

Innovative Measures Work Group

**REPORT TO THE SUSTAINABLE WATER INFRASTRUCTURE  
TASK FORCE**

JULY 22, 2008.

**By: E. Charles Wunz, P.E., DEE**

Mr. Chairman, honorable elected and appointed officials, members of the Task Force, and fellow Pennsylvanians, I am pleased to report on the activities of the Innovative Measures Work Group. My name is Chuck Wunz. I am originally from North East, PA and live in Lewisburg. I am a registered professional engineer in Pennsylvania and six other states and I am a Diplomate of the American Academy of Environmental Engineers.

The Innovative Measures Work Group has met three times, once at Rachel Carson, once at the University Area Joint Authority, the most innovative municipal authority in Pennsylvania, and once again in Harrisburg. Attendance has been around 25 for the first meeting, and about 16 members at each of the last two meetings and cooperation and support and effort of all the members has been first rate as has the support been from Paul Zeph of DEP.

We knew from the very start that the Innovative Measures Work Group was a unique undertaking, one whose recommendations were likely to be addressed by one of the other four Work Groups. For example, a recommendation from us on changing Act 537 or in adopting regulations for water system planning similar to Act 537 would be taken up by the Legislation and Regulation Work Group and a recommendation on rates would be taken up by the Sustainable Finance Work Group.

After we developed some 70 or so innovative recommendations in twelve different categories, Marcus Kohl and Nicky Kasi did, in fact, assign many of our recommendations to the other Work Groups for further development. Our thanks go out to them. We are pleased with that approach and will develop a detailed report only on the items that remain with the Innovative Measures Work Group as listed at the end of this report. Nonetheless, the Innovative Measures Work Group will make it clear in our report of the importance of some of the issues assigned to the other Work Groups for development. Task Force members will then know of the recommendations of two different work groups, ours and the Work Group to which final development of the issue was assigned.

During the War of 1812, at the end of the Battle of Lake Erie, Commodore Peary reported that he had "met the enemy and they are ours." Sometime later, in a comic strip, Pogo reported that he had "met the enemy and he is us." I will again repeat Pogo's report. The Innovative Measures Work Group does believe that the enemy is us, or at least how we have managed our water infrastructure.

**The Innovative Work Group recognizes the concept of “luxurious consumption”. That is, we, as a society, allow water infrastructure be provided at considerably more than the lowest possible cost to society. Grant and loan programs reward the poorly managed systems, not the best managed ones. Incentives for innovation are few. Small non-regional systems are promoted, not regional solutions. We also recognize that there are two rate-making approaches for water and sewer service in Pennsylvania, one that seeks the highest allowable rates, that is, those regulated by the PUC and one that seeks (with good intentions) the lowest possible rates, that is, many, but not all, municipal and municipal authority systems. It is no secret where the larger sustainable infrastructure problems exist.**

**We continue to feel that the most important issue is full and true cost of business rate making with a safety net for those least able to pay sustainable rates. We also believe that it is extremely important to base future state funding (and the benefit to society clearly supports state and federal funding and not exclusive reliance on ratepayer revenues) on the requirement to pay sustainable rates and with that the concepts of public education of the public and adequate training of those responsible for maintaining the infrastructure. Along with that concept would be a clearly stated and understood basis for providing grants and loans only to the level needed to pay the sustainable affordable rate. The calculation of the sustainable rate as a percentage of median family income or median household income should be well known. If a system simply cannot achieve a sustainable and affordable rate, it would need to be regionalized. This was accomplished with many small water systems in the 1990’s.**

**But there are many other important issues, on the water side one is the continued proliferation of small, unsustainable water systems. Whatever number of water systems we have, 1,000, 2,000, 3,000 or whatever, isn’t that enough? Is it not time for a moratorium on any new independent water systems?**

**On the wastewater side, it is that issue (Do we not have enough wastewater systems?) and it is the issue of regulatory inflexibility. If trading for water quality compliance is a good idea and can achieve a lower cost of compliance, why is trading not required?**

**Why do we allow ourselves the luxury and extra expense of not making trading mandatory? Why do we not promote real time permit limits? How many permit limits are based on maximum and minimum conditions that will never coincide?**

**For example, Q7-10 low receiving stream flow is the basis for many water quality based limits. Q7-10 low flow in a river or a stream occurs only about 1 % of the time.**

