

THE ROUGE RIVER PROJECT
A WORLD CLASS EFFORT



BRINGING OUR RIVER BACK TO LIFE

Rouge River National Wet Weather Demonstration Project

Wayne County, Michigan

QUALITY MANAGEMENT PLAN

RPO-WMD-QMP02.00

GRANTS 2,3,4 & 5

October 1999

Rouge River National Wet Weather Demonstration Project

MISSION STATEMENT

The mission of the Rouge River National Wet Weather Demonstration Project is to demonstrate effective solutions to water quality problems facing an urban watershed highly impacted by wet weather and develop potential solutions and implement projects which will lead to the restoration of water quality in the Rouge River. The project will address both conventional and toxic pollutants to:

- provide a safe and healthy recreational river resource for present and future generations;
- re-establish a healthy and diverse ecosystem within the Rouge River Watershed;
- protect downstream water resources such as the Detroit River and Lake Erie; and
- help ensure compliance with federal, state and local environmental laws which protect human health and the environment.

This will be accomplished through the development, implementation, and financial integration of technical, social, and institutional frameworks leading to cost efficient, and innovative, watershed based solutions to wet weather problems. This watershed-based national demonstration project will provide other municipalities across the nation facing similar problems with guidance and potentially effective solutions.

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1.0 QUALITY MANAGEMENT POLICY (QMP) AND PROJECT ORGANIZATION.

Provisions of the previous QMP, prepared in July 1996 will be followed until this QMP is approved. The applicable term of this QMP is October 1998 to December 2000. This section sets forth the quality assurance policy of the Wayne County Rouge Program Office (RPO) and identifies those individuals responsible for implementing the quality system detailed in subsequent sections of this Quality Management Plan (QMP). The QMP is disseminated to various staff members within the RPO and their contractors and subconsultants by requiring work plan managers and project coordinators to become familiar with the document and maintaining a copy in the RPO library for all interested parties to refer to as needed. Implementation of the QMP will be the responsibility of the work plan managers and project coordinators.

1.1 BACKGROUND OF THE ROUGE RIVER NATIONAL WET WEATHER DEMONSTRATION PROJECT.

The Rouge River and its watershed are a primary source of pollution to the Great Lakes. The Clean Water Act of 1972 intended to make waterways "fishable and swimmable." Although that goal has not been reached, great progress has been made in improving water quality in most waterways. The Rouge River Remedial Action Plan (RAP) provided a basis for which Rouge Project efforts were created. It identified the major sources of pollution and the relative contributions of each to the water quality to the river. The RAP is the continuing foundation for the Rouge Project and presents a framework for addressing the problems within the Rouge River. The Rouge Project with this plan is attempting to look beyond treatment and focus on prevention methods.

The Rouge Project is based upon and serves as a natural extension of the Remedial Action Plan (RAP). The RAP was originally developed by the MDNR and presented to the Water Resources Commission in 1989 (updated in 1994/5) as a plan to restore the water quality in the Rouge River. A watershed-wide management approach was recommended in the RAP to address the pollution of the Rouge River. Currently the RAP is scheduled for update in the year 2000, those efforts are now underway by the state MDEQ with communities and subwatershed input (in a collaborative model). The Rouge Project will help further the implementation of this recommendation through Project activities designed to specifically address, and substantially reduce, water pollution in the Rouge River by successfully demonstrating a holistic watershed-wide management approach.

The Rouge Project is managed under the auspices of the Wayne County Department of Environment (WCDOE), Wayne County, Michigan. This project is funded in part by the United States Environmental Protection Agency (EPA), Grant Nos. X995743-01, 02, 04, and C-264000-01 totaling \$315.6 million and \$161.3 million in local funds. As the recipient (Grantee) of federal grant funds, the executive management of the WCDOE is responsible for the overall administration, direction, and quality management of the Rouge Project including grant administration, reporting, and allocation of funds to subgrantee basin communities. The Divisions of Public Works (DPW) and Watershed Management (WMD) are a part of the WCDOE.

The Rouge Project was established under the initial Rouge Grant 1 from the EPA, Region V, and enabled Wayne County to initiate a comprehensive watershed-wide pollution control approach that addresses combined sewer overflow (CSO), storm water management, and other nonpoint source controls through the application of innovative technologies, progressive community based financial and institutional arrangements, and creative public involvement and education programs.

Rouge Grant 2 provided the framework for the progression and implementation of Project goals as Wayne County continues its mission to develop potential solutions and implement projects which will lead to the restoration of water quality in the Rouge River. The Project will address both conventional and toxic pollutants to:

- *provide a safe and healthy recreational river resource for present and future generations;*
- *re-establish a healthy and diverse ecosystem within the Rouge River Watershed;*
- *protect downstream water resources such as the Detroit River and Lake Erie; and*
- *help ensure compliance with federal, state, and local environmental laws which protect human health and environment.*

This will be accomplished through the development, implementation, and financial integration of technical, social, and institutional frameworks leading to cost-efficient and innovative watershed and subwatershed -based solutions to wet weather problems. This Rouge River watershed-based national demonstration project will provide guidance and potentially effective solutions to other municipalities across the nation facing similar problems.

Under Rouge Grants 3 to 5, work continues with implementation of CSO Phase 1 projects, stormwater management projects, GIS development, wetlands, recreation and habitat restoration projects.

1.1.1 Rouge Program Office (RPO). Wayne County implements the Rouge Project through individual joint partnership agreements or Inter-Agency Agreements (IAA) with local Rouge River Watershed communities, the Michigan Department of Natural Resources (MDNR), Michigan Department of Environmental Quality (MDEQ), and other institutional and organizational entities including the Southeast Michigan Council of Governments (SEMCOG). One of the primary goals of the Rouge Project is to promote the success of water pollution clean-up initiatives through demonstrating a holistic watershed-wide management approach to the problems of runoff and nonpoint flow control and treatment systems. The Rouge Project is intended to serve as a national model with inherent technical and administrative components specifically designed, and documented, for transfer, reuse, and portability to other watersheds with similar problems throughout the United States. The Rouge Project will also serve to demonstrate the efficacy of alternative wet weather flow control and treatment systems, and watershed-wide management processes.

To facilitate implementation of the Rouge Project, the WCDOE contracted with Camp Dresser & McKee (CDM) to provide technical and administrative support in establishing the RPO. The RPO serves as Wayne County's strategic base for project management and operations of the Rouge Project.

In addition to staff allocations by the WCDOE, the Wayne County RPO is currently comprised of the following Rouge Project consultants:

Camp Dresser & McKee (CDM), Prime
Applied Science, Inc. (ASI)
ASCI Corporation (ASCI)
Cole Financial Services, Inc. (CFS)
Environmental Consulting & Technology, Inc. (ECT)
Hubbel Roth & Clark (HRC)
Johnson, Johnson & Roy, Inc. (JJR)
McNamee, Porter & Seeley, Inc. (MPS)
Orchard, Hiltz & McCliment, Inc. (OHM)
Organizational Improvement Systems (OIS)
Project Management Associates (PMA)
Public Sector Consultants (PSC)
Sigma Associates (SIGMA)
Systems and Management Consultants (SYMCON)
Thomas Management Consultants (TMC)
Tilton & Associates (TA)
Tucker Young Jackson Tull, Inc. (TYJT)
Wade Trim/Associates (WTA)

1.1.2 Mission Statement. *The mission of the Rouge Project is to demonstrate effective solutions to water quality problems facing an urban watershed highly impacted by wet weather and develop potential solutions and implement projects which will lead to the restoration of water quality in the Rouge River. The project will address both conventional and toxic pollutants to:*

- *provide a safe and healthy recreational river resource for present and future generations;*
- *re-establish a healthy and diverse ecosystem within the Rouge River Watershed;*
- *protect downstream water resources such as the Detroit River and Lake Erie, and*
- *help ensure compliance with federal, state and local environmental laws which protect human health and the environment.*

This will be accomplished through the development, implementation, and financial integration of technical, social, and institutional frameworks leading to cost efficient, and innovative watershed-based solutions to wet weather problems. This watershed-based national demonstration project will provide other municipalities across the nation facing similar problems with guidance and potentially effective solutions.

1.2 QUALITY ASSURANCE POLICY. Recognizing that major environmental measurement activities are critical components of the Rouge Project led EPA to request Wayne County to develop a Quality Management Plan (QMP) for the Rouge Project.

Wayne County has developed this QMP in accordance with the *DRAFT EPA REQUIREMENTS FOR QUALITY MANAGEMENT PLANS - EPA QA/R-2*, EPA, 1992. The Rouge Project QMP defines the project management structure, framework for decision processes, implementation responsibilities, quality assurance policies, and standard operating procedures (SOPs) employed by Wayne County to ensure that the overall quality project management meets EPA requirements.

The RPO will perform all assignments set forth in the Rouge Project Grants in a manner that ensures full compliance with EPA grant requirements throughout all phases of project implementation; yields technically superior work products that are produced consistent with established quality systems, and delivers on time and within budget. Wayne County will strive for continual improvement of RPO work processes and documentation and will implement all quality management systems set forth in this QMP to assure that:

- the Rouge Project may serve as a national model with inherent technical and administrative components specifically designed, and documented, for transfer, reuse, and portability to other watersheds with similar problems throughout the United States.
- environmental measurement activities are planned and executed to produce data of appropriate type, quantity and quality for decision making; and
- engineered systems are designed, constructed and operated to meet the criteria for which they were developed.

Wayne County has developed this QMP to serve as the primary guide for implementation of the program quality assurance policy. The QMP addresses specific quality assurance system components under the following section headings in this document:

This QMP documents the quality management and assurance polices, procedures, roles and responsibilities, and identifies the methods by which continual improvement of quality management will be achieved and monitored. The QMP will be mutually approved by both the EPA and WCDOE. Upon approval, authority for approval of the associated quality assurance documents

(Quality Assurance Project Plan, field sampling plans, standard operating procedures, and guidance documents) becomes the responsibility of Wayne County and that the Management System Reviews (MSRs) will be done both internally and in collaboration with the EPA to oversee the quality system established for the Rouge Project. No environmental measurements will be made without: an approved Quality Assurance Project Plan, field sampling plan, and standard operating procedures; and the planning phase including the Data Quality Objective (DQO) process as described in the document "Guidance for the Data Quality Objectives Process" (EPA A/G-4). To date, there have been three internal management system reviews, July 16 & 17, 1997, September 24, 1998 and March/April 1999. These meetings reviewed and updated strategies to achieve the established project goals. The meetings held in 1999 reconstituted the project Steering Committee to include subwatershed advisory groups (SWAGs) and private sector business representation.

1.3 ROUGE PROJECT ORGANIZATION. The Rouge Project is administered by the WCDOE, under the leadership of Mr. James Murray, who is the Director for the Rouge Project. As Director, Mr. Murray designated key WCDOE staff members to assist with the management, administration, and coordination of the Rouge Project. The Rouge Project was comprised of 10 separate, but functionally interrelated, *Program Work Elements* in Grant 1. In Grant 2, work continued in five principal *work groups*. These organizational components of the Rouge Project Quality Management Plan are identified in *Figure 1-1*. The Rouge Project team members roles for the WCDOE are described below:

Director, Wayne County Department of Environment - As Director of the WCDOE and the Rouge Project, Mr. Murray reports directly to Mr. Edward McNamara, Wayne County Executive. Mr. Murray is responsible for the oversight and overall management of the project and works directly with the Grantor, EPA, Region V, in defining project management objectives and policy guidelines. Mr. Murray also coordinates closely with the MDNR/MDEQ in the implementation of this project as an extension of the RAP and he has established, and works closely with, a Steering Committee composed of institutional, regulatory, and watershed community representatives. The Steering Committee serves as an advisory group to Wayne County in reviewing project progress. Corresponding technical advisory groups (TAGs) were also established for each of the technical program components.

Mr. Murray plans, organizes, directs, reviews and evaluates programs and staff to provide for the planning, financing and implementation of WCDOE environmental protection programs and facilities. He also provides leadership and coordination for the various divisions, units and administrative support functions including providing expert professional assistance to Wayne County and local agency management staff in areas of responsibility.

Chief Deputy Director, WCDOE - Mr. Vyto Kaunelis works under the direction of the Director of the WCDOE, and supports the Director on policy development for the Rouge Project. Mr. Kaunelis has considerable latitude for independent judgment and action, serves as the Chief Deputy and Divisional Program Administrator of the WCDOE, and coordinates its Division programs, operations, and activities in accordance with the mission, directives, and statutes by which the WCDOE programs operate.

Director, Watershed Management Division - Ms. Kelly Cave is the Director of the Division. Ms. Cave is under the direction of the Director of the WCDOE, and plans, organizes, directs, reviews and evaluates grant, construction, demonstration and operating programs and staff to provide for management of integrated and Quality Watershed Systems and Environment. Ms. Cave provides expert professional assistance to the county and local agency management staff including transition activities for the Rouge Project to Wayne County communities and to the WCDOE through her Division. This Division operates and

Figure 1-1: Quality Management Plan Organizational Chart

coordinates the continuation efforts coming from the Rouge Project.

Technical Coordinator, Watershed Management Division - Mr. Noel Mullett operates as Technical Coordinator for the Rouge Project. Mr. Mullett reports directly to Ms. Kelly Cave, Director Watershed Management Division. The Technical Project Coordinator supervises technical oversight personnel; sets general project coordination policies; establishes task and process priorities for demonstration; directs the process and coordinates with or through others the project linkages transferring information, standards, or data to the Division and communities. The Technical Coordinator also establishes and maintains good working relationships with community governments, as assigned, citizen groups and individual citizens if assigned; and works with Project Administrators to assure development of community programs and transition of RPO activities to divisions of the Wayne County.

Chief of Administration - Mr. Butler Benton is WCDOE Chief of Administration and is under the general direction of the Director with considerable latitude for independent planning, directing, and coordinating; he is responsible for overseeing all managerial and administrative operations in the WCDOE. Specifically, Mr. Benton is responsible for overseeing the financial, technical planning and general administration services, as well as the implementation of proper procedures and modernization of systems and resources to meet federal, state and county requirements. Additionally, he provides administrative leadership to the Program Operation and Compliance Deputies in areas of Administration of the WCDOE and provides expert professional assistance to WCDOE management staff in areas of responsibility, and acts as Chief of Administrative Operations for the Director.

Project Administrator - Mr. Dennis Scully works under the general supervision of Director of Division of Administration for the Rouge Project. Mr. Scully is responsible for oversight of non-technical aspects of projects and coordinator of resources for contract compliance and planned parameters of projects. In addition, Mr. Scully ensures compliance for all tasks of projects and recommends corrective actions to expedite solutions; reviews and analyzes reports and records; works with departmental managers to ensure that necessary data for planning activities on current and future projects is obtained and available to them; and assists with development of department goals and objectives.

Director, Compliance and Public Affairs - Ms. Josephine Powell works under administrative direction of the Director of Department of Environment with considerable latitude for independent judgement and action. Mrs. Powell plans organizes, directs and reviews and evaluates programs and staff to provide for the planning, coordinating and implementing environmental legal, compliance and enforcement activities for the Department. She provides consultation in conjunction with the Corporation Counsel and Prosecuting Attorney. Mrs. Powell provides leadership and coordination for the public involvement and alternative dispute functions of the Department and provides expert professional assistance to County and local agencies in the areas

of responsibility. Mrs. Powell directs and causes the proper administration of various County, State and Federal Laws; assures that ordinances, regulations and policies are performed consistently and accurately throughout the Department for all programs.

