Alliance For A Clean Environment (ACE) December, 2011

THE SCHUYLKILL RIVER

Is A Vital Drinking Water Source For Almost 2 Million People From Pottstown To Philadelphia.

Limerick Nuclear Plant Operations Result In Unprecedented Threats And Harms To Ecosystems, Fish, Wildlife, Public Health. Limerick's Discharges Can Increase Costs For Drinking Water.

- **As Long As Limerick Nuclear Plant Continues To Operate Harms Will Increase, Threatening The Viability Of This Vital Drinking Water Source.**

Since 2006 ACE investigated Limerick Nuclear Plant's unprecedented harms and threats to the Schuylkill River. Evidence compiled by ACE suggests that Limerick's continuous radioactive and other toxic discharges, along with significant depletion from Limerick's cooling towers, could eventually jeopardize the viability of safe drinking water for almost two million people and many businesses that require water from the Schuylkill River to operate.

Evidence and conclusions in this report are based on reviews conducted by ACE of Limerick Nuclear Plant's 2011 NPDES Permit Renewal Request to DEP (Permit No. PA0051926), Exelon's 2009 Radiological Report To NRC, Exelon's Current Docket Requests to DRBC, Exelon's Plans For "Uprates", and Exelon's Application for Relicensing Until 2049.

Threats and Harms Summarized In This Section Include:

1. **Radioactive Wastewater Discharges 24/7**
2. **Heated Discharges 24/7**
3. **Drastic Increases In Limerick's Other Toxic Discharges**
4. **Contaminated Unfiltered Mine Water Pumped Into The River To Supplement The Flow For Limerick Operations**
5. **Limerick's Cooling Towers Causing Major Depletion Each Year**
6. **Exelon Efforts To Minimize and/or Eliminate Safeguards, While Increasing Dangerous Discharges**

CONCLUSIONS:

ACE urges everyone to review details on the many serious threats in this report, give them full common sense consideration, and speak up now. Limerick's unprecedented threats to the Schuylkill River and public drinking water can be minimized through filtration and stopped by closing Limerick. Your voice is critical to stopping Limerick's unprecedented assault on the Schuylkill River.

Contact all elected officials before decisions are made on Exelon's requests.

- **Urge elected officials to demand that DEP, DRBC, and NRC require the utmost precaution and prevention until Limerick closes.**

Consider ACE suggestions for actions needed by each agency that makes decisions impacting the Schuylkill River and public drinking water.

1. **DEP should require filtration, instead of drastically increasing pollution for Limerick's NPDES permit limit.**
   - If Exelon refuses to filter Limerick's discharges into the Schuylkill River, DEP should levy significant fines on Exelon for all past, present, and future Limerick violations until filtration looks like a bargain.
   - Either Exelon pays to filter or the public pays with their health and pocketbook. Exelon is making a fortune operating Limerick and should not force the public to pay more for water.
   - Why should the public pay more for water because Exelon won't filter Limerick's discharges?
2. **DEP and DRBC should say NO to Exelon's request to eliminate temperature restrictions.**
   - This can avoid permanent damage to Schuylkill River ecosystems and minimize threats to wildlife and the public using the river for recreation.
3. **DEP and DRBC should say NO to Exelon's requests to reduce low flow restrictions.**
4. **DRBC should deny Exelon's Docket Requests to pump more unfiltered contaminated mine water into the Schuylkill River.**
   - If Exelon wants to continue to pump toxic mine water into a drinking water source to operate Limerick, then Exelon should be required to filter the mine water first.
5. **DRBC should say NO to reducing monitoring requirements.**
   - Low flows concentrate toxics which are discharged into the river. Without more frequent monitoring these concentrations will go undetected.
6. **NRC should say NO to relicensing Limerick Nuclear Plant for 20 more years, until 2049, based on what will happen to drinking water for almost two million people.**
   - Each year Limerick continues to operate, the Schuylkill River will become more depleted and more poisoned.
   - Limerick Nuclear Plant should be closed, minimally when its 40-year license expires in 2029.
   - The longer and harder the plant is run, the more risk there will be for water shortages and water too poisoned to be used safely, for almost two million people from Pottstown to Philadelphia.

Exelon's Requests To Reduce Low Flow Restrictions And Drastically Increase Pollution Discharges To Operate Limerick Will Lead To Costly Consequences For The Public.

Health Threats and Costs Will Increase For Water Customers Of Pottstown, Phoenixville, American Water Works, Aqua PA, and Philadelphia.

Why Harms and Threats Will Increase

1. **Exelon, Limerick's Owner, Is Asking The Delaware River Basin Commission (DRBC) To Increase Contamination While Reducing and Eliminating Safeguards:**
   - ✓ **Increase Contaminated Mine Water Pumping Into The Schuylkill River For Supplementation**
   - ✓ **Reduce Low-Flow Restrictions**
   - ✓ **Eliminate Temperature Restrictions**
   - ✓ **Reduce Monitoring Requirements**
   - ✓ **Eliminate Public Participations**

2. **Exelon Is Trying To Run Limerick Nuclear Plant Harder With "Uprates" and Longer With "Relicensing", Both Increasing Threats and Harms To The Schuylkill River.**

3. **Exelon asked the PA Department of Environmental Protection to drastically increase toxic discharge limits into the Schuylkill River from Limerick Nuclear Plant.**

4. **Cooling towers will continue to deplete the Schuylkill River by billions of gallons each year, concentrating all the dangerous radionuclides and other toxics discharged from Limerick and pumped from the mines.**

Why Health Threats and Costs Will Increase

- **As radionuclides and other toxics discharged into the river concentrate because of depletion, drinking water will become more contaminated and those using the river for recreation will be more at risk.**

- **Water treatment companies do continuously monitor for all radionuclides associated with Limerick Nuclear Plant's energy production. Increasing levels of radionuclides will go undetected and unaddressed. Only some water companies use filtration, and they only remove a fraction of radionuclides discharged from Limerick.**

- **The most dangerous mine water toxics are not continuously monitored, reported, or filtered out.**

- **In fact, Exelon, the company with a vested interest in the outcome, that has shown it can't be trusted to provide accurate and full disclosure on water issues, is completely in charge of all monitoring, testing, and reporting.**

- **Even when contamination is detected by lax water treatment plant monitoring, instead of filtering out toxics, they add more toxic chemicals to treat the water. The more toxics to treat the more cost for treatment, which eventually increases costs for water customers.**

- **Some toxic discharges associated with Limerick operations damage water treatment equipment, costing water treatment systems and their customers more money.**

- Lower Schuylkill River Flows Caused By Limerick Operations Will Concentrate Radiation and Other Dangerous Discharges, Leading To Increased Health Threats and Public Costs For Water Treatment.
- Lower Flows Caused By Limerick's Cooling Towers Can Lead To Severe Drinking Water Shortages, Especially In Times Of Drought.

A RECIPE FOR A DRINKING WATER DISASTER

Water Worries Increase Every Day Limerick Operates

How Long Will The Schuylkill River Remain A Safe, Viable Drinking Water Source? How Can The Schuylkill River Continue to Sustain Limerick Nuclear Plant's Unprecedented Depletion and Contamination and Still Remain A Safe Usable Source of Water?

Limerick's serious threats to the Schuylkill River water supply will continue and increase as long as Limerick continues to operate. Limerick's current 40-year license expires in 2029. Exelon wants 20 more years until 2049, but evidence suggests that could completely destroy the drinking water supply for almost two million people.

Will There Be Enough Safe Drinking Water For Almost 2 Million People, Even Until 2029 When Limerick's Current License Expires?

Every Day Limerick Operates The Schuylkill River Becomes:

- ✓ **More Radioactive And More Heated**
- ✓ **More Contaminated With Many Other Dangerous Toxics**
- ✓ **More Depleted From Cooling Towers**
- ✓ **More Dangerous From Concentrations of Toxics**

After decades of operation, there has never been an independent comprehensive study to try to honestly estimate answers to the following questions, yet Exelon wants "Uprates" to run Limerick harder and "Relicensing" to run Limerick longer, which both further jeopardize the water supply.

- ✓ **Will There Be Enough Water For Almost 2 Million People?**
- ✓ **Will The Water Become Too Radiated and Heated For Safe Use?**
- ✓ **Will Mine Water Pumping Into The River To Supplement The Flow For Limerick Operations, Contaminate The River Too Much For Safe Use?**

Meltdown Threats Are Increasing. Limerick Is Extremely Vulnerable. A meltdown could destroy this vital drinking water source forever.

- **There may not even be enough water to continuously cool the generators and wastes. The Schuylkill River is no endless water supply like the ocean was in Japan. How much river water would be needed to try to cool reactors and wastes as in Japan.**
- **Highly radioactive run-off made the ocean in Japan highly radioactive. The Schuylkill River with far less water than an ocean would become far more radioactive.**

Prevention and Precaution Are Imperative!

Limerick Must Close To Avoid A Drinking Water Disaster

Until Limerick Closes, Exelon Must Filter All Discharges

WHY WOULD NRC ALLOW 20 MORE YEARS WHEN A VITAL DRINKING WATER SOURCE IS AT STAKE?

Of Greatest Concern:

RADIATION

LIMERICK'S RADIOACTIVE WASTEWATER DISCHARGES
24 Hours A Day, 7 Days A Week, 365 Days A Year

1. RADIOACTIVE WASTEWATER DISCHARGES INTO THE SCHUYLKILL RIVER
14.1 Million Gallons Per Day - 5 Billion Gallons Per Year

RADIOACTIVE SOURCES Discharging Into Schuylkill River From Limerick Nuclear Plant (Outfall 001)

- Spray Pond
- Holding Pond
- Closed Cooling Water Loops
- Treated Radwaste
- Cooling Towers At Times

Over 100 Different Radionuclides Are Associated With Producing Nuclear Power. Many are discharged with the wastewater.

1,312,320 GALLONS of RADIOACTIVE WATER are STORED in 18 TANKS at Limerick

Exelon's 2007 and 2009 Radiological Reports To NRC For Limerick Nuclear Power Plant **Reveal:**
Limerick Test Results - RADIOACTIVE **S**URFACE WATER
6 of 7 Samples Detected Gross Beta (dissolved) - **1 of 7 Detected Gross Alpha** (dissolved)

Exelon's 2009 Radiological Report to NRC - For Limerick Nuclear Power Plant

In WATER - 12 Different Radionuclides Were Reported

		½ Life
1.	**Iodine I-131**	8 Days
2.	Cesium Cs-134	30 Years
3.	Cesium Cs-137	30 Years
4.	Manganese Mn-54	314 Days
5.	Zinc Zn-65	250 Days
6.	Cobalt Co-58	70 Days
7.	Cobalt Co-60	70 Days
8.	Zirconium Zr-95	65 Days
9.	Iron Fe-59	46.6 Days
10.	Niobium Nb-95	35 Days
11.	Barium Ba-140	13 Days
12.	Lanthanum La-140	40 Hours

In FISH - 9 Different Radionuclides Were Reported

1.	**Iodine I-131**	8 Days
2.	Cesium Cs-134	30 Years
3.	Cesium Cs-137	30 Years
4.	Manganese Mn-54	314 Days
5.	Zinc Zn-65	250 Days
6.	Cobalt Co-58	70 Days
7.	Cobalt Co-60	70 Days
8.	Iron Fe - 59	456.6 Days
9.	Potassium K-40	1 Day

Note:	The Hazardous Life of a Radioactive Isotope is Ten to Twenty Times its Half-Life
Reality:	Synergistic, Additive, and Cumulative Harmful Impacts Are Obviously Significant
Problems:	Many Radionuclides go Unreported and Unmonitored - Sampling Is Woefully Inadequate and Controlled by Exelon, a Company that Can't Be Trusted

What Are The Consequences Of Additive, Cumulative, and Synergistic, Continuous Radioactive Discharges From Limerick Nuclear Plant Into The Schuylkill River Since 1985?

NO ONE ACTUALLY KNOWS FOR SURE

- **Additive, Cumulative, Synergistic Harmful Impacts Over Time Are NOT Measured, Estimated, or Considered.**
- **However, Long Term Harms Must Be Significant, Considering The National Academy of Sciences Says There Is No Safe Level.**
- **There Is NO Comprehensive Independent Long-Term Continuous Monitoring For All Radionuclides From All Limerick Nuclear Plant's Discharge Points Into The Schuylkill River.**
- **Exelon, the company that has shown it can't be trusted to provide timely and full disclosure, is in charge of the entire monitoring, testing, and reporting protocol.**
- **NRC Cannot Claim To Know Or Understand The Degree Of Harm. NRC Admitted Publically 5-22-11 That NRC NEVER Tested At Limerick.**
- **Exelon, The Company With A Vested Interest In The Outcome, That Has Shown It Can't Be Trusted Elsewhere, Controls All Limerick's Radiation Monitoring, Testing, and Reporting to NRC.**
- **Even Exelon's Own Monitoring Reports To NRC Prove Radionuclides Listed Above Are In Water and Fish.**

RADIATION In Philadelphia's Drinking Water

Philadelphia (about 21 Miles from Limerick Nuclear Plant), is downstream from Limerick's continuous radioactive discharges into the Schuylkill River, and draws much of its drinking water from the Schuylkill River.

When Limerick Nuclear Plant Discharges About 5 Billion Gallons Of Radioactive Wastewater Into The Schuylkill River, Limerick Is An Obvious Major Source Of Radiation In Philadelphia's Drinking Water.

Limerick Discharges Radioactive Wastewater

24 Hours A Day - 365 Days A Year
14.1 Million Gallons Per Day - 5 Billion Gallons Per Year

Radioactive Iodine-131

- **Some Of The Highest Levels In The Nation Were Found In Philadelphia Water.**

- Testing was done nationwide in the spring of 2011 after Fukushima meltdowns. But Fukushima, nor any other source, while potentially contributing factors, cannot explain radiation detected at the highest levels in the nation in Philadelphia's drinking water. Highest levels from Fukushima would be expected on the West Coast of the U.S. The elephant in the room is clearly Limerick.

- 5 of the highest readings for radioactive iodine in the U.S. were found in Philadelphia drinking water supply.

- EPA says the most common source of Iodine-131 is from the "fission of uranium atoms during operation of nuclear reactors".

- Radiation was already detected in Philadelphia water in 2007, before Fukushima.

- Iodine-131 is logically NOT the only radionuclide in the water. Other dangerous radionuclides such as Cesium 134 and 137 with a 30 year half life and Cobalt 58 and 60 with a 70 day half life, reported in water and fish, by Exelon, in Limerick's 2009 Radiological Monitoring Report, would also be in Philadelphia water.

The half-life of IODINE-131 is 8 days, far longer than the time it takes Limerick's discharges to reach Philadelphia.

- **Iodine-131 Was Listed In Exelon's 2009 Radiological Report to NRC For Limerick Nuclear Power Plant In WATER and FISH.**

EPA Data: Iodine-131 Levels In Drinking Water

Iodine-131 Found In Philadelphia Water

Scott Bomboy MyFoxPhilly.com

PHILADELPHIA - New data released by the EPA show three of the five highest readings for radioactive iodine in the U.S. are in the Philadelphia drinking water supply.

A blogger on Forbes first spotted the data on Sunday in a database of water tests posted on the EPA Web site.

Read All Findings at / www.epa.gov/japan2011/rert/radnet-sampling-data.html#water

The EPA site shows the effects of the Fukushima nuclear accident on American supplies of milk and water.

The EPA said in a previous statement "detections in air, precipitation, and milk were expected, and the levels detected have been far below levels of public-health concern."

However, some scientists don't agree with the EPA guidelines on radiation. The Physicians for Social Responsibility, a prominent anti-nuclear group, believes there is no safe level of exposure to radiation .

The EPA says the most common source of Iodine-131 from the "fission of uranium atoms during operation of nuclear reactors and by plutonium (or uranium) in the detonation of nuclear weapons."

The newest data release has samples from 66 sites across the U.S. and 21 sites picked up traces of Iodine-131 in the water supply.

The sample from Philadelphia's Queen Lane Treatment Plant showed 2.2 picoCuries per liter—the highest drinking-water level shown in the U.S. after the Fukushima accident.

Letter to Philadelphia Inquirer From ACE - April, 2011

Limerick Nuclear Plant, The Obvious Major Source Of Radiation In Philadelphia Drinking Water

Radiation confirmed in Philadelphia drinking water is no surprise to us.

Limerick Nuclear Power Plant, just 21 miles away, discharges radioactive wastewater into the Schuylkill River, 24 hours a day, 365 days a year, confirmed in Limerick's NPDES permit renewal application to PA DEP.

Iodine-131 is just one radionuclide discharged with Limerick's 5 billion gallons of radioactive wastewater annually.
Recently we sent a summary packet to Chris Crockett, Philadelphia's acting deputy commissioner for Philadelphia's Water Department. It identified serious concerns and questions based on our review of Exelon's NPDES permit for Limerick Nuclear Plant and related harms to Schuylkill River water quality and quantity.

A few years ago we met with Chris Crockett's staff about Limerick Nuclear Plant's harmful impacts on Philadelphia water, including depletion, which concentrates Limerick's radioactive discharges.

We were surprised that the Inquirer reported 4-12-11, that Crockett said he was unsure how long it would take to determine the reason for relatively high [radiation] levels found. Harmful radiation impacts from Japan and other sources are additive, cumulative, and synergistic to Limerick's serious threats to Philadelphia water.

Chris Crockett should be commended for adding carbon filtration at the Queen Lane plant. However, Exelon should pay, rather than Philadelphia taxpayers.

Dr. Lewis Cuthbert, President
Alliance For A Clean Environment
aceactivists@comcast.net

NOTE:

- Philadelphia installed carbon filtration to attempt to remove Iodine-131, but that will not remove Limerick's other dangerous radionuclides withdrawn with Schuylkill River water.
- Other kinds of costly filtration such as reverse osmosis would be required to try to remove other radionuclides. With budgets for water companies continuously stretched and shrinking, it is not likely the most protective radioactive filtration will be installed in Philadelphia or any of the other major water treatment companies that use Schuylkill River water.

RADIATION RELEASES WITH THEIR ADDITIVE AND CUMULATIVE RADIOACTIVE THREATS WILL CONTINUE AND INCREASE EACH YEAR AS LONG AS LIMERICK OPERATES!

- **Limerick will continue to discharge over 5 billion gallons of radioactive wastewater each year into the Schuylkill River until they close, scheduled in 2029 (90 Billion Gallons More).**
- **Radioactive impacts are additive, cumulative, and synergistic. Some radionuclides remain in the environment for decades, even longer.**
- **Limerick Nuclear Plant depleted the Schuylkill River each year by about 12 to 15 billion gallons, withdrawing 20 billion gallons and only returning 5. Limerick opened in 1985. By 1999, the Schuylkill River reached record low flows, according to DEP.**
- **Low Schuylkill River flows concentrate radionuclides discharged into the river.**
- **Water treatment companies are not required to do continuous monitoring or testing for all radionuclides in Limerick's discharges. All Limerick's radionuclides are not filtered out of public drinking water.**

PRECAUTION IS IMPERATIVE! RADIATION EXPOSURE CAN CAUSE CANCER AND OTHER HEATLH HARMS AT ANY LEVEL!

RELICENSING WOULD BE NEGLIGENT! THE ONLY WAY TO ELIMINATE INCREASED RADIOACTIVE THREATS TO THE SCHUYLKILL RIVER FROM LIMERICK IS TO CLOSE LIMERICK.

More Dangerous Discharges To The Schuylkill River

- **Exelon Admitted Limerick Nuclear Plant Can't Meet Original Permitted NPDES Pollution Discharge Limits.**
- **Exelon Requested Drastic Increases In Limerick Nuclear Plant's NPDES Permit For Total Dissolved Solids (TDS) Discharges**
- **Exelon Wants DEP To Allow Limerick's Limit To Be:**
  - **4 Times Safe Drinking Water Standards**
    - **Exelon's Request** **2,000** mg/l
    - **Original Limit** **1,000** mg/l
    - **Safe Drinking Water Standard** **500** mg/l
- **How Could DEP's Approval Of Drastic Increases Impact The Public?**
  1. **Higher Costs For Drinking Water From Schuylkill River**

     Higher Costs to Public Drinking Water Systems and Their Customers Including:
     - Pottstown
     - Phoenixville
     - Aqua PA
     - American Water Works
     - Philadelphia (Only About 21 Miles Away)
  2. **Increased Health Threats From More River Pollution To All Using Water For Drinking and Recreation**
  3. **Increased Threats to Ecosystems**

LIMERICK NUCLEAR PLANT VIOLATED ITS NPDES PERMIT LIMIT

- **13 of 16 TDS Samples Violated Permit Limits (2009 - 2010)**
- **Violations Were Up To 5 Times Safe Drinking Water Standards**

- **TDS sampling shows Limerick would violate even the newly requested permit limit of 2000 mg/l, especially in the hottest, lowest flow seasons of the year.**
- **One Example of Exelon's TDS sampling data shows why filtration is imperative: Limerick's Daily Volume of TDS into the Schuylkill River from just one sample from one discharge pipe (Outfall 001) reached 2,419 mg/l**
- **Violations Should Not Be Cause To Raise Permit Limits Four Times Safe Drinking Water Standards**
  - **Exelon Should Be Fined And / Or Forced To Filter - NOT Get Permit Limits Doubled**
  - **To Prevent Unnecessary Public Water Costs and Harms - FILTRATION IS IMPERATIVE**

- **Exelon claims the majority of Limerick's TDS permit violations are attributable to Limerick's Schuylkill River water intake. Exelon's claim appears to be INACCURATE, disputed by data in Exelon's own permit application data.**

  Exelon's own data shows Limerick's TDS discharges over 2,000 mg/l.

  Exelon's Analysis Results Table - Pollutant Group 1 - Module 4

Limerick Outfall 001	Maximum Daily TDS	-	Concentration	2,419	-	Mass	286,458
Schuylkill River Intake	Maximum Daily TDS	-	Concentration	403	-	Mass	188,976

EXELON SHOULD BE FINED.

➢ LIMERICK SHOULD NOT BE PERMITTED INCREASES FOR VIOLATIONS.

- Limerick Nuclear Plant's TDS VIOLATIONS Should NOT Be Justification To Increase Limerick's NPDES Permit Limit.
- Exelon admitted Limerick's current 1,000 mg/l TDS limit is not being met and that at times blowdown contains greater than the newly requested 2,000 mg/l TDS.
- Exelon's Assertion That Limerick's TDS Violations Are An Excuse To Demand Increased TDS Permit Limits Is Both Outrageous and Unacceptable.
- Limerick's Violations Were As High As 5 TIMES Safe Drinking Water Standards. How can Limerick meet the newly requested 2,000 mg/l for TDS, especially in heat and drought?
- Treatment Gets More Difficult and More Expensive to Water Treatment Plants and Their Customers.
- If Exelon's Request for Limerick's TDS Limit to become 4 Times Safe Drinking Water Standards is approved, how much more will drinking water companies have to pay to treat water to reach the 500 mg/l TDS Safe Drinking Water Limit ?
- How much more will customers pay for their water because of DEP increasing TDS limits at Limerick?

