

LESSONS LEARNED; FUTURE OPPORTUNITIES FOR GOVERNMENT POLICIES

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**“A PERSPECTIVE FROM A DEVELOPED COUNTRY
PRACTITIONER”**

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TWO MAIN MESSAGES FROM ME TODAY

- REMEMBER WHAT HAS WORKED TO DATE [POLICY, TECHNICAL, ETC]; INCORPORATE THE BEST OF NEW IDEAS
- THESE ARE EXTRAORDINARY TIMES FOR STUDENTS ENTERING THE FIELD; WE MAY SEE AMAZING PARADIGM SHIFTS

1972 FEDERAL WATER POLLUTION CONTROL ACT; **ESSENTIAL** **ELEMENTS** THAT WORKED [FAIRLY] WELL

- BROAD PUBLIC AND POLITICAL **SUPPORT**; WELL-CRAFTED **LAW**
- **PERMITS** FOR ALL POINT SOURCES; **ENFORCEMENT** FOR NON-COMPLIANCE
- EFFLUENT LIMITS BASED ON TECHNOLOGY AND WATER **QUALITY STANDARDS AND USES**
- **MONITORING** OF DISCHARGES AND RECEIVING STREAM
- **GRANTS FOR MUNICIPALITIES**



MUCH TO LEARN FROM HISTORY BUT TIMES HAVE EVOLVED DUE TO:

- INCREASING POPULATION— 7.5 BILLION AND COUNTING [4.1 BILLION IN URBAN AREAS]
- MORE LIMITED RESOURCES
- FOOD/ENERGY NEEDS
- HUMAN RIGHTS/INEQUALITIES

LEARN FROM DEVELOPED COUNTRIES BUT ALSO FOCUS ON OPPORTUNITIES THAT SDG 6.3 PROMOTES

- WORDS MATTER: USE THE TERM “RESOURCEWATER”, NOT “WASTEWATER” WHERE POSSIBLE?
- DEVELOP LEGAL/REGULATORY/ENFORCEMENT PROGRAMS THAT FITS SPECIFIC NEEDS; BEST MONITORING AND INFORMATION SYSTEMS APPROACH; SUSTAINABLE, FLEXIBLE FINANCESYSTEMS
- INCENTIVES FOR WATER REUSE AND NUTRIENT CYCLE MANAGEMENT
- PROVIDE A SPECIAL FOCUS ON INEQUALITIES OF ALL KINDS
- SOCIAL MEDIA FOR EDUCATION, COMMUNICATIONS, ETC

IS THIS A PERIOD OF FUNDAMENTAL CHANGE IN PROVIDING PUBLIC SERVICES? SOME PAST BENCHMARKS

- PHILADELPHIA SUPPLY OF WATER IN THE EARLY 19TH CENTURY: FREDERICK GRAFF
- 1854: DR JOHN SNOW SOLVES THE CHOLERA OUTBREAK IN LONDON
- THE ELECTRIFICATION OF AMERICA IN LATE 19TH CENTURY: EDISON, WESTINGHOUSE, TESLA
- TELEPHONE, THE INTERNET, OTHERS THAT WERE ONCE “UNIMAGINABLE” UNTIL THEY HAPPENED.
- 1980-90s: HOWARD NEUKRUG INNOVATES WITH CAPTURING URBAN RUNOFF
- 2017: DR GIEGENGACK LECTURES AT UPENN ABOUT THE IMPORTANCE OF NUTRIENT LIFECYCLE MANAGEMENT

- CAN WE ENVISION A FUTURE WHERE THERE WILL BE NO SUCH THING AS WASTEWATER? [1972 FWPCA ENVISIONED THE “NATIONAL POLLUTANT DISCHARGE ELIMINATION PROGRAM”]
- WILL ONE OF OUR STUDENTS MAKE THE NEXT BREAKTHROUGH IN UTILIZING “RESOURCEWATER”? COUNTLESS LIVES CAN BE SAVED!

MANY WONDERFUL OPPORTUNITIES FOR STUDENT RESEARCH, EG:

- USING BOTH “LESSONS LEARNED” FROM THE PAST 100+ YEARS AND NEW IDEAS
- MORE CREATIVE WATER REUSE
- INTEGRATING POLICIES FOR WATER WITH FOOD AND ENERGY POLICIES---CREATE FOOD AND ENERGY FROM RESOURCEWATER
- SAFELY REPLACE/SUPPLEMENT THE “FLUSH” MENTALITY

HEY STUDENTS CAN YOU HELP THIS KID?!



AND THIS KID?!



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