1.4 ROUGE PROGRAM OFFICE ORGANIZATION. Brief position and functional descriptions are provided below for RPO management controls positions.

RPO Project Manager - The Project Manager, Mr. Carl R. Johnson, P.E., is responsible for the successful translation, implementation, and coordination of Wayne County directives and the quality management systems to ensure the development and delivery of quality RPO work products. He works under the direction of the Chief Deputy and the Director, Division of Watershed Management. Mr. Johnson is responsible for the general technical approach being taken and for providing guidance to the Work Plan Managers and Objective Managers.

RPO Objective Managers - The role of the objective managers is to assure that the scope of assignments and end products of the Rouge Project meet the program objectives. Additional details in the role of the Objective Manager are contained in the Program Management System Guide (Volume II-A Binder), hereinafter referred to as PMS document. Objective Managers have been appointed in the following areas:

- Human Health - Mr. Barry Johnson
- Recreation and Public Understanding - Dr. Donald Tilton
- Institutional and Downstream - Mr. James Ridgway
- CSO Load Reduction - Dr. Suresh Sangal
- Nonpoint Sources and Watershed Management - Ms. Kelly Cave
- GIS - Mr. Charles Bristol
- Outreach - Mr. Dale Bryson
- Monitoring & Ecosystem Diversity - Mr. Joe Rathbun

RPO Quality Assurance Managers - The Rouge Project Quality Assurance Managers (QAMs), Mr. Tom Pedersen and Mr. John Bona are responsible for designing, implementing, and monitoring the quality systems established for the RPO and for continually ensuring that the quality management approaches are modified, revised and updated as necessary. Mr. Pedersen provides independent review of the effectiveness of the quality control systems and is responsible for auditing the processes. Additionally, he specializes in quality assurance and control systems specifically related to environmental measurement tasks.

Mr. Bona is responsible for ensuring that appropriate levels of review are provided for all Rouge Project Work Efforts products and for analytical laboratory quality and field measurement quality assurance activities through the use of auditing procedures documented in subsequent sections of this document. In addition, the QAM has the authority and responsibility for bringing quality

management issues that are not being adequately addressed within the framework of the RPO project management structure to the attention of CDM's Corporate Quality Management Officer.

Mr. Bona is responsible for addressing, communicating, tracking, and resolving specific quality assurance issues, concerns, or questions related to the Rouge Project through efficient, expedient means of direct communications with the RPO Program, and Wayne County decision makers. Mr. Pedersen is responsible for keeping CDM's corporate quality assurance staff apprised of quality management activities associated with the Rouge Project. Wayne County has also established a direct reporting line for the QAM to Project Director, WCDOE, for the purpose of ensuring that quality issues that require high level attention are communicated in an effective manner.

Project Coordinators - The RPO Project Coordinators are directly responsible to the RPO Project Manager and work in concert with the Objective Managers for the day-to-day execution of the associated task management. All Project Coordinators are responsible for maintaining close communication and working relationships with Wayne County Senior Management, Wayne County reviewers, or other WCDOE and community people with their project liaison, staff members as needed. As Project Coordinators, one of their most important project management tasks is their timely identification/communication of project work issues and daily information exchanges to Wayne County. Project Coordinators are also responsible for generating, monitoring, and tracking individual work plan budgets and schedules against the daily management of the activities of work Plan' team.

Staff - All RPO project staff are responsible for performing assigned tasks in a consistent manner with the procedures and protocols set forth in the QMP and to recommend methods to improve quality management, project execution and staff management.

The PMS explains the RPO position roles and responsibilities in more detail.

All RPO project staff have direct responsibility for quality management as detailed in subsequent sections of this QMP, and are responsible for reporting deficiencies in the quality systems to the RPO QAMs, Mr. Tom Pedersen and Mr. John Bona.

1.5 OVERSIGHT GROUPS. The RPO quality assurance systems are dynamic in nature. As such, they are revised based on shared observations and input from both RPO staff members and working groups at both the management and technical levels, as needed. Quality management for the RPO has been designed around a process that ensures input from all levels of the organization. Within the RPO program structure, all staff have an active participatory role in quality management. RPO staff oversight and technical groups, and Wayne County staff share quality management responsibilities. The goal is to promote interactive consensus building to implement and maintain quality management of all RPO initiatives. *Figure 1-2* illustrates the process of funneling information to Wayne County as a means of quality improvement.

Wayne County has established a Steering Committee to review the activities of the RPO.

Steering Committee - In addition to the quality control functions built into the RPO, a Steering Committee formed by key participants in the Rouge Project has been established to provide budget oversight and review of Rouge Program Work Efforts and Work Plans. The Rouge Project Steering Committee meets quarterly at various Rouge Watershed communities or the RPO.

While Wayne County has the responsibility and accountability for administration of the demonstration grant, Wayne County allows those units of government most impacted to share in the planning and implementation of the grant. The Steering Committee has specific responsibilities consistent with the grant application which include: (1) budget oversight, (2) review of project elements, (3) review of work plans, (4) participation of TAG, and (5) providing comments, guidance, and leadership to assure that the demonstration grant accomplishes its primary objectives. Membership in the Steering Committee includes leaders of Rouge Watershed communities as well as EPA, MDEQ, and Wayne County. EPA participation in the Steering Committee does not in any way diminish its responsibilities as the grantor nor in Wayne County's role as the grantee for the Rouge Project. Similarly, MDEQ's participation neither modifies nor diminishes in any way its responsibilities for enforcement of state environmental and delegated federal environmental laws.

1.5.1 Speciality Work Groups.

The **Core Advisory Group** or CAG was given the task in 1998 and 1997 of developing the elements of a watershed (subwatershed) based general storm water permit that would offer local agencies the option of meeting their storm water quality responsibilities under federal and state law based on hydrologic rather than political jurisdictional boundaries and present recommendations to the United States District Court. The CAG proposed three subgroups: one subgroup would focus on the technical aspects of the general permit, one would focus on the institutional and financial options required for communities to implement the provisions of a watershed based general permit, and one would focus on policy questions that arise concerning the development of the general permit or its implementation. Work of the CAG continues within seven subwatershed advisory groups (SWAGs) in 1998 to 2000.

Subwatershed Advisory Group Meetings. There are seven active subwatershed advisory groups: Main 1/ Main 2, Upper 1 / Upper 2, Middle 1, Middle 3, Main 3 / Main 4, Lower 1, Lower 2. A map showing the seven areas is presented in *Figure 1-3*. These seven subwatersheds represent the areas delineated in consultation with communities and the DEQ to fulfill requirements for subwatershed planning under the Michigan DEQ voluntary stormwater general permit. The subwatersheds meet approximately monthly, and there is a WC/ RPO facilitator assigned to each group.

Great Lakes Initiative is a special regulatory program to provide an enhanced level of protection to the waters in the Great Lakes Basin. The GLI has a primary focus of controlling the discharge of bioaccumulative chemicals of concern (BCCs) through a suite of implementation procedures to be followed by the eight Great Lakes States. Because of the

Figure 1-2: Quality Management Organizational Components

very low concentration of the BCCs in waste streams, the GLI strongly encourages the use of pollution prevention practices to meet the effluent limits that will be set under the GLI. A Great Lakes Initiative Coordinating Committee was established in 1996, including Wayne County and other Great Lakes pollution control agencies, to establish approaches to implementing the GLI.

The **Community Grant Program** began in 1993 with the award of grants for the Phase 1 CSO basins and sewer separation projects. The program expanded in 1998 and the RPO introduced three new community support features: a) a streamlined process for executing IAA for Wayne County; b) a handbook on grant requirements to assist communities; and c) the appointment of an RPO representative to provide more “personal service” to your community in the development and implementation of your project. The Community Grant Program has six categories: GIS, Recreation and Habitat Restoration, Watershed management, Wetlands, Stormwater and CSO.

The **Urban Wet Weather Flows Federal Advisory Committee** was created by USEPA to advise the Agency on issues relating to the development of NPDES storm water regulations and their implementation. The FACA Committee has two subcommittees: the Storm Water Phase II Subcommittee and the Sanitary Sewer Overflows Subcommittee. Representatives of Wayne County and the RPO continue to participate actively in a work of the FACA Committee by participating in meetings, by developing documents for the Committee and USEPA, by reviewing documents and related activities.

The **Phase II Storm Water Rules** have been proposed by USEPA. These rules are an outgrowth of the Urban Wet Weather Flows Federal Advisory Committee. Wayne County and the RPO coordinated the development of extensive comments that were submitted to USEPA by the Rouge Project. When promulgated in final form in March 1999 these rules will establish the water pollution control program addressing storm water discharges in urban areas.

The **Total Maximum Daily Loads Federal Advisory Committee** was created by USEPA to advise the Agency on identifying water quality limited water bodies, establish Total Maximum Daily Loads (TMDLs) for them and developing appropriate watershed protection programs for these impaired waters in accordance with the Clean Water Act. Wayne County and the RPO participated in the meetings of the FACA Committee by providing testimony at the committee meetings, by reviewing documents from the Committee and through active discussions with Committee members and USEPA.

RRAC and RAP Update: The RPO and RRAC are represented by a team from each organization that is identifying means for the two groups to work more closely together. Both the RPO and RRAC are jointly working on a Rouge Report Card, a progress Report on the 1994 RAP, and a plan for developing the next RAP Update, which is scheduled for the Year 2000, and will coincide with the completion of the Phase 1 CSO basin evaluation and the development of the seven subwatershed management plans under the MDEQ Voluntary General Stormwater Permit.

1.6 ROUGE PROJECT COMPONENTS. The project is organized in a way to implement a comprehensive water quality management program. The strategy is to perform these tasks plan in a manner which will achieve the goals of the Clean Water Act and provide the technical basis on which other watershed managers can implement a similar effort.

The following description provides an overview of the current studies under Grant 2, 3, 4, and 5. In 1999 and 2000, the RPO plans to perform two types of work:

- Services to support watershed-wide needs in monitoring, CSO evaluation, public involvement, grant administration, program management and reporting., and facilitation of subwatershed advisory group efforts. See *Table 1.1* for a description of the work plans for watershed-wide services.
- Services requested by particular communities and agencies through interagency agreements with Wayne County.

In the second category of work, there are currently 4 work plans in effect, and several others pending:

<u>Agency</u>	<u>Title</u>	<u>RPO Work Plan Number</u>
<i>Work Plans in Effect...</i>		
MDEQ	GIS Installation and Training	WMOG6.5
SOCWA	Healthy Gardens Program	URBSW7.1
Wayne Co. Parks	Nankin Mills Streambanks	URBSW7.2
Superior Twp.	GIS Development	URBSW7.3

Work Plans being Developed...

Livonia	GIS Project	TBD
Detroit Parks & Rec.	Streambank/Park Improvements	TBD

In addition, at this writing, five of the seven subwatersheds have chosen the RPO to assist them in preparing their subwatershed management plan as required by the General Permit.

These work plans will be administered and managed through quarterly budgets and tasks during 1999. The quarterly time frame will allow the RPO to most effectively allocate resources to those watershed wide services that are of most benefit to the demonstration project objectives and the needs of the communities and agencies in the watershed.

Table 1.1
1999 RPO WORK PLANS -- WATERSHEDWIDE SERVICES

Number	Title	General Description of Work for 1999
WMD6.5	Program Management and Reporting -- 1999	Steering Committee, Court meetings, EPA and DEQ meetings, national outreach, and office administration
WMD6.7	Subgrant Administration -- 1999	Administration of all subgrants (approximately 100), processing of reimbursement requests, progress reports
CSO6.3	CSO Evaluation -- 1999	Coordination of community monitoring, water quality evaluations, sewer system modeling
URBSW6.3	Watershed Management -- 1999	Facilitation of subwatershed advisory groups, assistance with General Permit applications (through time of Certificates of Coverage); technical extension service.
DSSPI1.6	Public Involvement -- 1999	Rouge Friendly Business and Neighborhood programs, partnership activities, local outreach events -- Waterfestival, workshops, PI survey.
WMOG6.6	GIS Map Production and Database Administration	Operate and maintain GIS system and database, produce GIS maps as requested, operate and maintain website
WMOG1.2	Assistance on RAP Revision	Work with RRAC, development of Interim Rouge Report Card, assistance with RAP Revision as requested by RRAC.
WMOG2.4	Monitoring -- 1999	Planning for 1999 monitoring season, evaluation of 1998 data and results, integration of effort with USGS, MDEQ, and Wayne County, operation of 1999 field program.
DMP1.2	Abandoned Dumps	Completion of Presumptive Remedies Handbook; pilot field work at two sites.

1.7 PROJECT COORDINATION AND REPORTING. The RPO project personnel are kept apprised of quality assurance issues through the normal routes of communication established by the Wayne County RPO including:

- Wayne County RPO Policy Meetings (as scheduled)
- Weekly Technical and Program Management Meetings
- Monthly Progress Reports
- Monthly Project Controls Activity Report
- Bi-Monthly Wayne County/EPA/MDNR/MDEQ Rouge Project Policy Meetings
- Quarterly Rouge Project Steering Committee Meetings
- Watershed Restoration News
- Products Catalogue
- Website
- Rouge Information Manager
- Kiosk

Wayne County RPO Policy Meeting - On a monthly basis, the Director, DOE Managers and appropriate RPO policy level Management staff members meet in the RPO conference room. At this meeting, the Director is apprised of project progress, issues, policy clarifications and updates on Program work efforts and their work plan. Additionally, the Director will address key project policy issues and provides management guidance to Wayne County decision makers and RPO Program Management. Significant project issues concerning coordination efforts among staff, local communities, MDNR/MDEQ, and EPA are also addressed and resolved.

This meeting provides a regular forum for key project personnel to assess progress-to-date; evaluate procedures, processes, and work products; and identify actions required to assure maximum and efficient efforts are directed toward the Rouge Project mission and goals.

Bi-Weekly Program Technical and Program Management Meeting - This meeting is held every other Monday afternoon and results in development of action items for follow through by RPO staff. The RPO Technical Manager directs these meetings which provide equal opportunity for all attendees to pose questions, obtain information, resolve project issues, report new

information and introduce innovative approaches from Wayne County, RPO Work Plan Managers, EPA, MDNR/MDEQ, or watershed communities.

Monthly Progress and Project Control Activity Reports - The Wayne County RPO submits a formal Monthly Progress Report to WCDOE by the 20th day of each subsequent project month. The RPO Program Director directs the preparation of the Monthly Progress Report which serves as the official Rouge Project progress report of RPO activities to Wayne County and other interested parties on Grants 1 through 5. The Monthly Progress Report is distributed to Wayne County senior management, decision makers, EPA, MDNR/MDEQ, and RPO Program Management staff. The Monthly Progress Report is also made available to RPO staff through the RPO Library. Each approved work plan is tracked by cost and schedule by the Projects Control team of the RPO. This variance report is to improve control, assist Work Plan Managers with schedule correcting and assist in timely project work correction and coordination.