INCREASED TDS LIMITS IN LIMERICK'S NPDES PERMIT RENEWAL ARE LINKED TO ➢ INCREASED PM-10 DANGEROUS AIR POLLUTION.

- Exelon requested a huge increase in blowdown water from 1,256 ppmw to 10,000 ppmw for each cooling tower in Limerick's Title V Permit Renewal TVOP-46-00038.
- Exelon said limiting blowdown TDS to 1,256 for each cooling tower restricts particulate matter (PM) and creates an unnecessary risk to Limerick for noncompliance with the air pollution permit.
- PA DEP Air Quality Bureau refused to set the limit on TDS concentrations for blowdown entering Outfall 001, claiming it was a Water Quality issue that needed to be addressed in the NPDES permit.

➢ **DEP failed to require Limerick to filter Schuylkill River water intake to reduce PM-10 air pollution. Instead DEP changed the permit language so Exelon could comply with air and water limits.**

DOUBLING LIMERICK'S TDS PERMIT LIMITS WOULD BE NEGLIGENT.

DEP must stop shifting the financial burden for the astronomical costs of pollution onto the public, especially in such hard economic ~~times.~~

The Rationale for DEP to DENY Exelon's Request to Raise TDS Limits in Limerick's NPDES Permit and to Instead Require Exelon to Filter Intake and Discharges for TDS Into The Schuylkill River is based on two major points.

1. INCREASED AIR POLLUTION

In essence, DEP admitted raising TDS limits will result in increased PM-10 emissions from Limerick's cooling towers. This will increase serious public health threats from air pollution.

- To protect public health DEP should require reductions in PM-10 emissions through TDS filtration of Schuylkill River water intake. Filtration would prevent circumstances for an 8 times ~~higher increase in PM-10 emissions.~~

2. COSTS FOR PUBLIC WATER WILL INCREASE FOR WATER TREATMENT SYSTEMS AND THEIR CUSTOMERS.

Higher TDS limits for discharges into the Schuylkill River from Limerick will eventually result in increased costs to water treatment systems from Limerick to Philadelphia. In these hard economic times, that is unacceptable.

- Either Exelon pays to filter TDS from Limerick's discharges, or eventually the public pays with their health and pocketbooks.
- Exelon makes billions of dollars in profits each year. Its CEO makes millions. Exelon can afford to filter Limerick's intake and discharges for TDS out of enormous profits and bonuses.

DEP MUST REQUIRE EXELON TO FILTER LIMERICK'S WASTE WATER DISCHARGES FOR TDS.

- **IF EXELON REFUSES, LIMERICK SHOULD BE CLOSED TO PROTECT PUBLIC HEALTH AND REDUCE COSTS FOR DRINKING WATER.**

TDS discharged from Limerick Nuclear Plant with Limerick's radioactive wastewater hold and concentrate radionuclides and other toxics in the wastewater from Limerick's operations.

- **Harmful Long-Term Consequences From TDS Violations and Future Increases Need To Be Fully Understood and Disclosed To The Public, PRIOR to Issuance of Limerick's NPDES Permit Renewal.**

DEP's Approval Of Exelon's Requested Drastic Increases In Limerick's NPDES Permit Would Result In:

1. **Increases In Public Health Threats To All Who Use The River For Drinking Water and Recreation.**
2. **Increased Harms To Fish and Wildlife Using The River For Drinking Water.**
3. **Increased Costs To Water Treatment Systems Passed On To The Public For Their Drinking Water.**

See ACE Blogs For Updates and Comments

Exelon is attempting to have DRBC regulate NPDES limits, instead of DEP.

Exelon is trying to manipulate the system even further. It is unclear who will end up in charge of such important decisions on Limerick's unprecedented threats to the Schuylkill River. DEP or DRBC?

- Item 8 of Permit Reference Page 33 suggests to us that Exelon has attempted to manipulate DEP into allowing DRBC to make NPDES decisions.
- June 14, 2010 DEP/Exelon had a pre-application meeting.
- ACE requested minutes from the meeting but never received them.

The only solution to prevent unnecessary harm and costs to the public from massive TDS discharges from Limerick, is to require FILTRATION for TDS discharges into the Schuylkill River.

1. If Exelon Refuses To Provide Filtration, DEP Should Levy Significant Fines For All Past, Current, and Future Violations.

2. Fines and Interest for Non-Payment Should Continue Until Exelon Agrees To Provide Filters to Meet Current NPDES Limits for TDS. Even Current Limits Already Double Safe Drinking Water Standards.

3. Limerick's excessive TDS discharges obviously contribute to increased costs for treatment and removal at water treatment systems. Exelon either pays for filtration of their TDS waste water discharges as a cost of doing their business, or the public pays in the end.

4. DEP should examine all past sampling data to determine the extent of past TDS Permit Limit Violations, then FINE Exelon for each and every NPDES permit violation for TDS, according to the extent of the violation. Fines from past violations could pay for split sample testing.

5. To justify the requirement for filtration, ACE urged DEP to do split sampling during June, July, August, and September of 2011, when TDS levels could be the highest. We believe this is the only way to have reliable, trustworthy data to determine actual TDS discharges from Limerick nuclear Plant.

Comments and Solutions:

A. DEP Should DENY Exelon's Request For A Drastic Increase In Limerick's NPDES - TDS Permit Limit - FOUR Times Safe Drinking Water Standards and Double Limerick's Original Limit.

B. DEP Should Instead Require Filtration On All Limerick's Toxic Discharges Into The Schuylkill River, to Avoid Violations and Unnecessary Costs to the Public.

- **Why should water treatment systems and their customers be forced to pay more, just to maximize Exelon's profits?**
- **Either Exelon pays to filter Limerick discharges before they enter this vital drinking water source, or the public eventually pays with their health and their pocketbooks.**

C. DEP Should Fine Exelon for all Past, Current, and Future PERMIT VIOLATIONS

- **Fines should be used for legal battles likely required to get Exelon to FILTER all Limerick discharges to minimize health and financial threats to the public.**

ATTEMPT TO ELIMINATE TEMPERATURE RESTRICTIONS

Thermal Discharge Limits Are An Important Safeguard to the Schuylkill River, Its Ecosystems, and Public Health.

- **Limerick Nuclear Plant Has CONTINUOUS HEATED DISCHARGES Into The Schuylkill River. 24 Hours a Day 7 Days a Week 365 Days a Year**
  14.1 Million Gallons Per Day - 5 Billion Gallons Per Year

- **Exelon Wants DEP To Eliminate Schuylkill River Temperature Restrictions In Limerick Nuclear Plant's NPDES Permit.**

  As justification, Exelon used a 1984 Environmental Impact Statement on Limerick Nuclear Plant, which was based on "ESTIMATES" from BEFORE Limerick started operating to justify eliminating temperature restrictions for this 2011 NPDES Permit.

- **Eliminating Limerick's Temperature Restriction on Discharge Limits Could Further Jeopardize this vital drinking water source.**

- **If DEP and DRBC Eliminate Temperature Restrictions, Consequences Could:**
  1) **Cause irreversible damage to ecosystems**
  2) **Increase threats to wildlife and people using the river for recreation.**

     Example of health consequences from an overheated river:

     Triathlon participant died in the Schuylkill River, June, 2010

     That part of the event was discontinued, claiming the river was Overheated at 89 Degrees.

Prevention and Precaution Are Imperative:

- **DEP and DRBC Should Deny Exelon's Request to Eliminate Temperature Restrictions. Instead, Exelon Should Reduce Heated Discharges in times of extreme heat and drought.**

DANGEROUS TOXIC MIX CONTINUOUSLY DISCHARGED

Limerick Nuclear Plant Discharges A Dangerous Mix Of Toxic Chemicals Into The Schuylkill River, Along With Its Radioactive Discharges.

Astronomical Amounts Of Dangerous Toxic Chemicals Are Used Every Day At Limerick Nuclear Plant. They Don't Just Disappear. They End Up In Our Water And Air.

EVERY DAY Limerick Nuclear Plant Uses Over 94,293 to 192,614 Pounds Per Day Of Toxic Chemicals - Some of Them Are Listed Below:

Chemical Substance or Trade Name	Average / Maximum Per DAY	Effluent	Detection
• Sulfuric Acid	40,000 to 60,000 lbs Per Day	6 to 9 PH Units	.01 Standard PH
• Sodium Hypochlorite	16,000 to 58,000 lbs Per DAY	TRO Limits	50 as TRO
• Sodium Bromide	1,600 to 2,800 lbs Per DAY	TRO Limits	50 as TRO
• Foamtrol AF1441	450 to 900 lbs Per DAY	2-4 mg/l	CALCULATED
• AB Aquashade	450 to 900 lbs Per DAY	.02- .03 mg/l	20
• Inhibitor AZ8104	1,000 to 2,000 lbs Per DAY	8 -19 mg/l	CALCULATED
• Flogard MS6210	450 to 1,000 lbs Per DAY	3 -9 mg/l	CALCULATED
• Depositrol BL5400	160 to 320 lbs Per DAY	1-3 mg/l	CALCULATED
• Depositrol PY5204	2,000 to 3,000 lbs Per DAY	16 to 26 mg/l	CALCULATED
• Spectrus CT1300	1,200 to 2,000 lbs Per DAY	.20 mg/l	.052 mg/l
• Polyfloc AP1120	1.5 to 3 lbs Per DAY	.01 mg/l	CALCULATED
• Klaraid CDP1346	120 to 200 lbs Per DAY	.34 -.56	CALCULATED
• Depositrol BL5307	1,000 to 3,000 lbs Per DAY	.005 - .009	1000
• Continuum AEC3120	8 to 16 lbs Per DAY	.1 - .2	CALCULATED

• Spectrus DT 1400	4,690 to 9,520	lbs Per DAY	TSS Limit	200 at TSS
• Spectrus NX1100	1 to 2	lbs Per DAY	< 1 by dilution	CALCULATED
• Spectrus BD1500	1,000 to 1,500	lbs Per DAY	11-17 mg/l	CALCULATED
• Spectrus NX1103	20 to 120	lbs Per DAY	.01 mg/l	CALCULATED
• SURE-COOL 1393	240 to 321	lbs Per DAY	2-4 mg/l	organic phosphate test
• C-9	937 to 1,000	lbs Per DAY	4-9 mg/l	zinc test, .01 mg/l
• 3D TRASAR 3DT197	1,000 to 2,200	lbs Per DAY	3-19 mg/l	tolytriazoletest. .01 mg/l
• 3D TRASAR 3DT 121	2,000 to 3,000	lbs Per DAY	11-25 mg/l	active polymer test.6 mg/l
• 3D TRASAR 3DT 138	1,000 to 4,000	lbs Per DAY	.013 -.025 mg/l	same as above
• H-550	300 to 1,000	lbs Per DAY	.02-.05 mg/l	Gluteraldehyde test, 20ppm
• NALCO 7469	450 to 900	lbs Per DAY	4-8 mg/l	CALCULATED
• NALCO H150M	1,200 to 2,000	lbs Per DAY	3-5 mg/l	Active quat test .020 mg/l
• NALCO 1315 from H150M	14,370 to 28,560	lbs Per DAY	TSS Limit	Feed based on detox
• NALCO 8136	120 to 200	lbs Per DAY	.03-.06 mg.l	CALCULATED
• NALCO 73310	126 to 252	lbs Per DAY	1.4-2.8 mg/l	Nitrite test, 2 mg/l
• NALCO 73551	1,500 to 3,000	lbs Per DAY	10-20 mg/l	CALCULATED
• Ferroquest LP7200	600 to 600	lbs Per DAY	6.7 mg/l	CALCULATED
• Ferroquest LP7202	300 to 300	lbs Per DAY	3.4 mg/l	CALCULATED

- **These Toxic and Corrosive Chemicals Are Added To:**
  - **Cooling Towers**
  - **Spray Pond Raw Water**
  - **Other Systems**

- **Limerick Uses Massive Amounts Of The Toxic Chemicals Above Every Day For:**
  - **Corrosion Inhibitors**
  - **Scale Inhibitors**
  - **Biocides**
  - **Coagulants**
  - **Scale Removers**
  - **Dispersants**
  - **Surfactants**
  - **Microbio/Algicides**
  - **Anti-Scalants**

- **How Much RADIOACTIVE and CHEMICAL WASTEWATER STORED at Limerick Nuclear Plant Ends Up In The Schuylkill River? Examples of Astronomical Amounts Stored at Limerick:**
  - **RADIONUCLIDES** **1,312,320** Gallons **18** Tanks
  - **ACID CHEMICALS** **68,600** Gallons **20** Tanks
  - **SULFURIC ACID** **22,000** Gallons **2** Tanks
  - **DIESEL** **334,000** Gallons **16** Tanks

EXELON SHOULD BE REQUIRED TO FILTER LIMERICK'S DISCHARGES!

- **NINE Discharge Points Go Into The Schuylkill River From Limerick Nuclear Plant.**

- **FOURTEEN Discharge Points Go Into Possum Hollow Run, Which Eventually Flows Into The Schuylkill River.**

- **Limerick's NPDES Permit Does Not Specify How Much of Which Radionuclides or Other Toxics are discharged from each of the 24 discharge points, during routine operations, much less spikes from leaks and spills. Logically, no one knows for sure since discharges are not continuously monitored for all toxics associated with Limerick operations.**

- **DEP has not required limits to be established for all toxics associated with Limerick's waste water.**

INTENTIONAL POISONING OF THE SCHUYLKILL RIVER WITH CONTAMINATED UNFILTERED MINE WATER PUMPING, JUST TO OPERATE LIMERICK NUCLEAR PLANT

Exelon's "Demonstration Project" To Pump Contaminated Mine Water Into The Schuylkill River Is A Disaster In The Making.

DRBC, with the blessing of PA DEP, allowed Exelon to intentionally poison the Schuylkill River for Limerick operations, with contaminated mine water since 2003.

- **To Supplement The Schuylkill River Flow to operate Limerick Nuclear Power Plant, the Delaware River Basin Commission (DRBC) allowed Exelon to pump massive amounts of contaminated unfiltered mine pit water into the Schuylkill River.**

EXELON'S "DEMONSTRATION PROJECT" CONSTITUTED NEGLIGENCE!

Even though PA DEP called mine water the worst threat to groundwater in the state, the inexplicable negligent concept of Exelon's "Demonstration Project" was to:

- Allow massive mine water to be pumped into the Schuylkill River year after year and see what happens.
- Supplement the flow of the Schuylkill River because Limerick Nuclear Plant seriously depleted and overheated the river each year.
- Allow Exelon, the company with a vested interest in the outcome, to control all monitoring, testing, and reporting.
- Exelon was allowed to shift the focus away from the dangerous toxics associated with Wadesville Mine water used for the demonstration project.
- Exelon was also permitted to pump one billion gallons each year from the Tamaqua Reservoir above the Wadesville Mine water pumping. That diluted and hid actual levels of contamination and harms, we believe to enable Exelon's "Demonstration Project" to be approved.
- Water treatment companies were not warned to continuously test for and report on potential build-up of dangerous toxics, (Iron and Manganese) that threaten public health and damage water treatment systems. Water treatment systems do not filter out iron and manganese, they add more toxic chemicals to treat the water instead. After several years, iron and manganese levels were documented to be elevated at the Pottstown Waste Water Treatment Plant.
- Exelon's mine water pumping increases Total Dissolved Solids levels in the Schuylkill River, increasing problems and costs for water treatment systems, even for Limerick's water intake.
  - ✓ Scientific studies pinpoint mine drainage as a major source of total dissolved solids.
  - ✓ TDS levels increased at the Pottstown WWTP.
  - ✓ Exelon requested to double Total Dissolved Levels In Limerick's NPDES permit.

Why should drinking water for almost two million people be intentionally poisoned to operate Limerick Nuclear Plant?

Exelon asked DRBC to approve unlimited use of contaminated unfiltered mine water to supplement the Schuylkill River flow to operate Limerick Nuclear Plant. What would tens of billions more gallons of unfiltered contaminated mine water eventually do to the river, health of those using it for drinking water, and cost the public for treatment?

- **DRBC can, and must, stop the intentional contamination of the Schuylkill River with mine water pumping, while shifting the burden of contamination costs to the public.**
- **Exelon is making a fortune operating Limerick. Exelon should be required to pay to comprehensively filter all mine water pumped into the Schuylkill River to supplement the flow for Limerick operations.**
- **If Exelon refuses, Limerick Nuclear Plant should be closed now.**

EXELON'S HYPOCRACY

Exelon Deceives The Public, While Buying Silence and Support.

While Exelon massively poisons the Schuylkill River with mine water for profit, Exelon takes credit, claiming to protect the river through donations.

- Exelon gave funding to the Schuylkill River Heritage Foundation for projects that dealt with mine water which simply occasionally overflowed into the river and several other run-off problems.
- Problem: Exelon sits at the table to decide who receives funding. That sets up silence and support for Exelon, even from water groups because they want Exelon's funding.

The Schuylkill River is already too contaminated. There is proof that DRBC and DEP Have Long Failed To Protect The Schuylkill River.

- A 1997 Report Shows These Agencies Allowed The Schuylkill River To Be A Toxic Dumping Ground: "*Poisoning Our Waters; How the Government Permits Pollution"*
- The Schuylkill River Has Already Become Highly Contaminated. In 1997, The Schuylkill River Already Ranked 11th In The Nation, In RECEIVING TOXIC CHEMICALS.

DANGEROUS DEPLETION OF THE SCHUYKILL RIVER

Limerick's Cooling Towers Deplete The Schuylkill River By Billions of Gallons Each Year, Even After Supplementation

Limerick WITHDRAWS - 20 1/2 Billion Gallons Each Year
Limerick RETURNS - Only 5 Billion Gallons Each Year

- Not more than 3 billion gallons appear to have been supplemented in any one year. The math suggests Limerick DEPLETES the Schuylkill River every year by at least 12 billion gallons.

Schuylkill River Depletion Will Increase Dramatically Every Year, As Long As Limerick Nuclear Plant Continues To Operate.

RECORD LOW SCHUYLKILL RIVER FLOWS

Limerick Started to Operate In 1985. By 1999 The Schuylkill River Had "RECORD LOW FLOWS" .

- **How much will the Schuylkill River flow be depleted by 2029 when Limerick's current license expires?**

DEPLETING RIVER FLOWS LOWER WATER QUALITY

DRBC admits depletion leads to lower water quality, yet DRBC is considering approval of Exelon's request to reduce flow restrictions for Limerick Nuclear Plant, meaning Limerick can continue to deplete the river regardless of increased threats to water quality.

- **If Exelon's request is approved by DRBC to lower flow restrictions for Limerick's withdrawal from the Schuylkill River, there could be higher costs for water treatment companies, increased health threats, and threats to the Schuylkill River ecosystems and wildlife.**

LOWER FLOWS CONCENTRATE ALL TOXIC DISCHARGES

DRBC admits that reduced river flows lower water quality, degrade aquatic habitat and affect boating, fishing, and other in- stream uses.

- **The more depleted the Schuylkill River becomes, the greater the threat there is to public health from drinking the water, recreation in the river, wildlife use, and the ecosystem.**
- **Of greatest concern are Limerick's radioactive discharges into the Schuylkill River, 24 hours a day, 365 days a year and the synergistic, additive, and cumulative impacts of all those radionuclides combined with all Limerick's other toxic discharges (from Limerick and the mines), as well as all the other polluters' discharges into the river.**

DRINKING WATER SHORTAGES - A REAL CONCERN

DEP's late 1990s booklet titled "Water Is Life", shows DEP was concerned about the water supply for years.

- **Increasing heat and drought, along with aging water systems, suggest we could experience water shortages as communities have elsewhere.** For example: *"Two Million Without Drinking Water"* Boston, 2010.

EXELON'S REQUESTS TO DRBC, IF APPROVED, WOULD INCREASE CONTAMINATION WHILE REDUCING SAFEGUARDS.

Listed Below Is A Summary Of 8 Exelon Requests To DRBC.

- **Comments Following Each Request Are Based On ACE's Intensive Investigation Since 2006**

1. **Massive Water Withdrawal From The Schuylkill River For Limerick Nuclear Power Plant Operations**
   56.2 Million Gallons Per Day = 20,513,000,000 Gallons Per Year
   - Limerick Nuclear Power Plant's extraordinary water withdrawal is depleting the public water supply.

2. **Continued Discharge of Radioactive and Heated Water From Limerick Nuclear Plant**
   14.2 Million Gallons Per Day = 5,183,000,000 Gallons Per Year
   - Only ¼ of Limerick's water withdrawal is returned to the river – and that is radiated and heated.
   - This is a major threat to Philadelphia's water supply and quality.

3. **Reduce Low-Flow Restrictions**
   - Concentrations of contaminates pumped into the river increase as flows decrease.

4. **Modify Monitoring Requirements**
   - Safeguards related to Exelon's Demonstration Project are already inadequate, with no truly independent public interest oversight.
   - Reducing Exelon's monitoring requirements, while allowing Exelon to increase threats is a recipe for disaster.

5. **Eliminate Temperature Restrictions**
   - Temperature restrictions are an important safeguard for the health of the Schuylkill River ecosystems.
   - Comprehensive independent monitoring is imperative before any decision is made to eliminate temperature restriction. Evidence suggests Exelon's testing and claims must be independently verified to protect the public's interests.

6. **Continue UNFILTERED PUMPING of Billions of Gallons Each Year Of Contaminated Wadesville Mine Water In the 6 Lowest Flow Months (May to October)**
   - Over 6 Billion Gallons of contaminated Wadesville Mine Water were pumped into the river at 24,300 gallons per minute, 24 hours per day, during the 6 lowest flow months of the year, each year. It started in 2003.
   - There are obvious harms, a fact admitted by Exelon, stating there is "little harm". However, there has still never been a comprehensive independent study to determine the extent of harm. The testing protocol and data are controlled by those with a vested interest in the outcome.

7. **More Contaminated UNFILTERED Water Added From Other Mine Pools**
   - Additive, cumulative, and synergistic harms over time from adding more and more contaminated mine water to a river that is continuously being depleted are unavoidable and could result in devastating consequences.
   - Before allowing more mine pools to be pumped into the source of drinking water for almost two million people, there must be a comprehensive study of what has already happened, and predictions of what could happen in the future, by an independent public interest expert.

