



North Carolina Department of Environment, Health,
and Natural Resources

Pollution **Prevention** in **POTW's**

Two North Carolina Pilot Studies

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■ Pollution Prevention in POTW's
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■ Introduction

In Federal fiscal year 1991-1992, the Environmental Protection Agency's Pollution Prevention Division offered grants to states to integrate pollution prevention into their existing publicly owned treatment works (POTWs) programs. Five states participated in the grants: Utah, New Mexico, Minnesota, Massachusetts, and North Carolina. North Carolina's programs in the Department of Environment, Health, and Natural Resources consist of the Pollution Prevention Program of the Office of Waste Reduction and the Pretreatment Program of the Division of Environmental Management, which oversees local municipal pretreatment programs.

■ The North Carolina Pollution Prevention Pays Program (PPP)

The North Carolina Pollution Prevention Pays Program (PPP) was established in 1984 as a non-regulatory State service to North Carolina businesses and industries. At that time, it was the first office of its type in the United States. Since then, the PPP has grown to a fully operating office with a staff of 11. Services to North Carolina businesses and industries offered by the PPP include:

- Technology transfer of information published by EPA and by the Program, and in over 3,000 references compiled in the Program library,
- Challenge Grants to promote pollution prevention,
- Speakers and panelists for conferences,
- Sponsorship of workshops and pilot studies, and
- On-site waste assessments for industry.

Regionally and nationally, the Program supports other states in implementing pollution prevention programs, assists in training EPA personnel, and is housed and works closely with EPA's Region IV Waste Reduction Resource Center for the Southeast.

■ The North Carolina Pretreatment Program

The Pretreatment Program was established as a regulatory agency in 1980 as part of the Clean Water Act. Emphasizing the establishment of technically based effluent limits for industrial users, the Program assists local municipalities with the technical aspects of administering a pretreatment program. Currently, the Program has seven regional field inspectors, four environmental professionals, and a supervisor. The Program oversees the implementation of 135 local pretreatment programs which, in turn, regulate approximately 1,000 Significant Industrial Users (SIUs).

These two North Carolina programs have worked together in an informal relationship over the years. The Pollution Prevention in POTW Grants appeared to both programs as a good opportunity to formalize a structure of cooperation. North Carolina's goals in this grant process included:

- Formalize a state-level Pollution Prevention/POTW program structure,
- Establish local-level program structures,
- Identify incentives and barriers to pollution prevention in local-level programs, and
- Formalize a system of information transfer.

North Carolina's municipalities and industrial dischargers to wastewater treatment plants vary in size.

Two local pretreatment programs, one in the large municipality of the City of Winston Salem and one in the small municipality of the Town of Troy, were chosen to implement the pollution prevention pilot studies under the EPA grant. The following summary documents the activities conducted and resources created during these studies.

I. Cooperation Between State Agencies for Pollution Prevention in Publicly Owned Treatment Works

This section details the arrangements established for a regulatory agency, the North Carolina Pretreatment Program, and a non-regulatory agency, the North Carolina Pollution Prevention Program (PPP), to cooperate in providing assistance to municipalities and, at the same time, maintain the individual agency's mandated goals. An understanding of the complexity of this working relationship requires an understanding of the mandate of each agency.

Agency Mandates

In response to the Clean Water Act, the North Carolina Pretreatment Program was established as a regulatory agency to achieve four objectives: (1) prevent industrial waste from interfering with publicly owned treatment works (POTWs) operations, (2) prevent contamination of POTW sludge, (3) prevent pass-through of pollutants to the POTWs' receiving streams, and (4) protect POTW workers from harmful exposure. Since implementation, the Program has been successful in reducing pollutant loadings to POTWs and improving sludge quality and POTW performance. Traditional end-of-pipe treatment has been perceived as the best method to achieve these results. Primary services provided to POTWs by the Pretreatment Staff include determining pollutant loadings to the POTW by means of a technically based headworks analysis, issuing permits to industrial users, and determining compliance with the permit limits. The primary concern of the Pretreatment Program (as well as of the NPDES Program) is that municipal POTWs maintain consistent compliance with effluent limitations.

The Pollution Prevention Program (PPP) was created by the State legislature as a non-regulatory assistance program to North Carolina businesses and industries. By emphasizing source reduction, reuse, and recycling, the PPP has assisted industries and municipalities in reducing waste. Major preliminary waste reduction options, which usually include improved management of resources, personnel training, material substitutions, and best management practices, can greatly reduce the waste generated, cut costs of treatment and raw materials, and reduce liability. These options can work effectively if industry management and personnel are dedicated to making the program prosper.

The Cooperative Effort by Two State Agencies

The goal of the Pollution Prevention in Publicly Owned Treatment Works (PP/POTW) cooperative effort between the two State agencies in the Winston-Salem and Troy pilot studies was to optimize the strengths of each agency. By working together, information on actions other than end-of-pipe treatment to achieve compliance with permit limits is exchanged with local pretreatment program coordinators and the industrial users of the POTW. However, the mechanics of the relationship had to be carefully worked out so that the regulatory and non-regulatory status of the respective agencies was preserved.

To that end, it was established that the Pretreatment Program would initiate contact with the municipalities and invite the PPP to assist in reducing the waste load at the source, i.e., the industries; likewise, the municipality would initiate contact with the industry and invite the PPP to assist the industry in waste reduction. The arrangement permits the Pretreatment Program to maintain its regulatory authority and require the municipality to ultimately meet effluent limits; it also allows the PPP to offer free, non-regulatory assistance to the municipality via its industries.

Any summary reports about activities conducted at the municipality are provided to the Pretreatment Program by the municipality, not by the PPP. This procedure maintains the channel of communication between the regulating agency and the regulated municipality while ensuring the non-regulatory status of the PPP.

The pilot studies have successfully demonstrated that State agencies with dissimilar mandates can cooperate effectively. During this grant process, the Pretreatment unit has achieved its primary goal of permit compliance by the municipality while the PPP has been able to offer free waste reduction options to the municipalities and industries. Although the options presented by the pollution prevention programs did not result in total elimination of any waste streams, reductions in pollutants have been achieved, and the industries have been provided with alternatives that potentially can further reduce the waste streams such that the size of any treatment facilities required will be reduced.

■ Potential for Continued Assistance

With the success of the interagency cooperation during these pilot studies, good potential exists for continued assistance. One potentially positive situation would be a case involving a municipality that does not currently have a pretreatment program and finds (for reasons such as flow, categorical industry, etc.) that one is needed. Before a program is developed, however, the Pretreatment Program may require that the municipality obtain assistance from the PPP. This referral would be made with the prospect that the discharge or process could be eliminated or reduced to the point that a costly pretreatment program is avoided and pollutant loadings to the POTW are reduced. In such situations when the Pretreatment Program invites the PPP to assist municipalities that have compliance problems, a win/win situation can develop for the municipalities, the industries, and the environment.

■ Proposed Grant Program

As an incentive for municipalities to participate in the PP/POTW effort, the two agencies have proposed a program that funds matching grants. The following are preliminary provisions of the program:

1. For the first year, the grants will be funded with monies from the Federal PP/POTW grant received by the North Carolina Pretreatment Program;
2. After these monies are expended, the grants will be funded as a component of the PPP's Challenge Grants, which are currently issued to industries but for which a PP/POTW component will be developed;
3. The grants of up to \$15,000 must be matched by the municipalities either in dollars or "in kind," i.e., in personnel time and/or to purchase items to be used in the program.
4. Grant monies may be used to cover the following activities:
 - Costs for mailing fliers, questionnaires, information, etc.;
 - Special monitoring to locate a specific problem;
 - Actual consultant time spent on the pollution prevention program, if a municipality uses a consultant for its primary technical support;
 - Workshops and seminars for the industries in the municipality; and
 - Any expense that is directly attributable to the pollution prevention program
5. Grant monies may not be used for the following:
 - Normal monitoring including sampling for long-term monitoring reports, parameters normally sampled, etc.;
 - Any activity usually performed by a consultant or activities not part of the pollution prevention program, if a municipality uses a consultant for its primary technical support; and
 - Any normal operating expense not directly incurred because of the pollution prevention program.

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6. Grant Request Summary Form. Below is a list of items that should accompany the Grant Request Summary Form and the purposes for which the items will be reviewed.

