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Maintenance, Logistics and Facilities
Facilities Management NWSPD 30-41

OPERATIONS AND MAINTENANCE

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This Instruction implements Operations and Maintenance areas contained in National Weather Service (NWS) Policy 30-41, *Facilities Management*, dated September 9, 2002.

SUMMARY OF REVISIONS: This instruction supercedes WSOM Chapter H-10, Issuance 82-15, dated October 1, 1982; WSOM Chapter H-11, dated May 26, 1972; and WSOM Chapter H-51, Issuance 82-21, dated December 8, 1982.

Signed by Mark S. Paese for 01/02/2003
John McNulty, Jr. Date
Director, Office of Operational Systems

Operations and Maintenance

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1. Introduction. In the early 1980s, the National Oceanic and Atmospheric Administration (NOAA) launched a major program to modernize the National Weather Service (NWS) based on new technology and knowledge in the sciences of meteorology and hydrology. Inherent in this process was phasing the existing field organization into a streamlined network of Weather Forecast Offices (WFO) strategically located across the United States.

This network of facilities, whether newly constructed, modified, or leased, requires maintenance and integrated logistics support (ILS) throughout the life cycle. This instruction serves as the NWS vehicle for carrying out this broad requirement.

The NWS fulfills its mission to provide accurate, real-time weather forecasts and warnings by operating 122 WFOs and specialized facilities within the United States and overseas trust territories.

Appendix A provides a listing of the NWS WFOs inventory by age.

The NWS mission requires 100 percent uptime for all of its facilities, which operate on a 24 hour basis. Some minimal downtime can be accommodated due to emergency situations, but all of the NWS WFOs are considered to be mission-critical operations, and must be maintained at the highest degree of readiness. Failure of any of its facilities for a prolonged period would impact the ability of the NWS to carry out its congressionally mandated mission, and could jeopardize life and property.

1.1 Purpose. The purpose of this document is to provide operations and maintenance instructions to carry out NWS Policy Directive 30-41. The overall goal is to provide the most reliable and cost-effective facilities support and maintenance program possible to ensure that the NWS is able to meet its operational objectives.

Although facilities support requirements inherently exist for the already-completed (120) facilities, the comprehensive program level system for accomplishing this function has been under development.

1.2 Scope. This instruction covers facilities-unique topics from an ILS perspective. To the extent possible, all material has been streamlined and tailored to preclude duplication of any existing documentation, but still provide the optimal support planning approach.

This instruction delineates actions to be taken by the NWS Headquarters (WSH) on behalf of the Regions and clarifies inputs needed from the Regions. The purpose is not to spell out maintenance procedures, but rather to set top-level parameters to ensure minimum mission support requirements are met. The Regions must tailor their maintenance approach to meet or exceed these requirements.

1.3 Definitions. The NWS WFO Maintenance budget is intended to be used for maintenance and repair activities only; construction projects will be funded from other sources. To ensure appropriated funds are used correctly and proper distinctions are made between maintenance and repair versus construction, the following definitions have been adopted.

1.3.1 Maintenance. Maintenance is the work required to preserve and maintain real property in such condition that it may be effectively used for its designated functional purpose. Maintenance includes cyclic work done to prevent damage that would be more costly to restore than to prevent. Maintenance includes work to sustain components. Examples include replacement of disposable filters, painting, caulking, re-fastening loose siding and sealing bituminous pavements. Painting done in connection with repair work (i.e., as a result of the repairs) is properly classified as repair.