Bi-monthly Wayne County/EPA/MDNR/MDEQ Rouge Project Policy Meeting - In alternate months, Wayne County senior management, along with MDNR/MDEQ representatives to the Rouge Project, meet with EPA staff at Region V offices in Chicago. The purpose of these meetings is to assure appropriate policy coordination on administrative, policy, financial, grant, and other issues. Questions concerning specific grant requirements and/or procedures for information exchange are answered at these meetings. This meeting provides a forum for direct contact on a regular basis between the EPA Project Officer, and senior EPA staff with Wayne County DOE Director, James E. Murray, and senior Wayne County staff and the MDNR/MDEQ representative.

The Watershed Restoration News is an ongoing publication of the Rouge Project. It is published periodically to educate the public and generate interest in the community grants projects. The community grant program funds individual projects that can demonstrate the application of techniques to meet water quality goals.

The **Products Catalogue** is produced under the project's public involvement work effort. The catalogue includes a list of all technical documents, tools and public involvement materials produced for the project. Its purpose is to share lessons learned from the project with other watersheds and/or organizations and encourage the use of those lessons as a guide in implementing water quality improvement programs. There are three major categories of information: documents, data and maps. The catalogue is updated every six to eight months.

The **Website** is a computerized listing of documents, maps and papers produced under the project. The project website address is :

<http://www.RougeRiver.com>

Documents on the website are updated monthly or quarterly, depending on the particular document.

The **Rouge Information Manager** is a multimedia based tool to provide information on Rouge activities addressing GIS, database management, CSO, nonpoint source, water quality modeling, and public involvement. This information will be distributed periodically on CD-ROM through the RPO.

The **Kiosk** is a touch-screen computer system that displays various types of information, including maps, aerial photographs, graphics, artwork, photographs and text. The kiosk is useful as a public outreach tool for several reasons including: low maintenance, effectiveness, ease of use, multimedia capability, and information dissemination. Currently, there are two Rouge Project kiosks, one is located within the WCDOE and the other one is transported to libraries and science centers throughout the Rouge Watershed.

The **RPO Extension Service** will share the information, data, and pollution prevention strategies learned on the project with Rouge Watershed communities. Some of the areas in which the Technical Extension Service program will provide assistance are: GIS, modeling, public information and involvement, illicit connection, grant management assistance and watershed plan review. The RPO can provide communities with technical support and grant funding to perform their own watershed management projects.

Wayne County RPO Technical Advisory Group Meetings - The Technical Advisory and Working Groups provide comments, guidance, and leadership to assure that the demonstration grant accomplishes its primary objectives. Membership and attendance in the TAGs is dependent upon the specific area being reviewed. In the current phase of the project, technical advisory groups (TAGs) are convened for specific purposes. For example, there is a TAG for the Upper 2 GIS Pilot Study being performed to examine GIS data sharing issues. There is also a WERF Peer Review Team, which functions like a TAG, and reviews the work of the Phase 1 CSO performance evaluation. There is a CSO Work Group, and a work group charged with developing a regional stormwater detention ordinance. There is also a Public Involvement TAG.

1.8 QUALITY MANAGEMENT IMPLEMENTATION. Communication of quality system requirements among Wayne County RPO staff is a prerequisite to their effective implementation. To facilitate the exchange of information on project activities and quality issues, the RPO has established three formal communication channels: (1) Bi-Monthly WC/RPO Technical Management Meetings; (2) Weekly Program Element Status Reports; (3) Wayne County RPO Monthly Progress Reports; (4) and project central elements. In addition, daily informal communications and documentation distribution systems are used to keep Wayne County RPO staff informed of all quality system issues and necessary changes.

1.8.1 QMP Revisions. The QAMs are responsible for updating and revising the QMP in response to comments provided by the Wayne County RPO staff and as a result of quality system audits. The QAMs will provide staff with updates on quality systems through E-mail

Figure 1-3
Seven Subwatershed Management Areas

Table 1.2
Monthly Progress Report Example Table of Contents

	Section
EXECUTIVE SUMMARY	1.0
GRANT 2 PROGRESS REPORT	2.0
Work Plans Completed this Month/Nearing Completion	
WATERSHED MANAGEMENT	2.1
NONPOINT SOURCE POLLUTION CONTROL	2.2
CSO COORDINATION	2.3
DECISION SUPPORT/PUBLIC INVOLVEMENT	2.4
GRANT 4 PROGRESS REPORT	3.0
GRANT 4 WORK PLANS	3.1
GRANTS 3 & 5 PROGRESS REPORT	4.0
RPO COMMUNITY PROJECTS	5.0
Grant Budgets for Individual Communities	5.1
STORMWATER BMP PROJECTS	5.2
SUBWATERSHED PILOT PROJECTS	5.3
ROUGE WATERSHED PROJECTS	5.4
Geographic Information Systems (GIS)	
Stormwater Management	
PHASE 1 CSO PROJECTS	5.5
PHASE II CSO PROJECTS	5.6
CONSOLIDATED GRANT FINANCIALS	6.0
ATTACHMENTS	7.0

by the QAMs or such as when major changes are made, and updated as needed. Updated versions of the QMP will be submitted for internal review and approval to the following individuals:

 C RPO Program Director (review)

C RPO Technical Manager (review)

notification and presentations at staff meetings. The QMP will be reviewed on an annual basis

C Wayne County Administrator, Director (accept)

C Wayne County (approve)

C EPA Region V, Quality Assurance Manager (approve)

C EPA Region V, Chief, Water Compliance Branch (approve)

The QMP approval sheet contained on page "iii" will be used to document review and approval of the QMP revisions.

1.8.2 Document Distribution and Update Notices. The quality system being implemented by Wayne County for the RPO is dynamic and is subject to revision and updates as required. To stay in step with the required changes needed to update and properly maintain the project quality systems, the Wayne County Project Director implemented the decision to maximize computer technology to create electronic mail capability between WCDOE and RPO project staff; this mail intersection capability has been successfully implemented.

The RPO was directed to coordinate with Wayne County communications personnel to establish E-mail system access between the WCDOE and the RPO. This communication tool will facilitate communication transfer between Wayne County RPO project staff. The E-mail system may also be used by Program Management to inform staff of dynamic changes in quality systems as well as providing updates on project activities. Instructions on how to use the E-mail system are contained in the RPO Office Procedures Guide. At the direction of the Wayne County Director, all Wayne County and RPO project staff are required to read and familiarize themselves with all sections of the QMP related to their Program Work Efforts and the overall quality management systems established by Wayne County for RPO project personnel and operations.

The Wayne County QMP will be reviewed on an annual basis and updated if necessary, by Wayne County and RPO staff working with the Quality Assurance Managers.

2.0 QUALITY MANAGEMENT SYSTEMS. This section describes the components of the RPO quality system and the procedures for their use. The quality systems include components that set forth the quality requirements and approaches as well as procedural elements that detail the process for performing quality reviews and documenting the implementation of the quality system.

In undertaking the mission of the Rouge Project, WCDOE has tasked the RPO with the development of a variety of technical work products and providing related services. Accomplishing the specific work task objectives across all program work efforts in a consistent and efficient manner can only be achieved through the implementation of a program-wide quality management system. The QMP describes the overall quality assurance/quality control (QA\QC) procedures that have been developed for use by the RPO and the process by which the QMP is updated.

The quality management systems can be thought of as the "scaffolding" that will be used to facilitate the "construction" of the RPO. Similarly the work products can be likened to the "building" that will remain at program completion. The product of these efforts will be diverse and numerous but must all fit into the overall "framework" of the national demonstration program. The technical objectives and goals of each of the program work efforts serve as the framework for execution of work. All these structural components are built on the "foundation" of the Rouge Project, which is articulated in the mission statement and broadened in the mission objectives.

The quality system "scaffolding" will be modified as time progresses to allow for the execution of technical work, but the lasting products of the RPO will be the technical products and services generated by the RPO in support of Rouge Project initiatives.

This section provides a description of the quality management system that is being developed by the RPO. The systems established provide the scaffolding for execution of the work tasks currently envisioned. As the program develops to meet the needs of Wayne County, adjustment in the quality system "scaffolding" may be required. This section also describes how changes in these systems can be made. The major quality management systems established for the RPO include the organizational tools and quality control procedural components discussed in this section.

This section focuses on the quality systems that address environmental measurement activities. The RPO Program Management System Guide describes administrative operational and management systems that apply to all RPO activities, and will be updated periodically in support of the QMP.

2.1 QUALITY MANAGEMENT PROCESS DOCUMENTATION. The RPO has established a quality management system that provides for various levels of QA/QC documentation. This QMP serves as the overall umbrella under which all other quality systems are developed and implemented including standard operating procedures (SOPs), operating guidelines and other documents useful in the preparation of technical deliverables. *Figure 2-1* illustrates the relationship of the QMP to the other RPO quality documentation and work product process.

2.1.1 Quality Management Plan - The QMP serves as the overall planning document for the RPO with regard to quality systems development and implementation. The QMP sets the stage for the quality assurance program which is the responsibility of the RPO Quality Assurance Managers.

The QMP has been developed to address all activities of the RPO that affect environmental measurements and the resulting data. For this reason, the QMP addresses issues ranging from data management to staff training. The QMP does not contain specific procedures or protocols that are used to conduct of day-to-day work activities, but identifies the documents that contain specific guidance for QA\QC tasks and identifies the individuals responsible for these activities. This QMP and the associated quality management system components have been developed with the assistance of EPA Region V Quality Assurance Section and Water Quality Division.

2.1.2 Quality Assurance Project Plan - Environmental measurement activities undertaken as part of the Rouge Project include baseline water quality and sediment characterization, storm event sampling, and sampling for special studies including CSO surrogate basin evaluations. The data collected will be used in the development of water quality model simulations and for making decisions with regard to control and treatment of wet weather flows. Numerous sampling events are planned for the course of the study; the purpose of the Quality Assurance Project Plan (QAPP) is to document the manner in which sampling and analysis will be performed. Since the majority of environmental sampling and analyses activities that will be performed over the course of the Rouge Project will utilize identical sampling and analyses procedures, a decision was made to develop an overall QAPP which would serve as the guide for conducting RPO field and analytical activities. *Table 2.1* provides the table of contents for the RPO QAPP.

The QAPP documents the overall requirements for establishment of Data Quality Objectives (DQOs) using the process outlines in “Guidance for the Data Quality Objectives Process” (EPA A/G-4) and specifies minimum requirements. Specific DQOs are developed for each sampling and analysis task and documented in the Field Sampling Plan (FSP). The QAPP serves as the overall guidance for planning field activities and developing FSPs.

The QAPP is submitted for internal review and approval to the following individuals:

- RPO Program Director
- RPO Technical Manager
- Wayne County, Divisions of Public Works and Watershed Management Directors
- WCDOE, Director
- EPA Region V, Quality Assurance Manager
- EPA Region V, Water Division, Director

The QAPP will be updated whenever dictated by the results of the annual review of the QMP. The QAMs will provide staff with updates through e-mail or presentations at staff meetings.

2.1.3 Field Sampling Plans - FSPs are prepared to provide the detailed information required by staff to undertake specific environmental measurement activities in a manner consistent with QAPP requirements.

The FSP is the document which provides information on types of samples, sampling locations, sample bottles, and analysis to be performed. FSPs are used by field staff in executing environmental measurement activities and are developed for each individual field sampling task. *Table 2.2* provides the generic FSP table of contents. Development of FSPs is the responsibility of the Work Plan Manager under which the environmental measurement activity will be conducted. FSPs developed by RPO staff are subject to internal review and approval by the Sampling Functional Group Manager and the Quality Assurance Manager (refer to Section 2.2 and *Figure 2-3*).

Field Sampling Plan Preparation Guide - To facilitate consistent and complete development of FSPs, a FSP Preparation Guide has been developed. This guidance document serves as a template for the preparation of site specific FSPs. The FSP Preparation Guide also serves as a review checklist for quality control reviews to ensure that the appropriate level of detail is provided in the FSP.

2.1.4 Standard Operating Procedures Compendium - Activities that are undertaken routinely in a consistent manner are documented in the Compendia of RPO SOPs. SOPs are available for laboratory methods (i.e., five day Biochemical Oxygen Demand Determination) and field sampling (i.e. sediment core sampling) techniques. The RPO is assembling SOPs in the following documents that are available for staff use:

- Field SOP Compendium
- Laboratory SOP Compendium
- Office Procedures SOP compendium

Each laboratory under contract to Wayne County is responsible for implementing a quality assurance program specifically designed for laboratory activities. As part of this program, SOPs for all analytical methods must be developed, used and updated on a regular basis. The RPO maintains copies of all subcontract laboratory SOPs that are used on RPO activities in the laboratory SOP Compendia. Only EPA approved analytical methods are used for analyses of samples collected as part of the Rouge Project. For those activities which require the modification of existing SOPs or development of new SOPs, internal review and approval will be sought from EPA prior to their use. The procedures for development of SOPs and their review are detailed in Section 8.3 and the QAPP.

Figure 2-1: Quality System Documentation

Table 2.1
Quality Assurance Project Plan Table of Contents

<u>SECTION</u>	<u>TITLE</u>
1.0	Project Description
2.0	Project Organization and Responsibility
3.0	Quality Assurance Objectives for Measurements
4.0	Sampling Procedures
5.0	Sample Custody and Field Documentation
6.0	Calibration Procedures and Frequency
7.0	Analytical Procedures
8.0	Internal Quality Control Checks
9.0	Data Reduction, Validation and Reporting
10.0	Performance and System Audits
11.0	Preventive Maintenance Procedures
12.0	Routine Procedures to Assess Data Precision, Accuracy, Completeness, and Sensitivity
13.0	Corrective Actions
14.0	Quality Assurance Reports to Management

Table 2.2
Field Sampling Plan Generic Table of Contents

Section	Title
1.0	Task Description
2.0	Data Quality Objectives
3.0	Sampling Location and Frequency (Including QC)
4.0	Field Measurement, Monitoring, and Sampling Methods
5.0	Field Documentation
6.0	Sample Designation
7.0	Sample Handling & Shipping

The standard numbering format for each SOP is listed below:

RPO/FIRM-YYY-XXXX

Where “RPO” represents the Wayne County RPO. “FIRM” represents the consultant organization that prepared the SOP. “YYY” is representative of the SOP Compendium classification (i.e., field or laboratory), and “XXXX” represents the topic of the manual as identified by its numeric code. The “YYY” classification is further defined by the variables “FLD” which represents field or “LAB” which indicates laboratory.

The coding of each SOP manual is identified and will adhere to the classification and topic format outline in *Table 2.3*.