<u>Item</u>	<u>Purpose</u>
Allocation Table	This information will provide current and potential loading problems.
Flow, Population, Staff	This information will be used to determine the organizational format for implementing the PP/POTW program. For example, a larger facility will receive training and instruction to enable its inspectors to utilize pollution prevention in inspection audits. For a small facility that may not have inspection personnel, a PPP staff member will be more active in the day-to-day operations of program implementation.
Name and description of facilities	This information provides a summary of the types and variety of industries and processes present.
A statement about how the Pollution Prevention grant will be used to address a problem at the POTW	This is a problem the applicant wishes to focus on, i.e., a clean sludge to meet the 503 sludge regulations, a solution to whole effluent toxicity, meeting NPDES limits for a particular parameter, periodical slugs, etc.
The issues the applicant wishes to see addressed at the facility.	This information will provide insight into the other issues that affect the facility.

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7. Proposal Review. The proposals will be reviewed by staff of the Pollution Prevention Program of the Office of Waste Reduction and the Pretreatment Program of the Division of Environmental Management.

With the benefits from these grants and the structured working relationship between the two State agencies, the PP/POTW project should be successful.

■ **II. Training**

Training is a critical component in setting up a pollution prevention program for a local pretreatment unit. At the large municipality, the local pretreatment staff was trained in pollution prevention concepts and waste reduction audit techniques. This staff is then capable of transmitting information about pollution prevention and educating its industrial users and other members of the community. At the small municipality, the local pretreatment program staff, the industrial users, and other members of the community were trained in general pollution prevention concepts; in this case, Pollution Prevention Program (PPP) personnel conducted waste audits of the industrial facilities using the POTW.

The following section contains commentary on the presentation and descriptions of slides used in the PP/POTW pilot program training sessions. This training, which is designed for audiences that have little or no knowledge of pollution prevention, begins with the basics of pollution prevention and its application in industry. As the program progresses, the participants are instructed on methods to prevent pollution by reducing waste at its source, not by treating waste at the end of the pipe. Once the philosophy of pollution prevention is presented, pollution prevention activities in the State and specific case studies of waste reduction accomplishments in certain industries are presented.

This program is designed to give a general representation of pollution prevention as a means to reduce waste generation in industry and is intended to "plant the seed" so that inspectors or pretreatment coordinators are motivated to learn more about the industries they regulate and how pollution prevention can help them meet discharge limits. It is also designed as an introduction to pollution prevention concepts for the industries.

Since pollution prevention is process-specific, participants in the training sessions, such as pretreatment inspectors, cannot expect to be knowledgeable about all waste reduction possibilities after this presentation. The participants will have received basic information on pollution prevention in general and, in the case of North Carolina, contacts for information on a specific process and its waste reduction possibilities.

Note: In North Carolina, the Pollution Prevention Program addresses multimedia wastes, i.e., air, water, solid and hazardous waste problems. Thus, while the course focused on waste water, all media were addressed.

■ **The Training Course: Slides and Commentary**

Slide 1. This slide is the symbol of the North Carolina Pollution Prevention Program (PPP). This class period was used to present background on the PPP and the goals of this pilot study. This introduction was beneficial since some of the municipal pretreatment inspectors and local staff were not in attendance at earlier meetings when the City of Winston-Salem and the Town of Troy had agreed to participate in this pilot.

Slide 2. This comical slide shows the devil with his fork forcing a man to decide which of two doors he will enter. The two doors are labeled "Damned if you do.." and "Damned if you don't...". With this slide, we demonstrate the situation in which many industries currently find themselves; for example,

- (1) If money is spent on product lines to improve products, money will not be available to build new or upgrade old pretreatment facilities to maintain compliance.
- (2) If all their money is spent on pretreatment facilities, money is not available for research and development to stay competitive.

So what do they choose? **POLLUTION PREVENTION!**

This is a win-win situation. By reducing their waste, companies can reduce their waste disposal cost and the need to build new or upgrade to larger waste pretreatment facilities; they can then use this money to maintain competitiveness.

This win-win situation, then, directly benefits the municipality to which this company is connected. If the company maintains compliance, the municipality can stay within its limits. If the company remains a healthy corporate member of the community, the municipality will benefit from a strong tax base and, since the company may hire additional people, possible growth

Note: "The municipality that helps industry helps itself" is the theme of this entire project.

Slide 3. This slide of a Model T Ford truck illustrates the idea that pollution prevention is not a new concept. When Henry Ford saw that he was buying the wood crates that parts were shipped in and boards for running boards, he decided to put a stop to this waste. He instructed his suppliers to send parts in crates made with boards that had holes predrilled. He then dismantled the crates and used the predrilled boards for running boards. Granted, the drilling of the holes was an extra expense for his supplier, but it was an acceptable one. Today, when a company persuades a supplier to take back empty containers or ship raw product on pallets that can be reused by the company, it is Henry Ford at work again.

Slide 4. This slide shows four old buckets sitting on stone stairs; by gravity the top bucket empties into the next bucket down. The sequence continues with the second emptying into the third and the third into the fourth and the fourth discharging. A representation of an electroplating countercurrent rinse system used in the 1880's, this system uses 25 percent of the water used by a one-tank system and achieves the same degree of rinsing.

This is another illustration that pollution prevention is not a new idea.

Slide 5. Slide 5 contains the following quotation and comment:

Quotation: "EPA believes that for pollution prevention to succeed, it must be central part of the Agency's primary mission of protecting human health and the environment... EPA does not view pollution prevention as an exotic activity standing apart from the Agency's primary mission; rather, the goal is to incorporate prevention into every aspect of the Agency's operations in Program and Regional Offices."

Comment: EPA is concentrating on pollution prevention and is moving away from end-of-pipe controls.

Description: The slide shows that EPA is looking at pollution prevention as a viable opportunity for reducing waste streams. This slide was made a few years ago, and EPA's emphasis on pollution prevention has increased since that time.

Slide 6. This slide pictures a lake shore line with water, sky, and trees visible. Imposed over the picture are two large arrows forming a circle; MULTIMEDIA is written between the ends of the arrows.

This slide illustrates the fact that conventional waste management practices shift waste from one media to another. Airborne waste, for example, is treated in a scrubber and trapped in the scrubber water, which then is treated, and either the waste components are volatilized to the air or settled out into the sludge. The sludge is then either incinerated, landfilled, or land applied. Thus, the waste is shifted, not reduced. Or, as some have said, "Waste flows to the point of least regulation."

This slide serves to generate awareness of source reduction and multimedia impacts in waste management.

Slide 7. This slide shows the waste management hierarchy: Reduce, reuse, recycle (on-site, off-site), treatment, and finally disposal.

The slide points out that conventional waste management has focused on end-of-pipe treatment. Pollution prevention stresses reducing the waste at its source.

- Reduce the waste at its source as much as possible.
- Reuse what is left as much as possible.
- Recycle what can't be reused.
- Treat what can't be recycled.
- Properly dispose of what is left.

Slide 8. The title of this slide is POLLUTION PREVENTION PAYS THROUGH listed below the title are the following:

- Reduced waste treatment, transportation, and disposal costs.
- Reduced compliance costs - fines, air emissions fees, hazardous waste fees.
- Reduced long term liability and insurance costs.
- Reduced production costs: more efficient use of materials.
- Income from sale or reuse of waste.
- An improved perception of the industry by the public.

Slide 9. The title of this slide is REGULATORY TIES. Listed are the various regulations that include some component of pollution prevention or a mechanism for industries to monitor their use of chemicals.

The Pollution Prevention Act of 1990	Requires all SARA 313 reporters to report information on source reduction and recycling activities.
SARA 313	Requires companies to submit information on their efforts to reduce toxic emissions.
33/50 Industrial Toxics Project	Seeks to obtain commitments from industries to voluntarily reduce 17 targeted chemicals
Clean Air Act	Gives incentives to industry for voluntarily reducing emissions.
Clean Water Act	(Proposed reauthorization includes toxics use reduction.)
Enforcement/Compliance Orders	EPA Region IV encourages the incorporation of pollution prevention ideas into compliance orders.
State Solid Waste Reduction Goals	North Carolina has set a goal of 25-percent reduction in solid waste generation by June 30, 1993, and a goal of 40-percent reduction by June 30,2001.

This slide emphasizes that pollution prevention is being incorporated in Federal regulations.

Slide 10. This slide outlines some of the the less obvious costs involved with waste generation.

