increases for a 20 year period.
The above calculations are based upon projecting the compounding strategy over a 20 year period.

For the purpose of the above calculations total water consumption for Sydney Water was attributed to 624,000 mega litres per year. For the new projected figures a similar calculation was used based upon the submissions put forward via Gosford and Wyong. This had consumption reducing via 24% in years 1 and 2, 20% in year 3 and 16% in year 4. The above table takes this calculation into consideration.

Hence as the total water consumed is anticipated to be less so too would the anticipated sewage production. Therefore the total sewage figure used in the first instance was 436,800 mega litres a year and in the new proposed version only 331, 968 mega litres.

Unfortunately the State Government has not announced any new sewage reduction program nor given any indication that the water credit scheme is to be adopted. On the other hand feedback has been received that the ideas and concepts presented have at least generated considerable discussion, hopefully this will lead to a positive outcome.

This document thereby supports the claims for tariff restructuring with the provision for utilising the additional funding to implement infrastructure that will address all stakeholder water needs without having to get into huge debt to do so.

It is anticipated that if rainfall returns to anywhere near the previous levels, that the additional income generated be directed to advancing some of the infrastructure projects thus far mooted.

My final point is that there is going to be an increased need for Federal and State Government assistance to our communities in the west. The Coastal communities are going to be faced with the situation of supporting such endeavours as this or risk losing future agriculture from these inland areas.

This report is now presented for your consideration.