Table 2.3
Standard Operating Procedures Coding System

Classification	Topic	Codes
FIELD (FLD)	Logistics (Coordination)	0100
	Documentation	0200
	Survey	0300
	Instrumentation/Calibration	0400
	Flow Measurements	0500
	Sampling	0600
	Analysis	0700
	QA/QC	3000
	LABORATORY (LAB)	
	Logistics	0100
	Documentation	0200
	Instrumentation/Calibration	0400
	Sample Preparation	1000
	Inorganics	1100
	Organics	1200
	QA/QC	3000

2.1.5 Guidance Documents. In addition to the QAPP, FSPs and SOPs which are focused mainly on environmental measurement activities, the RPO has developed a series of guides that are used to ensure the quality of work products. These guides provide information on how data is to be managed through details on proper report formatting. Guides currently available or under development by the Wayne County RPO include:

- Program Management System Guide
- Office Procedures Guide
- Document Style Guide
- Field Sampling Plan Preparation Guide
- Data Management and Evaluation Guide
- Data Screening, Validation Reduction, and Reporting Guide

2.2 QUALITY MANAGEMENT PROCESS IMPLEMENTATION. The guidance documents and supporting information being assembled by the RPO must be utilized and improved upon by staff for quality improvement to occur. The day-to-day technical operations are the key parts of the program that determine the measure to which the overall program goals are achieved. In order to ensure that the quality system that has been devised is in fact being implemented, a series of quality control checks have been developed.

Figure 2-2 illustrates the relation of the QMP, QAPP and FSPs to one another. Under the Wayne County RPO's quality "scaffolding" approach, the QMP serves as the overall framework for performance of the quality system. The QAPP provides details specific to environmental measurements on the project as a whole and the FSPs provide site and activity specific instructions for environmental measurements.

All SOPs developed by the RPO will have a structured format. SOPs developed for field or laboratory analytical methods will follow the outline shown in *Table 2.4*. SOPs developed for field sampling methods will follow the format shown in *Table 2.5*.

The overall length of each SOP may vary in length from two to 20 pages and the tone of each will enable another not familiar with the task to execute the work.

Quality control checks have been built into the FSP development system as illustrated in *Figure 2-3*. FSPs are developed for each task specific work activity defined under each program element. The FSP is developed using the FSP Guide as a template and the QAPP for specific information on sampling and analysis methods that are consistent across the program. SOPs that are available in the RPO Compendium are utilized as available in preparing FSPs or are developed as needed.

Early planning is the key to the development of a sound FSP for the environmental measurement activities and involvement of senior level technical staff during the planning stage of the project. The Work Plan Manager responsible for the FSP development must confer with the Sampling Functional Group Manager and QA Manager(s) at a minimum during the planning stages of FSP development. FSPs must be reviewed and accepted by the Work Plan Manager responsible for the environmental measurements activities, the Sampling Functional Group Manager and the QA Manager(s).

The QA Manager(s) conduct(s) audits of the files to ensure that the appropriate level of staff involvement was provided in the FSP development. In addition, the QA Manager(s) also audits the process to ensure that all newly developed SOPs or additions of EPA accepted SOPs results in their inclusion in the appropriate compendium. Any new SOPs or changes in the QAPP that are identified through the preparation of the site specific FSP will trigger updating or review of these documents. EPA will be informed of any proposed changes to SOPs or the QAPP. The QA Manager(s) are also responsible for ensuring that the FSPs and SOPs are reviewed and that the review process is modified as the need arises.

Table 2.4
Field/Laboratory Analytical Method SOP Elements

Section	Title
1.0	Scope and Application
2.0	Method Summary
3.0	Sample Collection, Handling, and Preservation
4.0	Interferences
5.0	Safety
6.0	Equipment/Material Reagents
7.0	Calibration
8.0	Quality Assurance/Quality Control
9.0	Calculations
10.0	Quality Assurance/Quality Control
11.0	Data Reporting Requirements
12.0	References

Figure 2-2: Wayne County Rouge Program Office Guidance Documentation

Table 2.5
Field Sampling SOP Elements

<u>Section</u>	<u>Title</u>
1.0	Scope and Application
2.0	Method Summary
3.0	Sampling Equipment/Apparatus
4.0	Safety
5.0	Sample Containers and QC Procedures
6.0	Preservative
7.0	Procedures
8.0	Quality Assurance/Quality Control and Chain-of-Custody
9.0	Documentation and Reporting
10.0	References

Figure 2-3: FSP Quality Management Process

3.0 PERSONNEL QUALIFICATIONS AND TRAINING. Ensuring that qualified and appropriately trained staff are assigned to perform work tasks, and environmental measurement activities is the responsibility of each of the RPO Project Managers with the assistance of Project Coordinators for respective community projects and RPO work plans. This section provides a description of the RPO's systematic approach to evaluation of staff training needs and methods for meeting those needs in a timely manner.

3.1 STAFF QUALIFICATIONS. The technical direction of the RPO is managed on a day-to-day basis by the RPO Project Manager who has specialized educational and management training specific to the activities of the project. The Project Manager interacts with staff on a continual basis and is in the best position to determine the qualification needs for the various activities to be conducted under his direction. *Table 3.1* lists the general requirements for the various positions within the RPO. These general qualifications are guidelines only; special consideration may be given to ensure all relevant training and education is evaluated as circumstances and project requirements will vary. The RPO strives to allow all project consultant staff equal opportunities for advancement as stipulated under each RPO project consultant firm's equal employment opportunity provisions.

3.2 TRAINING. The majority of RPO project staff have bachelors degrees, and many have graduate degrees in the engineering or scientific disciplines in which they are practicing. Continued enhancement of technical skills is realized through work experiences and on-the-job training, as well as formal training courses. Wayne County RPO project consultant firms each have established mechanisms whereby their respective employees are provided access to training and educational opportunities.

In addition, it is important to note that firms contracted by Wayne County to work with the RPO are various types of professional services firms which encourage professional training and educational programs for the advancement of their employees. These firms also provide their employees training required by Occupational Health and Safety Administration (OSHA) regulations (or require that their employees receive training by OSHA certified trainers) to ensure strict adherence and enforcement of OSHA safety requirements.

RPO staff experienced in particular environmental measurement activities are providing on-the-job training to junior staff in a variety of skills. On-the-job training provides for continual transfer of technology among RPO staff. All staff members will be provided with training prior to performing a new task. This training will consist of reviewing how the tasks fits into the overall work plan, data quality objectives, standard operating procedures, manufacturer instructions, and relevant guidance documents. Hands-on instructions in the usage of the monitoring and sampling equipment (auto samplers, water quality monitors, stage/flow monitors) and software applications for data handling (downloading, uploading to RPO database, QA/QC review, flagging) will be provided. Practice sessions or “dry-runs” will be conducted for field-related activities. Formalized training is also provided by RPO staff on an as needed basis. Below are examples of formalized training provided

to RPO staff. Project staff are trained in the latest hardware and software programs in order to keep abreast of the new technologies and features. Training in the latest programs enables the staff to offer innovative ideas and enhance the design of various RPO Presentations and publications.

Geomedia, a new GIS application development system, has been identified as a valuable tool for developing applications which utilize RPO's GIS and analytical databases. To quickly gain technical competency with Geomedia, one of the project staff will be sent to formal training in its use with the cost of training being shared between Wayne County and the consultant's firm. Upon his/her return, the knowledge gained through training will be shared with other project staff by collaborative development of targeted applications.

Computer software - project staff area trained in the latest hardware and software programs in order to keep abreast of the new technologies and features. Training in the latest programs enables the staff to offer innovative ideas and enhance the design of various RPO presentations and publications.

Identification of the additional or further training requirements for RPO staff is primarily the responsibility of the WPMs working with the Technical Advisors (TA). As a normal part of their quality control activities, TAs will be able to identify if the technical activities performed are meeting the expectations of Wayne County. Should the quality of work products or activities not meet expectations, the TA will conduct an assessment of the root cause of the problem to determine if correction could be accomplished through a training program (*Figure 3-1*).

Table 3.1
RPO Staff Qualifications Guidelines

Position	Education	Registration	Direct Applicable Experience
Program Director	Masters	P.E.	25 years
Quality Assurance Manager	Masters	Professional Certification	15 years
Project Manager	Masters	P.E.	20 years
Objectives Manager	Masters	Professional Certification	10-20 years
Technical Advisors	Masters	Professional Certification	10 years
Project Coordinator	Bachelors	P.E.	5-10 years
Senior Professional	Bachelors	--	5 years
Senior Technician	Associates	--	5 years
Professional	Bachelors	--	2 years

Technician	Associates	--	3 years
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Figure 3-1: Corrective Measure Determination Process

3.2.1 Training Opportunities Identification. In addition to the identification of training needs to correct deficiencies in work products or activities, the RPO has implemented a proactive approach to providing RPO staff training. The RPO project staff and WPMs are encouraged to identify training necessary for RPO staff to remain current in their technical disciplines. These training opportunities are usually identified through courses offered by universities or professional organizations.

The RPO staff are encouraged to communicate training needs and opportunities to the RPO Program Director for consideration. Valuable training can also be attained by attendance at professional conferences, meetings, seminars and workshops, and staff are also encouraged to identify those opportunities that would benefit the mission of the Rouge Project. In addition, Wayne County conducts training programs to provide technology transfer to the Rouge River Watershed communities.

The process for advancing RPO training activities are outlined in *Figure 3-2*. *Figure 3-3* provides a form to be used in requesting permission to attend a training course, conference, or seminar.

3.2.2 Orientation Training. Wayne County established the RPO to serve as Wayne County's arm and strategic base for project management and operations for the Rouge Project. The interrelationships of the Rouge Project consultant firms to one another and the communication networks established amongst these firms with one another, the RPO, WCDOE, state and federal regulatory agencies, and the public is complex. To ensure that all project staff are familiar with the interactions and communication channels established for the Rouge Project, newly assigned staff are provided orientation training. The orientation training includes an overview of the RPO office procedures, policy, and introduction to the quality management system as documented in this QMP.

In addition, the following system software and training manuals are available to all RPO staff:

- Harvard Graphics™ Software Training Manual
- Quattro Pro™ Software Training Manual
- WordPerfect™ Software Training Manual

3.2.3 Training Records. The RPO Project Manager is responsible for maintaining records of all training activities including records of internal training activities. The training materials obtained from staff attending formal training courses and those proceedings from professional seminars will be logged into the RPO training catalog and copies will be maintained in the RPO Library. All training manuals and supporting materials procured by the RPO are the property of WCDOE.

3.2.4 Training Effectiveness Evaluation. Each staff member attending a training course will provide a memorandum summarizing the materials covered in the training course and

providing an assessment of the value of the course to the RPO. These evaluation memoranda will be used as the basis for management to support attendance of additional staff at these or similar courses or elimination from consideration.

Training evaluation memoranda will also be developed by the RPO in the form of internally conducted courses for use in guiding future training activities. The QA Manager and Technical Manager will review these forms on an annual basis to provide recommendations to the RPO Program Director on training needs.

Figure 3-2: Training Activity Schema

Figure 3-3: Seminars/Conferences/Training Request Form

4.0 PROCUREMENT OF ITEMS AND SERVICES. The RPO utilizes the services of a number of subcontractors and purchases equipment and supplies in support of environmental measurement activities that are authorized by Wayne County for use on the Rouge Project. This section describes how the services and materials required by the RPO are procured. The procedures outlined have been developed to ensure that the vendors and subcontractors are guided by quality systems consistent with those established by Wayne County for the RPO.

One of the most important services procured by the RPO, from the standpoint of environmental measurements, are analytical laboratory services. The data resulting from laboratory analyses are critical inputs to all stages of the planning, modeling and evaluation portions of the RPO Program work efforts. Equally important are the field monitoring and sampling equipment installed on the Rouge River. This section provides an overview of the procurement guidelines and specific procedures for securing analytical services and field equipment.

4.1 PROCUREMENT GUIDELINES. The RPO procurement procedures were developed to comply with EPA grant requirements and Federal Acquisition Regulations (40 CFR Part 31). Specifically, the RPO procurement procedures mirror the requirements for Wayne County as it relates to:

- C Having written procedures;
- C Maintaining a contract administration system which ensures that contractors perform in accordance with the terms, conditions, and specifications of their contracts or purchase orders;
- C Reviewing proposed procurements to avoid the purchase of unnecessary or duplicate items;
- C Using value engineering in design contracts for construction projects;
- C Awarding contracts only to responsible contractors with demonstrated ability to perform successfully under the terms and conditions of the proposed procurement;
- C Maintaining records sufficient to detail the significant history of a procurement, including but not limited to:
 - rationale for the method of payment
 - contractor selection
 - basis for the contract price
- C Maintaining procedures which allows bidders or contractors to communicate and resolve disputes and protests the RPO. All disputes/protests shall be resolved by Wayne County; and

- C Ensuring that the Wayne County requirements for the Disadvantaged Business Enterprise (DBE) Program are met. If needed, the Wayne County Human Relations Director shall be consulted on proposed procurements.

The RPO is committed to conducting procurement transactions in such a way as to provide full and open competition consistent with Wayne County and 40 CFR Part 31.36 standards and quality assurance practices consistent with 40 CFR Part 31.45 standards. To this end, all procurements by the RPO must be approved by the appropriate Technical Manager or Finance Manager and RPO Program Director. Additionally, the procurement of capital equipment and/or services (in excess of \$5000 for a single procurement) must be reviewed and approved by the appropriate Wayne County Senior Management Staff before the procurement process is initiated. The RPO Program Director, or in his absence, the Technical Manager shall consult with the appropriate Wayne County Senior Management Staff in the RPO procurement process; within the RPO, no further delegation is permitted.

The process for preparing a procurement and obtaining procurement approval is shown in *Figure 4-1*. For all procurements where Federal Acquisition Regulations (FAR) require open competition, the RPO will issue appropriate announcements and conduct the procurement consistent with FAR, State and applicable local regulations. The goods or services required to perform environmental measurement-type activities are identified by the originator of the purchase requisition. The standard purchase requisition form contained in the Wayne County RPO Office Procedures Guideline should be used for all basic project purchases. Additional justification for procurement of services should be provided as required. The originator of the purchase requisition must secure the approval of the Technical Manager. For other equipment, supplies or services related to environmental measurements, the purchase requisition should be forwarded to the RPO Technical Manager. For items or services not related to environmental measurements, the purchase requisition is given to the RPO Finance Manager for review. Subconsultants who are procuring the equipment for service under their contract shall use their own company standard form for the purchase.

The respective Work Plan Manager, Project Manager, and Project Coordinator Laboratory Coordinator or Technical Manager, in consultation with the RPO Project Manager, should determine if adequate justification exists to procure the requested service or item. If so, the appropriate form of requisition should be prepared whether that be a Request for Bid (RFB), Request for Proposal (RFP), Request for Qualifications (RFQ), or Purchase Order (PO). The completed requisition is provided to the RPO Finance Manager for review to ensure that it complies with all regulatory requirements prior to approval.

Figure 4-1: Wayne County RPO Procurement Guidelines

The RPO Project Manager monitors procurement activities and decisions and coordinates with appropriate Wayne County Senior Management before approval and issuance of a purchase order or other form of procurement. The RPO Program Manager is responsible for monitoring the process for purchasing equipment, supplies, or services in a manner which will ensure that quality products and services are secured.

4.2 ANALYTICAL SERVICES. Three categories of analytical services are currently utilized by the RPO:

- Production analytical services;
- Special analytical services; and
- Quality control analytical services.

The laboratories quality auditing system and designated Laboratory Quality Assurance Officers are listed in *Table 4.1* and shown in *Figure 4-2*.