- . LESS OBVIOUS COSTS
- . LOSS OF RAW MATERIAL
- . CRADLE-TO-GRAVE LIABILITY
- . PUBLIC PERCEPTION

With "loss of raw material," a facility may look at a current percentage of efficiency as acceptable or as "the way it has always been done." If the process were more efficient, however, the money spent on transportation and actual raw product will be saved.

With "cradle -to-grave" rules on hazardous waste, a company that generates hazardous waste can never be free from liability. Thus, the best way to prevent the liability is to prevent the waste generation.

"Public perception" can play a big role in business economics. If the public perceives a company as not environmentally responsible, the loss in sales revenue could be detrimental.

"Regulatory perception" is also important. Regulatory documents are public, and when a company's regulatory reviews are good, the general public will hear about it. Also, when a company has a good reputation with the regulatory community, the regulators are more likely to assist the company in solving problems that arise.

Slide 11. This slide is a picture of an old woman facing forward wearing a hat and a bulky coat and a young woman wearing a necklace with her face turned away from the viewer.

The point of this slide is that some viewers see the old woman and others see the young woman; it's all a matter of perception. This is the same with waste streams. If we look for waste, we find waste. If we look for opportunities for waste reduction or beneficial reuse, we find waste reduction and beneficial reuse.

Slide 12. With the words "Changed Attitudes & Perceptions," the purpose of this slide is to make the audience aware that pollution prevention consists first and foremost of changing the way people view the way they work. We can give people information on new technologies or process changes; but unless their attitudes and perceptions change, they will not successfully implement a waste reduction program.

Slide 13. SIX STEPS TO A WASTE AUDIT

- Step 1. Corporate Commitment
- Step 2. Team Selection
- Step 3. Background Information
- Step 4. Flow Diagram & Plant Survey
- Step 5. Materials Balance
- Step 6. Alternatives Evaluation

This slide, which breaks down the waste audit process into six basic steps, is the transition that takes the audience from pollution prevention in a general sense to implementation in a facility. It also is the point in the presentation to emphasize that the more information on hand, the better the estimates.

It is also imperative that the audience understand the first step in this process, Corporate Commitment. Without the backing and the authority from the top to make changes and implement modifications, the plan will not succeed.

Slide 14. IMPLEMENT LOW_TECH TO HIGH_TECH

This slide is used to convey to the audience that the most potential for cost savings from waste reduction will come first from the simple activities. For example, in a meat packing plant, the most load will be removed from the waste water with the least amount of capital input if employees sweep or vacuum up the solids on the floor before cleaning the equipment with water. Usually the "biggest bang for the buck" comes from improved housekeeping and employee training.

Slide 15. WASTE MANAGEMENT = PEOPLE MANAGEMENT

This slide is used to emphasize the concept that a waste reduction program starts with people management. Waste can be greatly reduced through employee training and employee awareness programs. Once employees understand what they are to be looking for, they will suggest ideas and areas for investigation. The employees are on the floor every day and every night. They see what really happens and what needs to be changed.

Also, when this presentation is used for pretreatment staff and waste water operators, this is the time to stress that they change their way of looking at the waste that comes out of industries. Perhaps they see something going to the landfill that could be recycled, or they can find another company that could use this company's waste stream as a raw product. These opportunities can be observed during pretreatment or annual inspections and assistance visits.

Slide 16. WHAT IS A WASTE?

This slide is used to stress the need for education and training. When employees in a food processing plant see chicken or beef fall to the floor, they usually think that that piece cannot be used. They do not realize is that this is waste that can cause large amounts of BOD and oil and grease at the treatment plant. They think that food to be eaten is not harmful to the environment. Employees need to be educated about the consequences when the waste leaves their area and its impact on the environment.

Slide 17. After it has been exposed to an understanding of pollution prevention and the basic needs of a program, the audience needs to view some examples. These examples usually work best if they are about companies in the same state and/or regulatory authority. With waste water staff, it is also more effective to choose examples from the types of industries in their municipality. In stressing the point to "start simple," it is useful to show the examples in a format similar to those listed here; that is, from low-tech to high-tech.

Slides 17 through 51 show examples of the following:

- An intentional process waste (trimmings, equipment setup) and an unintentional process waste (spillage, offspec): Dry cleanup methods, i.e., using brooms, dust pans, wet-dry vacuums, etc.
- Alternatives for the Use of Retrieved Waste: Case studies illustrating the costs saved using dry cleanup and the money earned or saved with using the waste reduction alternatives.
- Employee Awareness Programs: Cases studies of facilities in which employee awareness programs worked.
- Preventive and Routine Maintenance: Case studies of lost revenue and raw product through poor maintenance
- Water and Chemical Conservation: Case studies of quantities and dollars that can be saved through conservation.
- Production Process Modification: Case studies on successful process modifications
- Volume Reduction: Case studies showing that volume reduction has saved money.

Slides 52 - 60. Once the trainer has given the audience an introduction to pollution prevention, the basic needs of a program and examples of how the program can work, contacts in State and local agencies that offer waste reduction assistance should be provided. In North Carolina, the Pollution Prevention Program of the Office of Waste Reduction is available for free, non-regulatory technical assistance by telephone at (919) 571-4100 and by mail at 3825 Barrett Drive, Raleigh, NC 27609.

■ III. City of Winston-Salem: Pollution Prevention Pilot Activities

The City of Winston-Salem was chosen as the large municipality participant in the Pollution Prevention in Publicly Owned Treatment Works (PP/POTW) grant study. With a combined daily flow of 45 million gallons per day (MGD), the City operates two wastewater treatment plants, the Lower Muddy Creek Wastewater Treatment Plant at 15 MGD and the Archie Elledge Wastewater Treatment Plant at 30 MGD. The City serves a population of approximately 200,000 and monitors 35 Significant Industrial Users (SIUs) and 65 Industrial Users (IUs) for a total of 100 companies monitored. The 65 IUs consist of commercial and some domestic sites. The City's pretreatment program, the Industrial Waste Control Program (IWC), is staffed by a supervisor, two industrial waste chemists, four permanent industrial waste technicians, and one temporary industrial waste technician.

The resources and structure of a pretreatment program as large as that in Winston-Salem lends itself to operation of its pollution prevention program internally without a great deal of hands-on assistance from the State. Once the staff has been trained in the basics of pollution prevention, instructed in performing site audits, and informed about sources of current pollution prevention information, it can incorporate these concepts into the current program. Also, a pretreatment program this large has the benefit of years of internal self-monitoring, SIU monitoring data, and State monitoring reports.

For the grant study, the IWC people not only had gathered this information, but they had compiled it into a usable format, and they knew of problem areas. During the early stages of training, the IWC staff recognized areas where pollution prevention could help their program and some of their SIUs. The wealth of background data and the overall knowledge of the staff members made quick implementation of this pollution prevention program possible.

As with any municipal program, the size of the plant or the staff does not mean that the work load per staff member is any less than in a smaller program; if anything, the opposite is probably true. After submitting a pollution prevention assessment report to each SIU and IU, the IWC provided assistance on pollution prevention options within its capabilities and time constraints. Most of the large SIUs have environmental personnel who can implement the options suggested without a great deal of assistance. However, because it cannot spend the time and resources needed at many facilities, the IWC would suggest that additional help is available from the Pollution Prevention Program (PPP). This procedure has worked well: IWC offers assistance yet provides a referral for further assistance if it is desired. Smaller companies that do not have the necessary staff can contact the PPP for the additional hands-on assistance.

The following list outlines the pollution prevention activities performed by the Winston-Salem IWC. It is important to emphasize the scope and magnitude of these activities.

- Received training from PPP Staff.
- Evaluated the headworks analysis for both treatment plants
- Publicized the pollution prevention program through local newspapers ads and radio spots.
- Conducted 35 SIU and 9 IU pollution prevention audits.
- Lowered the molybdenum levels discharged to its Lower Muddy Creek wastewater plant. With the enactment of the Federal 503 sludge regulations, molybdenum is an element of concern. The IWC found that molybdenum is used in cooling towers and scrubbers as a corrosion inhibitor. Through product substitution in the industrial cooling towers and scrubbers, IWC has experienced an 84-percent reduction in molybdenum in the influent to the POTW.