1.3.2 Repair. The restoration of real property to such condition that it may be effectively used for its designated functional purpose. Repair may be overhaul, reprocessing, or replacement of deteriorated component parts or materials.

a. Repair may include the relocation or reconfiguration of building components such as partitions, windows, and doors to the extent they are replacements of existing components. Additional quantities, beyond what existed, is construction.

b. Repair may include the relocation and reconfiguration of utility systems into arrangements to meet current standards and current code requirements to the extent that the total area or population served by the utility system being replaced is not increased. An increase in total area or population served is construction.

c. Repair does not include increases in quantities of components for functional reasons, nor extension of utilities or protective systems to areas not previously served. An increase in quantities of components for functional reasons, areas not previously served by utilities or protective systems, or increases in exterior building dimensions is construction.

d. Complete replacement of a facility is construction, not repair.

1.3.3 Construction. Construction includes:

a. The erection, installation, or assembly of a new facility.

b. The addition, expansion, extension, alteration, conversion (in the sense of facility modification caused by a change in facility utilization), or complete replacement of an existing facility.

c. The relocation of a facility from one location to another.

d. Installed building equipment made a part of the facility.

e. Related site preparation, excavation, filling, landscaping or other land improvements.

f. Foundations, site work and utility work associated with the setup of relocatable buildings.

2. Program Management.

2.1 Facilities Operations and Maintenance Planning. The NWS Facilities Operations and Maintenance approach is described and documented by this instruction. It is the principal facilities support planning and logistics support document and serves as the source for summary and consolidated information required by other program management documents. The objectives are:

a. To provide a comprehensive document to support all NWS facilities.

b. To provide NWS management with necessary information on facilities considerations.

2.1.2 Update. This instruction will be updated periodically when circumstances such as the following dictate:

a. New program policy or direction is received.

b. Changes in any of the facilities program elements.

c. Changes to organization.

d. Facilities design or configuration changes.

2.2 Organization. Overall facilities operation and maintenance direction falls under the purview of the Office of Operational Systems (OOS), Facilities Management Branch (FMB)

(W/OPS15). FMB is primarily responsible for performing WSH level planning and coordination and acts as the interface with NOAA. Per NWSPD30-41, day-to-day responsibility for program execution is delegated to the Regions. Appendix B includes the NWS and Regional Facilities Maintenance organization charts.

To ensure proper coordination and communication between the WSH and the Regions, a Facilities Executive Committee was established. Membership consists of two WSH personnel (Division Director, Maintenance, Logistics and Acquisition Division (MLAD) and Facilities Management Branch representative) and one representative from each Region.

Note: National Centers for Environmental Prediction (NCEP) receives an allocation of the maintenance budget expressly for the Tropical Prediction Center in Miami. Southern Region and NCEP share the costs of operating and maintaining this facility. However, NCEP membership on this committee is not deemed necessary.

The Facilities Executive Committee is the focal point for all facilities operations and maintenance planning and management activity.

The Committee convenes via conference call on a recurring basis, usually once every two months, depending on the number and type of action items. The Committee meets formally on an unscheduled basis to address problems and issues that cannot otherwise be solved via conference calls and action items.

3. Maintenance Concept. The maintenance and management approach is typically referred to as the maintenance concept in this industry. The maintenance concept is an integrated description of what is included within the maintenance envelope (scope). It addresses, for example, how maintenance is performed, who performs the maintenance, frequency, logistics support required (e.g., tools, spares), and all other pertinent considerations. Various methods are used to document the maintenance concept, the most common of which is by support element.

The NWS maintenance concept envisions two rather broad maintenance levels: organization (field/site) and outsourcing. The organizational/site level maintenance is generally accomplished by a Sector Facilities Technician (SFT) or other on-site personnel. Any maintenance actions that cannot be handled at the organizational level is outsourced, which may involve one or more support contractors.

Each CONUS (Continental United States) SFT is assigned a geographic sector of the region encompassing four or five sites. Alaska and Pacific Regions must employ different strategies. The SFT visits each assigned site at least once per quarter for one week. The SFT travels via an assigned GSA vehicle, which houses any support equipment, tools, spare parts, and supplies/expendables needed to do the job. The SFT's workload at a specific site consists of scheduled or preventive maintenance and unscheduled or backlog maintenance. During a site visit, the SFT addresses the highest priority items.