4.2.1 Production Analytical Services. Production analytical services are those routine laboratory analyses conducted in support of RPO baseline water quality, sediment, and other related sampling activities. Analyses conducted by production laboratories include total suspended solids (TSS) for other program work efforts such as CSO and NPS, and 5-day biochemical oxygen demand (BOD₅) through semi-volatile organic and polychlorinated diphenyls (PCB) analyses for example. The Wayne County RPO has contracted with five Michigan-based analytical laboratories to provide production analytical services.

**Table 4.1
Analytical Laboratories Designated Quality Assurance Officers**

Analytical Laboratory	QA Officer
McNamee Porter & Seeley	Dr. Romulo F. Aquino
AAC Trinty/ Kemron Environmental Services	Chuck O'Brien
University of Michigan, School of Public Health Laboratory	Dr. Peter Meier
ENCOTEC	James Kuchn

Figure 4-2: Field and Laboratory Quality Auditing

The RPO production laboratories were selected following the evaluation approach illustrated in *Figure 4-3*. RPO member firm McNamee Porter & Seeley, Inc. (MPS) conducted the initial procurement and contracting of laboratories for the program using a process developed specifically for the Rouge Project. This process required two steps. The first step involved a RFQ. The RFQ required interested laboratories to submit information on the types of analytical procedures performed, the methods used to perform each analysis, the capacity or size, and their current Quality Assurance Project Plan (QAPP). Based on the information presented in the qualification packages, a given number of laboratories were selected for further consideration. The criteria varied, but focused on the laboratory's ability to use EPA-approved methods and provide the desired analysis in a timely period. The second step was to visit each selected laboratory and review with the lab manager the QAPP, QA/QC documentation, sample receipt and storage area, sample preparation area, instruments, and data handling. Results of both steps were incorporated into Wayne County's standardized procurement process, where the final selections were made. The MPS Laboratory Director serves as the coordinator for RPO production analytical laboratory services and works closely with the Sampling Functional Group Manager to ensure that the adequate analytical capacity is maintained for the duration of the program.

The production analytical services laboratories under contract are required to maintain an active quality assurance program and ensure that the program is documented in a Quality Assurance Plan. The production laboratory analytical results are evaluated on a continual basis through submittal of blind duplicate and blank samples and analyses. In addition, performance evaluation samples and laboratory audits are conducted to ensure that quality analytical services are provided to the RPO. The RPO QAPP provides details on the auditing procedures that apply to production laboratories. The RPO QA Manager is responsible for ensuring that laboratory audits are conducted. The QA Manager will utilize trained independent analytical chemists to perform the laboratory audits.

4.2.2 Special Analytical Services. Special analytical services include those laboratory methods that are not routinely performed by the production laboratories or require specialized methods or equipment. Scanning electron microscopy (SEM) and X-ray diffraction are examples of special analytical services that may be required to characterize sediment samples. Work Plan Managers and/or the Technical Manager identifying the need for special analytical services will work with the Sampling Functional Group Manager and the RPO Production Laboratory QA Coordinator in identifying and contracting for specialized analytical services. The process for procuring specialized analytical services will follow the general procurement process shown in *Figure 4-3*.

4.2.3 Quality Control Analytical Services. Quality control analytical services are performed to provide independent checking on the production laboratories. The laboratories providing quality control analytical services are independent of the contracted production laboratories. The functions performed by the QC laboratories include analyses of samples split with the production

laboratory, preparation of performance evaluation samples, auditing production laboratories, and evaluating production laboratory data sets for quality assurance purposes and data reliability.

The primary QC laboratory for the RPO is ENCOTEC, in Ann Arbor, Michigan. Camp Dresser & McKee's (CDM) Cambridge, Massachusetts laboratory serves as a backup QC laboratory for the Rouge Project.

- 4.3 EQUIPMENT.** Environmental measurement activities being conducted by RPO staff require the use of various equipment, including automatic samplers and continuous monitoring devices. The equipment purchased for use in the Rouge Project is procured in a manner which maximizes potential for collection of high quality data. Technical staff develop technical specifications for equipment and work with vendors to ensure equipment and work with vendors to ensure equipment delivered meets the RPO specifications. Calibration and maintenance procedures for equipment are described in the QAPP and SOPs Compendium.
- 4.4 OTHER SERVICES.** The RPO may, at times, require other goods or services not directly related to laboratory analyses or field equipment, but which still have bearing on environmental measurements. Services such as geographic positioning and surveying, and items such as computer programs, would fall under this category. To ensure that the appropriate level of consideration is given to the procurement of these types of goods and services, all purchase requisitions not falling under analytical services or sampling/monitoring equipment will be reviewed by the Technical Manager. If the equipment request or service is justified, the request will then be forwarded to the RPO Project Manager and the appropriate WCDOE decision maker for approval. The Appendix contains cost information on review of bills and invoices.
- 4.5 EARNED VALUE SYSTEM.** The Earned Value System is the budgeted cost of work performed. It is calculated by multiplying the percent complete of an activity by the budget for the activity. We use earned value by loading each task in our schedules with the budgets as identified in the approved work plans. Then, the earned value is calculated by multiplying the percent complete for each task by the budget for each task. The earned value is then compared to the actual costs and the budgeted costs to measure the performance of each work plan.

Figure 4-3: Analytical Laboratory Procurement Process

5.0 QUALITY DOCUMENTATION AND RECORDS. The Rouge Project will develop and produce numerous documents and records. The documents prepared by RPO staff will range from technical memoranda through final program work effort work products and program deliverables. In addition, numerous guidance documents, such as this QMP and the referenced PMS Guide and QAPP, will be developed over the course of the program and will serve as planning and management tools of the RPO. This section discusses the types of documents that are generated by staff and the means by which these documents are filed. The internal and external review processes, as well as the manner by which the RPO will respond to external review comments, is also outlined. Record preservation issues are also discussed. Additional detailed information on quality document record keeping is contained in the RPO PMS Guide.

Work Plan Managers along with either the Technical Manager or RPO Project Manager are responsible for identifying reports and work products to be delivered to Wayne County under each work plan. The review process for work products is discussed in Section 8.0 - *Quality Implementation of Work Processes*.

5.1 DOCUMENT MANAGEMENT. Various forms and types of documents will be managed by RPO staff as a normal course of Program work effort task execution, including reports published by others and original data collected. The information will be collected in various formats, including written reports; paper and digitized maps; photographs and computer generated images; and videotape and sound recordings.

Figure 5-1 illustrates generally the document management process. Work plan managers are responsible for maintaining working files of all documents important to the execution of work tasks. The Document Control Process in Section 8.0 of the PMS Guide document is the guide for the file and record system for the RPO. Those reference documents and publications which are not relied upon on a daily or continual basis are transferred to the RPO Library or central file for use by all staff. The RPO Support Specialist Manager provides administrative assistance to the document control specialist who maintains a catalog or database of RPO library documents, central file procedures and index. The RPO Document Control System also contains copies of all guidance documents including this QMP, the QAPP, the PMS Guide and SOP documents.

Copies of all deliverables, by work plan, produced by the RPO are maintained in the central file managed by the document control specialist. Deliverables include technical memoranda, official correspondence, meeting notes and agenda, and work task reports. Each technical memoranda and technical work product is assigned a document control number and stored in the secure central file under the control of the document control specialist. All staff have access to these files, but removal of materials is only permitted for producing copies for use within the office.

The central files contain all, technical information that documents the activities conducted

Figure 5-1: Document Management Schema

by the Wayne County RPO. For example, draft reports and final reports for each Work Plan are maintained in the central file. To ensure that documentation critical to the operation of the RPO is not lost or destroyed as a result of uncontrolled events or acts (i.e. fire, theft), copies of all project records are maintained in a secure off-site storage facility provided by Wayne County. This off-site storage facility, which is available for use by staff, provides an archive of information important to the RPO and Wayne County.

All RPO off-site storage records will be maintained by Wayne County in accordance with federal, state, and county guidelines. The transfer of project magnetic media to an off-site secure facility is also managed by the RPO document control specialist.

5.2 GUIDANCE DOCUMENT DEVELOPMENT. Guidance documents are developed by RPO staff to assist others in performing routine functions and to document processes that have been standardized for the RPO. Examples of guidance documents that have been prepared are the *Document Style Guide*, *Data Management and Evaluation Guide*, *Data Screening, Validation, Reduction and Reporting Guide*, *Field Sampling Plan Guidance Document* and the *Field Sampling Plan Preparation Guidance Document*. This subsection describes the preparation review, approval and revision process for guidance documents. *Figure 5-2* illustrates the steps involved in developing guidance documents for use by staff including the specific chain of authority responsible for the internal review and approval.

The need for guidance documents may arise at times during the course of the Rouge Project to address standardization of process or methods in additional SOPs. The first step in developing a guidance document or protocol is preparation of an outline. The outline will be reviewed by the RPO Technical Manager to ascertain need and to assign appropriate staff for preparation. The QA Managers will also review the outline to ensure that it is not redundant to other guidance documents. Staff are then assigned to develop a preliminary draft of the guidance document.

The preliminary draft document is reviewed by a peer review group consisting of staff who would be subject to the protocols developed in the guidance and by the appropriate Program WPM and respective TA. Based upon review comments received from the peer group, the document is revised and the resulting draft is provided to Wayne County and the Wayne County Technical Manager or RPO for review and comment.

Following incorporation of comments from Wayne County and the RPO Technical Manager or his designee, the guidance document is finalized as Revision 0 and issued to staff. EPA review and approval is required of the QMP, QAPP, and all RPO developed SOPs and revisions of these documents.

All guidance documents issued through this process are maintained in the RPO Management Library and are available for auditing by EPA, MDNR and/or MDEQ.

Revisions and updates to guidance documents are made on an *as needed* basis as identified

Figure 5-2: Wayne County RPO Guidance Document Development

by staff using the documents. In addition, the QA Managers will conduct an annual review of the RPO guidance documents. This review will be undertaken to identify those documents which require modifications or revisions and will lead to the development of a schedule for issuing major revisions to the guidance if required. Minor updates and modifications will be issued by March of each year. Any changes will also be identified in a memo to all RPO staff and Wayne County.

All RPO technical documentation identified as a deliverable or work product must adhere to a formal quality management review, approval, and distribution process. *Figure 5-3* illustrates the steps required for the production of RPO documentation.

5.3 RECORDS MAINTENANCE. The RPO activities will result in the development of numerous technical memoranda, data sets and reports that will be of value to researchers, engineers, managers and administrators even after the Rouge Project mission is accomplished. The records produced throughout the course of the Program will therefore be catalogued and maintained in a manner that will allow for easy access following program completion. To the extent possible, only data collected as part of the program work effort activities will be stored in computerized form that will allow for ease of retrieval.

The RPO Technical Manager and Project Manager are responsible for the assembly of data in a format that satisfies the need to be transferable to local communities and government agencies. The GIS Functional Group Manager and the Data Management Functional Group Manager are tasked with developing program data repositories that can be easily accessed by future users. The GIS is being built using ARC/INFO (ESRI, 1992), an industry leader and the standard system being used by MDNR/MDEQ and EPA in Region V. Laboratory analytical data results are being maintained in an ORACLE® database structure which will allow for data evaluation using standard query language (SQL).

Use of these computerized systems will result in the assembly of analytical data, field monitoring information, and mapping details in a consistent manner providing a means for ready access to authorized data users.

Figure 5-3: Wayne County RPO Document Review/Approval/Distribution Process

6.0 COMPUTER HARDWARE AND SOFTWARE. The RPO staff use computers on a daily basis for conducting a variety of tasks related to environmental measurement activities. The Rouge Program work efforts have been structured to maximize the use of computerized methods for data collection, management, evaluation, reporting and display. The Data Management and GIS functional groups specifically address the need to ensure that the data collected is accessible via computerized methods, and oversees the usage of computerized hardware and software systems to support the program mission. This section outlines how computer hardware and software is managed by the RPO including:

- System Specifications
- System Modifications
- Software Development
- Software Evaluation
- Information Resources Management

6.1 SYSTEM SPECIFICATIONS. The computer hardware systems installed at the RPO include IBM compatible personal computers (PCs), SUN SPARC microcomputer work stations, and peripherals networked via a NOVELL communications system (*Figure 6-1*). The NOVELL network is a process server that allows all desktop personal computers (PCs) to communicate with each other. The NOVELL system allows for transfer of information and files between PCs and also allows for remote printing of reports and graphics. *Figure 6-2* is a representation of the NOVELL network which shows the configuration in the RPO office as well as the link from the RPO on the 9th floor of the Michigan Building and the Wayne County Department of Environment located in the Neudeck Building.

Database management and GIS activities are conducted using two SPARC work stations which are linked to the Central SPARC 1030 work station server. The GIS plotter, digitizer and model are linked through this server to the other work stations. An Ethernet system provides communication between the desktop systems and process servers. *Table 6.1* lists the computer processor hardware systems installed at the RPO.

Most RPO computers are equipped with 16 megabytes (MB) of random access memory (RAM) and some have extended RAM of 32 MB. All computers include hard disk drives with ranges from 240 MB to 4.0 gigabytes (GB). In addition, the file server includes a supplementary hard drive that provides for 6.0 GB of storage.

Serial numbers for all computer processing units (CPU), numeric processing units (NPU), hard drives, monitors, keyboards and all peripherals such as printers and tape storage are maintained on file at the RPO by the Technical Manager. *Table 6.2* lists software systems currently installed on RPO computers.

Wayne County maintains licenses for each of the software packages installed on hardware systems.

Unauthorized copying of software from, or loading of unlicensed software onto RPO computers is strictly prohibited. The Computer Systems Manager is responsible for

Figure 6-1: RPO Computer Hardware Network Configuration

Figure 6-2: Wayne County RPO NOVELL Network Configuration

Table 6.1
Computer Processor Systems

<u>Processor Type</u>	<u>No. of Units</u>
486DX-33	10
486DX-50	2
486DX2-66	15
486DX4-100	1
386DX 40	1
PENTIUM-133	1
PENTIUM-150	3
PENTIUM II 350	9
486SL (Notebooks)	4
PENTIUM 233 Notebook	1
SUN SPARC 1030	2
SUN SPARC 1PX	1

**Table 6.2
Computer Software**

Package	No. Of Copies	Package	No. Of Copies
ABC Flowchart	4	Microsoft Office 97 Professional Developer	1
Adobe Acrobat	1	Microsoft Powerpoint 95	2
Aldus Pagemaker	1	Microsoft Publisher	1
ArcView v3.1	6	Microsoft Visual Basic	1
AutoCad	1	Microsoft Windows 95	24
Calendaar Creator Plus 2.0	2	Microsoft Windows NT Workstation	3
Carbon Copy	2	Microsoft Windows NT Server	1
CD Creator	1	Netscape Communicator	1
Check-It Pro	1	Norton Utilities	14
Corel Draw	1	Novell GroupWise	50
Crystal Reports Pro 6.0	1	Org Plus for Windows	1
Harvard Graphics f/Windows	2	PC/TCP Network for DOS	5
HiJack Pro/Win	1	Perfect Office Suite	37
InstallSheild Express 2	1	PKWare Utilities	29
Internet Chameleon v4.5	1	Premivera Project Plan	1
LapLink Pro	3	WEMM	1
Lotus 1-2-3	1	SAS for WIndows	1
Lotus Frelance Graphics 95	2	TimeLine for Windows	1
Microsoft Access	11	Turbo Pascal	1
Microsoft Front Page	1	Uninstaller	1
Microsoft Excel	3	WinProxy 2.1	1
Microsoft Office 4.2	1	WinZip 6.3	10
Microsoft Office 97 Professional	15		

monitoring all RPO computer systems to ensure that only licensed software products are installed and for deleting any authorized or unlicensed systems. The Computer Systems Manager

maintains an updated list of all software serial numbers and cross reference listing of CPUs on which the packages are installed. The Computer Systems Manager also maintains file copies of all license agreements.