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- Mailed out 621 questionnaires to businesses to assess waste reduction potential. Although some facilities required a follow-up contact, all information was received, entered into a database, and cross-referenced with a solid waste survey.
 - Sent out 385 pollution prevention information packages to businesses as a result of the 621 questionnaires.
 - Established a pollution prevention library at IWC.
 - Modified the Pretreatment Permit Applications and Inspection Checklist to include questions pertaining to waste reduction activities.
 - Established a pollution prevention awards program for the SIUs and IUs
 - Set up working partnerships with other local programs, e.g., the Special Projects Coordinator at the Utilities Division, the Keep Winston-Salem Beautiful Program and the Recycle Today Program.
 - Attended sessions on water conservation and water transfers and participated in wastewater schools.
 - Developed a Pollution Prevention Plan for the City of Winston Salem (see Section VI below)
 - Conducted a pollution prevention workshop, "Pollution Prevention Makes Sense," which attracted approximately 200 participants and 20 exhibitors. The first of a series that will detail various pollution prevention issues, this first workshop was designed to educate industries on the general principle of pollution prevention. The IWC also used that opportunity to request that each industry voluntarily create its own pollution prevention plan. The first workshop agenda and the proposed topics for future workshops are attached.

The pilot study has been a success in the City of Winston-Salem. The IWC staff is dedicated to learning the pollution prevention technologies that are applicable to the POTW's industries and to making pollution prevention a permanent part of the pretreatment program. The municipality and the industries will benefit from this program.

■ IV. Town of Troy: Pollution Prevention Pilot Activities

The Town of Troy was chosen as the small municipality participant in the State's Pollution Prevention in Publicly Owned Treatment Works (PP/POTW) grant pilot study. The Town operates one wastewater treatment plant at a permitted flow of 0.84 million gallons per day (MGD) but averages an actual daily flow of approximately 0.50 MGD. The city serves a population of approximately 3,400 with three Significant Industrial Users (SIUs) and six Industrial-Commercial Users (IUs) for a total of nine companies monitored. The Town's Pretreatment Program is staffed by a supervisor, who is also the Operator in Responsible Charge (ORC) of the wastewater treatment plant and the Water and Sewer Superintendent. The Pretreatment Supervisor is assisted with the monitoring schedule by a Water and Sewer technician. The management of the Water and Sewer Department is administered by the Town Manager, who is also the Town Planner, Utilities Director, Personnel Director, Zoning Administrator, and Public Works Director.

A pretreatment program of this size and with these resources and structure lends itself to operation of its pollution prevention program with a great deal of hands-on assistance from the State and other outside organizations. The Town of Troy currently uses a consulting firm to assist with monitoring, SIU inspections, and data compilation. This consultant assisted with the additional monitoring and other activities performed during the development of the Town of Troy's Pollution Prevention Program

The following list of the pollution prevention activities performed by the Troy Pretreatment Program is an outline and does not communicate the scope of these activities.

- Received training from Pollution Prevention Program staff.
- Evaluated the headworks analysis for the treatment plant.
- Conducted a pollution prevention presentation for representatives of all SIUs and IUs to kick off the Pollution Prevention Program.
- Publicized the program through ads in the local newspaper and on the local cable information channel.
- Conducted three SIU and six IU pollution prevention audits.
- Greatly reduced oil/grease discharges to the treatment plant after discussions with the affected facilities.
- Developed a Long-Term Monitoring Plan which will assist in necessary data gathering.
- Marled out 129 questionnaires to businesses to assess the potential for waste reduction. At the time this report was prepared, 49 questionnaires had been returned, and follow-up calls were being made to the remaining businesses.
- Sent 14 pollution prevention information packages to businesses in response to the 49 questionnaires returned,
- Conducted a specific conductivity scan of the sewer system to attempt to locate sources of aquatic toxicity.
- Performed additional toxicity monitoring in an attempt to determine the source or sources of the aquatic toxicity.

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- Lowered the hydraulic loading to the POTW through an infiltration/inflow investigation. After one company's "once-through non-contact cooling water" was diverted out of the sanitary sewer, the daily average flow to the POTW was reduced by 20,000 gallons per day.
 - Inventoried Material Safety Data Sheets (MSDS) from the three SIUs and three of the IUs into a computer database in an attempt to focus on the potential sources for metals and aquatic toxicity. This exercise was of limited value because of the little information detailed on the MSDSs.
 - Coordinated the Pollution Prevention Plan with other local programs, i.e., the Utilities Department's Street Crew and the Parks and Recreation Department.
 - Distributed solid waste recycling and composting information to citizens upon request.

The pilot study has been a success in the Town of Troy. Although the treated effluent is still not in compliance with the Town's NPDES permit, efforts are ongoing to determine the sources of the problems. Once the sources have been identified, additional pollution prevention investigations will be conducted. Until that time, the municipal staff will continue to work with the businesses and industries to promote pollution prevention. The Town of Troy has dedicated resources and personnel to incorporating the Pollution Prevention Program into its pretreatment structure, and both the municipality and industries will benefit from these efforts.

Note: In a small municipal pretreatment program with limited resources, the greatest obstacle to pollution prevention solutions is usually the scarcity of detailed data. Since the SIUs and a few IUs are usually the only facilities monitored up-the-pipe, the overall sewer can be characterized by only a few discharges. Characterization of the treatment components is limited as well because a small town does not have laboratory facilities to analyze the component data. Thus, the staff can gather only so much daily influent data to determine trends. This situation leaves the facility personnel in a catch-up position when a problem occurs. When a Pollution Prevention Program is to be implemented in a municipality, time should be allotted at the start to gather data so that specific sources of problems can be determined. Industrial pollution prevention assessments can be conducted and information packages can be assembled without these data, but, to maximize resources, a focussed approach would probably be more beneficial.

■ V. Questionnaires

After the municipalities had conducted on-site pollution prevention audits of their significant industrial users (SIUs), they gathered information on the non-SIUs by searching water bills, sewer connection applications, and the telephone book to create a database of non-SIUs.

Once a database had been compiled, the non-SIUs were grouped by industry or activity into as many as 18 categories, for which questionnaires had been prepared for the municipalities by the Pollution Prevention Program staff. A questionnaire in the appropriate category was sent to each non-SIU.

The questionnaires are structured such that the first 15 questions are identical in all categories to ensure that all respondees receive the same base questions. The questions after No. 15 are specific for a category and are used to focus on certain areas appropriate for that category; however, these questions cannot by any means replace an on-site investigation or the in-depth questions that would be asked at the site. The activity or industry is not identified on the questionnaires: so that the respondee would not be "led" to certain answers, they are identified by a number (Form A1, Form A2, Form A3, etc.) according to a key devised by the staff. This kind of "blind" survey can help determine the level of environmental awareness at the company.

The responses to the questionnaires were grouped according to the severity of the pollution prevention problem; for example, the company needs an on-site audit or a pollution prevention information package, or more information is needed from the non-SIU. As in any sampling effort, not all companies were cooperative. In those cases, a second questionnaire was sent and/or the companies were telephoned about the questionnaire.

This effort was beneficial in a number of ways. The municipal staff found new sources for waste reduction, and these non-SIUs are the medium to small businesses that need help in source reduction, recycling, and reuse.

The following are examples of the questionnaires used in both pilot studies.

The questionnaires, form identification numbers, and the classifications used with each are as follows:

Form ID	Title of Questionnaire	Industry/Process of Concern
A1	I General	Glass, General, Refuse Systems, Rubber & Plastic. Waste Disposal
A2	Automotive	Automobile Repair, Trucking
A3	Battery	Battery
A4	Blueprint and Microfilm	Blueprint and Microfilm, Photography
A5	Car Wash	Car Wash
A6	Chemical Formulating	Chemical Formulating
A7	Distribution Facilities	Distribution Facilities
A8	Electronics	Electronics
A9	Food	Food
A10	Ink and Paint	Ink and Paint, Signs
A11	I Laboratories	Laboratories
A12	I Laundry	Laundry
A13	I Leather	Leather
A14	Medical	Medical
A15	Metal Work	Metal Work and Primary Metal
A16	I Textiles	Textiles
A17	I Wood and Paver	Wood and Paver
A18	Wastewater Disposal	Disposal Method

WASTE STREAM QUESTIONNAIRE (A1)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. county: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals./Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: (Approx. Gal/Day) Town Sanitary Sewer: _____
Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)? Yes _____ No _____ If so, explain:

15. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

WASTE STREAM QUESTIONNAIRE (A2)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals./Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: (Approx. Gal./Day) Town Sanitary Sewer: _____
Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than rest rooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)? Yes _____ No _____ If so, explain:

15. Are any cars/trucks/vehicles washed at this facility? Yes _____ No _____
 If so, how many and how often? _____
16. Do you flush radiators? Yes _____ No _____
 If so, how many and how often? _____
17. Do you change oil/service vehicles? Yes _____ No _____
 If so, how many and how often? _____
18. Do you paint vehicles or parts at this facility? Yes _____ No -
 If so, how many and how often? _____
19. What types and quantities of paints are used at this facility?