8. **Eliminate Public Participation In Future DRBC Decisions**
   - As additional contaminated unfiltered mine waters would be added to the Schuylkill River by Exelon, all future decisions would be made exclusively by the head of DRBC.

Approval of Exelon's Requests Would Be A Recipe For A Drinking Water Disaster.

Increased Harms with Less Safeguards Will Have Devastating Impacts On Ecosystems, Fish, Wildlife, Public Health and Costs For Drinking Water, As Well As Recreation. In Summary:

Threats and Harms Will Increase Based On Exelon's Current Requests To:

- ✓ Eliminate Low-Flow Restrictions
- ✓ Raise Temperature Restrictions
- ✓ Reduce Monitoring Requirements
- ✓ Eliminate Public Participation

Increasing Water Use and Increasing Hazardous Discharges Will Lead To More:

- ✓ Water Depletion
- ✓ Water Contamination
- ✓ Concentration of Toxics
- ✓ Public Health Threats
- ✓ Higher Costs For Water
- ✓ Harm To Wildlife Drinking The Water
- ✓ Ecosystem Damage From Limerick's Heated and Radioactive Discharges

To Protect The Schuylkill River, A Vital Public Drinking Water Source:

1. **Exelon Must FILTER All Mine Water Prior To Pumping It Into The Schuylkill River For Limerick Operations.**
2. **DRBC Should DELAY APPROVAL Of Exelon's "Demonstration Project" Until Completion Of A Comprehensive Independent Study, To More Accurately Determine Past, Present, and Future Harms. The Study Should Be Followed By An On-The-Record Public Hearing.**

   Absent Filtration Of Mine Water and an Independent Study To More Accurately Determine Past, Present, and Future Harms From Pumping Contaminated Mine Water Into The Schuylkill River, Limerick Should Be Required To Close Now To PREVENT A DRINKING WATER DISASTER.

LIMERICK "UPRATES" AND "RELICENSING" WILL INCREASE ALL LIMERICK'S HARMS AND THREATS TO THE SCHUYLKILL RIVER

Exelon's Plans To Run Limerick Nuclear Plant (1) Harder With "Uprates" and (2) Longer With "Relicensing", Would Increase All Threats To The Schuylkill River Listed In This Report.

1. **Limerick "Uprates" Increase Schuylkill River Water Use and Water Pollution.**

- **"Uprates" will use and pollute even more Schuylkill River water, adding to already alarming depletion of the river and increased concentrations of dangerous radiation and other toxics in Limerick's discharges.**

2. **Relicensing Limerick Would Extend and Increase Schuylkill River Water Depletion and Dangerous Water Contamination.**

- Exelon wants to operate Limerick Nuclear Plant 20 More Years After 2029 - until 2049. What would the consequences be on the Schuylkill River and Drinking Water?
- There is no guarantee the Schuylkill River can even sustain Limerick's assault until 2029 when Limerick is scheduled to close.
- How can the Schuylkill River possibly continue to be a safe and usable drinking water source for the almost 2 million who need it?
- Every year Limerick continues to operate, the Schuylkill River will be depleted by 12 to 15 Billion Gallons more each year.
- Every year Limerick operates massive amounts of radioactive wastewater will be discharged into the Schuylkill River 24 hours a day, 365 days a year.

- **As long as Limerick operates, Limerick will continue to discharge extraordinary amounts of toxics with its wastewater and possibly with the run-off from Limerick's other 23 discharge points . See graphic.**

- **Limerick Nuclear Plant Has 24 Discharge Points From The Site.**
  - **9 Directly Into The Schuylkill River**
  - **14 Into Possum Hollow Run Which Eventually Flows To The Schuylkill River**
  - **1 Into Sanatoga Creek**

  How Much Water Will Become Dangerously Contaminated Until 2029? 2049?

- **Billions of gallons of unfiltered contaminated mine water have already been pumped into the river unfiltered, to supplement river flows to operate Limerick. Any is not the answer.**

DROUGHT CONDITIONS CAUSE REAL CONCERN

What Could Happen?

Could Our Region Be The Next Without Safe Drinking Water Due To Limerick Operations?

Depletion In The Schuylkill River

Billions of Gallons Of Schuylkill River Water Will Continue To Be Depleted Each Year From Limerick's Cooling Towers.

Increased Schuylkill River Water Use

- **Limerick Uprates Will Require More Water**
- **Limerick Relicensing Would Deplete The River 20 More Years After 2029**

What Already Happened Since Limerick Started Operating In 1985?

- **The Schuylkill River Reached Record Low Flows By 1999**
  Just 14 Years After Limerick Started Operating. (From DEP Booklet, "Water Is Life")

- **Water Shortages Became More Frequent and Pronounced By The Late 90s**

- **PA Experienced Droughts 4 of 6 Years by Late 1990s**

- **Stream Flows and Groundwater Levels Reached All-Time Seasonal Lows**

- **Water Was Rationed for Citizens, But Not For Limerick Nuclear Plant**

HOW LONG CAN THE SCHUYLKILL RIVER REMAIN A SAFE VIABLE DRINKING WATER SOURCE?

Will There Even Be Enough Safe Drinking Water Until 2029 When Limerick's Current License Expires?

- **What Will Happen After 5, 10, or 15 Years After Over 12 Billion Gallons More of Depletion Each Year? How Can The Schuylkill River Continue to Sustain Limerick's Depletion, Especially If We Experience Droughts, and Still Remain A Safe Usable Source of Water?**

- **Will Those Taking Exelon's Donations Continue To Allow This Vital Drinking Water Source to be Dedicated to Operating Limerick Nuclear Plant?**

- **Should Water Treatment Systems and Their Customers Have To Pay More To Attempt to Make Water Safer Because of Limerick's Increasing Pollution?**

- **Even in the unlikely scenario that Limerick's extraordinary damage to water and the river could be remediated, who would pay? We can guess it won't be Exelon. It will likely be taxpayers, "IF" funds could be found. More likely obvious damage will just be denied.**

DEP. DRBC, and NRC Have Made Decisions To Protect Exelon's Profits - Not Schuylkill River Drinking Water.

At The Public's Expense, DEP, DRBC, and NRC All Ignore Limerick Nuclear Plant's Serious and Obvious Threats and Harms to the Schuylkill River. They turn a blind eye to the reality of Limerick Nuclear Plant's unprecedented harms and threats.

- **DRBC allowed Limerick Nuclear Plant to be constructed knowing the Schuylkill River could not sustain the extraordinary water use by Limerick's cooling towers according to FOIA Records on Limerick's Public Hearing Prior to Construction.**

- **DRBC allowed woefully inadequate supplementation from the Delaware River as an excuse to overlook Limerick's inevitable depletion of the Schuylkill River.**

- **From the beginning, DEP and DRBC ignored and dismissed the extreme threat to the Schuylkill River from over 5 billion gallons per year of Limerick's radioactive, heated discharges.**

- **DRBC and DEP based original permit limits on an ESTIMATED EIS completed before Limerick started operating.**

- **DRBC and DEP issued permits for Limerick Nuclear Power Plant to pollute the Schuylkill River, and could issue increases. By the end of 2012, DEP and DRBC may issue permits that allow increased pollution into the Schuylkill River related to Limerick Nuclear Plant operations.**

- **DRBC, DEP, and NRC all ignore the additive, cumulative, and synergistic threats from all the radionuclides and toxic chemicals discharges directly from Limerick and from the mine water.**

- **Harms to the Schuylkill River over the past 26 years of Limerick operations were never independently continuously monitored or evaluated by either agency.**

- **For the Updated EIS, it is now clear that NRC has no intention of providing a year of independent monitoring, testing, and reporting on all radionuclides and other toxics released at Outfall 001 into the Schuylkill River.**

- **Without at least a year of comprehensive, independent monitoring, testing, and reporting, it is impossible to determine the extent of damage to water in the future. Regulatory agencies are irrationally making decisions based on estimates.**

Limerick's Unprecedented Harms and Threats To The Schuylkill River Continue To Be Ignored and Dismissed By PA DEP. DRBC, and NRC, The Agencies Issuing Permits That Would Drastically Increase Harms and Threats.

Limerick Nuclear Plant's Assault On The Schuylkill River Can Get Far Worse. Limerick Operations Threaten to Permanently Damage The Schuylkill River In Many Ways.

Decisions Will Be Made On Exelon's Dangerous Requests Listed Below:

1. Doubled Increases In Toxic Wastewater Discharges (Schuylkill River)
2. Reduced Low-Flow Restrictions (Schuylkill River)
3. Eliminated Temperature Restrictions (Schuylkill River)
4. More Toxic Mine Water Pumping (Schuylkill River)
5. Less Monitoring
6. Uprates - Using More Water and Discharging More Toxics To Run Limerick Harder
7. Relicensing - Increased Water Depletion and Increased Radioactive Poisoning For 20 Years Longer

Considering the current financial constraints at DEP, we did not request a formal on-the-record public hearing for Limerick Nuclear Power Plant's NPDES Permit Renewal. But, January 17, 2011, we sent DEP a long list of concerns, questions, and requests about this permit. which need to be answered to obtain full disclosure on the issues critical to drinking water for almost two million people from Pottstown to Philadelphia. As of December, 2011, DEP failed to respond.

- **As of December, 2011, both DEP and DRBC failed to respond to critical concerns, questions, and requests from ACE, related to Exelon's requests for increased pollution from Limerick operations, as well as less safeguards for the Schuylkill River.**
- **When responses arrive and can be analyzed, we will update residents with that information on our blog.**

In Summary:

Limerick Nuclear Plant is slowly destroying the Schuylkill River, a vital drinking water source for almost two million people from Pottstown to Philadelphia.

Limerick Nuclear Plant is the worst threat to drinking water ACE ever investigated.

If Exelon's requests in Limerick's permits are approved, those threats will get far worse and our region could witness a drinking water disaster.

Testimony, obtained by ACE through FOIA, from Limerick's original public hearing prior to construction, shows people realized the Schuylkill River could NOT sustain the damage from Limerick Operations. Before Limerick Nuclear Plant was built, it was clear the Schuylkill River could not sustain Limerick's water needs. That is why a pipeline was required to bring water from the Delaware River to the nuclear plant, but that supplementation was never nearly enough to stop dangerous depletion in the Schuylkill River.

Yet, Limerick was licensed for 40 years, until 2029. Now Exelon wants to operate Limerick 20 more years, until 2049. That is an unacceptable risk to drinking water for almost 2 million people and to businesses that require water from the Schuylkill River.

There is much at stake for almost two million people who need the water in the Schuylkill River to survive and many businesses. Ask yourself:

- ✓ Whose water is it?
- ✓ Is Exelon entitled to continue to use and pollute the river for profit for another 20 years after Limerick's license runs out in 2029, while seriously jeopardizing a vital water source for so many people and other businesses?
- ✓ Are you willing to stand by while the Schuylkill River is being dedicated to the nuclear plant?

Exelon asked PA DEP for permit increases that will further jeopardize public health and eventually cost water treatment systems and their customers more for water. Exelon asked the Delaware River Basin Commission (DRBC) for permission to ignore low flow and heat restrictions, and to add more toxic water from more mines.

Exelon has been buying silence and support from elected officials and large organizations, regardless of Limerick's unprecedented threats to the Schuylkill River. For example, the Schuylkill River Heritage Foundation is an organization that should speak up to protect the Schuylkill River, but for Exelon's donations they turn a blind eye to unprecedented harms from Limerick's operations. Instead, they assist Exelon in making irrational claims about protecting the river. Limerick clearly does far more harm than benefits provided by donations.

People who take donations then fail to speak up, in essence, value Exelon donations over the health and safety of the river and people using it. There is no problem with taking Exelon's donations, but there is a problem if those donations buy silence and support to increase already unprecedented harms by Limerick Nuclear Plant.

Evidence Shows We Don't Need Limerick Nuclear Plant's Electric.

Evidence shows there is no need to continue this destruction of the Schuylkill River.

See the section on the ACE website that shows how solar power can provide viable clean, safe, base load power for our future. Exelon employees can and should start to be retrained to provide energy efficiency and transition to safe, cheaper, greener technologies.

We ask for your help to protect the drinking water in the Schuylkill River for almost two million people from Pottstown to Philadelphia.

A DRINKING WATER DISASTER CAN BE AVOIDED WITH YOUR HELP

Your Voice Is Urgently Needed To Protect The Schuylkill River!

- **Consider facts in this report and contact all your elected officials to close Limerick and demand the most protective filtration until Limerick closes.**

IN OUR VIEW - PREVENTION AND PRECAUTION ARE IMPERATIVE!

The Only Way To Stop Limerick Nuclear Plant's Unprecedented Harms and Threats To The Schuylkill River Is To Close Limerick.

1. Limerick Must Close To Avoid A Drinking Water Disaster.

To Close Limerick, Your Voice Is Needed To Contact Elected Officials!

2. Until Limerick Closes, To Prevent A Drinking Water Disaster:

A. Exelon should be required to spend the money to use the most effective, protective filtration for all radioactive and other toxic discharges from Limerick's site to meet original discharge limits.

B. If Exelon needs to supplement the Schuylkill River with contaminated mine pit waters to operate Limerick, then Exelon should be required to pay for the most protective filtration for all mine pit water before it is pumped into the river.

If Exelon Refuses To Filter All Discharges From Limerick and The Mines,

Then Limerick Should Be Required To Close Now.

Date: January 17, 2011

To: **PA DEP** Southeast Regional Office
Jenifer Fields, Regional Water Manager
2. East Main Street
Norristown, PA 19401

From: **Alliance For A Clean Environment (ACE)**
1189 Foxview Road
Pottstown, PA 19465

Re: **Concerns, Questions, and Requests Related To**
Limerick Nuclear Power Plant's - NPDES Permit No. PA0051926
National Pollutant Discharge Elimination System - Permit Renewal Application
Submitted By Exelon To PA DEP, September 2010

ACE is asking DEP to respond to each question and concern in the attached document, PRIOR to issuing Exelon's NPDES Permit Renewal. We request answers BEFORE this permit is finalized, with 60 days for us to review and respond to DEP's answers to our concerns, questions, and requests, PRIOR to issuance of Limerick's final NPDES permit.

Based on the potential for extremely harmful consequences to public water, public health, ecosystems, and additional public costs at water treatment systems, related to DEP decisions for Limerick Nuclear Power Plant's NPDES permit, we believe our requests for full and accurate disclosure, as well as prevention and precaution, are justified.

It is important for the public to have a better understanding of the big picture and long term consequences from radiation and other toxics Limerick Nuclear Power Plant is actually discharging, especially into the Schuylkill River, a source of drinking water for almost two million people from Pottstown to Philadelphia.

- To protect the public's water, health, and financial interests, we urge DEP to carefully consider issues we are raising as well as our recommendations for ways to reduce contamination in massive discharges into public waterways, instead of simply issuing this permit renewal with increases.

Of major concern are links which go unaddressed between this NPDES permit and Limerick's other permits and requests, including:

1. Limerick's Title V Air Pollution Permit Issued by DEP
2. Limerick's Radiological Discharges Reported to NRC, but NOT in this NPDES Permit
3. Exelon's Docket Requests to DRBC Related To The Schuylkill River
4. Exelon's TWO "Uprates" to Run Limerick Harder Logically Leading to Increased Water Intake and Increased Toxic Discharges Into the Schuylkill River and Other Discharge Points.

We need to understand how the issues listed above impact Limerick Nuclear Plant's NPDES Permit.

Changes requested by Exelon for Limerick's NPDES Permit are not simple changes as Exelon claims. DEP decisions could drastically increase threats to our region's air, water quality, and health, and increase public costs for water. Without a doubt, if Exelon requests are approved as requested, Limerick Nuclear Plant would be polluting the Schuylkill River, other discharge points, and the region's air even more. We need a clear understanding of how and why DEP decisions for this NPDES permit are being made, what is and is not actually included and why, and a clear understanding of the consequences of DEP decisions related to Exelon's other permits and requests.

Exelon's conclusion that their requested changes below are "not substantial", appears to be both self-serving and out of touch with reality:

1) TDS Permit Limits - INCREASED from 1,000 to 2,000 mg/l.
2) TRO Time Limits for Toxic Additives - INCREASED from 1 hour to 2 hours per day - 365 days a year.

3) Elimination of Temperature Restrictions
4) Elimination of Monitoring for Temperature

Increasing pollution, and eliminating temperature restrictions and monitoring for an increasingly depleted river, is a recipe for disaster. Yet, Exelon is asking both DEP and DRBC to do just that. There is no clear understanding of who is in charge. Ironically, DEP and DRBC have temperature restrictions that are miles apart

Limerick's heated discharges into the Schuylkill River raise serious questions. Irrationally, Exelon is asking to eliminate Schuylkill River temperature restrictions based on outdated and meaningless ESTIMATES from a 1984 Environmental Study, completed before Limerick even started operating.

Exelon's 2010 testing for Total Dissolved Solids (TDS) suggests that Limerick had serious TDS permit violations, with NO DEP enforcement action or requirement for filtration to reduce TDS discharges and PM-10 air pollution. Exelon's TDS data for 2010 suggests that at times Limerick would still be violating even the doubled TDS limit currently requested by Exelon for this permit. This is alarming, given the fact that in addition to costly TDS discharges into public waterways, the doubled increase in TDS limits would cause serious increases in PM-10 air pollution from the cooling towers.

Clearly, Limerick Nuclear Power Plant's discharges of a broad range of radionuclides 24 hours a day, 365 days a year, into the public drinking water source for almost two million people is a serious threat. Over 5 billion gallons of radioactive water are discharged into the Schuylkill River every year. Over 1.3 Million Gallons of highly Radioactive Wastewater are stored in 18 tanks at the Limerick site.

Radionuclides may also be discharged from other Limerick discharge points into nearby waterways. Limerick Nuclear Plant contaminated groundwater with radiation. We need a better understanding of how that could potentially impact discharge points covered by this NPDES Permitting.

It was shocking to learn that well over 94,000 to over 192,000 pounds of toxic chemicals are used at Limerick PER DAY. Those toxics either end up in our air or Limerick's wastewater discharges. They don't disappear. DEP seems to have failed to issue permit limits or require actual monitoring for most of those chemicals. DEP simply allows Exelon to CALCULATE the amount of many dangerous toxics discharged from Limerick into the Schuylkill River.

The extraordinary amounts of toxic chemicals used at Limerick have significant implications related to the alarming number of wastewater discharge points from the site. Limerick wastewater is discharged from NINE discharge points into the Schuylkill River, FOURTEEN discharge points into Possum Hollow Run, and ONE discharge into Sanatoga Creek. It is not clear if any of these bodies of water or their sediment have ever been tested independently for all the massive numbers of toxic chemicals used every day at Limerick or for radiation. We have no idea how much damage has already been done over the past 25 years.

Continuous increasing depletion of the Schuylkill River due to Limerick operations intensifies all the toxic threats from Limerick's waste water discharges. We do not believe this was considered in the current NPDES Permit. It seems the only way to minimize damage is to require filtration. That can't happen without DEP requiring full and accurate disclosure.

Because we realize there are constraints on DEP resources, we will not be requesting a public on-the-record hearing. However, because these issues are of critical importance to almost two million people, we do request timely answers to our questions, concerns, and requests PRIOR to issuance of the final permit with time to respond before that permit is issued.

Respectfully,
Dr. Lewis Cuthbert
ACE President

Date: January 17, 2011

To: **PA DEP** Southeast Regional Office
Jenifer Fields, Regional Water Manager
2. East Main Street
Norristown, PA 19401

Re: **Concerns, Questions, and Requests Related To**
Limerick Nuclear Power Plant's - NPDES Permit No. PA0051926
National Pollutant Discharge Elimination System - Permit Renewal Application
Submitted By Exelon To PA DEP, September 2010

ACE is asking DEP to respond to each question and concern in this document, PRIOR to issuing Exelon's NPDES Permit Renewal.

- **We request answers 60 days BEFORE this permit is finalized, to have time to review and respond to DEP's answers to our concerns, questions, and requests, and in time for ACE to respond, PRIOR to issuance of the final permit.**

Based on the potential for extremely harmful consequences to public water, public health, ecosystems, and additional public costs at water treatment systems, related to DEP decisions for Limerick Nuclear Power Plant's NPDES permit, we believe our requests for full and accurate disclosure, as well as prevention and precaution, are justified. It is important for the public to have a better understanding of the big picture and long term consequences from radiation and other toxics Limerick Nuclear Power Plant is actually discharging, especially into the Schuylkill River, a source of drinking water for almost two million people from Pottstown to Philadelphia.

- **To protect the public's water, health, and financial interests, we urge DEP to carefully consider issues we are raising as well as our recommendations for ways to reduce contamination in massive discharges into public waterways, instead of simply issuing this permit renewal with increases.**

Of major concern are the links which go unaddressed between this NPDES permit and Limerick's other permits and requests, including:

5. **Limerick's Title V Air Pollution Permit Issued by DEP**
   Link between huge TDS requested increase limits and PM-10 air pollution
6. **Limerick's Radiological Discharges Reported to NRC, but NOT in this NPDES Permit**
   A broad range of radionuclides discharged into the Schuylkill River are the most threatening discharge from Limerick, yet not clearly nor comprehensively addressed in this NPDES permit, even though DEP has a radiation department which deals with low-level radioactive wastes and this is about wastewater into the river. Radioactive water is likely in some of Limerick's other discharge points, but that is unclear.
7. **Exelon's Docket Requests to DRBC Related To The Schuylkill River**
   To Eliminate Temperature Restrictions, Lower Flow Restrictions, Reduce Safeguards, and Increase Mine Water Pumping into the River Increasing Toxic Metals and TDS in the Limerick Water Withdrawal.
8. **Exelon's Two "Uprates" to Run Limerick Harder, Logically Leading to Increased Water Intake and Toxic Discharges into the Schuylkill River and Other Limerick Discharge Points**
   Exelon's has plans for two uprate projects. Both could be completed during the time covered by this permit renewal. Has DEP discussed or pre-approved increases related to uprates in this permit renewal?

Changes requested by Exelon for Limerick's NPDES Permit are not simple changes as Exelon claims. DEP decisions could drastically increase threats to our region's air, water quality, health, and increase

public costs for water. Without a doubt, if Exelon requests are approved as requested, Limerick Nuclear Plant would be polluting the Schuylkill River, other discharge points, and the region's air even more. We need a clear understanding of how and why DEP decisions for this NPDES permit are being made, what is and is not actually included and why, and a clear understanding of the consequences of DEP decisions related to Exelon's other permits and requests.

Total Dissolved Solids Limits and PM-10 Emissions.

Our greatest concern is Exelon's request to double Limerick Nuclear Plant's Total Dissolved Solids (TDS) limit and the additional dangerous air pollution that would result from such a drastic increased limit.