6.2 SYSTEM MAINTENANCE. The RPO has established a computer technical support group to ensure that computerized systems are functioning properly. The computer technical support group consists of the following staff:

- Technical Manager
- Computer Systems Manager

The Technical Manager is responsible for the administration of the RPO computer system including purchases, upgrade planning, and interconnects, especially to external users. The Computer Systems Manager is responsible for the NOVELL and SUN networks and troubleshoots SUN hardware and software problems, and troubleshoots the computer hardware and software on the NOVELL network. The Computer Systems Manager is responsible for responding to and resolving software and hardware related problems.

6.3 SOFTWARE DEVELOPMENT. RPO Staff are creating application tools within ORACLE®, the RPO environmental database management system, ARC/INFO™, and the RPO GIS to enhance the ability of the software sets to meet project-specific needs. These tools are created using the macro programming languages inherent within the application software sets and use industry standard approaches in their development.

Needed functionality which is not provided by a single software set can often be achieved by "linking" multiple software sets together, eliminating the need for extensive custom coding. When needed, staff are creating these "compound" applications by using industry standard software

interchange techniques and, where necessary, creating graphical user interfaces to facilitate their use. All software applications and their associated code are documented and archived following RPO guidelines.

6.4 SOFTWARE EVALUATION. Numerous commercially available software programs are used by the RPO, including Quattro Pro™ for data evaluation, and SAS™ for statistical analysis. These industry standard packages were selected for use based upon their ability to be integrated into the overall computerized network and the ability to provide technical staff with user-friendly tools for data manipulation and evaluation.

As additional software tools are determined to be needed to support environmental measurement activities, these will be evaluated by the computer support group and by the appropriate WPM. The software will be evaluated in terms of:

- compatibility with the existing systems
- suitability to perform the required tasks
- recognition as an industry standard
- cost-effectiveness
- previous experience
- user-friendliness
- ability to handle the RPO database

6.5 INFORMATION RESOURCES MANAGEMENT. Effective Information Resources Management (IRM) is critical to the ongoing activities of the RPO and to future activities that will rely on the information assembled over the course of the program. IRM applies to the RPO PCs as well as the GIS and Data Management activities.

Backup procedures have been implemented for all PCs used by RPO staff. Computer files are transferred from the network hard drives to magnetic tape on a daily basis.

The GIS Functional Group Manager is developing IRM procedures for acquiring, imputing, and formatting electronic GIS data. Although some data is generated externally, Rouge Project technical teams also contribute data to the GIS database. The sources of GIS data include:

- C MDNR/MDEQ
- C EPA
- C Wayne County
- C Modeling Functional Group
- C Sampling Functional Group
- C CSO Team
- C Nonpoint Team

- C Subwatershed Teams
- C Vendors
- C USGS
- C Data Management Functional Group

Table 6-3
GIS Coverages

THEME	COVERAGE	DESCRIPTION
	BASEMAP	Reach, watershed and municipal boundaries.
ADMIN	COUNTY	Wayne, Oakland and Washtenaw county boundaries.
ADMIN	MICHIGAN	State of Michigan
ADMIN	QUAD	USGS quadrangle corners.
ADMIN	SECTION	Section corners and boundaries.
ADMIN	TOWN	City/township boundaries
CONTROL	TICCOV83	Arc/Info tic coverage - geographic control
ENGIN	CSOFAC	Proposed CSO treatment facilities (basins & tunnel)
ENGIN	DETBAS	Detention ponds (RPO delineated)
ENGIN	RAIL	Railroads
ENGIN	ROADCTY	County roads
ENGIN	ROADHWY	Highways, interstates
ENGIN	ROADLOC	Local and two-track roads
ENVIR	GEOLOGY	Bedrock Surface Geology
ENVIR	LUSE85	1985 land use cover for Wayne, Oakland and Washtenaw counties.
ENVIR	LUSE90	1990 land use cover for Wayne, Oakland and Washtenaw counties.
ENVIR	NWI	National Wetlands Inventory
ENVIR	SOIL	Soil types for Wayne, Oakland and Washtenaw Counties.
HYDRO	DSA	Drainage Service Areas (Wayne County delineated)
HYDRO	LAKE	Lakes and ponds
HYDRO	NEWBURGH	Newburgh Lake
HYDRO	REACH	Rouge River, tributaries, and head waters
HYDRO	RNGAGE95	1995 Rain gage stations
HYDRO	RNGAGE96	1996 Rain gage locations.
HYDRO	RNGAGE97	1997 Rain gage locations
HYDRO	SHORE	Detroit River shoreline
HYDRO	SSHEDRAP	Subwatershed boundaries as delineated by 1987 RAP
HYDRO	STGAGE	USGS stream gages
HYDRO	SUBAREA	RPO "subarea" drainage boundaries
HYDRO	SUBSHED	RPO subwatershed drainage boundaries
HYDRO	SWMA	Storm Water Management Areas
HYDRO	WSHED	RPO Rouge watershed boundary
HYDRO	WSHEDRAP	Rouge watershed boundary as delineated by 1987 RAP

POLLUT	ACT307S	Michigan Act 307 sites of environmental concern
POLLUT	ACT641S	Michigan Act 641 waste disposal sites
POLLUT	ACT64S	Michigan Act 64 hazardous waste disposal sites
POLLUT	FILL	Landfills and abandoned dumps as polygon features.
POLLUT	FILLPT	Landfills and abandoned dumps as point features.
POLLUT	OUTFALL	Outfalls - CSO, storm and unknown
SAMPSITE	BACTERIA	RPO bacteria sampling sites thru 1997.
SAMPSITE	FOTRSAMP	Friends of the Rouge schools sampling sites.
SAMPSITE	ROVCSO	Roving CSO Sites.
SAMPSITE	SAMPLE93	Water quality (wet & dry weather) sampling stations, fall 1993
SAMPSITE	SAMPLE94	Water quality (wet & dry weather) sampling stations, 1994
SAMPSITE	SAMPLE95	Water quality (wet & dry weather) sampling stations, 1995
SAMPSITE	SAMPLE96	Water quality (wet & dry weather) sampling stations, 1996.
SAMPSITE	SAMPLE97	Water quality (wet & dry weather) sampling stations, 1997.
SAMPSITE	SCHOOL98	Schools participating in Friends of the Rouge sampling program.
SAMPSITE	SEDSAMP	River reconnaissance sediment sample locations

7.0 QUALITY PLANNING. Planning for RPO work is undertaken in an interdisciplinary manner to ensure that work plans are developed in a manner that ensures integration into the overall Rouge Project. WCDOE is involved in the formulation of each work plan and in defining task specific goals. Open communication at the work planning stage provides the opportunity for the RPO to develop unique project approaches that will be consistent with the mission of the Rouge Project. This section provides an overview of the work planning process. Additional details on planning and execution of work are contained in the RPO Program Management System Guide.

Work plans are the primary planning documents for all Rouge Project tasks to be undertaken by the RPO. They define the scope of work activities, schedule, and budgets for specific tasks and define the overall goal and objectives of the tasks. For environmental measurement activities that will be conducted pursuant to the RPO QAPP, the work plan serves as the initial document for defining sampling objectives and intended data uses. The work plan must include budgetary information, therefore, consideration must be given to the types of analyses to be performed and the frequency or number of samples needed to make decisions and answer the questions raised in the work plan. The work plan not only serves as the initial planning document but also serves as a monitoring document to ensure that the tasks are performed consistent with the scope, budget, and schedule defined and approved by Wayne County.

7.1 QUALITY GOALS. Wayne County has established the RPO to provide program management and technical services in support of the overall Rouge Project. Wayne County has set forth its broad requirements for the program in the Rouge Project Mission Statement. The Mission Statement and its objectives serves as the guiding principle for the RPO in undertaking specific work activities.

The WCDOE directs the RPO in accomplishing the mission in a proactive manner by direct involvement in program work effort planning and execution. *Figure 7-1* identifies the various steps in the planning and execution phase of a work plan where quality assurance aspects are introduced. The work plan managers, the lead technical staff and the Wayne County DOE reviewer(s) are involved in these meetings. Wayne County staff have been specifically charged with providing overall direction, and assistance to the RPO Work Plan Managers as discussed in Section 1.0 of the QMP. Designated Wayne County staff are responsible for assisting RPO staff in defining the need for work tasks and developing work plans and monitoring work activities. Through proactive involvement in the work planning process, Wayne County is able to shape the work plans and define the deliverables that will result from their execution.

7.2 QUALITY CRITERIA. Each work plan developed by the RPO and approved by WCDOE specifically lists the activities that will be undertaken and the products that will result from these efforts. Wayne County staff are responsible for reviewing all work product deliverables and for ensuring that they meet established criteria for technical quality as well as being completed within budget and on time. The criteria for acceptability are defined by Wayne County for each work

plans' task at the time of project scoping.

7.3 WORK PLAN PREPARATION. Work plans define the tasks, budgets, schedules and deliverables for all activities undertaken by the RPO. The process by which work plans are prepared, reviewed, and approved is outlined in *Figure 7-2*. When the need for work is identified by Wayne County, the RPO will be directed to prepare a draft work plan.

The draft work plan includes a detailed description of tasks, and a draft schedule and cost estimate. Any environmental measurement activities that will be conducted pursuant to the work plan must be identified along with the estimated number of samples to be obtained and the analyses to be performed. The draft work plan must identify the development of a FSP as a specific task should any environmental measurement activity be contemplated, along with the schedule for development and review of the FSP.

The draft work plan is submitted to Wayne County for review and comment and revised as appropriate. Upon Wayne County's approval of the draft work plan, the RPO prepares a draft work plan Summary which is then reviewed by Wayne County. Following revisions and approval, the work plan Summary is presented to the Steering Committee and the TAG for Review. The RPO then modifies the work plan, if required, and submits the final work plan to Wayne County for review and approval. During the work plan approval process an authorization to proceed (ATP) may be initiated if there are specific tasks within a work plan that require immediate attention. If an ATP is requested by the Work Plan Manager, it must be approved by the RPO Finance Manager, Technical Manager, the RPO Program Director and Wayne County Project Director before any work task execution is initiated.

During the course of executing a work plan it may become evident that a modification is required to adjust the scope, schedule or budget. The Work Plan Manager is responsible for initiating development of Work plan amendments, as required. Any and all proposed modifications to schedule, cost, deliverables or tasks in a work plan must be documented and submitted to Wayne County for review and approval. Major modifications to work plans that significantly change the Work plan deliverables, the schedule, or the cost must be presented to the Steering Committee. Significant changes in work plans include those that would eliminate deliverables or modify the schedule or budget in such a way as to impact other work efforts. No modifications to Work plans will be made without the written authorization of the Director of WCDOE.

Work plans must identify all environmental measurement activities that will be performed and must include provisions for development of the FSP. In addition, all work plans which include environmental measurement activities that necessitate the development of a FSP should be reviewed by the Sampling Functional Group Manager.

7.3.1 Cost/Schedule Constraints. The costs for performance of proposed work plans activities and

the schedule for execution are evaluated by the RPO Program Director to ensure

Figure 7-1: Quality Planning Process

consistency with overall program goals, budget and schedules. The Deputy Program Director, working with the appropriate Wayne County Senior Management and RPO Finance Manager, will identify budgetary constraints if they exist and rectify these prior to forwarding the Work plans to Wayne County for approval. The Program Director, working with the scheduler, will also determine if the proposed work effort will impinge upon ongoing work and develop remedies to ensure that program schedules are not adversely affected.

7.3.2 Project Management Plan. For each work plan developed under the Rouge Project, a Project Management Plan (PMP) form will be completed and submitted for review. The PMP includes information on the work plan budgets, schedules and quality reviews. Before any RPO work plan project numbers are established by CDM, against which labor and other direct costs can be charged, the PMP must be reviewed and approved by the Program Director or Project Manager and the Quality Assurance Managers. The PMP is prepared by the Work plan Manager with assistance from the administrative support staff. The Program Director or Project Manager is responsible for reviewing the scope of work and task budget and schedules including subcontractor budgets. The Quality Assurance Managers are responsible for reviewing the quality review schedules and list of reviewers. The information contained in the PMP is used in performing work plan audits.

The PMP form and instructions for completion are contained in Appendix A.

7.4 QUALITY ASSESSMENT. WCDOE Senior Management will ultimately determine whether the RPO has performed up to expectations. The open communication channels established between Wayne County and the RPO allow for continual feedback on the quality of work products and services provided. In addition, the following regular meetings and reports have been established to provide Wayne County with consistent ongoing mechanisms to conduct quality assessments of RPO project activities, management, work plans progress, and products:

- Bi-Monthly RPO Policy Meetings
- Monthly Progress Reports
- Monthly Wayne County / EPA / MDNR Technical Coordination Meetings
- Bi-Monthly Wayne County / EPA / MDNR Rouge Project Policy Meetings
- Bi-Monthly Rouge Project Steering Committee Meetings
- RPO Technical Advisory Group Meetings and Meeting Notes

Quality assessments are undertaken to determine if the work products and services provided meet Wayne County expectations. The work processes established by the RPO ensure continual assessment of work products by Wayne County Senior Management who provide review and comment on all work products. Independent quality assessment of all report deliverables is provided by the assigned Technical Advisors.

Figure 7-2: Work plan Development Process

Quality assessment criteria of environmental measurements and frequency for assessment are described in the RPO QAPP.

The RPO QA Managers, will also conduct monthly reviews of project records and reports, and meet with RPO staff to address comments or suggestions regarding project quality assurance issues. Wayne County and RPO staff may relay comments or questions to the RPO QA Manager at any time via telephone, facsimile, electronic mail or regular post.

8.0 QUALITY IMPLEMENTATION OF WORK PROCESSES. Environmental measurement activities will be conducted in conformance with the RPO QAPP and with the FSP developed specifically for the project activity. This section provides an overview of the RPO's approach to the implementation of work processes related to environmental measurement activities relative to the collection and analysis of surface water, sediment and other environmental media samples. The major quality system work process implementation components are described in detail in the RPO Program Management System Guide. This section provides an overview of the following components.

- Work Process Procedures
- Work Process Monitoring
- Work Process Procedures Development

The QMP is disseminated to various staff members within the RPO and their contractors and subconsultants by requiring work plan managers and technical advisors to become familiar with the document and maintaining a copy in the RPO library for all interested parties to refer to as needed. Implementation of the QMP will be the responsibility of the QAMs, TAs, and WPMs.

8.1 WORK PROCESS PROCEDURES. The general progression of work activities is depicted in *Figure 8-1*. All tasks proceed from the development of a work plan and conclude with the delivery of a completed RPO work product. The deliverable may be in the form of a technical memorandum summarizing task activities or documenting the service provided, notes from TAG meetings, documents such as FSPs or formal reports. The work plan defines all the tasks that will be performed and the resulting work product that will be generated.