20. What types and quantities of solvents are used at this facility?

21. Do you wash service rags and/or uniforms on site or are they shipped off site for washing?
 Onsite _____ Offsite _____
22. If your rags/uniforms are washed offsite, what is the name of the company that performs this service?

23. How do you dispose of the following?
 Radiator flushings? _____
 Used Solvents? _____
 Waste Paints? _____
 Old Batteries? _____
 Waste Oils? _____
24. Are there any drains in the service or storage areas? Yes _____ No _____
 If so, are they storm drains or sanitary sewer drains?

25. Are there any drains in the paint areas? Yes _____ No _____

26. How is the paint room cleaned? (washed down swept down, etc.)

27. Is there any machining of parts, brakes, etc. at this facility? Yes _____ No _____
If so, are there any coolant oils used? Yes _____ No _____
If so, how are these oils disposed of? _____

28. Is there any engine cleaning conducted at this facility? Yes _____ No _____
If so, how are the engines cleaned? _____

29. Is there any parts cleaning conducted at this facility? Yes _____ No _____
If so, how are the parts cleaned? _____

30. What types and quantities of cleaning solutions do you use? (detergents, caustics, etc.)

31. Are any trucks/tankers washed out at this facility? Yes _____ No _____
If so, how many and how often? _____
32. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?
Yes _____ No _____ If so, explain:

15. Does this facility recycle batteries?
Yes _____ No _____ If so, what types and quantities:

16. Describe the recycling and/or disposal process.

17. Describe how chemicals are stored and the location of any drains (type - storm or sanitary?) in the storage area.

18. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

WASTE STREAM QUESTIONNAIRE (A4)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: _____ Town of Water System: _____
(Approx. Gals/Day) Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: Town Sanitary Sewer: _____
(Approx. Gal/Day) Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?
Yes _____ No _____ If so, explain:

15. Do you reuse your fixers, developers, and/or bleaches?
Yes _____ No - _____ If so, do you use counter current rinsing explain:

16. Do you practice silver recovery onsite? Yes _____ No _____ If so, explain what method you use:

17. Do you send silver solutions offsite for recovery? Yes _____ No _____ If so, explain:

18. What is the general nature and types of chemicals used in your process?

18. Describe how chemicals are stored and the location of any drains (type - storm or sanitary?) in the storage area.

19. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

WASTE STREAM QUESTIONNAIRE (A5)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals./Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: (Approx. Gal/Day) Town Sanitary Sewer: _____
Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?
Yes _____ No _____ If so, explain:

15. Is this facility a detail shop, power washer, and/or a self-service car wash? Explain:

16. What types and quantities of detergents, polishes, water softeners, waxes, and or water treatment chemicals are used at this facility? Explain:

17. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

WASTE STREAM QUESTIONNAIRE (A6)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx Gals/Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: Town Sanitary Sewer: _____
(Approx. Gal./Day) Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.): _____

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?

Yes No If so, explain:

15. If the answer to question 14 was yes, how is the sludge/grits/solids from the pretreatment unit disposed of?

16. Does this facility perform any chemical synthesis, fermentation, mixing, and/or formulation of chemicals/oils/solutions?

Yes No If so, explain:

17. Describe how tanks, equipment, and transfer lines are cleaned and the frequency of cleaning.

18. Do you have employee showers at this facility? Yes No
If so, how many and how often are they used?

19. Is this facility required to report under SARA 313 Toxic Release Inventory?

Yes No

20. Is this facility a hazardous waste generator?

Yes No

WASTE STREAM QUESTIONNAIRE (A7)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals./Day) Town Water System: _____
Private Well: _____
Other (Explain):

10. Wastewater Empties Into: Town Sanitary Sewer: _____
(Approx. Gal/Day) Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?
Yes _____ No _____ If so, explain:

15. How is spilled material handled? (washed down the drain swept-up, etc.)

16. Do you specialize in the distribution of any particular material?
Yes _____ No _____ If so, explain:

17. Do **you** warehouse or stock material at this facility?
yes - _____ No - _____ If so, explain:

18. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

WASTE STREAM QUESTIONNAIRE (A8)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals/Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: (Approx. Gal./Day) Town Sanitary Sewer: _____
Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?

Yes _____ No _____ If so, explain:

15. Is there any drawing done at this facility? Yes _____ No _____ If so, explain:

16. Is there any plating done at this facility? Yes _____ No _____ If so, explain:

17. Is there any wire or component cleaning/washing performed at this facility?

Yes _____ No _____ If so, explain types of cleaning used and types of cleaning agents:

18. Are you practicing any recycling of wastewater?

Yes _____ No _____ If so, explain:

19. Are you practicing any counterflow rinsing, drag out control, or metal recovery at this facility?

Yes _____ No _____ If so, explain:

20. Is there any machining performed at this facility?

Yes _____ No _____ If so, explain:

21. Is there any painting or solvents used at this facility? If so explain types and quantities used.

22. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

WASTE STREAM QUESTIONNAIRE (A9)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals/Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: (Approx. Gal./Day) Town Sanitary Sewer: _____
Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan, Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?

Yes _____ No _____ If so, explain:

15. What type of cleanup does this facility use? (dry-sweep, washdown, etc.)
Explain:

16. Describe the disposal methods for the following:

Solid Food Waste: _____

Liquid Waste: _____

Oils/Greases: _____

or Dishwater or cleanup water:

17. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

WASTE STREAM QUESTIONNAIRE (AIO)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals./Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: (Approx. Gal./Day) Town Sanitary Sewer: _____
Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?
Yes _____ No _____ If so, explain:

15. Does this facility use/manufacture any heavy metal containing paints or inks?
Yes _____ No _____ If so, explain:

16. When a spill occurs or just general cleanup, what type of cleanup procedures are followed? (dry cleanup, washdown, etc.) Explain:

17. Does this facility use/manufacture any solvent and/or water based paints or inks?
Yes _____ No _____ If so, explain:

18. What types of solvents/chemicals are used during cleanup?

19. How by-products handled?

20. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

WASTE STREAM QUESTIONNAIRE (All)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals./Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: (Approx. Gal./Day) Town Sanitary Sewer: _____
Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?

Yes _____ No _____ If so, explain:

15. What is the sample media analyzed at this facility?

16. Do your procedures involve extracting with solvents?

Yes _____ No _____ If so, explain:

17. How are the samples disposed of after analysis?

18. How are waste solvents and chemicals disposed of after analysis?

19. What solvents/chemicals are used in cleanup?

20. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

WASTE STREAM QUESTIONNAIRE (A12)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals./Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: (Approx. Gal/Day) Town Sanitary Sewer: _____
Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?

Yes _____ No _____ If so, explain:

15. What types and quantities of detergents/cleaning solutions does this facility use?

16. What types of articles makeup the majority of items cleaned at this facility? [uniforms (medical/service station/etc.), baby diapers, etc.]

17. Do you accept rags or uniforms from furniture manufacturers, printers, etc.?

Yes _____ No _____

If so, what is the approximate quantity and frequency?

18. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

IF THIS FACILITY IS CONDUCTING DRY CLEANING OPERATIONS. PLEASE ANSWER THE FOLLOWING QUESTIONS.

19. What types and sizes of machines are you using?(dry to dry, transfer units, etc.)

20. Can you estimate how many pounds of solvent per 100 pounds of clothes are being used?

21. Is the solvent being recycled? If so, how?

22. Describe any emission control devices (carbon absorbers, condensers, etc.) and the management of any associated waste.

WASTE STREAM QUESTIONNAIRE (A13)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals./Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: Town Sanitary Sewer: _____
(Approx. Gal./Day) Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?
Yes _____ No _____ If so, explain:

15. What types and quantities of chemicals are used at this facility? (tanning components, softening agents, water proofing compounds, etc.)

16. What type of cleanup practices are used at this facility? (sweep-up, washdown, etc.)

17. Are Leathers being painted at this facility? Yes _____ No _____ If so, explain what types and quantities of paints and solvents are being used:

18. Describe paint booths and management of waste associated with them. (wash water, filters, etc.)

19. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

WASTE STREAM QUESTIONNAIRE (A14)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals/Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: Town Sanitary Sewer: _____
(Approx. Gal./Day) Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.): _____
12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?