Emergency maintenance must be addressed whether the SFT is on site or not. The current maintenance concept makes it unlikely the SFT will be at the site during the emergency situation. The Regions are responsible for ensuring that proper backup and notification procedures are in place to handle unscheduled maintenance.

The six Regional Directors are responsible for overseeing all maintenance activity for their WFOs. Delegation of responsibilities to the meteorologist-in-charge (MIC) is typical. The SFT is currently the major performer and/or coordinator of facilities maintenance actions. In the event the SFT is not available, the Electronic Systems Analyst (ESA) or an Electronic Technician (ET) could be assigned backup responsibility in coordination with the Regional Engineer. The SFT or the contractor-provided equivalent must be capable of the following:

a. Work planning and scheduling.

b. Performance of scheduled and emergency maintenance.

c. Performing assistant contracting officer's technical representative (ACOTR) duties.

The above responsibilities imply the maintenance performers are proficient across a wide array of facilities maintenance and repairs, work management, and logistics activities.

The number of personnel located at each site and Regional Headquarters will ultimately be determined by the number of sites supported, the proximity of those sites to the Regional Headquarters and each other, and the anticipated level of maintenance activity. Criticality of equipments, type of backup responsibility envisioned, full time equivalent (FTE) constraints, and response time requirements will all influence staffing levels. The risk of not attaining operational availability must be weighed against the cost of utilizing additional, less-than-fully employed personnel.

Generally, site maintenance will consist of troubleshooting at the replaceable unit or sub-assembly level, with subsequent removal of the failed component. Repairable units will be sent to the vendor or repair facility where a determination will be made to repair or dispose of the component.

Maintenance activity will always be performed in a variety of environments; therefore, consideration must be given for extreme changes in temperature, weather, light, space or other factors.

Sites do not normally accommodate storage of tools and spares due to space constraints and security considerations. Maintenance personnel must be capable of responding with the right equipment in a short time; therefore service vehicles or other transportation is used. Historically, response to any call must occur within 24 hours; however, reliability of the failed item, site status, and other environmental factors could dictate otherwise.

4. Work Planning/Management. The NWS work order based asset management system is a customized Commercial-Off-The-Shelf product. It has the capability to receive, classify, identify, estimate, approve, schedule, track, account for, and report all work throughout the facilities maintenance process, from inception to completion. The system contains a planning and estimating function to estimate labor, materials, tools and equipment requirements, and prepare job/work orders. The system provides a work authorization capability to allow for acceptance or rejection of work requests based on urgency, cost, or other managerial considerations.

Note: NWS is currently in the process of selecting and implementing a Computerized Maintenance Management System (CMMS). All references to CMMS in this document assume that the system has been selected and implemented.

4.1 Annual Work Plans (AWP). The Regions will use the asset management system to develop AWPs, which will serve as the basis for planning, budgeting, and scheduling facilities work and align with the funding availability. The AWP will be prepared prior to the start of the upcoming fiscal year and be ready to execute on October 1st. Often, appropriation delays due to Continuing Resolutions occur during the first quarter of the fiscal year. The AWP will allow for such delays by planning for executable work up to the previous year's budget allocation. If planned work is not accomplished, it is added to the maintenance backlog. Likewise, emergency requirements are added to the AWP upon occurrence and could potentially defer other work. The AWP is a flexible working document, incorporating changes throughout the fiscal year to accommodate emerging mission and customer requirements.

5. Budget.

5.1 Budget Formulation/Execution.

5.1.1 Budget Formulation. The AWP is key to sustaining an adequate facilities operations and maintenance program. Even though budget formulation, consolidation, and submission is accomplished at the WSH level, Regional inputs are essential to the process.

Every Region is different in terms of geography, approach, staffing, and strengths. Every site is different in terms of location, configuration, age, and condition. Therefore, the facilities budget will differ from region to region, site to site. Also, the Regions are allowed maximum flexibility in terms of maintenance approach and estimating judgement.