8.1.1 Work Plans. The Rouge Project grant identifies, in a broad sense, the goals and objectives that are to be achieved under the various Program Work Efforts. The grant provides the starting point for all work activities undertaken by the RPO as illustrated in *Figure 8-1*. Work Plan Managers, in conjunction with their Wayne County Decision Makers, are responsible for developing work plans which provide detailed scopes, budgets and schedules for execution of work. The work plans are the primary planning documents for all activities undertaken by the RPO and, as such, the scoping sessions that lead to the work plan are critical tasks in the overall work process.

Scoping activities must take into consideration all those issues and factors that will bear upon the quality of environmental data. It is at this stage of the work process that initial consideration must be given to the identification of Data Quality Objectives (DQOs). DQOs are specific statements as to the quantity and quality of data that will be collected as part of the work plan. For all activities that will require the collection of environmental samples or making field measurements, the work plans must provide information on the following issues:

Figure 8-1 Work Activities Progression

- the types of environmental samples to be collected;
- types of analytical or field measurement techniques to be used and what detection level, precision, and accuracy must be achieved;
- number of samples to be collected and analyzed or number of monitoring values to be recorded including frequency of collection;
- why are the samples or measurements being made and how will the resulting data be used in making decisions or drawing conclusions.

Work Plan Managers along with the Technical Manager are responsible for the daily coordinating efforts with all other program work efforts to minimize task redundancy and to maximize the benefits achieved by utilizing a multidisciplinary approach. Objectives Managers provide overall guidance in technical coordination.

The work plan development process may be initiated at any time by Wayne County or the RPO should they identify the need for additional work efforts or the refinement of work efforts based on Wayne County's needs or ongoing monitoring of RPO activities. Wayne County work assignments to the RPO are coordinated by Wayne County decision makers and directed for implementation by the RPO Program Management who must coordinate RPO resources to implement the Wayne County work plans and determine budget requirements before the initiation of any new work plans development efforts. The Technical Manager may also identify the need for additional efforts or the adjustment of ongoing efforts through the course of executing work; if such a need is identified, the Technical Manager will coordinate directly with the Project Manager. In all cases, the assigned Wayne County decision maker to a Program Work Effort will be kept informed and apprised of the work progress and substantive issues that may affect the quality of the work effort or subsequent work products.

8.1.2 Technical Memoranda. In many cases, execution of work plans will lead to the development of Technical Memoranda that serve as work plan deliverables. These deliverables may be final "stand alone" documents that provide summary information and findings obtained as a result of the work plan efforts. These technical memoranda are considered to be of value because of the technical information provided. For example, a technical memorandum has been developed which provides a comprehensive review of the literature related to watershed and river basin computerized decision support tools. This type of technical memorandum provides useful data to researchers who have an interest in decision support systems and is not specifically bound by the parameters of the Rouge Project. This type of technical memoranda and review served the RPO by providing the necessary starting point for the development of the decision support approach currently being implemented. Technical memoranda may also be intermediate work products that will be combined at latter stages to form integrated work products. Developing technical memoranda allows for sharing of the intermediary work products among the various program work effort staff for review. Following review and approval by Wayne County, these technical memorandums may serve as useful documents for distribution to EPA, MDNR/MDEQ, TAGs and

others for review and comment.

Technical Memoranda are used mainly for the documentation of office related work efforts but are also used to summarize the results of field observations and sampling events.

8.1.3 Field Sampling Plans. FSPs provide the detailed documentation necessary to conduct specific environmental measurement activities. Before any sample is collected or field measurement is made, an FSP must be prepared, reviewed and approved following the procedures described in this QMP and in the RPO QAPP. *Figure 8-2* schematically depicts the relationship of the FSP to the QMP, QAPP and other related guidance documents.

This QMP serves to outline the overall quality systems that have been established and describes the content of related quality guideline documents and the process for implementing work. The QAPP provides details on the sampling and analyses approaches that are common to all activities and specifies minimum requirements for analytical detection limits as well as bias, precision, and accuracy. The QAPP defines the manner by which field activities are performed in generic terms and describes procedures that are common to all sampling activities such as corrective action reporting mechanisms.

Companion documents to the QAPP are the Laboratory Standard Operating Procedures Compendium and the Field Standard Operating Procedures Compendium. These compendia provide an assemblage of all the SOP that are utilized for sampling and analysis. The SOPs include those used by the analytical laboratories contracted by the RPO and include field equipment calibration procedures, and field methods that are relevant to the Rouge Project. SOPs include methods developed by RPO member firms as well as standard methods and SOPs contained in published sources. SOPs contained in EPA guidance documents such as the sampling methods contained in "*A Compendium of Superfund Methods*" may also be used. The SOP Compendia are updated as new SOPs are developed or existing SOPs are revised as part of specific FSP development activities.

FSP development is facilitated by use of the "*RPO FSP Preparation Guide*" which serves as a template for the development of site specific SOPs. The FSP Preparation Guide identifies the major elements, in the form of an annotated outline, that must be included in task specific FSPs. FSPs will be developed under various program work efforts including Sampling, CSO, and NPS. The Preparation Guide provides for the consistent development of FSPs across the program elements regardless of the member firm developing the document. The FSP template also provides for the efficient review of draft FSPs by serving as a checklist.

8.1.4 Field Sampling. The Sampling Functional Group Manager (FGM), in conjunction with the Program Work Plan Managers is responsible for developing a schedule of all anticipated field sampling activities and estimating the numbers of samples that will be generated as a result of these

activities. This information is used by the Sampling FGM to inform laboratories of anticipated sample volume and determine if additional laboratory capacity is required. Although some baseline, dry weather, CSO and NPS sampling activities can be scheduled ahead of time, most of the wet weather sampling events cannot be scheduled and will be dependent on storm events. Responding to these storm events is addressed in the logistical plan outlined in each specific FSP that addresses wet weather sampling activities. *Figure 8-3* outlines the work process for coordination of sampling activities. RPO has contracted with a weather forecasting service that provides advanced warning of anticipated storm events expected to occur within the Rouge River Watershed. The weather forecasting service also provides information on the anticipated magnitude, extent, and duration of a storm. The coordinator will determine whether sampling crews will be mobilized to respond to the forecasted precipitation event.

The Field Sampling Coordinator or designee, will be in constant communication with the forecasting service if the precipitation event is expected to yield rainfall that will produce samples for synoptic or specific area data needs as defined in the Baseline FSP.

Upon notification of an impending rainfall event, the Field Sampling Coordinator will determine if adequate time is available for sampling teams to mobilize and respond to the storm event. If less than 48 hours of advance notice for the rainfall event is provided, mobilization will not be initiated. Should the forecast indicate that precipitation will not occur for at least 48 hours, then mobilization will be initiated.

Mobilization activities require that the Field Sampling Coordinator inform the sampling team of proposed activities and that all sampling containers, Chain-of-Custody (COC) forms, logbooks, and sampling equipment be assembled. Laboratories must be contacted to prepare sample containers with preservatives if these have not already been put aside for the event. All production and QC laboratories are then contacted to coordinate sample delivery and to ensure that laboratory staff is available to receive samples and to initiate short hold time analyses. Coordination of all sampling activities is handled by the Field Sampling Coordinator who maintains continual communication with all field staff during the sampling activities by cellular telephone.

During the actual sampling activities the Field Sampling Coordinator will serve as the dispatcher shifting field crew assignments to meet the sampling event objectives.

8.1.5 Field Activities Documentation. The RPO QAPP provides detailed information on the documentation that is collected as part of all field activities. Chain-of-Custody form preparation and distribution procedures, as well as logbook entries, are described. The observations and information generated as part of the field activities are critical data sources that will subsequently be used in assessing analytical data and interpreting the results. Extreme care must be taken to ensure that all sample containers and field measurements are accurately recorded because these data will serve as the basis for subsequent decision making activities.

The work process for field documentation is illustrated in *Figure 8-4*.

Figure 8-2: Quality System Documentation

Figure 8-3: Sampling Activity Coordination Process

Figure 8-4: Field Documentation

The FGM is responsible for all work processes leading up to the sampling and/or monitoring activities, as well as the execution of field sampling and measurement activities and documentation through to the reporting of field activities. The reporting of the field activities serves as a record of observations that can be reviewed in conjunction with analytical data. In some cases, the field report will provide insight into data that is not immediately evident from a review of the analytical data. For example, the field summary report should report observations of automatic sampler conditions that may affect water quality results (e.g., potential fouling) or water conditions (e.g., floating sheen) that may translate into presence of contaminants.

8.1.6 Laboratory Analysis. The RPO has contracted with a number of laboratories to provide analysis of environmental samples including:

- C McNamee, Porter, & Seeley, Inc.
- C Kemron Environmental Services
- C University of Michigan, School of Public Health
- C Analytic & Biologic Laboratories, Inc.

These laboratories provide routine production laboratory services for the baseline sampling activities as well as the specific analytical services required for program work effort support. The process by which analytical data quality control is conducted is described in detail in the RPO Data Management Guide and the Data Screening, Validation Reduction and Reporting guide.

Figure 8-5 depicts the work flow process for analytical data reporting and review. Because of the significant number of samples that may result from any one sampling event, it is important that all staff understand the process by which sampling activities are undertaken. Coordination of all analytical laboratory services is the responsibility of the FMG, with the Field Sampling Team Coordinator providing day-to-day support on sampling/analytical logistics. The FGM, with the support of the Laboratory Coordinator, is responsible for developing RPO contracts with laboratories and for ensuring that analytical reports are generated per specified standards and delivered on time.

All analytical reports resulting from the field activities are provided to the RPO in the Quattro Pro® spreadsheet formats as shown in the QAPP. The analytical data undergoes a series of reviews before it is entered into the environmental database including laboratory QA/QC reviews and data useability reviews. These reviews are described in detail in the *Data Management and Evaluation Guide*.

8.1.7 Data Evaluation and Reporting. Analytical data that is determined to be valid for use in interpretive reports (useable) is then assembled into summary reports using the format presented in *Figure 8-6*. Detailed descriptions of how these summary data tables and figures are generated are discussed in the *RPO Data Management and Evaluation Guide* (September 1994).

Figure 8-5: Analytical Data Reporting and Review

Figure 8-6: Analytical Report Format Example

Development of the final report generated from each sampling/monitoring activity is the responsibility of the Work Plan Manager under whom the work effort was undertaken. Field/analytical technical memoranda content and format are discussed in the *RPO Data Screening , Validation, Reduction and Reporting Guide*.

8.2 WORK PROCESS MONITORING. A key component of RPO's quality system is the continual monitoring of work processes provided by the program work effort Technical Advisors (TAs) and overall monitoring and program direction provided by the Technical Manager. The TAs are responsible for providing technical guidance and assistance to the respective Program Work Efforts to which they are assigned. TAs are responsible for continual monitoring of all work processes from developing work plans through final work product preparation. The TAs serve in a proactive guidance capacity to each Program Work Plan Manager. Each TA provides an objective review of the program work effort technical progress and assessment, problem solving, work product development assistance, and concise technical review of the Program work effort. The TA reports directly to the RPO Technical Manager and consults with the designated Wayne County decision maker of a Program Work Effort on an ongoing basis.

Each TA has been allotted up to 40 hours per month to assist with the production and review of technical work in progress. The TA's primary role is to provide direct technical assistance and support to the Work Plan Managers. Since the TA reports to the RPO Technical Manager and may coordinate directly with the Wayne County Decision Maker, they provide useful objective technical reviews of a Program Work Effort's work progress and activities of RPO management and can therefore provide objective reviews of work activities. TAs are also responsible for coordinating and scheduling Technical Review Committee meetings with the RPO Program Management and Wayne County decision makers, and for identifying the need for independent specialty reviews. The TAs attend technical review and program status meetings on a regular basis. TAs are required to visit the RPO to review and report on the work progress of their assigned Program Work Effort at least every other month.

The Technical Manager provides guidance to the TAs and ensures that pertinent information is exchanged across all Program Work Efforts; they also receive copies of all work products generated as a means of monitoring work plan progress. In addition to providing guidance to TAs, the Technical Manager meets with FMGs and the Program Director at the RPO on a monthly basis.

Field activity monitoring details, including laboratory QC sample analyses are discussed in detail in the RPO QAPP.

8.3 WORK PROCESS PROCEDURES DEVELOPMENT. Procedures for the performance of work are being developed under various program work efforts. Procedures development is dependent on the expected frequency that the activity will be performed, complexity of the task, benefit of standardizing the approach, and the need to document the procedure. All field and laboratory procedures used for the collection, measurement and analysis of samples must be documented in a SOP.

Only SOPs approved by EPA are to be used for RPO related environmental measurement activities. If a procedure or method will be used that is not contained in the RPO SOP Compendia, it must be submitted for review and approved by EPA before use on the Rouge Project. Work Plan Managers that identify the need for developing a new SOP must inform the QA Managers of this need. The QA Managers will work with the program work effort staff to develop the draft SOP and will coordinate the review of the SOP by EPA QA staff. Only after EPA review and approval of the SOP will it be entered into the RPO SOP Compendia and available for reference in FSPs and use by RPO staff.

The procedure for review and approval of SOPs is detailed in the RPO QAPP and follow the procedures outlined briefly below:

Review and approval of all RPO SOPs used in Field Sampling and Laboratory analyses occur concurrently with the development, review, and approval of FSPs. FSPs are developed for each RPO environmental measurement activity and contain detailed information specific to the environmental measurement activities utilized to support various work plans developed by the RPO under a particular Program Work Effort. Any newly created SOP (one not contained in the RPO SOP Compendium), or proposed modification to an existing RPO SOP, must be reviewed and approved by EPA before use. The specific procedures for review and approval of SOPs is contained in the RPO QAPP. All FSPs and their associated SOPs must have the written approval of the RPO FGM, QA Managers, and Wayne County Decision Maker before environmental measurement activities may begin.

Questions on developing SOPs should be directed to the attention of the RPO FGM or the QA Managers.

Procedures may also be developed for those work processes for which improved efficiency will be achieved through the implementation of a standardized approach. For example, under the GIS Program Work Effort, documentation is being developed describing how new spatial data will be added to the system and how maps will be generated. Each FGM is responsible for identifying those work process procedures that need to be developed and must identify how these procedures will be built into the overall RPO quality management system in the work plans developed for these activities.

The QA Managers should be contacted should new or revised work process documentation be required.

9.0 QUALITY ASSESSMENT AND RESPONSE. The RPO quality systems have been instituted specifically to provide a mechanism to foster continual improvement in the quality of services and technical work products developed in support of the Wayne County Rouge River National Wet Weather Demonstration Project. The principal focus of the QMP and associated documentation is to ensure that the environmental measurement activities are undertaken in a manner consistent with EPA quality assurance requirements. The RPO Program Management recognizes that monitoring of all work activities is a crucial part of the quality system and that appropriate means of assessing quality must be provided as part of these efforts. This section describes the procedure established for:

- Quality Assessments
- Response Actions

9.1 QUALITY ASSESSMENTS. Quality assurance is provided by developing and implementing appropriate technical operation and management systems. Audits are performed to ensure that the quality control systems are being followed, to monitor procedures, and to assess technical quality. Auditing the performance of components of the quality system are important aspects of the quality assessment activities, but more importantly, it is the integrated assessment of the overall management of the program. Although equipment and SOP deficiencies are often cited as root causes of environmental measurement problems, office procedures, resource limitations, and management attitudes may also affect the quality of services or work products.