Yes _____ No _____ If so, explain:

15. How are chemical/body fluid/blood spills contained and disposed of?

16. What disinfectants are used by this facility?

17. Do you X-ray at this facility?

Yes _____ No _____ If so, explain quantity and frequency:

18. Does this facility use or store Mercury?

Yes _____ No _____ If so, explain:

19. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

20. Do you recover silver?

Yes _____ No _____ If so, explain:

21. Do you recycle solvents?

Yes _____ No _____ If so, explain quantity and frequency:

22. Do you have a formalin waste stream at this facility?
Yes _____ No _____ If so, explain how you dispose of the waste formalin:

WASTE STREAM QUESTIONNAIRE (A15)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals/Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: Town Sanitary Sewer: _____
(Approx. Gal/Day) Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?
 Yes _____ No _____ If so, explain:

15. Do you paint parts at this facility? Yes _____ No _____
 If so, how many and how often? _____
16. What types and quantities of paints are used at this facility?

17. What types and quantities of solvents are used at this facility?

18. Do you wash service rags and/or uniforms on site or are they shipped off site for washing, or are they disposed of? Onsite _____ Offsite _____ Disposed of _____
 If they are disposed of, then how? _____
19. If your rags/uniforms are washed offsite, what is the name of the company that performs this service?

20. How do you dispose of the following?
 Used Solvents? _____
 Waste Paints? _____
 Metal scraps? _____
 Absorbants? _____
 Adhesives, sealants, etc.? _____
21. Are there any drains in the process/machining or storage areas? Yes _____ No _____
22. Are there any drains in the paint areas? Yes _____ No _____
23. How is the paint room cleaned? (washed down, swept down, etc.)

24. Is there any machining of parts at this facility? Yes _____ No _____
 If so, are there any coolant oils used? Yes _____ No _____
 If so, how are these coolant oils disposed of or recycled? How?

25. Is there any parts cleaning conducted at this facility? Yes _____ No _____
If so, how are the parts cleaned?

26. What types and quantities of cleaning solutions do you use? (detergents, caustics, etc.)

27. Is there any drawing or forming conducted at this facility? Yes _____ No _____
If so, what types of lubricants/coolants are used?

28. What Metals are handled/used at this facility?

29. Do you cast at this facility?
Yes _____ No _____ If so, explain how casting and molding sands are handled:

30. Is there any plating, coating, or phosphating at this facility?
Yes _____ No _____ If so, explain types and quantities:

31. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

WASTE STREAM QUESTIONNAIRE (A16)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals/Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: (Approx. Gal/Day) Town Sanitary Sewer: _____
Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.): _____

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?
Yes _____ No _____ If so, explain:

15. Please describe any printing and or dyeing operations used at this facility.

16. Please describe the ten most used chemicals and the quantity used at this facility. (p% wase include chlorides, surfactants, etc.

17. Have the dyes or pigments been reviewed for heavy metal or other toxic constituents?
Yes _____ No _____ If so, explain any substitutions that have been made:

18. Is there any dye/ink reuse? Yes. _____ No _____ If so, explain:

19. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

WASTE STREAM QUESTIONNAIRE (A17)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals/Day) Town Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: (Approx. Gal/Day) Town Sanitary Sewer: _____
Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Yes _____ No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?
Yes _____ No _____ If so, explain:

15. What types of stains/waxes/sealers/stripping compounds are used at this facility?

16. What type of manufacturing wastewater streams are generated at this facility?

17. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

WASTE STREAM QUESTIONNAIRE (A18)

1. Company Name: _____
2. Mailing Address: _____
3. Street Address: _____
4. Phone: _____ 5. County: _____
6. Contact Person and His/Her Title for this Facility:

7. SIC Codes: _____
8. Describe the Operations Performed at this Facility:

9. Source of Water: (Approx. Gals./Day) _____ Town of Water System: _____
Private Well: _____
Other (Explain): _____

10. Wastewater Empties Into: (Approx. Gal/Day) Town Sanitary Sewer: _____
Septic Tank: _____
Other (Explain): _____

11. Number of Employees at this facility:
Permanent: _____
Part Time: _____
Months that the Part Time Labor is Employed (Jan., Feb., etc.):

12. Does your facility have a Spill Prevention Control and Countermeasure (SPCC) Plan?
Yes _____ No _____
13. Other than restrooms, does this facility discharge any other wastewater (washdown water, process wastewater, etc.)?
Y e s No _____ If so, explain:

14. Does this facility have any pretreatment units that the wastewater passes through prior to it being discharged (catch basins, oil/water separators, etc.)?
Yes _____ No _____ If so, explain:

15. What chemicals/paint/solvents and what processes are they being used in at this facility?
E x p l a i n :

16. Do you have employee showers at this facility? Yes _____ No _____
If so, how many and how often are they used?

■ VI. Municipal Pollution Prevention Plans

■ Introduction

After the preliminary pollution prevention audits are completed and the questionnaires evaluated, a system for continued development of the municipal pollution prevention program must be set up. The guidance for this system of development is the pollution prevention plan. For a long-term pollution prevention program to be successful, a pollution prevention plan is essential.

Although Pollution Prevention Program staff offered guidance about material to be included in the plan, the specifics were left to the municipalities. This flexibility allowed them to use their knowledge of their own systems to set their own goals.

The main purposes of this preliminary plan are to explain how the plan originated, to set out goals for reduction and training, and to establish dates for plan reevaluation. Information about the start of the plan is important since staffs change and the genesis of the program may be lost. Goals for reduction and training are also important to ensure continued reduction of waste and development of the staff. Actual dates for evaluating the progress of the program may be the most important part of the pollution prevention plan as deadlines work as strong motivators for the staff to continue to strive for waste reduction. The re-evaluation keeps the pollution prevention plan a growing and changing entity and up-to-date with the current status of the facilities.

The level of execution of a pollution prevention plan depends on the dedication of the municipal staff, but a well-designed plan should assist the staff in its execution.

In this section, the plan for the City of Winston-Salem is presented. At the drafting of this document, the plan for the Town of Troy is under development.

VII. Incentives and Barriers to Pollution Prevention in POTWs

During the course of these pilot studies, various benefits or incentives and some obstacles to pollution prevention became evident. Some of these are listed below.

Incentives

- Since pollution prevention is process-specific, the information provided by the Pollution Prevention Program staff gave the local pretreatment staff an opportunity to learn more about the industrial processes they regulate and the waste streams generated.
- The pollution prevention alternatives offered the industries an alternative to costly treatment
- Even in cases when a pollution prevention option could not be found for a particular process, better working relationships developed because of the assistance the State and local municipalities were attempting to provide to the industries.
- Since the POTW training was conducted with a multimedia approach, the local pretreatment coordinators used this experience as a platform to launch cooperative efforts with the other media groups in the municipality such as solid waste and air quality.
- The State-level program structure fostered better working relationships between the Pretreatment Program and the Pollution Prevention Program. Better communication between a regulatory and non-regulatory agency has developed.
- The information transfer phase that took place under the study has enhanced the flow of pollution prevention information; the municipalities have a direct contact at the PPP for questions/information.
- Loadings to the POTW have been reduced.
- With the need for new treatment structures reduced as a result of the pollution prevention efforts, industry and municipal dollars have been saved.
- For a large municipality, the local pretreatment program is an excellent one in which to incorporate pollution prevention activities. Inspection, industrial waste surveys, and other routine pretreatment program activities can easily be modified to incorporate pollution prevention concepts.

Barriers

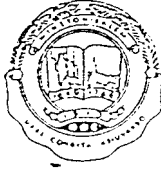
- When smaller facilities wish to join resources with other media groups to promote a multimedia approach, the other groups may not yet be in place. As an example, although a pretreatment inspector finds solid waste that could be recycled by various medium-sized companies, the municipality does not yet have a structured recycling program in place. These situations cause some activities to be postponed and/or perhaps forgotten.
- Funds for programs and activities are always a problem. The Winston-Salem Industrial Waste Control found a way to generate some funds for facilities and refreshments at its workshops by allowing exhibitors to set up displays if they contributed to the cost.
- Time has been a barrier. The true results of a program as comprehensive as these pilot studies will not be measured in a few months or a year; the benefits will be seen 5 to 10 years in the future. As the municipal staffs learn more about the pollution prevention alternatives available to their industries and pass this information along, the potential for effective and sustained pollution prevention programs will greatly increase.