**But Q7-10 low flow never occurs when wastewater treatment plants flows are at their highest, but that is always the modeling assumption. Why would ammonia limits for Harrisburg be set assuming Q7-10 low flow in the Susquehanna with the simultaneous assumption that the maximum design flow would occur not only from Harrisburg but also from 6 other neighboring treatment plant discharges? The “real time effluent limits” may scare regulators, but they are much more representative of the real world than the 1970’s idealistic approach of Q7-10 and a single point of compliance. If summer and winter limits for fecal coliform and ammonia are recognized, why not expand that concept? Experimentation with this approach is recommended.**

**Our identification of innovative measures continues. The recent research on side stream treatment for nutrient removal from New York City, Calgary, and Washington Blue Plains looks so promising that I am tempted to recommend that all Act 537 Planning for nutrient removal should require the analysis of side stream and not full stream treatment and that all Chesapeake Bay projects seeking state funding should be re-examined for side stream treatment. Side stream treatment at Harrisburg may, for example, result in a “treat all, trade none” nutrient removal project costing only 26 % of the full stream treatment option.**

**And because innovation opportunities continue, we recommend that an Innovative Measures Work Group be a standing committee supporting DEP just like CAC and SAC.**

**It is clear also from our work that the Innovative Measures Work Group may include one or more dissenting views. Those views are welcomed as they provide additional information to the Task Force.**

**In addition to commenting on concepts delegated to the other Work Groups, our report will address the following:**

### **Design and Technology**

Lengthen planning periods to 50-years with each 5-year time frame resulting in an action plan. Require capital project planning and reporting. Provide capacity for only 5 or 10 years into the future. This is similar to the UAJA model.

Establish maximum I/I allowances. Provide no funding if I/I exceed a certain threshold.

Mandate pressure sewers in small sewer systems where I/I can be a significant portion of the flow. For example, an 8-inch pipe can carry over 1 MGD and one leak in a gravity system can contribute that amount of I/I. That flow would far exceed the capacity of a

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100,000 GPD treatment plant. Pressure sewers have no I/I. A smaller WWTP would result.

Require pressure sewers and water reuse in all Special Protection watersheds.

Require water reuse in all new systems similar to several other states and address any liability issues related to water reuse so it will be encouraged and not burdened by the threat of lawsuit.

### **Law/Regulations**

Mandate trading as a lower cost compliance solution everywhere it is viable.

Where trading is allowed establish stipulated penalties for exceeding a cap as a funding method for compliance projects.

Require lowest use water fixtures and encourage water fixture trade-in programs.

Require all new construction to meet low flow, water reuse, and green design standards plus a 10% retrofit requirement on existing housing.

Use wastewater to replenish groundwater.

### **Public Education**

Consider how water reuse, conservation, and low impact development would impact the social order and create a public education program to address those impacts.

### **Stormwater Pollution and Better Use of and Protection of “Green” Infrastructure**

Encourage the formation of SW enterprise agencies within the water and wastewater community to integrate planning, services, and customer bases. After all, it is all just water.

Provide statewide support for tree planting and for rain gardens.

Use greenways to recycle and reuse water.

Better utilization of existing and creation of new wetlands to assist with retention, treatment and infiltration.

Require forested buffers on all streams

There are better practices for erosion control for sediment runoff reduction than silt fences, such as silt socks are excellent filters, especially if put behind fences

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Need “green” solutions that will help reduce duration and frequency of storm events in combination with “gray solutions. “Green” solutions are those that minimize stormwater getting to sewer system like rain barrels, rain gardens, plantings along streets, porous pavement. “Gray” solutions are those linked to construction of infrastructure expansion and improvement. (Costs by ALCOSAN estimated at \$60 million now, \$10 million ten years ago)

The width of the forest buffer is important due to the filtration processes. The more bottom surface area for filtration and pollutant assimilation for nitrogen and organic matter, the better. Stream systems can process between 25 and 75% of nitrogen added to the system.

Non-structural solutions can include sustainable land use planning by municipalities and judicious implementation of existing statutes and ordinances to drive the location of infrastructure. Conscientious ground and surface water protection policies and strategies must be implemented in the very near future, or all water will require treatment. A sustainable approach to drinking water supply should not depend on the assumption that all water will require treatment. It is unwise to assume that treatment technology in the future will be able to correct and treat all water pollution.

The protection of pristine groundwater supplies is the most sustainable and cost-efficient approach to long-term potable water supply. This would involve protecting groundwater by purchasing land or limiting construction in groundwater recharge areas.

### **Energy**

Establish a 5-year moratorium on delivery of bio-solids to landfills in favor of generating waste to energy.

Establish a 5-year moratorium on aerobic bio-solids digestion and require anaerobic digestion with energy recovery.

End of report