Yours sincerely

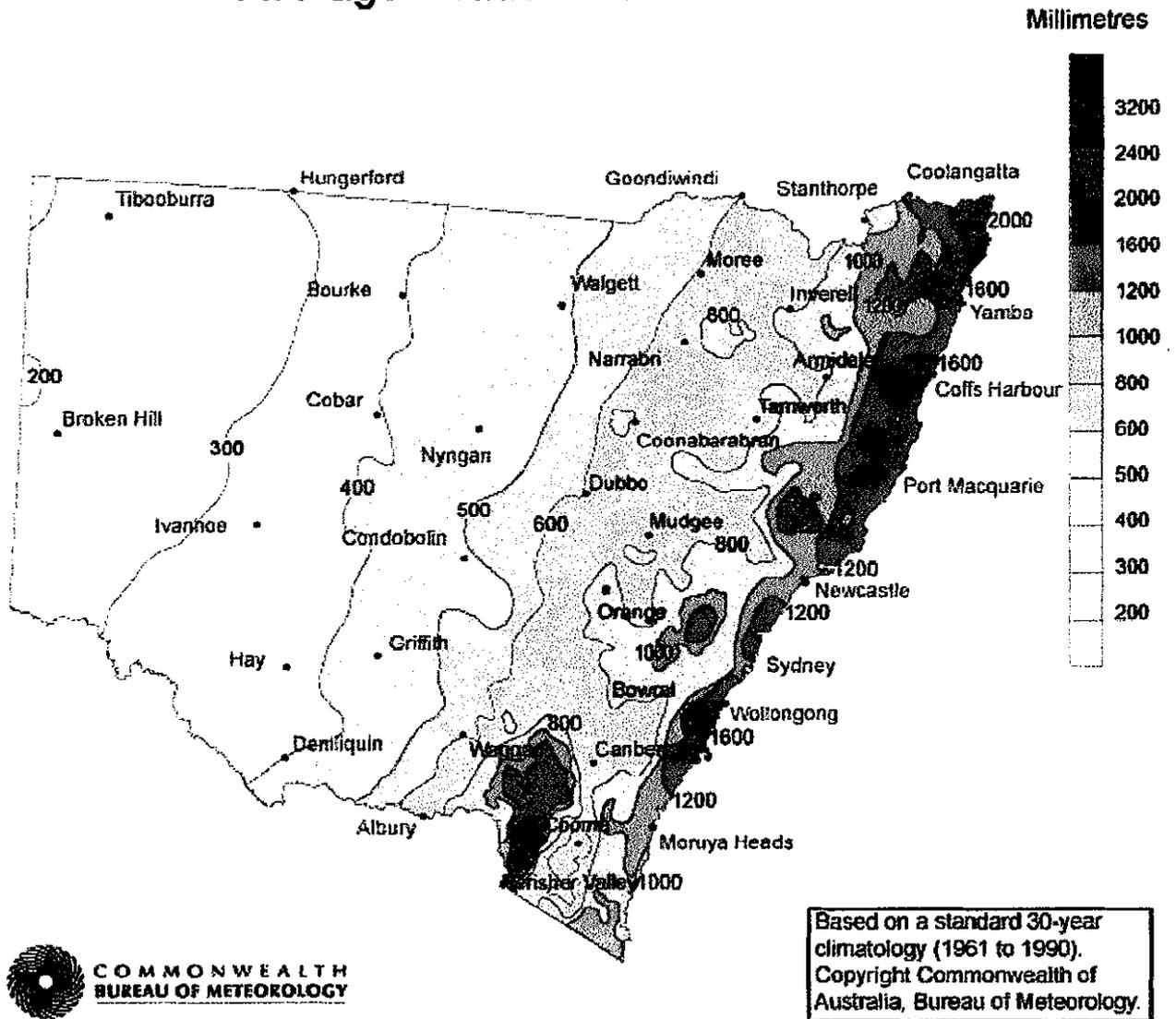
Rodney Edwards
23rd December 2004

Other concerning issues with water are;

- The annual catchments of our dams are not meeting the needs of our community.
- Inland dams get nowhere near the annual rainfall falling on the coast.
- Syphoning the table water can be advantages but should only be viewed as a temporary band-aid solution.

The final attachment is a copy of the annual rainfall chart for normal rainfall.

Average Rainfall - Annual



References:

New South Wales State of the Environment 2003 <http://www.epa.nsw.gov.au/soe/soe2003/>

Upon connecting to this web page under the heading “Resources” choose the option “Tables” under the heading “Human Settlement choose the option “Table 2.2 Consumption, yield and recycling across major systems”.

If you scroll down the page you will also come across the “Urban water discharge” paragraph found on page 4 of this document.

Bibliography:

1. NSW Environment Protection Authority <http://www.epa.nsw.gov.au>
2. NSW Independent Pricing & Regulatory Tribunal <http://www.ipart.nsw.gov.au/>

Submissions – under the Review of Metropolitan Water Agency Prices
from 1 July 2005 – Issues Paper

- 08/08/2004 [Banyard, R - S6216 \(Individual\)](#)
- 19/07/2004 [Banyard, Rick - S6193 \(Individual\)](#)
- 31/08/2004 [Charlestown Golf Club Limited - S6240 \(Lorraine Baggs\)](#)
- 23/12/2004 [EWON - S6456 \(Clare Petre\)](#)
- 20/10/2004 [Gosford City Council - S6313 \(Peter Wilson\)](#)
- 16/12/2004 [Hawkesbury-Nepean Catchment Management Authority - S6441 \(John Klem\)](#)
- 17/08/2004 [Hayes, Peter - S6215 \(Individual\)](#)
- 30/11/2004 [Higgins, R - S6429 \(Individual\)](#)
- 19/10/2004 [Hunter Water Corporation - S6312 \(Kevin Young\)](#)
- 19/11/2004 [Jack, Grant - S6421 \(Individual\)](#)
- 09/12/2004 [Jennings, W & F - S6432 \(Individual\)](#)
- 07/12/2004 [Key, A - S6434 \(Individual\)](#)
- 24/12/2004 [Local Government Association of NSW - S6458 \(Bill Gillooly\)](#)
- 29/08/2004 [Maria - S6266 \(Individual\)](#)
- 09/12/2004 [MS- S6430 \(Individual\)](#)
- 17/11/2004 [NG- S6433 \(Individual\)](#)
- 16/11/2004 [Owen, James - S6395 \(Individual\)](#)
- 21/12/2004 [PIAC - S6455 \(Elissa Freeman\)](#)
- 18/11/2004 [Property Owners Association of NSW - S6420 \(GP Keleny\)](#)
- 23/12/2004 [Services Sydney Pty Ltd - S6459 \(John van der Merwe\)](#)
- 12/11/2004 [Sydney Catchment Authority - S6382 \(Graeme Head\)](#)
- 12/11/2004 [Sydney Water Corporation - S6381 \(David Evans\)](#)
- 22/12/2004 [Wood, W - S6457 \(Individual\)](#)
- 19/10/2004 [Wyong Shire Council - S6311 \(Kerry Yates\)](#)