DEP acknowledged that Limerick's NPDES Permit Renewal will increase air pollution from Limerick's cooling towers (DEP's Comment Response Document for Limerick's Title V Permit Renewal**). DEP admitted Limerick's cooling towers are an effluent stream from the river to the sky.**

Exelon acknowledged cooling towers produce too much air pollution when using air pollution as the excuse to refuse NJ DEP's request to construct cooling towers at their nuclear plant in New Jersey.

Why would PA DEP even consider approving Exelon's request to double Limerick's TDS limits knowing that will lead to huge increases in already dangerous air pollution from Limerick's cooling towers? Exelon's requests for double TDS limits for Limerick Nuclear Plant could lead to what appears to be the potential for an 8 times higher increase in dangerous Particulate Matter (PM-10) emissions.

Exelon's request for double TDS increases is NOT acceptable, especially when FILTRATION for Limerick's water withdrawal could eliminate the need for TDS permit increases, and therefore minimize PM-10 emissions from Limerick's cooling towers and other sources.

- ✓ PM-10 is regulated under Clean Air Act health based standards because it harms health. We remind DEP, PM-10 not only causes serious respiratory problems, it is also linked to heart attacks and strokes. PM-10 causes increased hospitalizations, etc., increasing health care costs to the public.
- ✓ PM-10 emissions from Limerick's cooling towers and Limerick's other three sources of PM-10 are not accurately measured and added. DEP allows Exelon to calculate PM-10 emissions from the cooling towers based on TDS. It would be beyond irresponsible to allow TDS limits to double current limits, knowing that will lead to increased PM-10 from the cooling towers and likely other Limerick sources, in a region where PM-10 emissions are already too high.

- ➢ **We urge DEP to carefully review ACE comments and requests below on Exelon's Requested TDS Limits and respond to each.**

Total Dissolved Solids (TDS) Limits

Attachment To Application Form (Section 12)

ACE is Strenuously OPPOSED to the Drastic Increases In Total Dissolved Solids Limits ~~Requested by Exelon in this Permit Application.~~

DEP Should NOT APPROVE Exelon's 2000 mg/l TDS Permit Limit Request.

Exelon is requesting Limerick TDS limit to be raised to - 2,000 mg/l

Limerick's Current Permit TDS Permit Limit is - 1,000 mg/l

Safe Drinking Water Act Standards for TDS are - 500 mg/~~l~~

We remind DEP that Limerick's Total Dissolved Solids limit is for discharges into a public drinking water source for almost 2 million people.

- **How could DEP possibly justify a TDS limit that is 4 times the limit of Safe Drinking Water Standards for this vital source of public drinking water?**
- **The current limit is double Safe Drinking Water Standards for a drinking water source. Why was that limit permitted in the first place instead of requiring filtration?**
  - ✓ When was the 1000 mg/l TDS permit limit first determined by PA DEP?
  - ✓ Did DEP consider the volume of TDS discharged - that TDS is discharged with over 5 billion gallons of radioactive water every year?
  - ✓ Did DEP allow a TDS discharge limit double Safe Drinking Water Standards based on dilution?
- **If Limerick's current TDS permit limit of 1,000 was largely based on a decades-old estimate using dilution, shouldn't TDS permit limits be REDUCED now based on lower river flows - NOT INCREASED?**
  - ✓ Schuylkill River flows are lower every year due to Limerick Nuclear Plant operations. Limerick significantly depleted the river flow since it started operating in 1985. Over 25 years more than 300 billion gallons of river water were never returned to the river. Tens of billions of gallons were instead emitted into the sky from the cooling towers containing PM-10.
- **In a depleting water source, wouldn't Limerick's continuous and massive TDS discharges be far more concentrated, especially in times of heat and drought?**
  - ✓ Limerick will continue to deplete the river as long as Limerick continues to operate**.**
  - ✓ The depletion threat could grow as a result of Limerick Uprates.
  - ✓ As depletion continues, the threats from concentration will increase.
  - ✓ How could DEP possibly consider a permit limit for TDS discharge 4 times higher?
- **Concentration of TDS levels in the Schuylkill River should be of concern to DEP due to the increased costs for all public drinking water systems to try to remove TDS in their treatment.** These costs will be passed off to the public. Many families are already struggling

to pay bills and can't afford to pay unnecessary increases in their water bills due to Exelon being permitted to massively increase TDS discharges into the Schuylkill River instead of filtering discharges.

LIMERICK VIOLATED NPDES PERMIT LIMITS FOR TDS

✓ Exelon Should Be Fined, Not Getting Increased Permit Limits

Exelon's Assertion That Limerick's TDS Violations Are An Excuse To Demand Increased TDS Permit Limits Is Both Outrageous and Unacceptable.

- **Limerick Nuclear Plant's TDS VIOLATIONS Should NOT Be Justification To INCREASE Limerick's NPDES Permit Limit Into A Public Water Source Where Water Treatment Companies Must Meet the 500 mg/l Drinking Water Standard.**

Limerick's NPDES Permit Violations Are Documented In Exelon's Permit Application.

Exelon's Own 2009 Data For Limerick's NPDES Permit Application Shows Many Violations, (Even With Exelon Using Diluted Composite Samples).

- **Limerick Nuclear Plant Violated Its NPDES Permit Limit for TDS:**

  13 of 16 Samples Violated Permit Limits (2009 - 2010)
  Violations Were Up To 5 Times Safe Drinking Water Standards

- **TDS sampling shows at times Limerick would violate even the newly requested permit limit of 2000 mg/l, especially in the hottest, lowest flow seasons of the year.**

  One Example of Exelon's TDS sampling data shows why filtration is imperative: Limerick's Daily Volume of TDS into the Schuylkill River from just one sample from one discharge pipe (Outfall 001) reached 2,419 mg/l

  - That's 5 TIMES Safe Drinking Water Standards.
  - In heat and drought conditions wouldn't DEP expect even the new limit of 2,000 mg/l to be violated?
  - How much will drinking water companies have to pay to treat that water to reach the 500 mg/l TDS limit for the water they sell their customers?
  - How much more will customers pay for their water because of DEP increasing TDS limits at Limerick?
  - Exelon admitted Limerick's current 1,000 mg/l TDS limit is not being met and that at times blowdown contains greater than 2,000 mg/l TDS.

When Exelon admits that in the hottest, lowest flow months, Limerick could violate even its newly requested permit increase of 2,000 mg/l, why shouldn't Exelon be required to pay for TDS filtration and avoid violations and costs to the public? Because Limerick Can't Meet Its TDS Permit Limit Into The Schuylkill River,

- **Exelon Should be Required to Filter Its Waste Water Discharges for TDS.**

- **The only solution to prevent unnecessary harm and costs to the public from massive TDS discharges from Limerick, is to**

require FILTRATION for TDS discharges into the Schuylkill River.

6. **If Exelon Refuses To Provide Filtration, DEP Should Levy Significant Fines For All Past, Current, and Future Violations.**

7. **Fines and Interest for Non-Payment Should Continue Until Exelon Agrees To Provide Filters to Meet Current NPDES Limits for TDS. Even Current Limits Already Double Safe Drinking Water Standards.**

8. **Limerick's excessive TDS discharges obviously contribute to increased costs for treatment and removal at water treatment systems. Exelon either pays for filtration of their TDS waste water discharges as a cost of doing their business, or the public pays in the end.**

9. **DEP should examine all past sampling data to determine the extent of past TDS Permit Limit Violations, then FINE Exelon for each and every NPDES permit violation for TDS, according to the extent of the violation. Fines from past violations could pay for split sample testing.**

10. **To justify the requirement for filtration, ACE urges DEP to do split sampling during June, July, August, and September of 2011, when TDS levels could be the highest. We believe this is the only way to have reliable, trustworthy data to determine actual TDS discharges from Limerick nuclear Plant.**

Exelon made what appear to be inaccurate claims. **Exelon claims Limerick's additions to TDS discharges should be well below the 1,000 mg/l limit. That appears to be inaccurate.**

- **Exelon claims the majority of Limerick's TDS permit violations are attributable to TDS in Limerick's Schuylkill River water intake. That appears to be disputed by data in Exelon's own permit application data.**

  Exelon's own data suggests Limerick's additions to TDS are over 2,000 mg/l.

  Exelon's Analysis Results Table - Pollutant Group 1 - Module 4

Limerick Outfall 001	Maximum Daily TDS	-	Concentration	2,419	-	Mass	286,458
Schuylkill River Intake	Maximum Daily TDS	-	Concentration	403	-	Mass	188,976

Exelon admits Limerick Nuclear Plant adds to TDS levels in discharge waters, stating it is mostly through addition of sulfuric acid in cooling tower basins.

- ✓ **What other practices at Limerick contribute to increased TDS concentrations?**

Wouldn't TDS produced at Limerick hold and concentrate radionuclides and other toxics associated with Limerick's operations?

That could increase health threats as well as costs to water treatment plant customers beyond Limerick, as well as all who use the river for recreation. **Harmful Long-Term Consequences From TDS Violations and Future Increases Need To Be Fully Understood and Disclosed PRIOR to issuance of this NPDES permit.**

1. **Do Limerick's other toxics concentrate in Total Dissolved Solids, including the wide range of long-lived radionuclides discharged from various underground radioactive liquid discharge pipes at Limerick?**

2. **If so, is that a consideration if TDS permit limits were dramatically increased?**
3. **Has DEP considered all the actual health, environmental, and financial costs to the public from the synergistic, additive, and cumulative toxic impacts from Limerick's TDS discharges over 25 years? Or what the impacts could be to the public if increased TDS limits were approved?**

Who is in charge of these important decisions? DEP or DRBC?

Item 8 of Permit Reference Page 33 suggests to us that Exelon has attempted to manipulate DEP into allowing DRBC to make NPDES decisions. Exelon is attempting to have DRBC regulate NPDES limits, instead of DEP.

- June 14, 2010 DEP/Exelon had a pre-application meeting. Are there minutes from that meeting?

Exelon's Mine Water Pumping For Limerick Increases Schuylkill River TDS Levels.

Scientific studies pinpoint mine drainage as a major source of total dissolved solids. Exelon's massive mine water pumping into the Schuylkill River since 2003, to supplement the river flow for Limerick operations, has contributed to higher levels of TDS in the Schuylkill River.

1. **Exelon is trying to get approval to pump more and more mine water into the Schuylkill River to operate Limerick. Over time, won't that increase total dissolved solids problems at Limerick's intake, as well as problems and costs for every water treatment plant from Pottstown to Philadelphia?**
2. **What were the TDS levels in Limerick Nuclear Plant's withdrawals from the Schuylkill River BEFORE mine water pumping started in 2003?**
3. **Since mine water pumping started, we understand TDS levels increased at the Pottstown WWTP.**
4. **Has DEP compared TDS intake at Limerick, before and after 2003?**

- **Independent data is needed, to compare TDS levels prior to 2003 with 2011 TDS data over June, July, August, September, and October. DEP should fine Exelon for Limerick's 2010 TDS violations at Limerick to pay for split sampling.**

Clearly, Doubling Limerick's Current TDS Limits Would Not Only Be Negligent Related To Increased Public Health Threats From Increased Air Pollution, It Would Also Be Negligent Related to Increased Costs to All Public Drinking Water Systems Beyond Limerick.

In summary, the ACE Rationale for DEP to DENY Exelon's Request to Raise TDS Limits in Limerick's NPDES Permit and for DEP to INSTEAD REQUIRE Exelon to Filter both intake and discharges for TDS is based on two major points.

3. **INCREASED AIR POLLUTION**
   In essence, DEP admitted that raising TDS limits will result in INCREASED PM-10 emissions from Limerick's cooling towers. Without a doubt this will cause INCREASED THREATS TO PUBLIC HEALTH.

- **To protect public health DEP should be requiring reductions in PM-10 emissions through TDS filtration, not allowing circumstances that lead to potentially an 8 times ~~higher increase in PM-10 emissions.~~**

4. **INCREASED COSTS TO PUBLIC WATER TREATMENT SYSTEMS, AND ULTIMATELY THE PUBLIC.**

Higher TDS limits for discharges into the Schuylkill River from Limerick will eventually result in increased costs to water treatment systems from Limerick to Philadelphia.

- **Public water costs will increase for customers. In these hard economic times, that is unacceptable. Either Exelon pays to filter out TDS from Limerick's discharges, or public water customers pay later.**

- **DEP- must stop shifting the burden for the astronomical costs of pollution onto the public, especially in such hard economic ~~times.~~**

Exelon makes billions of dollars in profits each year. Its CEO makes millions. Exelon can afford to filter Limerick's intake and discharges for TDS out of enormous profits and bonuses.

THERMAL DISCHARGE

DEP Should NOT Accept 1984 Estimates For 2011 Decisions.

- ✓ **Limerick Didn't even Start Operating Until After 1984**

APPENDIX F - Historical Information

As evidence of Limerick Nuclear Plant's thermal discharge impacts to the Schuylkill river, Exelon included a 1984 Environmental Statement from before Limerick started operating, for this 2011 NPDES permit.

Why would DEP allow Exelon to determine Limerick Nuclear Plant's thermal (heated) discharge threat to the Schuylkill River based on "estimated" conclusions from an outdated 1984 Environmental Statement produced before Limerick even started operating?

- The 1984 conclusions were based on ESTIMATES of dilution and river flows from BEFORE operations, and should have no bearing on current conditions for 2011 permitting, 25 years later.
- 1984 estimates were based on rapid dilution and typical river flows, which likely changed significantly over the past 25 years, largely due to depletion as a result of Limerick operations.
  - For 25 years, each year, possibly 15 billion gallons of river water intake were never returned to the river.
  - Only about 1 billion gallons per year were supplemented from the Delaware River (1985 to 2003).
  - Another 2 billion were supplemented each year from Tamaqua and the Wadesville Mine pit (2003 to 2009).
  - That means each year, 12 to 14 billion gallons of water were depleted from the Schuylkill River.
- NO independent study has been done to accurately determine harms already done from Limerick's current thermal discharge requirement.

- ✓ **DEP and the public need to know actual thermal discharge impacts to the Schuylkill River and its ecosystems, based on actual current flow rates during heat and drought, NOT on ESTIMATES from before Limerick started operating.**

Thermal Discharge - Exelon's Request and Rationale Item 5, Page 30

Exelon wants DEP to delete the thermal permit requirement, "No rise above 87 degrees F, and instead allow Exelon to do a study".

Temperature restrictions are an important safeguard for the Schuylkill River and its Ecosystems. This Exelon request to eliminate a thermal permit requirement is irresponsible. ACE strenuously objects to DEP eliminating temperature restrictions to accommodate Exelon's bottom line. This can obviously further jeopardize a vital public water source, the Schuylkill River, and its ecosystems.

- ✓ **How could DEP possibly defend eliminating temperature restrictions? How could DEP possibly trust a study controlled by Exelon? It is clearly NOT in the best interests of the public, for DEP to make permitting decisions based on the outcome of a study designed and paid for by Exelon, the company with a vested interest in the outcome.**

We believe Exelon's study will say whatever Exelon wants it to say, based on Exelon's history of deception, summarized at the end of this document.

- ➢ **Given the potential for harm, why would DEP trust a study controlled by the company with a vested interest in the outcome that has shown it can't be trusted?**

DRBC permitted Limerick Nuclear Plant to operate in relation to the Schuylkill River, based on a 59 Degree temperature restriction originally decided based on the concerns of water experts, which is still in place.

- ➢ **Explain how DRBC's 59 Degree Docket Limit for the Schuylkill River, relates to DEP's 87 Degree Temperature Restriction for Limerick Discharges into the Schuylkill River.**

A. **What year did Limerick Nuclear Plant receive its original NPDES permit?**
B. **What were the average winter and summer temperature of the Schuylkill River before Limerick received its first NPDES permit?**
C. **Why did DEP's permit allow an 87 Degree Limit for Schuylkill River discharges when DRBC's Docket had a 59 Degree Temperature Restriction?**
D. **Through FOIA, ACE obtained the original public hearing comments on Limerick Nuclear Plant. Clearly, many people and groups were most alarmed about Limerick Nuclear Power Plant's long-term impacts on the Schuylkill River water supply, water quality, and its ecosystems. Protective temperature restrictions were deemed critical.**
    a. **Why did DEP allow an 87 degrees F limit in the first place, when DRBC's temperature restriction is 59 degrees?**

Consequences from an overheated river can be serious and go beyond the ecosystem.

For example, in June, 2010, the Schuylkill River reached 89 degrees in Philadelphia. A triathlon swimmer died in the Schuylkill River and the rest of the event was cancelled.

- ➢ **DEP permitting allows Limerick discharges to raise temperatures by 2 degrees per hour and Exelon admits Limerick does raise temperatures by 2 degrees per hour. Look what can happen.**

Exelon says they would be forced to shut down Limerick when the river water temperature naturally reaches and exceeds 87 degrees, since discharge from 001 would cause a rise of the ambient temperature above 87 degrees.

- ✓ **To protect the river's ecosystem and public health, it seems clear that Limerick should be shut down when temperatures in the river reach 87 degrees or higher, to prevent Limerick from causing even higher temperatures.**

Exelon claims Limerick discharges do not increase river temperature by more than 2 degrees per hour, but is asking for no monitoring requirements to prove that.

- ✓ **We urge DEP to say NO to Exelon's request for "NO Monitoring of river temperatures" related to Limerick's thermal discharges.**

Exelon makes the unsubstantiated claim that the chances of Limerick thermal discharges raising temperatures by more than 2 degrees per hour is "highly unlikely".

- ✓ **There is NO INDEPENDENT PROOF to substantiate Exelon's claim that Limerick's thermal discharges are not raising Schuylkill River temperatures by more than 2 degrees. We believe Exelon's "highly unlikely" claim is illogical. Limerick depleted the river more and more every year of operation. Isn't it possible that Limerick's many millions of gallons every day of heated waste water discharges could be heating the river substantially more than 2 degrees in a depleting river?**

Exelon says the "likelihood" of cold shock of fish in the mixing zone is "very small".

A. **Did DEP ever attempt to verify the actual size of Limerick's mixing zone?**
B. **Do fish get cold shock even in 87 degree temperatures?**
C. **Do fish get impacted by heat shock? How hot can water be for various fish to survive?**
D. **How many fish are estimated to reside in the mixing zone? Is this located immediately after Limerick sucks up so many fish into its water withdrawal screens?**
E. **What specific types of fish resided in the river before Limerick started to operate? Are they all still found in the river? What kinds of fish are in the river now? What are the estimated numbers for each kind of fish before and after? Where does this information come from?**

Exelon refers to the outdated 1984 Environmental Report to NRC to conclude that a drop in temperature by more than 2 degrees per hour will not occur outside the area of initial dilution under a sudden stop of blowdown flow in combination with extreme low river flow conditions.

Why does DEP depend on conclusions based on a 1984 report, from before Limerick ever started operating, to make permitting decisions in 2011?

Exelon claims the in-river discharge diffuser limits the size of the mixing zone via effective heat dissipation.

Please explain how this limits transport of heat downriver as Exelon claims.

Exelon says Limerick's thermal discharge is "EXPECTED" to be in compliance with applicable limitations.

There is no proof that Limerick is in compliance with limitations.

Exelon again refers to the outdated 1984 Environmental Statement , in which, prior to Limerick's operations, NRC made the completely unsubstantiated claim that Limerick can be operated with "MINIMAL" environmental impact.

This 1984 claim is completely unsubstantiated and should not be used as justification for any reason in this 2011 permit. It is ridiculous to claim impact is "MINIMAL". That acknowledges there are harmful impacts, but justifies any amount since MINIMAL could be defined by interpretation.

Discharge Time For Total Residual Oxidants (TROs) -

INCREASE Permitted by DEP - From 2 to 3 Hours Per Day

Total Residual Oxidants (TRO) - Item 7 Page 33
2/29/08 PA DEP approved Exelon's request that Limerick's TRO discharge from Outfall 001 be increased from two to three hours per day.

- ✓ **In spite of the potential for additional harms to public water, air, health, and ecosystems, why did DEP approve Exelon's request?**

TRO Limits Control Toxic Chemical Addition

- ✓ **How did DEP verify that it was safe to approve the change that allowed this increased threat to public water, health, and ecosystems?**
- ✓ **Did DEP consider the consequences of added threats to air, as well as water?**

Exelon claimed this was necessary to continue Limerick operations. We disagree.

- ✓ **There was another solution - FILTRATION prior to discharge.** If Limerick cannot operate without increasing threats from their dangerous discharges, then Limerick should stop operating.

The health and financial consequences to the environment and people in the region need to be valued more than Exelon's bottom line.

Exelon Correspondence with DEP - APPENDIX E

Correspondence included by Exelon suggests a pattern of Exelon making requests to pollute more through their NPDES permit, and getting approval from DEP without independent investigation, testing, or reporting to protect the Schuylkill River, a vital public water source.

September 24, 2010 - Letter from Edward Callan, Limerick Manager To Jenifer Fields, PA DEP Regional Water Management

1. **PA DEP had a Pre-Application Meeting with Exelon June 14, 2010**
   Nothing is included in the permit related to the discussion of that meeting. Are there minutes from that meeting? Item 8 of Permit Reference Page 33 states clearly that in this meeting Exelon tried to manipulate DEP into drastically raising the Total Dissolved Solids (TDS) Limits from both cooling towers. Exelon wants DEP to allow DRBC to regulate limits.
   - Is DEP planning to allow DRBC to regulate these limits?

2. **Exelon made changes to chemical additives used at Limerick Nuclear Plant.**
   Chemical additives information in Module 1 is identical to submittal to DEP 7/30/10
   - Module 1 fails to make clear whether any of the original chemicals are still used. Are original chemicals still used?
   - How much of each chemical is used per year?

3. **Exelon made specific requests identified after Section 12 of the Application Form with rationale for each with relevant past correspondence.**

4. **July 9, 2007 EPA suspended the Phase II regulations and directed that until new regulations are issued, permits should include conditions developed on a Best Professional Judgment (BPJ) basis.**
   - **Who is in charge of securing the professional making judgment? Exelon or DEP?**

5. Exelon's request suggests the previous application is not being changed substantially, related to Limerick's description and classification and its source waters, Clean Water Act for cooling water intake structures (CWIS), and cooling water system.

- **What is substantial? It seems to us that "NOT Substantial" is a deceptive term being used by Exelon to try to verbally minimize obvious threats to get DEP to approve all the changes Exelon wants, regardless of the consequences to the river, ecosystems, public water, and even air.**
- **Does DEP consider Exelon's changes substantial or not? If not, why not?**

Please provide a response about whether DEP considers each of the requested changes listed below substantial or not. Exelon's subjective conclusions that these are "not substantial changes" appear to be self serving and out of touch with reality:

5) TDS Permit Limits - INCREASED from 1,000 to 2,000 mg/l.