■ Conclusion

The introduction of pollution prevention into publicly owned treatment works has been a success in the State of North Carolina. In the two years years since 1991, the State Pretreatment Unit and the Pollution Prevention Program have established the foundation for change in the management of municipal wastewater facilities in North Carolina. With the help of the two pilot cities, the City of Winston-Salem and the Town of Troy, it has been proven that a pollution prevention program can be set up and integrated into an existing pretreatment program. This program can function as an integral part of the existing program and actually enhance it.

A review of the goals of this pilot study grant process reveals that the State has fulfilled its objectives. The Pretreatment Program and the Pollution Prevention Program have developed a State-level structure wherein a regulatory agency and a non-regulatory agency assist each other without compromise to responsibilities or duties. The two pilot cities have pollution prevention programs integrated into their pretreatment programs, and they are continuing to progress. The Pollution Prevention Program has dedicated one person as the contact and to provide technical assistance for the Pollution in Publicly Owned Treatment Works (PP/POTW) project; thus, the municipalities and Pretreatment Program have a resource for information.

With the cooperative system and information transfer in place, the PP/POTW project should continue successfully in North Carolina for years to come.



City of Winston-Salem

PUBLIC WORKS
DEPARTMENT

March 19, 1993

POLLUTION PREVENTION PLAN

CITY OF WINSTON-SALEM

Policy Statement

With the intent of potentially reducing overall waste loads to the treatment facilities operated by the City of Winston-Salem and Forsyth County, Winston-Salem Industrial Waste Control will assist its dischargers, industrial and domestic, in reducing all waste to the levels that are economically and technically practical, including compliance with all Federal, State, and local regulations. This will be accomplished by, but not limited to, performing waste audits, conducting educational outreach programs and seminars, and providing technical information packages.

Plan Evaluation

By March 31, 1994, the Pollution Prevention Plan will be updated and new goals set. This Pollution Plan will be evaluated by September 30, 1993, to determine goals achievement including a summary document of review.

Employee Training and Awareness

- A. Management will be proactive 'in encouraging pollution prevention by providing resources and encouraging staff to attend Pollution Prevention workshops and seminars when possible.
- B. Staff will attend Pollution Prevention workshops, review case studies, professional and trade publications, and research pollution prevention options on an "as needed" basis.
- C. At least once each year, a staff training meeting will be held to share and discuss pollution prevention materials and activities.

Performance Goals

- A. Attain a target percent reduction in plant influent compared against the baseline of December 31, 1991 (please see appendix) during the next year of:

Elledge - Chromium 33%, Copper 5%, Cadmium, Lead, Nickel; and Zinc 3%,
Molybdenum 20%

Muddy - Heavy Metals 3%, Molybdenum 90%

POLLUTION PREVENTION PLAN (continued)

- B. Businesses which did not respond to the first survey will be sent a second survey due back April 7, 1993. Pertinent information will be obtained by April 30, 1993 from businesses which do not return the second survey.
- C. Respondents to the first survey will receive an information packet including:
- "Earth Watch 12 Guide to Business Recycling"
 - "Hazardous Waste Reduction the Bottom Line"
 - "Nature's Way: How Wastewater Treatment Works for You"
 - "Hazardous Waste What You Should and Shouldn't Do"
 - "Getting Rid of Garbage in Winston-Salem/Forsyth County"
 - "Local Recyclers List and Index"

The information packet and a thank you letter, including a contact name and phone number for additional information, will be mailed out by April 15, 1993.

- D. A similar information packet will be mailed to the second survey group by May 15, 1993.
- E. All surveys will be reviewed and prioritized according to potential impacts by May 15, 1993.
- F. Fifteen additional audits will be completed each year for non-SIUs. Priority will be based on potential impact to the WWTPs. The information from the questionnaire will be shared with appropriate agencies (Winston-Salem Stormwater, DEM, Winston-Salem Landfill and Recycle Today, Forsyth County Environmental Affairs). Industrial Waste Control will continue to inspect the SIUs annually and IUs every five years.
- G. A "Topics Survey" to evaluate local businesses' training and informational needs will be mailed out by March 31, 1993. The "Topic Survey" will involve approximately 2,000 businesses including:
- All SIUs
 - All industries monitored by Industrial Waste Control
 - All members of the Winston-Salem Chamber of Commerce
 - Survey respondents (Solid Waste and PP)
- H. All survey responses will be reviewed to determine the number and types of seminars needed to address environmental issues and the number and type of informational packets which need to be provided. One workshop will be conducted by May 31, 1993 and the Waste Reduction Plan and Awards System will be included in the workshops. Additional workshops may be necessary depending on the number of businesses wishing to participate, and how varied the topics of interest.
- I. The SIU Pretreatment Application will be modified to include waste reduction activities by May 31, 1993.

CITY OF WINSTON-SALEM'S POLLUTION PREVENTION PLAN

Preamble

The City of Winston-Salem received a grant of \$35,000, in August 1992, from the North Carolina Department of Environment, Health and Natural Resources, to establish a permanent Pollution Prevention Program in conjunction with the existing Industrial Waste Control Program. The primary goals of the Pollution Prevention Program are to provide ongoing assistance to local businesses in waste reduction efforts; and reduce loadings and gain back capacity at the wastewater treatment plant. The North Carolina Pollution Prevention Pays Program provided training of Industrial Waste Control staff, numerous case studies, reference materials, and literature. They also assisted in developing eighteen questionnaires for specific categories of businesses. The N. C. Pretreatment Unit assisted Industrial Waste Control staff in performing new headworks analysis for both wastewater treatment plants. State staff continues to provide information, assistance, and support for the Winston-Salem program.

The City mailed surveys to 621 businesses to assess waste reduction potential, and 366 were returned. The completed surveys were evaluated and categorized by priority of potential wastewater impacts. The survey information was entered into a database and cross referenced with a solid waste recycling survey so the database was shared by Winston-Salem Pollution Prevention, Recycle Today!, and Keep Winston-Salem Beautiful.

Forty-three audits have been completed, thirty-four for SIUs which combined the Pollution Prevention concerns with the annual pretreatment inspection. The remaining nine audits were based on priority and requests for assistance. Results of the audits were documented in the inspection memorandums.

The City hired Sean Sauls on February 1, 1993, as an intern to assist with the Pollution Prevention Program. Sean will be working with the program through July 1993, when he will continue to pursue a degree in Environmental Science.

The City's Recycle Today!, Keep Winston-Salem Beautiful, the Chamber of Commerce, and local businesses sponsored "Business and the Environment: Your Economic Edge". The primary focus of the seminar was waste minimization and recycling of solid waste. The seminar also included "How to Conduct a Waste Reduction Audit" (multi-media), and an announcement of the Winston-Salem Pollution Prevention Program Grant.

The Chamber of Commerce has established an Environmental Issues Forum which meets bimonthly; admission is free, and the forum is open to the public. The first presentation was given by Bob Fulp with Environmental Affairs, and focused on air pollution, and nonattainment issues in

Preamble (Continuedj

Forsyth County. The second presentation was made by R. Howard Grabbs, an Environmental Attorney with Womble Carlyle Sandridge and Rice, entitled "Environmental Auditing and Criminal Liability Issues". Three Winston-Salem IWC/PP staff are members of the Forum, and hope to introduce waste minimization topics.

A primary goal of the program is to reduce cadmium levels discharged to the Elledge Plant, to achieve compliance with proposed NPDES permit limits. Very significant reductions have been achieved. More detailed information is included in the attached appendix.

Another important goal of the program is to reduce molybdenum levels discharged to both wastewater treatment plants to comply with the new 503 Sludge Regulations. Molybdenum analyses were performed on all dischargers to the wastewater treatment plants and the wastewater treatment plants' influents. The analyses indicated the primary molybdenum source was cooling towers and air scrubbers. The chemical suppliers confirmed that molybdenum was used as a corrosion inhibitor. One chemical supplier developed a polyphosphonate as a substitute for molybdenum. Some industries are considering chemical substitution and alternative technologies (water energizers) to reduce molybdenum levels. Molybdenum levels have been decreasing significantly in the wastewater treatment plant influent and sludge.

The City has submitted Long-Term Monitoring Plans (LTMP), which are included in' the appendix, for both the Elledge and Muddy WWTPs. The LTMPs outline the locations and minimum monitoring that the City will perform for headworks analysis updates., The information generated from the LTMPs will provide an excellent long-term means for reviewing progress with impacts of waste minimization goals.