3. Sydney Water <http://www.sydneywater.com.au/>

Appendix A

Recommended Readings

- 19/07/2004 [Banyard, Rick - S6193 \(Individual\)](#) *Presentation of alternative strategies for IPART to consider.*
- 23/12/2004 [EWON - S6456 \(Clare Petre\)](#) *Energy & Water Ombudsman NSW, highlights the need for a fair system of water pricing including support for those on low incomes and large families (an important read).*
- 20/10/2004 [Gosford City Council - S6313 \(Peter Wilson\)](#) *Supports tariff restructuring in relation to the price per Kilo litre of water (seeking 18% + CPI each year for four years – note current price per KL water is \$0.755).*
- 16/12/2004 [Hawkesbury-Nepean Catchment Management Authority - S6441 \(John Klem\)](#) *Highlights the need for sewage reform and continued environmental flows in our river systems*
- 30/11/2004 [Higgins, R - S6429 \(Individual\)](#) *Highlights the lack of water meters on units and villas, hence the fairness of the existing system*
- 19/10/2004 [Hunter Water Corporation - S6312 \(Kevin Young\)](#) *Supports tariff restructuring in relation to the price per Kilo litre of water (seeking 3% + CPI each year for four years – note current price per KL water is \$1.01 over 50,000 is at \$0.93.1). Hunter Water unlike most other water utilities has a huge supply of freshwater, which raises the point of aiding other utilities (an important read).*
- 09/12/2004 [Jennings, W & F - S6432 \(Individual\)](#) *Example attributed to a large family and the impact upon water pricing.*
- 24/12/2004 [Local Government Association of NSW - S6458 \(Bill Gillooly\)](#) *An important submission that highlights a number of important issues that need to be considered if tariff restructuring is to occur (well worth reading).*
- 09/12/2004 [MS- S6430 \(Individual\)](#) *Example attributed to a large family and the impact upon water pricing.*
- 17/11/2004 [NG- S6433 \(Individual\)](#) *an important submission as this highlights the hidden subsidised use of water. People often forget that Business and Institutions such as Schools etc. provide water services such as toilets and water for drinking. Subsidies such as this reduce the amount a working family would use compared to that of a family restricted to the home.*
- 21/12/2004 [PIAC - S6455 \(Elissa Freeman\)](#) *Public Interest Advocacy Centre, highlights the need for a fair system of water pricing including support for those on low incomes and large families (an important read).*
- 18/11/2004 [Property Owners Association of NSW - S6420 \(GP Keleny\)](#) *Highlights the lack of water meters on units and villas, hence the fairness of the existing system*
- 23/12/2004 [Services Sydney Pty Ltd - S6459 \(John van der Merwe\)](#) *An example of a potential major player who could aid in reducing the effects of sewage on our environment and at the same time increase the volume of freshwater available to the community (well worth reading).*
- 12/11/2004 [Sydney Catchment Authority - S6382 \(Graeme Head\)](#) *Supports tariff restructuring in relation to the price per Kilo litre of water.*

- o 12/11/2004 [Sydney Water Corporation - S6381 \(David Evans\)](#) Supports tariff restructuring in relation to the price per Kilo litre of water (seeking 6% + CPI each year for four years – note current price per KL water is \$1.01).
- o 22/12/2004 [Wood, W - S6457 \(Individual\)](#). This submission raises questions on price uniformity in relation to sewage charges.
- o 19/10/2004 [Wyong Shire Council - S6311 \(Kerry Yates\)](#) Supports tariff restructuring in relation to the price per Kilo litre of water (seeking 18% + CPI each year for four years – note current price per KL water is \$0.755).

Appendix B

This appendix defines the concept attributed to the wholesale price of freshwater and the proposed new levy as presented within this report.

Wholesale Price of Freshwater

The official wholesale cost of bulk water can be attributed to the price Sydney Catchment Authority charges for bulk water. At present this represents a figure attributed to \$0.09 cents a kilo litre of freshwater. Note this is the bulk water price that is charged by the SCA to Sydney Water and a few Local Government Councils. It is not the intension of this report to alter this figure.

To avoid confusion in this regard perhaps the official bulk water figure can be considered as the bulk natural freshwater resource figure which is also used for agricultural irrigation.

EdwardsHanlon proposal is for IPART to consider the establishment of a new “wholesale price for freshwater attributed to on-selling of freshwater from one Water Utility to that of another Water Utility”. As in the example presented;

Hunter Water Corporation would be limited to on-selling its excess freshwater to the Joint Venture of Gosford and Wyong Councils at a whole sale price established by IPART (as in this example – no higher then \$0.60 KL).

Proposed new levy

The example presented within the *EdwardsHanlon* approach used the figure attributed to \$600 for a mega litre of water. In actual fact the calculations presented will work for any figure the IPART considers appropriate to address our infrastructure needs. Notably, a reduced amount (eg. \$400) will lesson the impact of the levy.

Table 1.2 Comparison of the cost of water, <i>EdwardsHanlon</i> @ \$400 levy (per kilolitre of water) Gosford – Wyong example 9% for first 4 years then 6% increases from year 5								
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8
Compounding Strategy	\$0.82	\$0.90	\$0.98	\$1.07	\$1.13	\$1.20	\$1.27	\$1.35
<i>EdwardsHanlon</i>	\$1.01	\$1.00	\$0.99	\$0.98	\$0.98	\$0.97	\$0.97	\$0.96