6) TRO Time Limits for Toxic Additives - INCREASED from 1 hour to 2 hours per day - 365 days a year.

7) Elimination of Temperature Restrictions

8) Elimination of Monitoring for Temperature

6. Exelon claims Limerick's cooling towers with closed cycle cooling and an in-river diffuser is the Best Technology Available.

- **This waste water is highly radioactive. Does Exelon mean "best" is the cheapest technology or the safest technology?**
- **Has DEP ever investigated if there is technology that could better reduce radioactive threats to the Schuylkill River?**

February 29, 2008 - DEP to Edward Callan, Exelon Plant Manager Request to INCREASE (TRO) Discharge Duration

Exelon asked to INCREASE the maximum allowable discharge duration from TWO hours per day to THREE hours per day for - TOTAL RESIDUAL OXIDANT (TRO) DISCHARGE - into the Schuylkill River from Outfall 001.

- **It appears DEP approved the request based on Exelon's claim that they could not operate with a two hour per day limit.**
- **Did DEP even attempt to get Exelon to prevent the excess discharge? If not, why not, given the harmful impacts, especially in a depleting river?**

May 19, 1998 – DEP response letter to PECO Engineer, regarding changes tor monitoring and sampling requirements for Limerick's NPDES permit

1. PECO requested monitoring and sampling changes for Total Suspended Solids (TSS), phosphorus, copper, and zinc at Outfall 001. DEP approved PECO's request allowing PECO to use a representative composite sample while using DTS in the cooling towers with a net limit of 30mg/l as an average monthly, 60 mg/l maximum daily and 75 mg/l as instantaneous maximum at Outfall 001. (Effective June 1, 1998).

- **Representative composite samples and varying limits don't represent impacts of spikes and true threats to the river. They are dilution tactics.**

- **What is the DTS that Exelon uses in the cooling towers? The letter does not explain.**

2. PECO wanted to use representative sampling at Outfall 001 for phosphorus, copper and zinc. DEP said NO. It does not give information on the total concentration of individual pollutants in the sample – that the total concentration of the individual pollutant can vary. But DEP allowed PECO to conduct a study to demonstrate the long term relationship.

   - **Has Exelon since been permitted to use representative sampling at Outfall 001, instead of actual testing for all pollutants in the sample to determine actual concentrations of each varying pollutant?**

Sources of Wastewater – Module 3

Over 100 different radionuclides are associated with producing nuclear power. It does not seem there is testing for all the different kinds of radionuclides that could be in Limerick's radioactive waste water discharges.

Limerick Discharges Radioactive Wastewater into the Schuylkill River 24 hours a day, 7 days a week, 365 days a year.

Radioactive wastewater produced at Limerick is discharged into the river from Outfall 001. It appears Radioactive Wastewater discharged through Outfall 1 comes from SIX different radioactive sources at the site. Is that correct?

Radioactive Wastewater Sources Discharged From Outfall 001 Include:
- ✓ **Cooling Towers**
- ✓ **Spray Pond**
- ✓ **Holding Pond**
- ✓ **Closed Cooling Water Loops**
- ✓ **Treated Radwaste**
- ✓ **Laundry Drains**

DEP has a radiation department and should know and be responsible for all radionuclides discharged into the river. These radionuclides have synergistic, additive, and cumulative harmful impacts to each other as well as with all the other toxics permitted in this NPDES permit and discharged into the Schuylkill River.

- **ACE requests DEP to verify what levels of each radionuclide from each of SIX sources are discharged into the river and to require reporting of those in this NPDES Permit.**

Industrial Wastewater Types Discharged From Limerick

Module 1

Outfall 1
Only THREE samples are required for the NPDES Permit Application for Outfall 1, which contains extremely hazardous chemicals, in addition to a broad range of RADIONUCLIDES.

RADIOACTIVE Sources Discharging From Outfall 001 Include:

1. **Cooling Towers**
2. **Spray Pond**
3. **Holding Pond**
4. **Closed Cooling Water Loops**
5. **Treated Radwaste**

- **THREE samples from Outfall 001 are woefully inadequate to determine risk to the Schuylkill River for this NPDES permit. How could radioactive risks to the Schuylkill River and its users accurately be determined with just THREE samples that may or may not include all radionuclides?**
- **How does DEP justify only THREE samples considering;**

✓ Radioactive Discharges occur 24 hours a day, 7 days a week, 365 days a year.
✓ Any or all of over 100 radionuclides could be in the waste water at varying levels from Outfall 001.
✓ 14.1 Million Gallons of Limerick's Radioactive Waste Water are permitted to be discharged EVERY DAY. That's over 5 billion gallons per year.

- **Are all radionuclides that could be associated with Limerick's operations included in the THREE samples? If not, why not?**

- **Has DEP ever taken independent or split samples from 001? If so, when and how many? If not, why not?**

Outfall 3 and 5

Only ONE Sample is required for Drainage Area 003 and 005 via Holding Pond even though Storm water runoff from surface areas associated with industrial activity at the nuclear plant would logically would contain radionuclides.

A. **Couldn't Outfall 3 and 5 discharges contain radionuclides?**
B. **Can DEP prove they do not contain radionuclides? Is there any testing for radionuclides from Outfalls 3 and 5 ?**
C. **Why is only one sample required?**
D. **What other toxics are sampled?**

NO Samples From Condenser Water Box Drain Down

Exelon took NO samples from Units 1 and 2 Condenser Water Box Drain Down, even though Exelon says the water is the same quality as cooling tower blowdown.

✓ Exelon claims this should be exempt from sampling because refueling occurs infrequently.

A. **Why not, radioactive levels could be extremely high during refueling.**
B. **Avoiding this sampling ignores spikes and drives down averages.**

No sampling during refueling fails to identify potentially huge spikes and true threats.

- **Potentially huge spikes during refueling must be evaluated. It seems clear that DEP should require sampling from this source during refueling and add it to discharge averages.**

Materials and Waste Inventory

The long list of tanks storing massive amounts of extremely hazardous chemicals at Limerick Nuclear Plant is both shocking and alarming. The permit fails

Examples of storage tank inventory at Limerick listed below suggest there should be independent sampling for those chemicals massively stored at Limerick:

- **Radionuclides 1,312,320 Gallons - Stored In 18 Tanks**
- **Acid Chemicals 68,600 Gallons - Stored In About 20 Tanks**
- **Sulfuric Acid 22,000 Gallons - Stored In 2 Tanks**
- **Diesel 334,000 Gallons - Stored In 16 Tanks**

These dangerous chemicals don't disappear, they end up in water discharges and air emissions from Limerick.

- **<u>To Protect The Environment and Public Health DEP Should</u>;**

  1. **Require the most protective filtration PRIOR TO DISCHARGES into the Schuylkill River.**
  2. **Require far more sampling of discharges, into water and air, for all toxic chemicals massively stored in tanks at Limerick.**
  3. **Take periodic independent and split samples.**

<u>Wastewater Treatment Technologies</u>

This section suggests that NO ACTUAL FILTRATION is required prior to discharge from any of Limerick's discharge points, including the most dangerous, Outfall 001.

Treatment is NOT Filtration!
It Appears NO FILTRATION Is Required To Prevent Unnecessary Air, Water, and Soil Contamination.

1. **Are there any actual filtration technologies that could reduce radiation and toxics from Limerick Nuclear Plant discharges?**
2. **Is there any actual FILTRATION used on any of Limerick's wastewater discharges? If so, what kind of filtration is used for which discharge pipes? What do they filter out? Where are the filters disposed?**

Questions About Wastewater 'Treatment' Technologies:

- Discharging Heat By Evaporation To Atmosphere.
  - **A. Does This Mean Radioactive Decay?**
  - **B. If not, what does it mean? How does this work?**
- Ion Exchange – Processing and Offsite Disposal of Spent Resins
  - **A. What does processing mean?**

B. **Is this radioactive?**
C. **Is there testing? If so, where can test results be found? If not, why not?**
D. **Where are spent resins disposed?**

- Sediment Removal by Licensed Contractor for Offsite Disposal – From raw water treatment system blowdown and sedimentation from settling basin receiving drainage backwash.
  A. **Is blowdown radioactive?**
  B. **Is sedimentation radioactive?**
  C. **Are these tested for all radionuclide levels at time of disposal?**
  D. **Where are they disposed?**
  E. **How much is disposed each year?**
- Oil Removal by Licensed Contractor for Offsite Disposal - Separators receive wastewater from settling basin and plant drains.
  A. **Is this oil radioactive? Where is it disposed? Who is the licensed contractor?**
  - **Clearly, wastewater technologies have much to do with radiation at a nuclear power plant, yet that is not clear in this permit.**
  - **Throughout Limerick's NPDES permit, many issues deal with radioactive wastewater and waste, yet the permit rarely mentions radiation. That is both deceptive and confusing for those trying to have a better understanding of actual potential for threats and harms.**

Limerick Nuclear Plant's Discharge Points - 24 or 30?

1. Exelon Discharge Diagram Shows 24 Discharge Points, numbers 1 to 23, then 1 numbered 30. What happened to the other six - 24 to 29? Were they not listed or don't they exist? Why were they numbered this way?

2. Exelon's 2009 Radiological Monitoring Report shows Limerick contaminated groundwater with radiation through leaks and spills over many years.
   - What are the implications of that related to discharge pipes?

3. Has DEP ever done independent sampling for all radionuclides or the other toxic additives from all 24 or 30 discharge points, including those identified as storm water run-off?

4. Has DEP ever taken split samples for radionuclides or other toxics sampled by Exelon?

5. How does DEP verify the toxic discharges that Exelon doesn't measure, but instead calculates?

From Permit to Discharge Industrial Wastewater Section 8 - Outfall Locations

9 Limerick Nuclear Plant Industrial Waste Water Pipes Discharge Into the Schuylkill River?

- How many of them carry radioactive wastewater?
- While the permit suggests Outfall 001 is clearly the major threat to the Schuylkill River both from radionuclides and other toxics in Limerick's wastewater, numbers 10, 11, and 12 are also shown to be in the middle of the Schuylkill River. What do they carry?
- Has DEP ever tested any of them to verify Exelon's claims about contents of discharge pipes and levels, especially Outfall 001? Taken split samples?

- Has DEP ever tested the Schuylkill River water and sediment directly from Limerick's discharge pipes for all radionuclides and other toxics listed in this permit and associated with Limerick's operations? Has there been testing by any agency?
- David Allard, head of DEP's radiation department, did radiation testing of the Schuylkill River a few years ago in relation to the nuclear laundry. Did he include testing of Limerick's radioactive discharge pipes, a far greater radioactive threat? If not, why not? If so, where are the results located and has this department reviewed them? If not, why not?

14 Limerick Nuclear Plant Industrial Wastewater Pipes Discharge Into Possum Hollow Run.

- How many could be carrying radioactive wastewater?
- Is there any proof of what is actually in the discharges from all 14?
- Has there ever been independent testing of Hollow Run for all radionuclides or other toxics associated with Limerick's operations?

1 Discharge Pipe goes into Sanatoga Creek.

- What toxics are in that discharge?

Pollutants, in Addition to Radionuclides, Discharged Into The Schuylkill River From Limerick Nuclear Plant.

It is important to remember that Limerick Nuclear Plant discharges over 5 Billion Gallons of contaminated waste water into the Schuylkill River every year. Dangerous pollutants listed below are contained in the massive amounts of waste water discharged 365 days a year into the Schuylkill River, a public drinking water source.

The following dangerous pollutants were detected in Limerick's discharges into the Schuylkill River, but not in sampling on Limerick's intake from the Schuylkill River:

Outfall 001 - Group 2 - Module 5 - Detected Pollutants

- ✓ **Arsenic**
- ✓ **Chromium III**
- ✓ **Copper**
- ✓ **Lead**
- ✓ **Nickel**
- ✓ **Selenium**
- ✓ **Silver**

The nuclear plant site is obviously causing this contamination since these toxics are not reported to be in water Limerick is withdrawing from the Schuylkill River.

1. How are each of these toxics used at the Limerick site?
2. Were any of the 3 samples required to be taken in July, August, or September when flows are lowest and temperatures are highest?
3. When only 3 samples were required for toxics detected above, why were 53 samples taken only for Cadmium, a pollutant that doesn't appear to be a problem at Limerick? What is the justification for this disproportionate sampling?
4. Levels reported cannot be considered reliable if based on only 3 discharge samples for this permit. Sampling is woefully inadequate to determine actual threats.

More Pollutants Discharged From Limerick Nuclear Plant.

Detected and Reported By Exelon from Only ONE Sample Taken For This Permit

Group 1

- ✓ Chlorine
- ✓ Sulfates
- ✓ Surfactants
- ✓ Barium
- ✓ Iron (Total and Dissolved)
- ✓ Manganese
- ✓ Magnesium
- ✓ Molybdenum
- ✓ Titanium

Group 2

- ✓ Zinc
- ✓ Cyanide
- ✓ Phenols

- **Did DEP ever take split samples from any of these groups of chemicals to verify results? If not, why not?**

- **How does DEP estimate the total threat from years of constant massive discharges from Limerick?**

In reality, levels of each become far less significant, considering these toxics are synergistic, additive, and cumulative to all the long-lived radionuclides continuously discharged into the Schuylkill River from Limerick.

- **Wouldn't filtration prevent unnecessary eventual cost increases for all the water treatment companies from Limerick to Philadelphia, attempting to meet Safe Drinking Water Standards from water withdrawn from the Schuylkill River? Many of these toxics could and should be removed by Exelon with filtration at all Limerick's discharge points.**

Toxic, Corrosive Chemical Threats

Massive Amounts of TOXIC and CORROSIVE chemicals that are stored and used at Limerick do NOT disappear. Eventually they are discharged into our air, water and soil. Their contribution to synergistic, additive, and cumulative discharge threats from Limerick are not adequately evaluated or addressed.

To highlight our concern, below we summarize and identify where they are used, what they are used for, and how much of which chemicals are used per day.

Toxic / Corrosive Chemical Additives Are Used **In:**

- ✓ Cooling Towers
- ✓ Spray Pond - Raw Water
- ✓ Reverse Osmosis System

Toxic / Corrosive Chemical Additives Are Used **For:**

- ✓ Corrosion Inhibitors
- ✓ Dispersants
- ✓ Scale Inhibitors
- ✓ Surfactants
- ✓ Biocides
- ✓ Microbio/algicides
- ✓ Coagulants
- ✓ Anti-Scalants
- ✓ Scale Removers

Chemical Substance or Trade Name	Average / Maximum Per DAY	Effluent	Detection
• Sulfuric Acid	40,000 to 60,000 lbs Per Day	6 to 9 PH Units	.01 Standard PH
• Sodium Hypochlorite	16,000 to 58,000 lbs Per DAY	TRO Limits	50 as TRO
• Sodium Bromide	1,600 to 2,800 lbs Per DAY	TRO Limits	50 as TRO
• Foamtrol AF1441	450 to 900 lbs Per DAY	2-4 mg/l	CALCULATED
• AB Aquashade	450 to 900 lbs Per DAY	.02- .03 mg/l	20
• Inhibitor AZ8104	1,000 to 2,000 lbs Per DAY	8 -19 mg/l	CALCULATED
• Flogard MS6210	450 to 1,000 lbs Per DAY	3 -9 mg/l	CALCULATED
• Depositrol BL5400	160 to 320 lbs Per DAY	1-3 mg/l	CALCULATED
• Depositrol PY5204	2,000 to 3,000 lbs Per DAY	16 to 26 mg/l	CALCULATED
• Spectrus CT1300	1,200 to 2,000 lbs Per DAY	.20 mg/l	.052 mg/l
• Polyfloc AP1120	1.5 to 3 lbs Per DAY	.o1 mg/l	CALCULATED
• Klaraid CDP1346	120 to 200 lbs Per DAY	.34 -.56	CALCULATED
• Depositrol BL5307	1,000 to 3,000 lbs Per DAY	.005 - .009	1000
• Continuum AEC3120	8 to 16 lbs Per DAY	.1 - .2	CALCULATED
• Spectrus DT 1400	4,690 to 9,520 lbs Per DAY	TSS Limit	200 at TSS
• Spectrus NX1100	1 to 2 lbs Per DAY	< 1 by dilution	CALCULATED
• Spectrus BD1500	1,000 to 1,500 lbs Per DAY	11-17 mg/l	CALCULATED
• Spectrus NX1103	20 to 120 lbs Per DAY	.01 mg/l	CALCULATED
• SURE-COOL 1393	240 to 321 lbs Per DAY	2-4 mg/l	organic phosphate test
• C-9	937 to 1,000 lbs Per DAY	4-9 mg/l	zinc test, .01 mg/l
• 3D TRASAR 3DT197	1,000 to 2,200 lbs Per DAY	3-19 mg/l	tolytriazoletest. .01 mg/l
• 3D TRASAR 3DT 121	2,000 to 3,000 lbs Per DAY	11-25 mg/l	active polymer test.6 mg/l
• 3D TRASAR 3DT 138	1,000 to 4,000 lbs Per DAY	.013 -.025 mg/l	same as above
• H-550	300 to 1,000 lbs Per DAY	.02-.05 mg/l	Gluteraldehyde test, 20ppm
• NALCO 7469	450 to 900 lbs Per DAY	4-8 mg/l	CALCULATED
• NALCO H150M	1,200 to 2,000 lbs Per DAY	3-5 mg/l	Active quat test .020 mg/l
• NALCO 1315	14,370 to 28,560 lbs Per DAY	TSS Limit	Feed based on detox from H150M
• NALCO 8136	120 to 200 lbs Per DAY	.03-.06 mg.l	CALCULATED

• NALCO 73310	126 to 252	lbs Per DAY	1.4-2.8 mg/l	Nitrite test, 2 mg/l
• NALCO 73551	1,500 to 3,000	lbs Per DAY	10-20 mg/l	CALCULATED
• Ferroquest LP7200	600 to 600	lbs Per DAY	6.7 mg/l	CALCULATED
• Ferroquest LP7202	300 to 300	lbs Per DAY	3.4 mg/l	CALCULATED

While incomplete (Almost 20 more toxics are listed in the permit but not listed here). This partial list shows:

Over 94,293 to 192,614 LBS

Of Toxic Chemicals Used at Limerick Nuclear Plant PER DAY

- **These toxic threats could be minimized to protect the public's health and financial interests by requiring Exelon to filter Limerick's discharge points into the Schuylkill River and elsewhere.**

- **How much of each of the massive list of toxic chemicals used each day at Limerick are dumped into Limerick's cooling towers?**

Detection Limit Questions

1. **It appears DEP failed to establish a large number of effluent limits and/or monitoring requirements in the final NPDES permit.** At the bottom of sampling data pages, DEP states that showing lowest levels of detection limits possible will minimize the need for DEP to require Exelon to do additional analysis or for DEP to potentially have to establish a large number of effluent limits and/or monitoring requirements in the final NPDES permit. **This is NOT protective. DEP avoided setting effluent limits and/or monitoring requirements instead of trying to actually determine risk. This helps Exelon, but jeopardizes public interests.**

2. **There are no limits. DEP didn't even establish limit values for individual toxics in effluent for this NPDES permit. How can DEP determine Limerick's violations of limits for individual toxics or risks from them, if there are none?** If safe limits or reliable monitoring requirements have NOT been determined by DEP for each of the massive numbers of pollutants discharged 365 days a year from Limerick Nuclear Plant, how can DEP assure the public that their drinking water from the Schuylkill River can be filtered adequately or even treated to be safe?

3. **Without specific limits established for each toxic known to be associated with Limerick operations, how did DEP possibly determine it was safe to allow limits for these Toxic Additives to be INCREASED from 1 to 2 hours per day, every day for 365 days a year.** Without effluent limits or reliable monitoring requirements, on what

criteria did DEP base the determination that it was still safe to allow toxic additives (TROs) to be discharged for 2 hours a day every day, 365 days a year?

4. **Which toxics are actually regulated in this NPDES permit? Why are there no established levels for regulated pollutants into public drinking water sources?**

5. **Radioactive discharges, for example, are only partially addressed in this NPDES permit. Fractured permitting between DEP and NRC allows serious radioactive threats to public water to go unaddressed as pollutant discharges into public waterways, in this NPDES wastewater permitting.** Radionuclides, signature toxics for this nuclear plant site's discharges, and the most dangerous, being only partially addressed in this NPDES permit is a huge loophole that allows Exelon to avoid critical scrutiny on dangerous radioactive wastewater. Who is responsible to review the damage done by Limerick's radioactive discharges into all Limerick's many discharge points?

Parameter NOT Measured

- ✓ Mass is Calculated as Concentration Based on mg/l x 42 MDG x 8.3453 lb/gallon.
  It is unclear how one sample determines reliable numbers
  - Please explain why DEP believes a reliable number can be determined with only one sample.

DILUTION - AVERAGES FAIL TO IDENTIFY SPIKES and ACTUAL RISKS

- ✓ AVERAGES DILUTE DATA. DEP allowed Exelon to use averages of just 3 samples over a year to be used for this permit for many dangerous toxics.
- ✓ Averages fail to determine spikes and actual threats.
- ✓ Far higher levels and spikes can go on undetected for long periods of time when taking only 3 samples over 365 days.

COMPOSITE SAMPLES DILUTE REALITY of RISKS

- ✓ Throughout the permit it is clear that DEP has permitted Exelon to use composite samples. That allows deceptive diluted results.

Coefficient of Effluent Variability (CV)

- ✓ What does this mean and why is the entire column left blank?

The column "Believed Absent" has been LEFT BLANK in Pollutant Group Reports.

- ✓ Does that mean Exelon admits all the listed toxics are IN SAMPLES, even when Exelon claims some are NON-DETECT?
- ✓ Couldn't a toxic be in the sample, but lower than an arbitrary "detection limit", allowing Exelon to claim that toxic is Non-Detect?
- ✓ Who decides which detection limits will be used for each chemical? DEP or Exelon?

TESTING DATES FOR 2011 NPDES PERMIT RENEWAL

Other than 2009-10 TDS data, dates for other data used by Exelon for this permitting are unclear.

For example: Module 4, 5, Pollutant Groups Sampling Data Upper left corner states -

- **Rev. MARCH, 2006**

1. **What were dates of samples used for this permit?** Outfall 001? All others?
   Instructions at the bottom of each data page state: "Average of Analysis - Determine the average of all samples taken within the past year."
   - **Define Past Year. Were all samples for this permit taken in 2009- 2010?**

2. **Is it possible Exelon used sampling data taken prior to March 2006 for this permit application?**
   - If so, why would over 5-year old sampling data be allowed to be used for 2011 NPDES permitting? Shouldn't newer data be required for a 5 year renewal?
   - Is Exelon using old data because it is lower?
   - Is Exelon using old data to get around effluent limits and monitoring requirements for final permit?
   - Are there more recent samples? If not, why not? If so, why aren't they used?