The following types of assessments are conducted as part of the RPO quality improvement process:

- Wayne County Client Satisfaction Surveys Audits
- Quality Management Reviews
- Work Plan Status Reviews
- Objective Manager Assessments
- Technical Advisor Assessments
- Technical Review Committees
- System Audits
- Performance Audits

9.1.1 Wayne County Client Satisfaction Survey. Wayne County ultimately decides whether the services and products developed by the RPO meet quality expectations. Wayne County as Grantee is responsible for ensuring that the mission of the program is attained and that the Grantor, EPA, MDNR, MDEQ and the public are satisfied with the work being done by the RPO.

Wayne County has established a direct line of communication between Senior Management and Rouge Project staff including individual Work Plan Managers.

Independent evaluation of the quality of services and products provided to Wayne County is provided through the performance of a quarterly client satisfaction survey. *Figure 9-1* provides the client satisfaction survey form that is used to document the findings of the survey. The survey is conducted at least quarterly by staff not directly involved in the project such as senior management staff of the RPO member firms. Quarterly client satisfaction surveys are conducted by CDM's senior area officer for the Midwest Region. The results of the surveys are relayed back to the RPO Program Director and QA Manager for communication to all RPO staff.

9.1.2 Project Quality Management Reviews. Project Quality Management (PQM) reviews are conducted on an intermittent basis for all major projects as part of CDM's corporate Quality Management Program. The RPO Program Director and QA Managers coordinate all PQM activities with the senior management in preparing for this professional review and assessment. PQM reviews serve as important assessment tools for Wayne County. PQM addresses all aspects of the RPO program management with special emphasis on the implementation of Wayne County's quality management system for the Rouge Project. In using PQM as a performance assessment tool in addition to the overall quality management system established by Wayne County for the Rouge Project, Wayne County has created an open communication system to promote continual project quality assessments, both formal and informal.

In February 1993, a PQM review of the RPO was conducted by an independent nationwide group of senior managers from the RPO prime contractor firm assigned to the Rouge Project. The results of this independent review were provided to the Wayne County Senior Management for review and comment. This initial PQM review included the identification of critical success factors and responsibilities of RPO project consultant firms. The PQM recommendations were reviewed in the Fall of 1994 and as a result a number of recommended changes to the project were instituted. During 1995 the recommendations of the PQM follow-up were instituted. In 1996, the progress of the changes in program management, including the institution of a project controls group and integration of Project Management Plans into the work plan preparation process was assessed. The RPO QA Managers are responsible for monitoring the progress of RPO program management with regard to PQM review recommendations.

9.1.3 Work Plan Status Reviews. The RPO has established routine procedures for monitoring the activities of all work plans through weekly staff progress meetings, monthly work plan schedule updates, and Monthly Progress Reports.

All Rouge Project staff are responsible for providing both verbal and written updates on the current and planned activities of work plans during the weekly staff progress meetings. These weekly progress summaries are used to report on project schedule, cost, and resource variance for the Monthly Progress Reports. Work Plan Managers are responsible for monitoring all work plan schedules, budgets and technical progress and for informing the Technical Manager and Project Manager if the need for implementing corrective actions is

Figure 9-1: Client Audit Form

required. The Program Director is responsible for monitoring the overall schedule, budget and technical scope for all RPO work plans.

9.1.4 Objective Manager Assessments. Objective Managers are responsible for conducting assessments and providing comments on the performance of each work plan as it relates the overall objectives established for the Rouge Project. The Objectives Managers are responsible for maintaining focus of the Work Plan Managers on the overall mission of the Rouge Project. Additional details on the roles and responsibilities of the Objectives Manager are described in the Program Management System Guide.

9.1.5 Technical Advisor Assessments. Technical Advisors (TAs) provide critical feedback regarding Rouge Project work activities to the Work Plan Managers, Technical Manager, and Wayne County Senior Management on the overall technical direction and the progress of individual tasks as they relate to the project goals and objectives as established by Wayne County.

The QA Managers are responsible for monitoring the effectiveness of the TAs activities and communicates directly with each of them on a continual basis to review systems and operational issues. The QA Managers also discuss the TA activities with Program Director, and Wayne County Senior Management to verify that modifications in quality systems are implemented as needed.

9.1.6 Technical Review Committees. Technical Review Committees (TRCs) are a major component to the Quality Management Program and are assembled to provide high level independent technical review of project activities and products. TAs, working with Work Plan Managers and the appropriate Wayne County Senior Management, are responsible for determining if a TRC review will be required for specific program work effort activities. Ideally, TRCs should be budgeted for and scheduled as part of the work plan development, but, in some cases, the need for a TRC may be identified during the course of work activities.

The QA Managers are responsible for monitoring that the TRC recommended actions are addressed and initiated by the appropriate RPO Work Plan Manager.

9.1.7 System and Performance Audits. Environmental measurement activities, including all field monitoring and sampling and all field and laboratory analysis, are subject to system and performance audits as detailed in Section 10 of the QAPP. The QA Manager(s) are responsible for ensuring that system and performance audits are performed and that appropriate response is taken as detailed under corrective actions sections of the QAPP.

9.2 RESPONSE ACTIONS. Response assessment monitoring activities may require modifications to the specific work plan tasks being performed, in some cases, may necessitate suspension of activities. The QAPP and the Data Screening, Validation, Reduction and Reporting Guide provide information on response activities required as part of quality assessment activities for environmental

measurement activities.

Activities that may lead to work suspension include those that pose a health or safety risk or would compromise the quality or integrity of environmental measurements.

9.2.1 Potential Health & Safety Risks. When any work activity poses a potential risk to the health or safety of Rouge Project staff, the work effort shall be immediately suspended. All RPO staff have the authority to suspend work that they feel poses potential health or safety risks. Corrective actions and reporting must be in conformance with the Health & Safety Plan developed for the specific field activity.

9.2.2 Environmental Measurement Integrity. The FSP, in conjunction with associated SOPs and the overall guidance of the QAPP, provides the information necessary to conduct activity specific environmental measurements. Any staff member who identifies that field activities are not being conducted in accordance with these documents should inform the designated field coordinator responsible for the activity who has authority to suspend work until deficiencies are rectified. The QA Managers should be contacted if recommendations for work suspensions are not acted upon and immediately addressed.

The QA Managers will monitor client satisfaction surveys, TRC meeting minutes, and the TA review memorandum to determine if response actions beyond those recommended in the various documents are required. The QA Managers will notify the EPA QA Manager and RPO Senior Management of any activity that could compromise the quality of work products or services if resolution can not be achieved within the structure of the RPO.

10.0 QUALITY IMPROVEMENT. Quality improvement is achieved through the continual monitoring of Wayne County's satisfaction with the products and services delivered by the Rouge Program Office. In addition, the efforts of the RPO are also judged by EPA Region V, MDNR/MDEQ, and the public. The feedback received from these various sources serves as the major input to the quality improvement process. Internal quality reviews are also used to direct quality improvement activities. This section describes the approach to continuous quality improvement and outlines the quality improvement mechanisms available to WCDOE and RPO staff. The quality improvement process is built on the following major components:

- Quality Improvement Policy
- Quality Improvement Processes
- Quality Monitoring
- Quality Adjustments

10.1 QUALITY IMPROVEMENT POLICY. Continuous quality improvement has been a goal of the RPO management team since the Project's inception in the Fall of 1992. The RPO is a unique assemblage of consulting firms who work in conjunction with Wayne County Rouge Watershed communities and their local governments, environmental groups, and both state and federal regulatory agencies to address wet weather flows to the Rouge River. Bringing together the diverse technical and management expertise needed to meet the challenge of the project has necessitated the development of a fluid operational approach.

The RPO Program Director has enlisted the assistance of Wayne County Senior Management and his firm's resources to continually help identify ways to improve the RPO Program Management activities. For example, in February of 1993, a PQM review was held to identify critical success factors for the RPO Program Management and identify the means to achieve these success factors. In June 1994, a mid-point program status review was conducted to help define areas where quality improvement could be achieved. RPO work plan managers and technical advisors provided the RPO Program Director and quality review team with written recommendations on the following topics:

- Overall Program Improvement Opportunities
- Cost/Time Saving Opportunities
- Program Work Effort Specific Improvement Opportunities

These recommendations were reviewed by the RPO Program Director, Technical Manager, QA Managers, and Wayne County Senior Management. Subsequent discussions with Wayne County decision makers regarding these recommendations have formed the basis for changes in the management of the RPO, some of which are now in the process of being implemented.

The quality improvement activities that have been initiated by the RPO Program Director and QA Managers are illustrative of their commitment to the continuous quality improvement. The RPO's

policy with regard to all work efforts actively encourages WCDOE and RPO staff to identify opportunities to improve the quality of services and products. The process for improvement is focused on the identification of "root causes" of problems coupled with the implementation of corrective actions in a cooperative manner.

10.2 QUALITY IMPROVEMENT PROCESSES. Quality improvement occurs as the staff learns to work more effectively together as a team and teamwork is facilitated through communication. RPO quality improvement processes are founded on effective communication through meetings and documentation.

At each phase of all RPO environmental measurement activities, program work effort staff are required to develop documentation ranging from work plans through final reports. These documents are subject to the reviews by Technical Advisors, the Technical Manager, and Wayne County Senior Management. Quality monitoring is checked on a routine basis by the QA Managers by review of RPO files and through discussion with RPO staff. The QA Managers ensures that the quality review processes as described in Section 9.0 are followed. Additionally, the QA Managers are charged with identification of systems that require modification and development of additional systems as required. The RPO QA Managers will initiate a quality system review on an annual basis to coincide with the anniversary of EPA approval of the RPO QMP.

The RPO has been assembled to meet the needs, goals, and objectives of the Rouge Project as defined by Wayne County, EPA Region V, MDNR\MDEQ, Rouge RAP, and Rouge Watershed communities. Staff from the various RPO consulting firms will continue to work together as a team through continuation of the program in 1996. The breadth of technical talent, the diversity of member firm corporate culture, and the complexity of the program requires a management approach which encourages open dialogue. Constructive comments rather than fault-finding are promoted in seeking proactive approaches and corrections to quality problems.

Quality problems of a nature that require confidential treatment of information and sources will be treated as such and through to the QA Managers and/or Wayne County Senior Management.

10.3 QUALITY MONITORING. Quality monitoring has been built into all aspects of RPO activities through the assignment of Technical Advisors or technical reviewers as part of the RPO PMP and work plan development process. *Figure 10-1* illustrates the various types of quality monitoring that are part of all work plan efforts that involve environmental measurement activities management.

TAs work with WPMs and Wayne County Senior Management in developing work plan scopes and establishing review schedules. The Work Plan Managers monitor the progress of work through the course of the project and schedule reviews by Technical Advisors or .

Figure 10-1: Environmental Measurements Quality Monitoring Process

identify other staff to provide independent review of technical work. Reviews of draft work products are conducted at critical milestones identified in the Work Plan and project control schedule. The TAs are responsible for providing review comments to the WPMs through the use of the review checklists discussed in Section 8.0 or review memoranda. Completed review checklists and memoranda are maintained in the RPO files along with all review draft revisions of technical deliverables such as FSPs and technical memoranda.

The QAM monitors the review process by auditing the monthly projects control report and PMP schedules. The QAM audit is conducted to ensure that the review schedules established are being appropriately implemented.

10.4 QUALITY ADJUSTMENTS. Detection of quality problems is the responsibility of all Rouge Project staff. The use of quality assurance audits is a routine means of ensuring that the quality systems are being implemented. The QAM is responsible for conducting audits of RPO activities to ensure compliance and to implement corrective actions to improve the quality of work products and services.

Quality improvement relies in part on the effectiveness of the quality systems developed for the program and the effective implementation and responsiveness of the RPO program management corrective actions program. The specific corrective actions measures outlined in the RPO QAPP have been developed to allow for feedback on specific environmental measurement activities. In addition, all Rouge Project staff are encouraged to provide feedback to the RPO Program Director and Wayne County Senior Management on the QMP or any other aspect of the quality system.

Providing technically superior services and work products to the project will be achieved through the successful teamwork of the WCDOE and RPO, EPA Region V, and MDNR\MDEQ, in concert with the partnership and support of watershed communities to achieve the mission goals of the Rouge Project. The success of the Rouge River National Wet Weather Demonstration Project's efforts lie with Wayne County's well defined quality systems and dynamic approach to quality improvement. To this end, all Rouge Project staff are encouraged to take a proactive approach to quality improvement and to notify the QA Managers and/or Wayne County Senior Management of ways in which the quality of products and services delivered to Wayne County could be improved.

11.0 REFERENCES

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12.0 ACRONYMS

ASI	Applied Science, Inc.
ATM	Authorization to Modify
ATP	Authorization to Proceed
BOD	biochemical oxygen demand
CDM	Camp Dresser & McKee
CFS	Cole Financial Services, Inc.
COC	Chain-of-Custody
CPU	computer processing units
CSO	Combined Sewer Overflow
DPW	Wayne County Division of Public Works Operations
DQOs	Data Quality Objectives
DSS	Decision Support Systems
E-Mail	electronic mail
ECT	Environmental Consulting & Technology, Inc.
EPA	Environmental Protection Agency
FAR	Federal Acquisition Regulation
FGM	Functional Group Manager
FOTR	Friends of the Rouge
FSP	Field Sampling Plan
GB	gigabyte
HAMR	Hits and Misses Report
HRC	Hubbell Roth & Clark
IAA	Inter-Agency Agreements
IRM	information resources management
JJR	Johnson, Johnson & Roy, Inc.
MB	megabyte
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
MPS	McNamee, Porter & Seeley, Inc.
NPU	numeric processing units
OHM	Orchard, Hiltz & McCliment, Inc.
OIS	Organizational Improvement Systems
OSHA	Occupational Health and Safety Administration
PAG	Program Advisory Group
PC	personal computer
PCB	polychlorinated diphenyls
PE	performance evaluation
PMA	Project Management Associates
PMP	Project Management Plan

PMS	Program Management System
PO	purchase order
POC	point of contact
POMs	Program Objective Managers
PSC	Public Sector Consultants
QA	quality assurance
QAM	Quality Assurance Manager
QAPP	Quality Assurance Project Plan
QC	quality control
RAP	Rouge River Remedial Action Plan
RFB	Request for Bid
RFP	Request for Proposal
RFQ	Request for Qualifications
RPO	Rouge Program Office
SEM	scanning electron microscopy
SEMCOG	Southeast Michigan Council of Governments
SOPs	Standard Operating Procedures
sql	standard query language
SYMCON	Systems and Management Consultants
TA	Technical Advisor
TAG	Technical Advisory Group
TMC	Thomas Management Consultants
TRC	Technical Review Committee
TSS	total suspended solids
TYJT	Tucker Young Jackson Tull, Inc.
WCDOE	Wayne County Department of Environment
WMSS	Watershed Management Support System
WPMs	Work Plan Managers
WTA	Wade Trim/Associates