On an annual basis, usually in the first quarter of the FY, the Regions will submit their budget updates based on their AWP (for FYXX + 2) to WSH via the Resource Information Management System (RIMS) database. The database is structured to accommodate inputs across several cost categories on a site-by-site basis.

Appendix C provides a listing of these cost categories with definitions and examples.

Appendix D provides a completed example of the current version of the RIMS-based WFO Maintenance Budget.

FMB is responsible for maintaining the written basis of estimate that accompanies and justifies the quantitative data, as well as developing and submitting any other rationale to support the annual budget submission.

5.2 Budget Execution. The NWS Facilities Operations and Maintenance program adheres to the NWS Cost Accounting system. Because the NWS WFO Maintenance budget is entirely non-labor, budget execution is accomplished and documented through the procurement system, and includes travel, contracts, supplies, and equipment. A series of phase codes has been developed for use by the facilities maintenance program in executing its budget to link these costs to RIMS budget categories. The WSH is responsible for ensuring the phase codes are properly entered into CAMS and associated with appropriate project/task codes. The Regions are responsible for using these codes for all facilities maintenance costs.

Appendix E provides the facilities cost accounting coding system.

6. Ingredients/Elements.

6.1 Requirements Determination and Review. To ensure a comprehensive facilities support system is in place, FMB will review facilities requirements at least annually to identify, define, modify, and document support considerations necessary to meet facilities support goals.

Within this context, FMB will address the following issues:

a. The NWS maintenance concept/approach.

b. Changes in resources or shifting of resources (Government vs. Contractor).

c. Technology changes impacting work processes.

d. Any recommendations to influence or improve facilities design.

6.2 Manpower and Personnel. Staffing the NWS facilities maintenance mission is not strictly based on analysis of requirements. The number of SFTs is correlated to the number of sites (sectors); the grades of SFTs vary from GS-09 to GS-12; and the skills/job series from construction repairman to engineer. The Regional staffs differ in terms of FTE and skill mix; for example, one region might have draftsmen, while another region might have an Electrical Engineer with uninterruptible power supply (UPS) experience. Regions may tailor their organizations to best accomplish the facilities mission within FTE and other constraints imposed by the personnel system. It is important for the Regions to know approximately how many hours per year will be demanded by the system to plan SFT workloads and develop/modify service contracts.

Appendix B provides WSH and a generic regional facilities maintenance organization charts.

Appendix F provides a Requirements Determination Task Analysis that lists the various tasks, frequency of performance, likely performer (Government or Contractor), and labor estimate. This list is provided for information and planning purposes, but will be used with the Annual Work Plan to ensure all requirements are addressed.

6.3 Supply Support/Provisioning. Supply support includes all maintenance actions, procedures, and techniques used to determine requirements to acquire, catalog, store, transfer, issue, replenish the inventory of, and dispose of any items or equipment. Provisioning refers to the initial, or start-up, supply support activity for a system when fielded.

FMB is responsible for ensuring all supply support and provisioning requirements are addressed and included in the NWS Facilities Maintenance budget consistent with the NWS maintenance concept. Provisioning is minimal because the concept is largely based on SFT capability and follow-up in the field, combined with service contracts. Supply support is largely just-in-time or off-the-shelf. Nevertheless, the Regions are responsible for ensuring that the following supply support issues are addressed:

a. Determination of the range and quantity of support items necessary to support assigned facilities.

b. Identification and management of long lead time items.

c. Identifying alternate vendor sources.

d. Handling of sensitive/critical/pilferable items.

e. Repair vs. discard decisions.

f. The types of spares and repair parts needed by the site/SFT, as well as cost and availability of these items.