Other Issues:

Acid/Chlorination of Cooling Water and Service Water

Listed in - Description of Facility - Page 3 of 4 - On-Site Activities

The acid/chlorination of cooling water has serious environmental and health consequences for our region, both from emissions into air, and discharges into waterways.

Enormous quantities of acids and chlorine chemicals are added to cooling tower waters which are turned into up to 42 million gallons of steam every day. Some of this acid/chlorinated water is discharged into the river.

Chlorine in air is a serious health threat to our region. WHO has a limit for chlorine in air.

- Has DEP ever tested chlorine levels in the air related to Limerick's steam to see if it meets safe standards?

What chlorine levels are permitted into the Schuylkill River or other waterways?

a. How are these levels measured?
b. If measured by Exelon, does DEP have any verification of reported levels?

Acids in the air can be devastating to the lungs and skin. There are extraordinary numbers of people with lung diseases and cancer, as well as skin rashes and other unexplained skin problems around Limerick. For years, people have been reporting serious corrosion damage to outdoor furniture and cars.

- Has DEP ever tested for acids or acid conversion chemical levels from Limerick's steam?

What levels of acidic waters are permitted into the Schuylkill River and other waterways?

a. Are all acids tested in discharge waters from all discharge pipes?
b. If Exelon does testing, does DEP have any way to verify results?

Waste Derived Liquid Fuels Burning

Listed in - Description of Facility - On-Site Activities - Page 3 of 4 - Revised 10/07

DEP's recent Comment Response Document for Limerick's Title V Permit Renewal stated waste fuels are no longer being burned in boilers at Limerick. This is no longer going on and there is no plan for it in the future.

a. Why is "Waste Derived Liquid Fuel Burning" still included in the description of the site?
b. Does this mean they are still allowed to do it?

Dredge Spoils

a. Where did they come from?
b. What toxics are in them?
c. If there is NO sample, how can anyone be sure what is in them?

ACE Summary Conclusions:

Data, Estimates, Reports, Studies, and Conclusions for this NPDES permit renewal are from Exelon, the company with a vested interest in the outcome, a company that has shown it can't be trusted.

ACE compiled a list below showing why DEP can't trust Exelon's data, estimates, reports, studies, or conclusions.

EXELON DECEPTION About Limerick's Water Intake and Consumption Is Highlighted by Exelon's Own Conflicting Claims

Exelon's inconsistent claims about Limerick Nuclear Plant's water intake and consumptive use are a glaring example of why it's impossible to trust Exelon.

- Exelon's Various Claims About Water Withdrawal:
  - **69** million gallons per day in 1970
  - **30** million gallons per day in the news reported October 8, 2008
  - **56.2** million gallons pay day in previous and current DRBC dockets
- Exelon's Unbelievable Conflicting Claims About Water Emitted From Limerick's Cooling Towers:
  - **35** million gallons per day in 1970
  - **38,059,065 to 40,723,200** Gallons Per Day
    (1/6/95 to EPA - Licensee Indicated Conservative Consumptive Flow Increase)
  - **42** million gallons per day in current DRBC docket
  - **35** million gallons per day - 1/06 Mercury and 6/17/08 to Pottstown
  - **17.5** million gallons per day average use July 22, 2008 – Republican Herald
  - **7** million gallons per day - October 8, 2008 – Mercury Special On Schuylkill River

Exelon failed to provide full, accurate, and timely disclosure of leaking pipes and radioactive contaminated groundwater.

- Exelon failed to take immediate action when problems were found. Even when radioactive groundwater contamination could no longer be denied, Exelon didn't replace pipes immediately.

- Exelon failed to report radiation leaks into water from their nuclear reactors for many years. Numerous repeated radioactive leaks went unaddressed over almost ten years at Exelon's Braidwood nuclear plant. Exelon also had radioactive leaks at their Dresden and Byron nuclear plants in Illinois. **Some called it Exelon's "Radioactive Watergate".**

Braidwood, Illinois

One shameful example of Exelon's deception and inaction that led to unnecessary health risks and diminished property value concerns.

- 22 recurring uncontrolled radioactive spills from the same buried pipe went inadequately addressed and not fully disclosed from 1996 to 2005.
- Exelon supplied 600 people with bottled water for more than four years.
- For many years there was no bottled water and even after the bottled water was supplied people were still forced to shower, cook, brush their teeth, etc. with radioactive contaminated water.
- Clean-up of so much radioactive contamination in the ground is a farce.
- Exposure increases the risk of developing cancer, according to legal papers. Ironically, while illogically claiming there was no public health threat, March 13, 2010 it was reported Exelon paid a court settlement.
- A resident said, "It's scary to live here, but who in their right minds would buy homes here?"
- Some people questioned whether or not a $1 million settlement to spend on some environmental projects makes up for damage caused by numerous radiation leaks discovered on and around nuclear power plants reported through the years.
- A mother of a teen battling cancer said, "If the cancer is in the air we breathe or the water we drank, I don't think there is enough money to go around. I know they admitted to the mistakes but how do you put a price tag on the environment?"
- Exelon is also paying $11.5 million to bring in a water system. Exelon is footing the bill for Godley residents to enjoy bottled water until the construction is complete.

Oyster Creek, New Jersey

Exelon failed to disclose radioactive leaks until 7 days after the Oyster Creek nuclear reactor was relicensed by NRC. In 2009 Exelon disclosed radioactive water leaking from buried pipes 7 days after NRC re-licensed this oldest nuclear plant in the U.S. Either NRC was duped by Exelon or NRC was complicit. Either is unacceptable.

- **This seriously damages trust in Exelon and NRC's credibility in its reviews for re-licensing.**
- **Radioactive water reached a major New Jersey aquifer (southern Jersey's main drinking water source), at concentrations 50 times higher than those allowed by law.**
- First reported April 9, 2009, the radioactive groundwater contamination is gradually moving toward wells in the area at 1 to 3 feet a day.
- Corrosion caused the reactor's crucial safety liner to rust and thin. How long were there undetected / unreported leaks? Is this happening at Limerick?
- NJDEP is taking aggressive action to safeguard water and hold Exelon accountable for this leaky 40 year old plant.
- The wait and see approach in response to another 'trust us' from Exelon resulted in exactly what some feared, contamination of one of the most significant aquifers in the region.
- NRC has failed to suspend or withdraw Oyster Creek's license renewal.

Unaddressed Limerick Leak - Reported by Whistleblower.

Exelon denied an unaddressed Limerick leak, even when ACE identified the fact that the information came from a document from Exelon's own files. Exelon's document proved the leak at Limerick went

unaddressed for many years, yet both Exelon and NRC first denied it ever existed. A year later, ACE was told by NRC that the leak had been fixed.

2007 Exelon Records For Limerick Nuclear Plant's Water Withdrawal and Payments Suggest Exelon May Have Underreported and Underpaid DRBC for Schuylkill River Water. ACE based concerns and conclusions of potential Exelon underreporting and underpayment on data for Limerick water use and payments that we received from DRBC through FOIA. Exelon's potential underreporting and payments for Limerick's Schuylkill River water use could have been going on since Limerick was purchased by Exelon. If conditions were that potential underpayments could have been verified, back payments and fines could have paid for an independent comprehensive study to determine actual damage to the Schuylkill River from Limerick operations since 1985 when Limerick started operating to date. Only then could we have a better idea of Limerick's true threat to the future water supply and quality for almost two million people who need the Schuylkill River for their vital public drinking water source.

Examples above provide evidence of why we cannot and should not trust Exelon's monitoring, testing, reports, or claims.

- **ACE views this NPDES permit to be the greatest threat to public drinking water of any permit we have reviewed to date. We urge DEP to independently verify all information provided by Exelon for this permit and to seriously consider more stringent requirements and our suggestions for filtration.**

- **We urge DEP to REJECT all Exelon's requests that will increase pollution while reducing safeguards. For example:**
  1. **TDS Permit Limits - INCREASED from 1000 to 2000 mg/l.**
  2. **TRO Time Limits for Toxic Additives - INCREASED from 1 hour to 2 hours per day - 365 days a year.**
  3. **Elimination of Temperature Restrictions**
  4. **Elimination of Monitoring for Temperature**

January 18, 2011

To: **Carol Collier, Executive Director DRBC**

From: The Alliance For Clean Environment (ACE)
1189 Foxview Road
Pottstown, PA 19465

RE: REQUEST FOR REVIEW AND RESPONSE

Ms. Collier,

As previously stated, ACE is extremely concerned about the long-term viability of the public water supply from Pottstown to Philadelphia. We view decisions now being made by DRBC and DEP as a matter of vital importance.

Since learning in 2006 about Exelon's "Demonstration Project" which allowed pumping of contaminated unfiltered mine water into the Schuylkill River we have been concerned. After learning that Exelon's Docket requests to DRBC included lowering flow restrictions, eliminating temperature restrictions, and minimizing monitoring requirements we became even more concerned. Later we learned that Exelon plans to pump more and more contaminated mine waters into the Schuylkill River. Since 2006 vast numbers of people signed our petitions opposing Exelon's requests. They agree that Exelon should be required to filter all mine water before massively pumping it into this source of drinking water to operate Limerick Nuclear Plant.

It is obvious that lower flows, more contamination, and less safeguards are a recipe for disaster. Limerick Nuclear Plant operations will continue to deplete the Schuylkill River likely by at least twelve billion gallons every year, even with supplementation.

However, we have become far more than concerned, even alarmed, after review of Limerick Nuclear Plant's NPDES Permit Renewal Application. Over the past 15 years we reviewed several NPDES permits, which all jeopardize the Schuylkill River, but Limerick Nuclear Plant's NPDES permit revealed Limerick's discharges are by far the worst threat of all. We prepared and submitted the attached comments, questions, and requests to PA DEP.

- **We urge you to carefully review the attached documents for a better understanding of unique and severe threats to the Schuylkill River from Limerick Nuclear Power Plant's radioactive and extremely toxic discharges, 24 hours a day, 365 days a year.**

Being responsible for water quality in the Schuylkill River, the source of drinking water for almost two million people from Pottstown to Philadelphia, we believe you should also be alarmed after review of the attached documents. Take a look at the extraordinary amounts and numbers of toxics (in addition to a broad range of radionuclides) used and discharged from Limerick Nuclear Plant into the Schuylkill River. There are nine discharge pipes into the Schuylkill River, with no independent monitoring, no set limits for most toxics in the wastewater, and lax oversight with requirements for only 1 to 3 samples for LImerick's NPDES permit This is frightening. How could water treatment systems beyond Limerick possibly deal with this kind of threat?

Notice that Exelon is asking for a Total Dissolved Solids (TDS) limit that is four times Safe Drinking Water Standards. How much would it cost water treatment systems to try to deal with that over time? TDS should be of particular concern to you and DRBC's Docket Decisions. Total Dissolved Solids are discharged with massive amounts of mine water. A DRBC decision to allow unfiltered mine water pumping could eventually become a huge financial burden to every water intake from the Schuylkill River headwaters to Philadelphia. Neither water treatment plants nor their customers can afford to deal with additional treatment costs to try to meet the Safe Drinking Water Standards of 500 mg/l, especially in this economy. Exelon should be required to pay for filtration before mine water is pumped into the river to avoid increased public costs for water.

Exelon's request to DEP asks to double the current TDS limit of 1000 mg/l to 2000 mg/l in their NPDES permit. That presents unacceptable air pollution threats from major increases of PM-10 emissions from Limerick's cooling towers, as well as increased costs to public water systems and their customers all the way to Philadelphia, only 20.7 miles Southeast of Limerick Nuclear Plant. The TDS issue is detailed in our comments.

There are other overlapping issues involving DRBC's eventual Docket Decisions and DEP's NPDES Permit Renewal.

- **We ask you to review our comments and respond to ACE about DRBC's views on those issues that overlap.**

- **We also ask you to investigate and respond to our concerns about the consequences of both of Exelon's planned Uprates, in terms of more Limerick water intake required from the Schuylkill River and increased toxic and radioactive discharges into the Schuylkill River, and how that relates to this increasingly depleted public drinking water source.**

Respectfully,

Dr. Lewis Cuthbert
ACE President

Attachments

May 11, 2011

To: **Carol Collier, DRBC Executive Director**

From: Dr. Lewis Cuthbert
Alliance For A Clean Environment
1189 Foxview Road
Pottstown, PA 19465

Subjects: DRBC Negligence and Attempt to Limit Pubic Participation

1. Your Failure to Respond To ACE's January 18, 2011 Request For Review and Response on Overlapping Issues With Exelon's NPDES Permit Renewal Request to PA DEP to Eliminate Temperature Restrictions in the Schuylkill River:
    - Specifically Our Concerns About Schuylkill River Temperatures Related to Limerick Nuclear Power Plant's Radioactive Heated Discharges and
    - How Increased Temperatures Due To Limerick Operations Could Be Causing More Harm Than Anticipated In The Environmental Impact Statement From 1985, Due To Massive Depletion of the River From Limerick Operations.
2. Exelon's Confusing DRAFT Docket and Untimely Notice of a Public Hearing.
3. Comments For Public Hearing DOCKET NO. D-2010-040 CP-1

Dear Ms. Collier,

First, we are dismayed that once again we cannot get answers to the important questions we raise concerning the drinking water source for almost two million people from Pottstown to Philadelphia. We remind you that we e-mailed you a cover letter (attached), our letter to PA DEP (attached), and an entire packet of information further explaining our concerns in the mail. To date, you failed to respond. This is no way to treat public concerns about drinking water.

Second, we did not attempt to rearrange our schedule to attend the public hearing in Trenton, New Jersey, planned for today for several reasons:

1. Exelon's Draft Docket fails to even mention Limerick Nuclear Power Plant. We are not sure what this is about.

2. If it is about Limerick's 5 billion gallons of heated radioactive discharges each year, there was not enough time to prepare comments, much less present them.

   A. DRBC received this DRAFT Docket April 8, 2011, but failed to provide it to anyone for review until May 2, just six working days prior to DRBC's May 2 notice of a public hearing May 11.

   B. Six working days is not nearly enough time for ACE to secure an expert to volunteer time to review the docket so that we could prepare comments for a public hearing.

3. DRBC's public hearing was scheduled for 19 issues in total. This was #18. Public comments were scheduled to begin until 1:00 P.M. Clearly, there was not much time scheduled for each issue. This is no way to treat issues of such importance.

We do have several important questions about Exelon's Docket Request:

1) Does this have anything to do with Limerick Nuclear Plant's heated radioactive discharges into the Schuylkill River? If so, why isn't Limerick mentioned?

2) Why would DRBC allow a docket with combined discharges from several facilities? That hides actual impacts from each. It makes it far more difficult for anyone to scrutinize effects of each, including DRBC.

   ACE opposes combined discharges. We request that DRBC require Exelon to separate and identify discharges from all facilities so that the public can better evaluate and understand harms from each.

3) Why is there a 110 Degree F Temperature Discharge Limit? How can that be safe or healthy for the ecosystem of an ever depleting river?

   ACE requests that DRBC NOT grant Exelon any exception to maximum allowable temperature requirements for any discharge location on the Schuylkill River to attempt to protect the health of the river and its ecosystems.

4) Why would DRBC rely on a MODELING STUDY, much less one that is done by the company responsible for the harms?

   It is reasonable to anticipate that Exelon's modeling is likely to say whatever Exelon wants it to say to get what they want, regardless of the harms caused by their operations.

ACE encourages DRBC to more carefully and frequently independently inspect and scrutinize all records from Exelon, including monitoring data and payments for water use.

- **Please apply all comments on this communication to the public hearing record on Docket NO. D-2010-040 CP-1, submitted on the public hearing date, May 11, 2011.**

August 12, 2011

To: Carol Collier, DRBC Executive Director

From: Alliance For A Clean Environment
Dr. Lewis Cuthbert, ACE President

Re: DRBC Decisions On Limerick Nuclear Plant's Water Use and Hazardous Discharges Could Result In Not Enough Safe Drinking Water For Almost Two Million People From Pottstown to Philadelphia

Limerick Nuclear Plant operations present unparalleled harms to the Schuylkill River, a vital public drinking water source for almost two million people from Pottstown to Philadelphia.

Limerick cooling towers drastically depleted the Schuylkill River since the late 1980s after Limerick started operating full force, while at the same time Limerick continuously discharged radioactive and heated wastewater (loaded with many other dangerous toxics), into the river 24 hours a day, 365 days a year.

Before DRBC made the disastrous decision to approve Limerick Nuclear Plant construction, public hearing evidence shows many were alarmed about Limerick's heated and radioactive discharges and that the Schuylkill River could not continue to sustain Limerick's water depletion forever. Supplementation efforts have never been sufficient to replace the many billions of gallons lost in the cooling towers each year.

DRBC's current decisions could compound Limerick's threats, making a bad situation far worse for almost two million people who desperately need the Schuylkill River to supply ample safe drinking water.

- **How could DRBC possibly justify allowing Exelon to continue to massively pump contaminated unfiltered mine pit water into the Schuylkill River to supplement the flow for Limerick's operations, without requiring filtration of all mine water PRIOR to pumping it into the river?**

- **It would be unethical and even immoral for DRBC to approve Exelon's current requests to eliminate Schuylkill River temperature restrictions, lower flow restrictions, reduce monitoring, add more contaminated unfiltered mine waters, and eliminate public participation in the future. Current economic conditions and the push for deregulation will lead to less oversight with increased health and financial risks. Clean-up at water treatment plants will either cost the public more or result in less effective treatment.**

- **In our opinion it is unethical for DRBC to enable a grant program to be used by Exelon as a smokescreen to whitewash major growing irreversible and undeniable harms to the Schuylkill River from Limerick Nuclear Plant operations. Exelon's role in determining who gets funded buys them silence and support.**

Exelon shamelessly plans more use and pollution of the Schuylkill River through Uprates and Relicensing. Exelon also wants Limerick's NPDES pollution discharge limits into

the Schuylkill River to be raised to FOUR times Safe Drinking Water Standards, even though this is a vital source of drinking water.
What happens when there is not enough safe drinking water for all the people who need it from Pottstown to Philadelphia? It is crucial for DRBC to look at Limerick Nuclear Plant's serious collective threats to Schuylkill River drinking water, and take immediate action to minimize damage.

- **We URGE You To Review and Respond In Writing, To Each Issued Raised In ACE 1-19-11 and 5-11-11 Correspondence (PLUS All Attachments). In the balance is irreparable harm to the Schuylkill River, its ecosystems, public drinking water, and public health.**

NPDES permit issues overlap with several of Exelon's current docket requests to DRBC. You failed to respond to our requested investigation of NPDES issues, including drastic increases in toxic threats to the Schuylkill River and higher river temperatures.

1-19-11 ACE requested that you provide written responses on issues overlapping with Limerick's NPDES permit for the Schuylkill River and Exelon's current docket requests. **You FAILED to respond (in almost 7 months).**

5-11-11 ACE contacted you about DRBC negligence in failing to respond, and DRBC's apparent attempt to limit public participation. We asked for clarification. **Again, you failed to respond (in 3 months).**

Since 2006, ACE raised important questions and concerns about Limerick Nuclear Plant's threats to the Schuylkill River. Your responses were consistently delayed, if addressed at all, and woefully inadequate.

Since 2006, ACE requested a comprehensive independent testing and monitoring protocol, to fully and accurately determine and disclose all harms to the river to date, after 25 years of Limerick's operations, to help determine consequences in the future. That never happened.

DRBC decisions impact the future viability of the Schuylkill River, yet DRBC continues to use biased data paid for by the company with a vested interest in the outcome that has shown elsewhere it can't be trusted.

Since 2007, ACE has collected vast numbers of signatures on petitions opposing Exelon's self-serving requests to DRBC, which if approved, could eventually result in almost two million people no longer having enough safe, usable drinking water. That would constitute too great a price for the continued operation of the Limerick Nuclear Plant.

Copies: **Federal Elected Officials of Impacted Communities**
State Elected Officials of Impacted Communities
Philadelphia Inquirer
Pottstown Mercury
Norristown Times Herald

August 26, 2010

To: DRBC

From: The Alliance For A Clean Environment
Dr. Lewis Cuthbert

RE: **Failure to Respond Concerning:**
Limerick Nuclear Plant's Threats to the Schuylkill River

We are frustrated with DRBC leadership, who appear to believe they have no obligation to answer public concerns. To date, Carol Collier made no attempt to respond to important concerns, e-mailed and faxed to her (copied to William Muszinski) on May 10 and July 22. This is the latest in a long list of NO RESPONSES. Time after time, it has been difficult to get answers and important information, even under the Freedom of Information Act. ACE has compiled a long list of DRBC's negligence and unresponsiveness, which we intend to put on a public hearing record when the public hearing that was promised is finally held in Pottstown, prior to approval of Exelon's current docket requests. This may be the only way for us to get responses with full disclosure.

We are perplexed as to why DRBC ignores the reality of Limerick Nuclear Plant's threats to water quality, water supply, and ecosystems in the Schuylkill River. DRBC invites us to meetings, but we doubt we would be given adequate time to discuss the many unresolved, unanswered, complicated issues from our 4 ½ year investigation. In fact, it appears those meetings largely deal with little more than reviewing testing and reports paid for by Exelon, the company with a vested interest in the outcome. That is even more suspect this year. Among other concerns, Exelon's contamination data will be deceptive for 2010. Exelon diluted the river with clean water from Tamaqua, while not pumping water into the river from Wadesville Mine.

- **We hope DRBC will take this into account related to the Iron and Manganese data from water treatment plants.**

In addition, another concern has recently been brought to our attention by a retired government agency official who questioned how the Wadesville Mine water ever got approved for discharge into the Schuylkill River. He was informed that testing was done on water from a spigot instead of the mine. When trying to get DEP to investigate, he was told DEP didn't care.

- **Does DEP or DRBC physically oversee the Wadesville Mine Water testing source?**

Exelon's record on full and accurate disclosure has become even more tarnished since we originally expressed concerns in 2007. As first stated to Mr. Muszinski at a meeting in our office in 2007, based on Exelon's "Radioactive Watergate" elsewhere, we have no confidence and little interest in reports paid for by Exelon. We provided Mr. Muszinski with extensive information showing cause for concern and the need for independent testing related to Exelon's "Demonstration Project". He claimed there was no money, but failed to admit DRBC is paid by Exelon for Limerick's consumptive and non-consumptive use of Schuylkill River water. In fact, we learned later that Exelon pays DRBC for water withdrawn and discharged. This revenue should be used for an independent testing protocol to look at all aspects of harms, before allowing more unfiltered contaminated mine waters to be massively pumped into the Schuylkill River.