The City is obtaining materials for information packets for mailings, workshops, and citizen groups. WXII Television Station very generously donated 500 "Earth Watch 12 Guide to Business Recycling". The City's Utilities Division is donating 1,000 "Getting Rid of Garbage in Winston-Salem/Forsyth County". The City's Elledge Wastewater Treatment Plant is donating 2,000 "Nature's Way How Wastewater Treatment Works For You". BP Oil-has shared. their "Environmental Compliance Training Workbook", which should be an excellent resource for developing training programs for service stations and similar facilities.

In summary, the City has had an active Industrial Waste Control Program since the late 1950s. Phase in on a Pollution Prevention Program began in early 1992. Long-term results can best be evaluated in comparison to the historic annual metals summary included in the appendix.

POLLUTION PREVENTION PLAN (continued)

- J. For awards (plaques) will be given to businesses for suitable waste reduction plan. Each subsequent year during which the business reviews and updates the plan, they will be awarded a bar or stick on to update the plaque.
- K. Businesses which participated in an. audit during the first year will be recognized in a newspaper insert or article.
- L. Information packets for concerned citizens and distribution in conjunction with presentations for civic groups, garden clubs, church, school groups, etc. , include:
- "Household Hazardous Waste Wheel"
 - "Getting Rid of Garbage in Winston-Salem/Forsyth County"
 - "60 Tips for Recycling Those Panty Hose"
 - "Household Hazardous Waste What You Should and Shouldn't Do"
 - "Nature's Way: How Wastewater Treatment Works for You"
 - "Local Recyclers List and Index"
- The goal will be to make five presentations per year to private citizen groups.
- M. A catalogued library will be set up to organize pollution prevention books, literature, case studies, brochures, and information packets to ensure efficient transfer of needed materials to area businesses and citizens. The library will be established. by April 30, 1993, and will be continuously updated with new reference materials, trade publications, workshop packets, and other waste minimization tools.
- N. Water billing permits will continue to be reviewed and evaluated to determine the need for questionnaires, information packets, audits, or inclusion in the monitoring program.
- O. All SIU waste reduction plans will be reviewed for content and progress in conjunction with the annual inspection and pretreatment permit application update. All non-SIUs will be required to resubmit their program annually with a progress report and goals for the upcoming year. The submittal will be reviewed for content and progress. All plans deemed adequate will receive a bar or stick on for their plaque.
- P. During the next period, informational packs will be distributed at the five private citizen group outreach efforts, as questions or requests are received, at inspections and audits, and at local business workshops. Additional information will be disseminated on a broader scale through a newspaper insert or a water bill stuffer.

POLLUTION PREVENTION PLAN (continued)

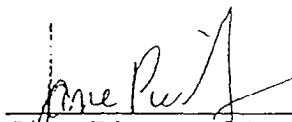
Effectiveness Measures

- A. Biannually influent and sludge constituents will be evaluated to determine the effectiveness and applicability of pollution prevention activities, and documented.
- B. Annually, Business Waste Reduction Plans will be reviewed for accomplishments and compared against wastewater treatment plant and landfill reductions, and documented. The Pollution Prevention Plan will be modified and improved based on the assessment of results.
- C. Goals and procedures of the plan will be evaluated for progress and to determine if they are attainable, and appropriate plan revisions will be made.

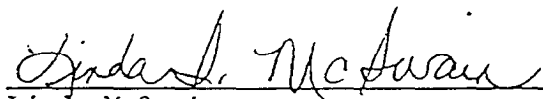
SIGNATORIES



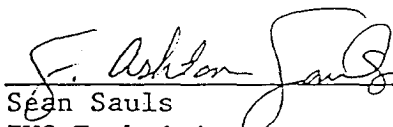
Crystal Couch
IWC Supervisor



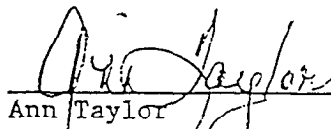
Jane Pieczynski
IWC Chemist



Linda McSwain
IWC Chemist



Sean Sauls
IWC Technician



Ann Taylor
IWC Office Assistant

POLLUTION PREVENTION MAKES SENSE

A g e n d a

June 9, 1993

The Marque

8:00 - 9:00 a.m.	Registration, View Exhibits Refreshments
9:00 - 9:10 a.m.	Welcome Pat Swarm, Assistant City Manager City of Winston-Salem
9:10 - 9:15 a.m.	Pollution Prevention Awards Program Crystal Couch, IWC Supervisor
9:15 - 9:35 a.m.	Environmental Liability Issues Mark Holton, Environmental Partner Womble Carlyle Sandridge and Rice
9:35 - 9:50 a.m.	What is a Waste Minimization Program? Crystal Couch, Sean Sauls Industrial Waste Control
9:50 - 10:05 a.m.	Sewer Use Ordinance Revisions Jane Pieczynski, Linda McSwain IWC Chemists
10:05 - 10:20 a.m.	Break, View Exhibits
10:20 - 11:00 a.m.	Panel Discussion Recycling Alternatives
 <u>Panelists</u>	
Jane Blackwell	Browning Ferris Industries
Ed Bradley	Brenner Iron and Metal Companies
Richard Ellman	Environmental Compliance Corporation
John Wall	Paper Stock Dealers Inc.
Bob Gilmore	Gilsnore Associates Inc.
Bob Joiner	Waste Management of the Piedmont
11:00 - 11:15 a.m.	Break, View Exhibits
11:15 - 11:45 a.m.	Working 9 to 5 to Reduce, Reuse and Recycle Glynis Whitted, Coordinator Keep Winston-Salem Beautiful Ray Rogers, Recycling Coordinator

11:45 - 12:00 noon Using a Mass Balance to Reduce Waste
George Eddy, Assistant to General Manager
Corn Products Company

12:00 - 1:15 p.m. Lunch **(on your own)**

1:15 - 1:30 p.m. Storm Water Update-Proposed Illicit
Connection Identification Program
Ray Hamilton, Senior Project Manager PE
HDR Infrastructure

1:30 - 1:45 p.m. Hazardous Waste Regulations
Steve Phibbs, Waste Management Specialist
DEHNR

1:45 - 2:10 p.m. Waste Reducing Technologies
Bob Carter, Senior Staff Engineer
Waste Reduction Resource Center

2:10 - 2:25 p.m. Break, View Exhibits

2:25 - 2:40 p.m. The "Model" Waste Minimization Plan
Crystal Couch, IWC Supervisor

2:40 - 3:00 p.m. Waste Reduction Case Studies
Lindsay Mize, Environmental Engineer
N.C. Pollution Prevention Program

3:00 - 3:25 p.m. Conducting an Internal Audit
Kirk Rife, Director of Environmental Affairs
Trigon Engineering Consultants, Inc.

3:25 - 3:30 p.m. Closing Remarks, Complete Evaluation

WORKSHOP EVALUATION FUTURE WORKSHOP TOPICS REQUEST

1. Local and State regulation update.
2. All pollution regulations; SPCC, RCRA, CERCLA, UST
3. Local, State, and Federal regulations
4. Air regulations
5. City, County, State, and Federal regulations
6. Biodegradability and role in determining waste disposal to POTWs
7. Waste reduction and minimization of waste oils
8. Update on status of project - future expectations
9. Add small group discussions
10. *Regulations*
11. Wastewater and stormwater regulations
12. *Solvent* reduction
13. Waste reducing technologies
14. Industrial pretreatment
15. Treatment technologies
16. Reporting/record keeping regulations
17. Specific case studies
18. Stormwater update
19. Pollution prevention update
20. Food industrial waste reduction
21. Exhibitors for pretreatment of low flow food processors
22. Pretreatment sludge disposal
23. Much like same format
24. Industrial pretreatment methods - metals removal or alternatives
25. Water quality issues

26. Sludge remediation - nonhazardous
27. Testing air emissions
28. Color removal/reduction - textiles
- 29.** More in depth on various cities' approach as to stormwater
30. Sewer Use Ordinance
31. Solvent substitution
- 32.** Determinations if EPA categorical standards apply
33. Hazardous waste *management*
34. North Carolina air pollution permitting
35. Case history presentations on specific waste reduction efforts with SIUs, whether successful or not (specifically metal finishing, textile, battery manufacturing, etc.)
36. Include panel discussion in next workshop too
- 37.** Regulatory updates presented by local and State authorities