6.4 Training. Under the current maintenance concept, the NWS National Strategic Training and Education Plan (NSTEP) support allows for initiation integration of facilities training into the ongoing, overall NWS training program. FMB is responsible for ensuring facilities requirements are incorporated into the NSTEP process to the extent practicable and supplemental, vendor-specific training is identified, coordinated, and provided to support the NWS maintenance concept.

To structure the training program, the Regions will submit an annual training requirements plan to WSH detailing the training courses planned/needed for the upcoming fiscal year.

6.5 Technical Data/Documentation. Technical data/documentation encompasses all recorded information necessary to produce, support, operate, or maintain a program. This includes written instructions, such as drawings, operations and maintenance manuals, specifications, standards, technical reports and data sheets, procedures, and computer programs.

This instruction, with revisions and updates, outlines FMB's approach to addressing technical documentation development and update procedures.

Each site received an O&M Manual and vendor-provided DDG (Diesel Driven Generator), UPS, and HVAC (heating, ventilation and air conditioning) manuals at occupancy. The Regions are responsible for ensuring these documents are updated and revised in accordance with Regional policy.

6.6 Computer Resources Support/CMMS. Computer resources support includes all computer equipment, software, documentation, services, personnel, and supplies needed to operate and support the CMMS or work management system. FMB is responsible for implementing CMMS capability throughout the NWS.

6.7 Reliability, Availability, and Maintainability (RAM).

6.7.1 Reliability. Reliability for facilities maintenance is an implied requirement insofar as it affects operational availability. There are no stated quantitative reliability requirements. Generally speaking, minimizing critical failures and maximizing mean time between failures (MTBF) are the two constant goals of the program. FMB will institute procedures for measuring reliability as needed.

6.7.2 Availability. Quantitative operational availability (A_o) requirements are not explicitly defined by this instruction. By definition, the facilities themselves rarely experience "down" time in the logistics sense, backup systems and redundancy avoid catastrophic failures. FMB will institute procedures for measuring availability as needed.

6.7.3 Maintainability. As is the case for reliability, maintainability is a requirement only insofar as it affects A_o. Specifically, the mean time to repair (MTTR) for the system must be minimized. Although there is no explicitly stated maximum allowable time to repair, there are derived limits for this figure based upon inherent MTBF. FMB will institute procedures for measuring maintainability as needed.

6.8 Configuration Management. Configuration management functions includes identifying and documenting the functional and physical characteristics of the system, controlling changes to those characteristics, recording and reporting change processing and implementation status, and verifying the accuracy of records versus actual system characteristics. Of particular facilities importance is the configuration management of engineering drawings. FMB is responsible for:

a. Developing guidance governing the configuration management of facility drawings.

b. Maintaining a set of master drawings for each facility within the NWS inventory.

Regions are responsible for submitting red-lined drawings that reflect the building's as-built configuration in accordance with WSH guidance and Regional policy.

6.9 Failure Reporting. The purpose of failure reporting is to provide a practical, effective, and uniform closed-loop procedure for collecting and analyzing facilities-related failures resulting from any cause (hardware, software, documentation, human, etc.). It serves as a tool to direct failure trend analysis and to identify hardware, software, documentation, procedures, and operator problems in order to minimize or eliminate recurrence of the undesired event. The Regions are responsible for:

a. Documenting hardware or software failure, by site, to include reason for failure, description of failure, corrective action taken, part name and nomenclature, serial number (if applicable), next higher assembly, mission downtime, any function(s) impeded or prevented by the failure.

b. Recording the method of failure detection: obvious system malfunction, alarm, display message, other visual/audio indication, or other.

c. Presenting findings and summaries periodically to the Facilities Executive Committee, which will review failure trends, track significant failures, monitor action item status until closed, and initiate action items, as deemed appropriate, for corrections and/or further analysis.

The NWS work order based CMMS, discussed in Section 4, will provide the mechanism for recording the above information.