Exelon's 2007 reporting and payments to DRBC, finally received by ACE through FOIA months after the first of four requests, appear to reveal that Exelon unreported and underpaid for Schuylkill River water. DRBC didn't even have the courtesy to respond to ACE's request for an investigation of Limerick's Schuylkill River water use compared to Exelon's request for water use, use at other nuclear plants, and payments for all years since Exelon took over in 2000. We believe that could lead to revealing many years of underpayments, likely more than ample for an independent and comprehensive testing protocol.

FOIA reveals many knew the water needs of Limerick Nuclear Plant from the Schuylkill River were unsustainable, yet DRBC made decisions that allowed this nuclear plant to be built anyway.

- **Due to DRBC's original irresponsible decisions, we now face the consequences of serious depletion of the Schuylkill River with ever increasing radioactive contamination from Limerick's discharges plus massive toxic metal contamination as a result of pumping unfiltered contaminated mine water into the river to supplement the flow due to the enormous shortfall of water from Limerick Nuclear Plant's consumptive use.**

DRBC should not compound its original bad decision to allow Limerick Nuclear Plant to be built knowing Schuylkill River water use was unsustainable, Don't allow increasing amounts of unfiltered, contaminated mine water to be pumped into the Schuylkill River, polluting the depleting river for Limerick's operations.

- Exelon is applying for Uprates which will require more water.

- Exelon is applying for Relicensing to operate until 2049, using extraordinary amounts of Schuylkill River water for another 35 years. With already frightening Schuylkill River depletion, how can the Schuylkill River sustain billions more water used each year than returned for another 35 years?

- **A DRBC decision to allow pumping more contaminated mine waters into the river will not only further contaminate the depleting Schuylkill River, it could allow Limerick's continued and increased unsustainable water use until 2049**.

To protect the public's water and financial interests,

1. **We urge DRBC to use money received from Exelon for use of Schuylkill River water to hire a truly independent scientist to set up an independent comprehensive protocol to determine all harmful impacts on the river since Limerick started to operate 25 years ago.**

2. **If DRBC will not do independent testing,** DRBC **should DENY Exelon's requests to pump unfiltered contaminated mine water into the Schuylkill River for Limerick's operations.**

In conclusion, ACE officers will NOT attend the September 2 meeting, but will attend a meeting if and when there is meaningful, comprehensive reliable data and reporting from an independent expert, not paid by Exelon.

For your convenience, we have attached the last two e-mails and faxes to which we never received responses.

Fwd: Request For Immediate Response

From : aceactivists@comcast.net Thu Jul 22 2010 8:18:02 AM

Subject : Fwd: Request For Immediate Response

To : Carol Collier <Carol.Collier@drbc.state.nj.us>

Cc : Governor Rendell <governor@state.pa.us>, DRBC William Muszynski <William.Muszynski@drbc.state.nj.us>

Bcc : ACE <aceactivists@comcast.net>

July 22. 2010

To: **Carol Collier, DRBC**

From: Dr. Lewis Cuthbert, ACE President

Subject: **Failure to answer questions from 5/10/10 and new questions and requests.**

May 10, 2010 we e-mailed and faxed you the request below for an immediate response. It is now July 22, 2010 and we still have NO RESPONSE from you.

We cannot believe that you are not responsible to answer the public's questions, when the issue is safe public drinking water for almost two million people from Pottstown to Philadelphia.

Since that time in June and July, we have had extended extreme heat. We now add other questions to our original questions.

People are expressing concerns to us about the depletion of the Schuylkill River and the concentration of toxics because of it.

1. Has Exelon resumed pumping Wadesville Mine water into the river?
2. Is Exelon pumping mine water from any other mines into the river?
3. Before DRBC approval of Exelon's requests, we are officially requesting independent testing, including for iron and manganese, at the end of the summer when the river is depleted to the full extent, to determine what will happen in the future in extreme heat and drought. We ask that the money be used that Exelon pays DRBC for public water from the Schuylkill River.

Based on resports to ACE, we believe the temperature issue from Exelon discharging millions of gallons of heated water per day needs to be investigated now. There was a triathlon event planned for the Schuylkill River in Philadelphia in early June where college students were told it was dangerous to swim because the river was too warm. They were told it was 89 degrees. People competed in the event anyway.

1. Has DRBC even checked the Schuylkill River temperature, below where Limerick Nuclear Plant continuously discharges heated water?
2. We urge DRBC to do temperature testing at various locations in the Schuylkill River, from Royersford to Philadelphia. Again we ask that the money that Exelon pays DRBC be used for independent testing to determine water

temperature and risks to the public andn aquatic life.

Evidence in Illinois and New Jersey shows Exelon's monitoring, testing, and reporting can't be trusted. Recent falsifying of water tests reported in the Mercury 7/2/10 shows once again (there have been others in PA) just how easy it is for a wealthy polluter to pay for the results they want.

We urge you to take this seriously and spend the money to get the truth told BEFORE any decisions are made on Exelon's requests to eliminate temperature restrictions.

Heatlh, lives, and a major water source are at risk.

PLEASE RESPOND AS SOON AS POSSIBLE TO QUESTIONS BELOW AND ABOVE!

If we do not receive answers to all our concerns within 30 days, we intend to contact our federal and state officials about this vitally important matter.

----- Forwarded Message -----
From: aceactivists@comcast.net
To: "Carol Collier" <Carol.Collier@drbc.state.nj.us>
Cc: "DRBC William Muszynski" <William.Muszynski@drbc.state.nj.us>
Sent: Monday, May 10, 2010 10:32:24 AM
Subject: Request For Immediate Response

The Alliance For A Clean Environment
1189 Foxview Road
Pottstown, PA 19465

May 10, 2010

REQUEST FOR IMMEDIATE RESPONSE

Ms. Collier,

We just learned from Exelon employees that DRBC plans to finalize the Docket for Exelon's Demonstration Project soon. If true, we have major concerns about that.

1. We are concerned that last year's testing data is significantly skewed based on what we learned.

- Exelon employees claimed that NO mine water was pumped by Exelon into the Schuylkill River last year (2009). Is that true?

- They also claimed only clean water from the public reservoir was pumped into the river (2009). Is that true?

If both of Exelon's claims are true, 2009 Exelon data would NOT be representative of on-going and future contamination threats to the Schuylkill River, the public, wildlife, and water treatment systems from pumping massive amounts of contaminated, unfiltered mine water into the Schuylkill River.

- Using 2009 data would significantly dilute risks and clearly fail to provide a way to accurately estimate what would happen to the river and water treatment systems in times of drought. Any cumulative or averaged statistical data or reports that include 2009 data are not accurately representative of threats posed to the public and water treatment systems.

➢ **If claims of Exelon employees are true, ACE strenuously objects to DRBC's use of 2009 Exelon data on Exelon's Demonstration Project. Clearly, use of 2009 data (when no mine water was pumped into the river but only clean water was), does not reflect an accurate picture of mine water contamination of the Schuylkill River and iron and manganese threats to water systems in the future, but instead dilutes the reality of harms.**

2. If it is true that DRBC soon plans to issue the Docket being reviewed, we strenuously object. DRBC never responded to many of the issues we raised, including Exelon's apparent underreported and underpaid use of Schuylkill River water, and the relationship between mine water pumping and Exelon's request to significantly increase TDS permit limits at Limerick's intake. There are several others.

➢ **Does DRBC really plan to issue the Docket approval at this time, before answering the public's questions and after a year when mine water was not used? If so, we request a copy electronically, at the same time it is provided to Exelon.**

Please respond as soon as possible.

Thank You,

Dr. Lewis Cuthbert
ACE President

How Much Water Does Exelon Withdraw and Use Per Day For Limerick Nuclear Plant?

DRBC Nor Anyone Else Knows For Sure Because Exelon Controls Data

INCONSISTENT NUMBERS

ORIGINAL 1970 - Water Requests By PECO – Prior To Operation;

Consumptive Use

- Average 2 Units — 35 Million Gallons Per Day
- **Maximum 2 Units** — **42 Million Gallons Per Day**

Non-Consumptive Use

- Average 2 Units — 12.9 Million Gallons Per Day
- **Maximum 2 Units** — **14.2 Million Gallons Per Day**

CURRENT 2008, Exelon Request To DRBC

- **SAME as original maximum requested in 1970**

Consumptive Use

- **2 Units** — **42 Million Gallons Per Day**

Non-Consumptive Use

- **2 Units** — **14.2 Million Gallons Per Day**

January, 2006 - Mercury Article

Consumptive Use — **35 Million Gallons Per Day**

June 17, 2008 – Exelon's Presentation To Pottstown Authority

Docket restricts consumptive use — **35 Million Gallons Per Day** (Over Six Months)

July 22, 2008 – Republican Herald - Exelon Spokesperson, Rachelle Benson Said:

Average Combined Cooling Water Use - **17.5 Million Gallons Per Day** **NOT TRUE**

October 8, 2008 – Mercury Special On Schuylkill River – TOTALLY INACCURATE

Exelon **Claimed 30 Million** Gallons Per Day Withdrawn **NOT TRUE**

- Original to Current Withdrawal Requests - 69 to 56.2 Million Gallons Per Day

Exelon **Claimed 7 Million Gallons** Per Day **Evaporate** Through Cooling Towers **NOT TRUE**

- 1970 to Current 2008 Docket Requests – 35 to 42 Million Gallons Per Day

Exelon **Claimed Most Water Is Pumped Back** **NOT TRUE**

- 1970 to Current 2008 Docket Requests – 14.2 Million Gallons Per Day Pumped Back
- Only **ONE QUARTER Is Pumped Back** To the Schuylkill River **– NOT MOST**

1995 - Limerick's Consumptive Use was EXPECTED by the Licensee (PECO - EXELON) To SIGNIFICANTLY INCREASE From the 35 Million Gallons Per Day Claimed Since 1970

- **To 38 - almost 43 Million Gallons Per Day**

1/6/95 – Licensee - Existing Consumptive Flow Will **INCREASE** CONSERVATIVELY;

- 38,059,065 to 40,723,200 Gallons Per Day

1995 - EPA Environmental Impact - Limerick Unit 1 Federal Register

Recent DRBC Information Reveals Still Different Numbers

10/21/08 - DRBC Letter to ACE

On Exelon's Totals For Payment Related To Schuylkill River Water

2007 Exelon Report To DRBC – QUESTIONABLE AT BEST

Consumptive Use **26.6 Million Gallons Per Day**
Non-Consumptive Use **8 Million Gallons Per Day**

NOT TRUE - Compared to Exelon's 1970 Claims and Current 2008 Claims
Consumptive Use **35 Million Gallons Per Day**
Non-Consumptive Use **14.2 Million Gallons Per Day**

12/2/08 - DRBC E-Mail to ACE

William Muszynsky, DRBC, **Claims Limerick RETURNS about 10% - NOT ACCURATE**

PECO / Exelon Previous and Current Limerick Nuclear Power Plant Water Discharge Requested In Docket

- **14.2 Million Gallons Per Day Returned to the Schuylkill River**

14.2 Million Gallons Per Day Represents

- **ONE QUARTER Water Returned to the Schuylkill River – NOT 10%**

Do The Math

PECO / Exelon 1970 and 2008 Requests For Limerick Nuclear Power Plant

- **Total Water Withdrawal - 56.2 Million Gallons Per Day**
- **Return To River - 14.2 Million Gallons Per Day**

14.2 is 1/4 of 56.2 - NOT 10%

The Alliance For A Clean Environment

1189 Foxview Road Pottstown, PA 19465

(610) 326-6433

The Alliance For A Clean Environment
1189 Foxview Road
Pottstown, PA 19465

January 15, 2009

John Hanger, Secretary
PA Department of Environmental Protection
Rachael Carson Office Building
400 E. Market Street
Harrisburg, PA 17105

Dear Secretary Hanger,

Because you had Cathy Curran Myers respond to Senator Rafferty for you, regarding Exelon's requests to DRBC related to Limerick Nuclear Power Plant's Schuylkill River water use, we feel it is important to personally inform you about the reality related to these issues. Our conclusions are based on information gathered over the past three years through FOIA, official documents (DRBC Dockets, Wadesville's NPDES permit), Exelon's statements and power point presentation to Pottstown Borough Authority, and the public.

In Ms. Myers November 26, 2008 letter to Senator Rafferty, she omitted several of Exelon's requests. She also made what appear to us to be inaccurate statements.

Exelon's application to DRBC is about a lot more than Exelon's "Demonstration Project", which has added billions of gallons of Wadesville Mine water into the Schuylkill River since 2003 which is highly contaminated with manganese and iron. Exelon has asked to minimize and even eliminate very important and necessary safeguards, eliminate public participation hereafter, and add additional mine waters to the Schuylkill River. See attachment on Exelon's current requests to DRBC.

DEP is allowing Wadesville Mine water to be massively pumped into this drinking water source, with manganese up to 80 times higher than Safe Drinking Water Standards and iron 20 times higher. Each year, Wadesville Mine water is discharged at 24,300 gallons per minute continuously over a 6 month period, at the lowest flow time of the year. Concentrations of these toxics should be of concern to DEP. Iron and manganese can not only threaten public health, the build-up can cause serious damage to water treatment systems according to the World Health Organization. Pottstown, for example, has even been adding another toxic chemical to try to treat their water for these toxic metals. Therefore, all the potential costs to the public, including future damage to pipes and other equipment at water treatment plants needs to be evaluated. Pottstown has shown signs of rising iron and manganese levels after only six years and six billion gallons of mine water from only one mine. What will happen after 5,10,15, or 20 years with a billion gallons each year? What will happen if more mine waters are added? People from other water companies downstream admitted off the record that they also see iron and manganese increases. What will happen if DRBC grants Exelon's requests to add more contaminated mine waters while eliminating and/or reducing safeguards as Exelon is asking to do? It doesn't take a scientist to see this is a recipe for disaster.

Issues to be considered:

1. Ms. Myers stated, "*DEP is committed to giving careful consideration to all of the environmental and economic costs and benefits of this proposal."* The problem is that DEP only considers costs to Exelon, but **fails to consider costs to the public**, such as:

- ✓ Damage to a vital drinking water source for 1 ¾ million people from Pottstown to Philadelphia.
- ✓ Costly damage to drinking water systems over time that can lead to overexposure to all who get their water from those systems. Testing for iron and manganese is not continuous, and in fact exposure can go on for long periods of time undetected.
- ✓ Costly filtration that may become necessary.
- ✓ Over time long term unfixable damage to the ecosystems.
- ✓ Threats to the health and well being of wildlife that depend on this water source from Wadesville to Philadelphia.
- ✓ Massive loss of groundwater for future water needs in Schuylkill County

2. Ms. Myers stated a draft docket is being developed with staff engineers, biologists, and water quality scientists.
   A. Unfortunately, **there has NEVER been any independent monitoring or testing**. All data and reporting being used to generate a draft docket are solely based on data and reporting by the company with a vested interest in the outcome. In fact, based on Exelon's widely varied claims of water use numbers, we believe water use numbers are based on illusion. Some numbers used, related to water use in the docket currently being revised, are still numbers estimated by PECO in the 1970s, long before Limerick ever started to operate.
   B. Participants mentioned are all using monitoring data and reports generated and paid for by Exelon, the company with a vested interest in the outcome.

3. Ms. Myers stated, "*The Exelon contractor and sub-contractor for the pilot project are professionally competent with requisite scientific skills, and operate within accepted protocols."*
   A. ACE has never disputed any of that. However, scientists we talked to suggested there are all kinds of way to generate deceptive testing data and issue deceptive reports, biased toward what the company paying for the report wants them to say.
   B. Exelon's so called, "Radioactive Watergate", referring to radioactive water contamination from Exelon's nuclear power plants in Illinois, suggests no one should rely on data solely generated by Exelon.

4. Ms. Myers stated, *"We reject ACE's past assertion that there are 'biases and untrusted motives" by DRBC or DEP."*
   A. Most independent observers who review all the facts involved with our three year investigation would likely come to the conclusion that both DRBC and DEP are ignoring reality and therefore are biased.
   B. What do you call it when in June 2008, long before any decision has been made on Exelon's "Demonstration Project", that Exelon stated publically that DEP already encouraged Exelon to seek other mine waters to be pumped into the Schuylkill River. That statement was used by Exelon to attempt to gain support from Pottstown Water Authority.
   C. Ms. Myers' illogical 2006 statement in the Mercury speaks volumes to this issue. She called mine drainage into groundwater one of PA's "great environmental liabilities", but called pumping mine water into the Schuylkill River "an asset". Logically, if drainage into groundwater is harmful, then massive discharges of that same water into the river are harmful too. This is about more than acid conditions. It's also about toxics.
   D. Myers predictably stated DEP sees no problems or violations. Not surprising! First, Exelon does its own monitoring and testing. Second, DEP allows discharge limits so high it's difficult to violate them. Wadesville Mine water is permitted to be discharged into the Schuylkill River 80 times higher than safe drinking water standards for manganese and 20 times higher than safe drinking water standards for Iron.
   E. Myers said, "DEP sees nothing to suggest the need for parallel analysis". Without independent testing, data and reports must be considered suspect. There's NO independent comprehensive analysis of harms. All data and reports are from a company hired and paid by those with a vested interest in the outcome.

F. What do you call it when someone absurdly equates occasional mine water overflow to intentional continuous pumping of 24,300 gallons per minute over a six month period each year?
G. Evidence suggests DRBC oversight is far worse than lax, with more examples than can be expressed in this letter. We wonder why DRBC failed to challenge Exelon.

5. Ms. Myers stated, *"DEP has NPDES permits in place controlling discharges from the …Wadesville site, including limits on discharges of iron and manganese. Contrary to ACE's assertions there are no total volume limitations in the referenced permit. Volume limits are in DRBC docket – To the best of my knowledge have been carefully observed "*
   A. Is this a deceptive tactic or failure to accurately evaluate our concern? ACE's concern was NOT with volume limits, but instead in gallons per minute discharge limits. Just look at enormous differences in per minute discharges.
   B. **How can you claim to carefully observe discharge limits when the DRBC** docket allows **10,000 gallons per minute discharge** from Wadesville Mine, **but Exelon repeatedly admits to 24,300 gallons per minute discharge?** This is an enormous difference, especially considering pumping is continuous over a six month period each year.
   C. DEP's **NPDES permit**, page 17, states "***anticipated 1500 gallons per minute*" discharge**. DEP anticipated 1,500 gallons per minute, while Exelon pumps 24,300 gallons per minute. We do not call this controlling discharges, as suggested by Ms. Myers.

6. Ms. Myers stated, "*We see nothing in the monitoring results to suggest the need for expenditure of additional public funds on parallel monitoring of what is essentially an alkaline, clean, groundwater source."*
   A. That statement verges on ridiculous. First, why would she expect to see anything in the monitoring results controlled by Exelon? The whole point is that all the monitoring is done by Exelon.
   B. Second, water discharged from a mine pit is anything but clean. In fact, a retired DEP employee has even expressed concern that in addition to toxic metals, sulfur, and other toxics, there could be a broad range of other toxics due to sewage sludge dumping in the area of the Wadesville Mine that could be drawn in when the mine recharges. This employee stated that the Wadesville Mine is a big problem for DEP in terms of calls about odors.

7. Ms. Myers stated, "*We see little merit in the assertion that additional monitoring funded through ACE would somehow be more impartial than the existing system."*
   A. First, a diligent protection agency employee should be able to see the flaws and biases in the existing system and should encourage parallel monitoring before more mine waters are added to the Schuylkill River and safeguards are minimized and eliminated.
   B. Second, at a March 2008 meeting in our office with William Muszynski, DRBC, we were told that the public would have to prove harms for DRBC to reject Exelon's requests. In the first place, the public should not have to prove harm. With obvious threats of harm such as this, government agencies such as DRBC and DEP should not be content to base decisions to allow such threats to public water only on data and reports generated by those with a vested interest in the outcome. DRBC and DEP should be concerned enough to take responsibility to provide independent monitoring, testing, and reporting before allowing more polluted water to be pumped into this source of drinking water. Monies paid by Exelon to DRBC could be used for this purpose.
   C. Mr. Muszynski flatly refused to secure independent fact finding and unjustly put the burden of proof onto the public. That is the only reason ACE has been attempting to secure funding to hire an independent public interest expert to design a comprehensive protocol to determine how much harm has been caused to date, prior to allowing more unfiltered mine water to be pumped into the Schuylkill River.

D. Third, a study with an independent public interest water expert designing a protocol to determine all the harms to date would be far more impartial than the existing system with review of only biased data with no means of comparison.
E. Finally, ACE has no interest in controlling this process, but ACE is totally impartial. We have no agenda other than public interest. We are all volunteers. ACE takes no money from polluters.

8. Ms. Myers said, *"There is environmental benefit to the Delaware River in reduction of diversion from the Delaware. Environmentally protective flows and recreational uses will be protected."*
   A. This is perplexing. Is the Schuylkill River to be sacrificed with ever increasing amounts of unfiltered mine water contaminated with toxic metals and possibly much more, just to benefit the Perkiomen Creek and recreational uses on it?
   B. It seems DRBC and DEP are making a DEFACTO decision to dedicate the Schuylkill River and Schuylkill County's groundwater to generate nuclear power.

9. Ms. Myers points to watershed improvements through Exelon funding as helping correct Schuylkill River Basin water quality problems.
   A. **This is deception at its worst**. Damage to the Schuylkill River and its ecosystems as a result of Limerick Nuclear Power Plant operations obviously far outweighs watershed improvements with Exelon's approximate donation of $200,000 per year.
   B. This fund actually causes organizations hoping to receive money from this fund to put on blinders to the realities of Exelon's requests. These groups fail to speak out, especially when Exelon has a hand in choosing groups and projects for the funding.
   C. To even attempt to address threats from 5 billion gallons per year of radioactive heated discharges from Limerick Nuclear Plant over decades, and now added to that billions of gallons of unfiltered mine water contaminated with toxic metals and many other toxics, added to the Schuylkill River headwaters, could actually cost taxpayers hundreds of millions, if not billions of dollars. The problems will only get worse over time.
   D. This Exelon funding mechanism to the Schuylkill Heritage Foundation whereby the polluter gets government sanctions and gets to strategically pick and choose what is to be studies or remedied is setting a dangerous precedent that is very anti-democratic.