6.10 Inspections/Condition Assessments. Annual condition inspections are normally conducted by SFTs to meet the minimal legal, environmental, and hazardous material requirements. The SFT will assess site conditions on semi-annual visits to detect obvious deficiencies; MIC/HIC (Hydrologist-in-Charge) and other site personnel participation varies among regions.

Findings from the inspections will be recorded in the NWS CMMS.

7. Deferred Maintenance and Backlog Lists.

7.1 Deferred Maintenance. Deferred maintenance is the set of actions necessary to prevent the deterioration of the asset or its function but which was not carried out when planned or scheduled. By its definition, deferred maintenance is extremely difficult to estimate or measure

for a variety of reasons. There must be a complete set of tasks with the status of those tasks in order to determine what has been deferred. Numerous studies and anecdotal evidence suggest almost every facility has some level of deferred maintenance, but determination of that level is dependent upon a record-keeping system that tracks planned maintenance, records accomplished maintenance, and therefore yields planned but not accomplished (e.g., deferred) maintenance. The other major source for identifying deferred maintenance is by condition assessment, although evidence of neglect may not always be visible and detectable by routine inspection.

The complete set of scheduled maintenance tasks is documented at Appendix F. FMB is responsible for updating this Appendix as necessary. The NWS CMMS will be used to document deferred maintenance.

7.2 Backlog Lists. WSH will maintain a consolidated, prioritized backlog list based on annual Regional inputs/updates. Each task or project will be accompanied by a cost estimate and a sense of priority. The backlog list consists of both deferred maintenance tasks from Section 7.1 and any project work resulting from the inspection/condition assessment program. Regions will update the backlog list via the NWS CMMS on an annual basis at the request of WSH.