10. Ms. Myers says, *"DEP will keep an open mind in evaluating the Exelon docket when it is finalized, and will fairly evaluate any scientific evidence to help measure the full costs and benefits of the proposal."*
    A. Costs and benefits are not always about science. Many problems inherent in Exelon's docket are not about science at all, but instead about nuclear power and greed. **You don't need science to see inherent threats from Exelon's requests. More contamination with less safeguards is clearly a recipe for disaster.**
       - Allowing the massive pumping of billions of gallons of unfiltered mine water year after year, permitted to be contaminate with toxic metals as high as 80 times higher than "Safe Drinking Water Standards", into a vital source of drinking water is clearly not about science at all. It defies logic for regulators to even allow this.
       - Where is DEP's scientific integrity? This is not only about dissolved oxygen.
         - ✓ It is also about toxic metals and other chemicals massively pumped into the Schuylkill River with the mine water. We see no evidence that DEP has even comprehensively characterized Wadesville Mine water to more accurately determine all toxics entering the Schuylkill River.
         - ✓ We see no requirement to independently and comprehensively characterize any of the other mine waters that would be added in the future as a result of approval of this docket. Where are the standards to protect the public's interests?
         - ✓ Why are such high levels permitted by DEP to be massively pumped into this drinking water source, instead of requiring filtration? Where is the science to

prove DEP's NPDES permit limits (manganese 80 times higher than "Safe Drinking Water Standards" and iron 20 times higher) will not cause harm to the river, its ecosystems, wildlife, water treatment systems, and public health over time?

- You can't find opposing scientific evidence if you refuse to look. Scientists tell us dissolved oxygen testing can be done not to find a problem, yet DEP defends the practice of self-testing for dissolved oxygen and has not interest in an independent protocol for testing before Docket decision are made.
- Even on the rare occasion when Exelon admitted to finding dissolved oxygen problems, without any scientific proof, DEP allowed Exelon to blame another source, even though Exelon could not identify a source.
- It is hardly scientific for DEP to make the absurd comparison claiming mine water pumping of 24,300 gallons per minute continuously over six months is better than occasional mine water overflow. Where's the scientific proof for such a bizarre claim?

B. In DEP's costs and benefits of the proposal, **<u>what price tag will be put on lack of safe public drinking water for 1 ¾ million people in droughts?</u>**
C. What price tag will be put on the potential harm caused to public water treatment systems by ever increasing iron and manganese in the Schuylkill River?
D. What price tag will DEP put on threats to public health from increased iron and manganese in public water? Treatment systems are not required to continuously test for iron and manganese. In fact, we understand testing for iron and manganese at water treatment facilities was typically only done once a year and therefore ever changing and increasing levels would not be identified or corrected for long periods of time.
E. What price tag will be put on the eventual need to attempt to clean up ever increasing toxic metals from massive mine water discharges into the river and sediment?
F. Exelon has asked to eliminate temperature restrictions, lower low flow restrictions, and reduce monitoring. Will the state start to pay for monitoring and testing? How much will that cost?
G. What price tag will be put on future legal actions against the state for allowing this to happen?

It is time for everyone, including DEP to look at reality. Limerick Nuclear Power Plant's consumptive use (steam), results in enormous shortfalls in the Schuylkill River each year, even with supplementation of mine water and Delaware River water. The result has been less and less water in the Schuylkill River, the vital water source for over 1 ¾ million people from Pottstown to Philadelphia, and ever increasing threats from concentrations of all the hazardous substances legally allowed to be discharged into the river, including the billions of gallons of radioactive heated water each year from Limerick Nuclear Plant.

1) Limerick Nuclear Plant withdraws about 20 ½ billion gallons of Schuylkill River water each year and only returns about five billion gallons. Even with two or three billion gallons of supplementation by Exelon, there is still a 12 to 13 billion gallon shortfall every year. That's clearly one reason the Schuylkill River levels have been so dramatically reduced over the past 20+ years. In fact, it was the drastically reduced levels in the Schuylkill River and Manatawny Creek tributary, that had area residents concerned and contacting ACE and why our investigation started over 3 years ago.
2) With less and less water in the Schuylkill River, what happens to the water supply for the 1 ¾ million people during ever increasing droughts?
3) Is DEP really going to allow billions of gallons more unfiltered and contaminated mine water to be used to supplement the Schuylkill River for the operations of Limerick Nuclear Power Plant?
4) Will the state have to eventually say no to building more homes or no to other businesses that will require water?

For the past two years we have been reporting the findings of our investigation to our community through our weekly one hour TV show, which reaches over 65,000 homes in prime time. People in this region are outraged.

The water supply for over 1 ¾ million people is at stake in this process. We are distressed that the DEP employee who has been a cheerleader for this "Demonstration Project" has been designated to represent you and Governor Rendell in this decision.

While we realize you are extremely busy, we believe many would benefit if we could better explain some of our most recent findings to you in person. We invite you to meet with us at our office in Pottstown where we have a six foot map, many helpful visuals, and important documentation which we collected over the past three years. We meet with people 7 days a week, any hour of the day.
We would like to meet with you prior to the public hearing in Pottstown. However, we would like to postpone such a meeting until after we receive and have had time to review and analyze addition important information we have requested from DRBC. We anticipate and are hopeful that would be mid to late March. Included is our most recent correspondence to DRBC.

If you have questions about any of the documentation on which our statements are based or would be willing to set up a time to meet the last half of March, please call (610) 326-2387.

Thank You,

Dr. Lewis Cuthbert
ACE President

Attachments

Cc: Senator Rafferty
Senator Dinniman
Senator O'Pake
Repressenative Quigley
Representative Vereb
Representative Hennessey
Representative Kessler
Pottstown Council, Water Authority, and Environmental Advisory Board
DRBC
Pottstown Mercury

December 4, 2008

Governor Ed Rendell

225 Main Capitol Building

Harrisburg, PA 17120

Re: **Request For An Independent Investigation On Underreported Schuylkill River Water Withdrawal And Use And Unreported Payments to DRBC**

Dear Governor Rendell,

The Alliance For A Clean Environment (ACE) is a grassroots environmental group with members in Berks, Chester, and Montgomery Counties.

Since April, 2008 we have sent you letters and copies of letters expressing our concerns about DRBC and Exelon's "Demonstration Project" for Limerick Nuclear Power Plant, as well as Limerick Nuclear Plant's overall harmful impacts on Schuylkill River water quantity and quality. We remind you that the Schuylkill River is a major source of drinking water for over 1 ¾ million people from Pottstown to Philadelphia.

Your response through agency officials was disappointing, but now with further investigation, we believe it is imperative for you to get directly involved to order a public interest investigation.

The more information we uncovered, the more concerned we are than ever, that directors of the agencies that you appointed at DRBC and DEP, are not taking threats to this vital water source seriously enough and are failing to provide meaningful oversight.

Given what is at stake, the evidence suggests that there is a critical need for a comprehensive independent investigation, prior to any decisions made by DRBC on Exelon's current Docket requests, with full public disclosure, prior to a public hearing.

Just one example of lax DRBC oversight is exemplified in the attached documents on Exelon's 2007 report on Schuylkill River water withdrawal and use, and payments to DRBC. Obviously, for the public to have confidence in the outcome, the investigation cannot be done by DRBC or Exelon.

There is still time to take precautionary action. On behalf of the 1 ¾ million people who rely on the Schuykill River for their drinking water source, we urge you to take immediate action to order

a full investigation. We offer our complete cooperation and assistance. Please review the attachments and have someone contact us if you have further questions. (610) 326-2387.

Thank You,

Dr. Lewis Cuthbert

ACE President

November, 2008
Evaluation Prepared By The Alliance For A Clean Environment (ACE) (610) 326-6433

ACE Is Requesting An Investigation

QUESTIONS

How Many Years Has Exelon Potentially Underreported Water Use and Underpaid DRBC?

Evidence Suggests (See Attachment), Exelon May Have For 2007:

- **UNDERREPORTED Water Withdrawal And Water Use**
- **UNDERPAID DRBC For Schuylkill River Water Withdrawal**

Is The Delaware River Basin Commission Really Providing Oversight?

The Following Questions Need Answers:

1. How much water does Limerick Nuclear Power Plant really use? Exelon, the company with a vested interest in the outcome, is the only one reporting use. Independent tracking is essential.
2. How long has Schuylkill River water use possibly been underreported and underpaid?
3. How much does Exelon owe in back payments covering past years?
4. Who will be charged with taking action to recover losses and to provide oversight in the future that is apparently not being provided by DRBC?

Plus - What Damage Was Done Since Exelon's Demonstration Project Started in 2003?

DRBC could soon decide to allow more Schuylkill River contamination with less safeguards.
A comprehensive independent investigation is needed. Exelon's "Demonstration Project" started in 2003 and resulted in billions of gallons of unfiltered contaminated mine water being pumped into the Schuylkill River. Exelon controls all the data on damage done to date. Now Exelon wants to add the contaminated water from even more mines, while reducing low-flow restrictions and eliminating temperature restrictions.

An Independent Investigation Is Crucial, Before DRBC Decides To Increase Threats.
An independent public interest scientist is needed to design a comprehensive protocol to investigate all current harms from Exelon's "Demonstration Project". Absent that, it is impossible to determine future harms from decades of pumping billions more gallons of mine water into the Schuylkill River.

2008 Payments Plus Back Payments Could Provide Funding To More Determine Future Harms.
DRBC collected $632,475.49 from Exelon for Limerick's 2007 water withdrawal. (See Attachment)
DRBC could use part of Exelon's 2008 water withdrawal payment to provide funding for an independent investigation (not by DRBC) to accurately determine Limerick's water use and Exelon's payments. Back payments could then be used to complete the investigation into harms.

Prevention Is Key!
Exelon payments for Schuylkill River water withdrawal could lead to prevention of unnecessary long-term irreparable harms.

Our Past Efforts

Since January, 2006 ACE has been investigating Exelon's Demonstration Project and the impacts of Limerick Nuclear Power Plant's extraordinary water withdrawal and radioactive releases on the Schuylkill River.

We sent numerous letters and e-mails to Carol Collier, DRBC director, reporting our findings and asking for responses. Unfortunately, she appears to have little interest in dealing with the reality of our concerns, even though it appears that regulatory agencies, including DRBC, had many of our same water quantity and quality concerns 30 years ago during licensing approval for Limerick Nuclear Power Plant.

March, 2008, Mr. William Muszynski from DRBC finally agreed to meet with ACE. We summarized our findings with supporting documentation for major concern. ACE asked DRBC to provide funding to hire an independent expert to design a comprehensive protocol for independent testing to to determine current and future harms from Exelon's "Demonstration Project". We were told the public would have to prove harm in order for DRBC to deny Exelon's requests to increase contamination while reducing safeguards.

July, 2008, we sent a FOIA request to DRBC for specific information associated with current and previous Limerick Nuclear Power Plant Dockets, some of which Mr. Muszinski failed to provide after our meeting. In October, 3 months later and after repeated requests, we finally received some of the information.

Information from our FOIA request uncovered even more discrepancies and led to more questions which clearly need to be fully addressed with an independent investigation, including those about Exelon's Schuylkill River water withdrawal and payments for Limerick Nuclear Power Plant.

See Attachments

For Questions, Detailed Documentation, Or Help With The Investigation

Contact ACE
(610) 326-2387

aceactivists@comcast.net

Summarized By The Alliance For A Clean Environment
December, 2008

ACE Obtained 1985 Public Hearing Comments From DRBC's Public Hearing To Start Operating Limerick Nuclear Plant

- **Attached Is A Summary Of Comments Suggesting It Was Reckless For DRBC To Originally Approve Limerick's License, Based On Important Concerns About Water And The Schuylkill River.**

Major Concerns Included:

1. **High temperature stress increases the sensitivity of aquatic organisms to disease and toxic pollutants.**

2. **Many were concerned that Limerick's Consumptive Use Of Public Water Deprives Water Quantity and Quality Benefits To The Public. They worried that the result would be to place downstream water uses, including those reliant on the Camden and Philadelphia water supply systems, at substantially increased risk.**

3. **In 1985 PECO (Exelon) made requests to DRBC for "Temporary Relief" of limitations. Now in 2011 Exelon Is Requesting "Permanent Relief" for the same limitations and safeguards.**

- **DRBC Findings Said, *"CONSTRAINTS are NECESSARY to PREVENT DISSOLVED SOLIDS VIOLATIONS* and *PROTECT WATER QUALITY AND QUANTITY."***

- **Limerick had MAJOR TDS violations and is currently requesting double permit limit increases.**

- **It appears DRBC may have already minimized / reduced some of those safeguards without the public hearing promised in Pottstown.**

The Alliance For A Clean Environment 10-26-11

Summary Issues

61 Comments - DRBC Public Hearing May 7, 1985

PECO Application For **Amendments April 24, 1985** To Docket D-69-210 CP (Final)

Purpose of 1985 PECO Application for Amendments

"Temporary relief" through 12/31/85 **from 2 existing docket limitations to increase frequency water may be withdrawn from the Schuylkill River for evaporation of Limerick Unit No. 1.**

- **23 years later Exelon is still asking for the same thing**

PECO (Exelon) made requests to DRBC for "Temporary Relief" in 1985 and now in 2008 Exelon Is Requesting "Permanent Relief" for the same following limitations:

1. **NO water withdraw from the Schuylkill River for evaporative use at Limerick when the temperature rises above 59 Degrees F.**
   - ✓ **This reduces days PECO must replace evaporative losses at Limerick Unit 1.**

2. **Water for evaporative use may not be withdrawn from the Schuylkill River when the flow at the Pottstown gage falls now below 560 cfs**.

3. **They want to substitute Dissolved Oxygen (DO) monitoring for Temperature Restriction**

Proposed Location Of Dissolved Oxygen Monitors

- ✓ **PECO (Exelon) proposed change in location of 6 dissolved oxygen monitors in lieu of proposed temperature monitor at Pottstown.**

DRBC Findings

- ***"CONSTRAINTS are NECESSARY to PREVENT;***
  - ***Dissolved Solids VIOLATIONS***
  - ***EFFLUENT and WATER QUALITY***

- ***CONSTRAINTS are NECESSARY* to *PROTECT***
  - ***WATER QUALITY and QUANTITY BELOW LIMERICK***

Substitution of DO monitoring for temperature constraint allows Limerick to take water many more days.

- ✓ PECO (Exelon) estimated impact under drought conditions such as 1966 – Under constraints **water could be withdrawn for 122 days - Substituting DO standard for temperature would permit withdrawals 50 days more**
- ✓ In a normal year such as 1968, **water is available for Limerick on 177 days under temperature and flow constraints -** S**ubstitution of DO standards allows water withdrawal 41 more days.**

Issues Raised By Concerned Agencies and Others At DRBC Hearings Regarding Adequacy and Accuracy of Dissolved Oxygen Monitoring

4. **Location and Specification of Monitoring:**

5. **Fish and Boat Commission Concerns:**
   Accuracy of Monitors - Proper Calibration
   Specific Seasonal Need of Aquatic Life

6. **Company v. Independent Monitoring:**
   Witnesses criticized PECO monitoring calling it ***"conflict of interest", "letting the fox guard the chicken coop"***

7. **Dissolved Oxygen In River Water Varies (over the day) by a Fairly Wide Range**

8. **Lack of specificity, self-monitored DO, and proposed self-adjusting for plant operations makes PECO's proposal even more troublesome.**

Witnesses Suggested More Restrictive Standards Were Needed

- **To Protect Fish and Aquatic Life in the River.**

9. **Philadelphia Suburban Water Company noted that "high temperature stress increases the sensitivity of aquatic organisms to disease and toxic pollutants."**

10. **Due to the number of hours required to shut down power plant operations if the DO criteria are triggered,**
    - **it is necessary to establish a buffer or "margin of safety".**

Public Comments Expressed That Limerick's Consumptive Use Of Public Water

- **Deprives Water Quantity and Quality Benefits To The Public**

The result would be to place downstream water uses, including those reliant on the Camden and Philadelphia water supply systems, at substantially increased risk.

- ✓ **DRBC Comprehensive Plan Policy – PRIORITIES of water use during drought emergencies give first priority to those uses which sustain human life, health and safety.** (Water Code, Delaware River Basin, Section 2.5.2)

SUMMARY

The objective of the 59 Degree temperature limitation contained in the original docket decision, was to prevent the Limerick Project from aggravating dissolved oxygen conditions in the Schuylkill River during critical periods.

DRBC denied PECO the temporary use of water from Blue Marsh for evaporation at Limerick, citing conflict with the Comprehensive Plan.

DECISIONS - By the Commission – DRBC Dated May 29, 1985

"Findings", "Sources of Water Supply"

1. NO withdrawals for consumptive use shall be made from the Schuylkill River or the natural flow of its tributaries whenever dissolved oxygen in the Schuylkill River at or below Limerick at any of the monitoring locations:
   - ✓ Is less than 7.0 mg/l during 3/1 to 6/15 or
   - ✓ Is equal to or less than 5.1 or 4.2 mg/l during the remainder of the year.

2. The following conditions were added:

   - ✓ Accurate recording dissolved oxygen monitors shall be installed within 200 feet of each dam on the Schuylkill River below Limerick.

   - ✓ Installation, calibration, maintenance, and operation of all dissolved oxygen monitors and interim manual measurements of dissolved oxygen shall be under the supervision and control of the US Geological Survey.

The request that DRBC **release water from storage at Blue Marsh Reservoir or other facilitates** whenever dissolved oxygen limitations or flow limitations would require PECO to replace all evaporative losses at the Limerick Nuclear Generating Station is hereby **DENIED**.

59 Degree Restriction

On The Schuylkill River Water Withdrawal For Limerick Nuclear Power Plant

September 1983 Comments By Department Of Environmental Resources (PA DEP)

Document Summarized By The Alliance For A Clean Environment 11/08

DER (Now DEP) Conclusion:

- ✓ **"*Operation of the* [59 Degree] *temperature condition does provide some additional margin of SAFETY for the benefit of improved water quality in the Schuylkill River"***
- ✓ ***"Elimination of the 59 Degree condition would have no environmental benefit…and could result in a marginal adverse impact on water quality control".***
- ✓ ***"The PRIME BENEFIT DERIVED from modifying the temperature restriction would be to REDUCE OPERATING COSTS to Philadelphia Electric* [now Exelon].**

1983 Background by DER:

In order to avoid thermal pollution in Limerick Nuclear Power Plant's discharges to the Schuylkill River, State and Federal regulations require use of evaporative cooling towers to dissipate waste heat.

- **Average consumptive use rate 35 million gallons per day for 2 units**
- **Maximum consumptive use rates are 42 million gallons per day for 2 units**

Purposes of operating conditions are explained in the 1973 Docket Decision:

1. ***"Constraints on non consumptive use of Schuylkill River water are necessary to prevent violation of:***
   - ✓ ***Total Dissolved Solids***
   - ✓ ***Stream Quality Objectives***
   - ✓ ***Effluent Quality Requirements of the Commission's Water Quality Regulations***
2. ***"Constraint on consumptive use of Schuylkill River water is:***
   - ✓ ***To Protect Water Quantity and Water Quality Below The Limerick Station.***

The decision to limit Schuylkill River withdrawals when temperatures are above 59 Degrees F was based on the study conducted by the former Federal Water Pollution Control Administration, June 1968, which

- **Examined water quality augmentation requirements to meet water quality standards within the Schuylkill River between 1970 to the year 2020.**

The Delaware River Basin Commission noted that when temperatures in the river exceed 59 Degrees F, the biological oxygen demand accelerates, and thus water flow for waste assimilation becomes most critical when temperatures exceed this level. This is why the 59 Degree F requirement was included as a special permit condition.

- ***"Where wasteload allocations and discharge limitations have not been met, the 59 Degree temperature restriction on withdrawals by Limerick provides an extra margin of safety protecting Schuylkill River flow and water quality conditions."***

Water Temperature In The Schuylkill River - Normally, temperatures begin exceeding 59 Degrees about May 1st and remain above 59 Degrees until about the end of September or October.

Impact of Limerick Operating Conditions - Without additional DRBC docket provisions for diversions, there are about 120 days each year in which withdrawals would not be allowed because of the 59 Degree requirement. Extreme years it would be about 120 days.

- **Therefore, this requirement would force the power plant off the Schuylkill River during the summer and early fall of every year for approximately four months.**

Streamflow In The Schuylkill River - If 2 units are operated, flows at Pottstown must exceed 560 cubic feet a second.

- During the most recent year available (at that time -1965), most of the 167 days when the Schuylkill River flow fell below cfs occurred between June 9 and December 12. Except for 15 days during May and 14 days between June and September, the low flow restrictions would have prohibited Schuylkill River withdrawals, regardless of the 59 Degree temperature restriction.
  - ***"Combining temperature and quantity restriction would result in approximately 200 days in which the plant would not be allowed to withdraw water from the Schuylkill River."***

Impact of Modifying or Removing 59 Degree Requirement

- In normal or wet years, the number of days triggering limits would be considerably less.
- In drought years, low flow conditions would restrict Limerick from making withdrawals for almost six months.

Environmental, Economic, and Social Impacts - Makeup Requirements and Alternatives

The Department concluded, "use of Blue Marsh would be clearly out of the question".

- Commitment of virtually all of Blue Marsh's storage to supply just 1 Unit at Limerick would have serious implications.
- Use of Blue Marsh would interfere with commitments to Western Berks Water Authority for 7 million gallons per day (then withdrawing 6 mgd).
- *"A decision to commit all the water in Blue Marsh for one use – to make up consumptive water withdrawals by ONE unit at Limerick would in effect require PA and DRBC to impose a ban on any further allocations and increased withdrawals by other users throughout the Schuylkill watershed."*
- *"Simultaneously, commitment of Blue Marsh to serve Limerick would remove Blue Marsh from availability to provide releases for replacement consumptive water uses in the entire Delaware Basin and for salinity control".*
- *"Such a commitment would substantially alter the current plans and policies for Delaware Basin water management, which assumes Blue Marsh will serve as a common reservoir benefiting the entire basin, not just one use.*

Impacts on the Perkiomen Creek

- Diversion would increase flows about 80% for 2 units at Limerick
- *"Elimination of the 59 Degree limitation, may not be beneficial from the perspective of the upper Perkiomen Creek watershed. The 59 Degree limitation provides a fairly even augmentation regime, which is virtually constant for early summer to fall."*
- *"Reliance solely on a low flow condition in the Schuylkill River to trigger diversions and augmentations to the Perkiomen would tend to cause Perkiomen flows to rise and fall.*
- *Uneven up-down pattern of releases may not be most beneficial to establishing a stable in-stream habitat".*
- *"If the 59 Degree restriction is eliminated, DRBC flow stabilization alone may not be adequate to fully protect an improved aquatic habitat…, once that habitat is established".*
  - "If 59 Degree restriction is removed, it would be prudent for DRBC to explore whether additional operating conditions are needed to assure a stable expanded aquatic habitat in the upper Perkiomen watershed".