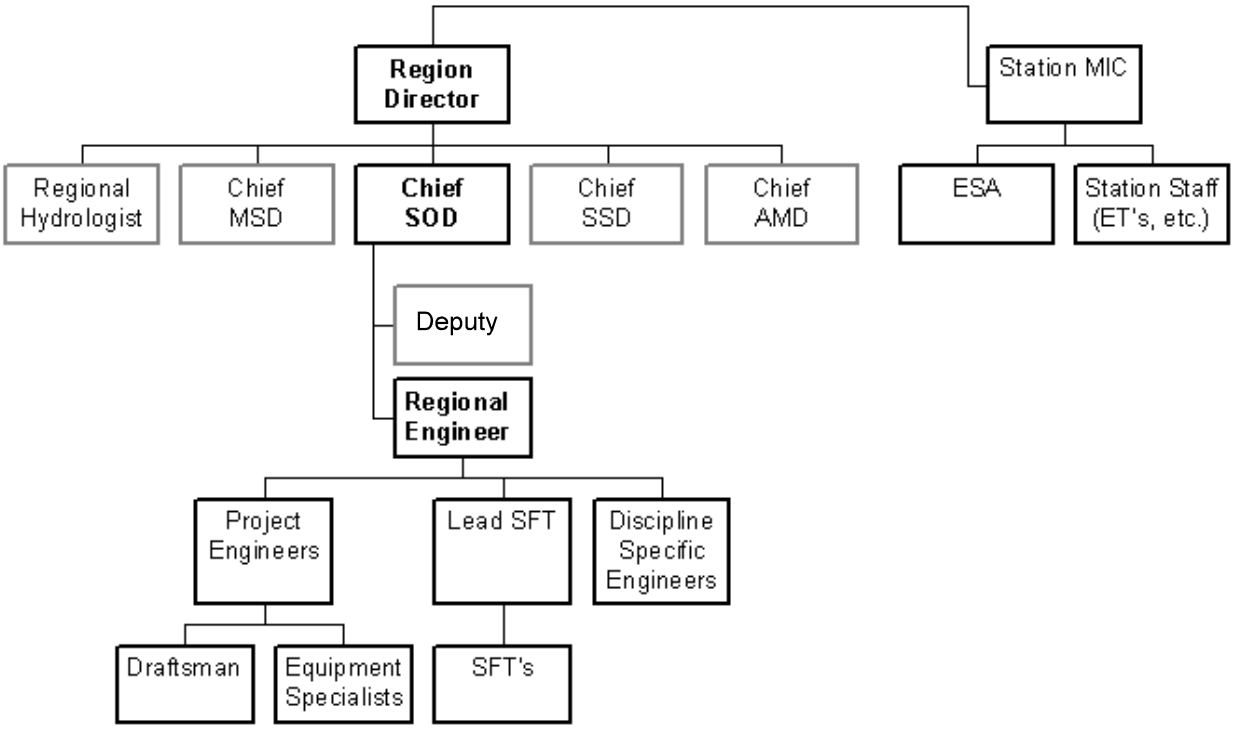
APPENDIX A - WFO Inventory by Age

Region	Site	Leased/ Owned	RFC/ WFO	BOD Date
S	OKLAHOMA CITY/NORMAN	L	RFC	15-May-89
S	MELBOURNE	OWNED	WFO	15-Jul-89
C	DODGE CITY	OWNED	WFO	15-Sep-89
S	AMARILLO, TX	OWNED	WFO	15-Oct-89
C	GOODLAND, KS	OWNED	WFO	15-Nov-89
C	MILWAUKEE, WI	OWNED	WFO	15-Nov-89
C	TOPEKA, KS	OWNED	WFO	15-Mar-90
E	STERLING	OWNED	WFO	15-Mar-90
C	ST LOUIS	OWNED	WFO	15-May-90
S	HOUST./GALV.	OWNED	WFO	15-Aug-90
C	GRAND ISLAND, NE	OWNED	WFO	15-Nov-90
W	PHOENIX, AZ	L	WFO	03-May-91
C	KANSAS CITY, MO/PLEASANT HILL	OWNED	RFC	02-Jul-91
C	WICHITA, KS	OWNED	WFO	16-Sep-91
C	CHICAGO, IL	OWNED	WFO	09-Oct-91
S	TULSA, OK	L	WFO	10-Feb-92
C	LOUISVILLE, KY	OWNED	WFO	09-Apr-92
C	DETROIT, MI	OWNED	WFO	30-Jun-92
E	BINGHAMTON, NY	OWNED	WFO	06-Jul-92
S	LITTLE ROCK, AR	L	WFO	21-Dec-92
E	CENTRAL PENN, PA	L	RFC	31-Dec-92
S	JACKSON, MS	OWNED	WFO	01-Feb-93
C	DES MOINES, IA	OWNED	WFO	22-Feb-93
E	CLEVELAND, OH	OWNED	WFO	25-Mar-93
E	PITTSBURGH, PA	OWNED	WFO	13-Apr-93
S	MEMPHIS, TN	L	WFO	03-May-93
C	SIOUX FALLS, SD	OWNED	WFO	05-May-93
C	CHEYENNE, WY	OWNED	WFO	10-May-93
C	INDIANAPOLIS, IN	OWNED	WFO	17-May-93
W	BOISE, ID	OWNED	WFO	17-May-93
E	BOSTON, MA	L	RFC	19-May-93
E	MOREHEAD CITY, NC	OWNED	WFO	15-Jun-93
E	PHILADELPHIA, PA	OWNED	WFO	24-Jun-93
E	NEW YORK CITY, NY	OWNED	WFO	28-Jun-93
W	LOS ANGELES, CA	OWNED	WFO	28-Jun-93
S	BIRMINGHAM, AL	OWNED	WFO	12-Jul-93
E	COLUMBIA, SC	L	WFO	12-Aug-93
S	DALLAS/FORT WORTH, TX	L	WFO	13-Aug-93
S	LUBBOCK, TX	L	WFO	17-Aug-93

E	NORFOLK/RICHMOND, VA	OWNED	WFO	04-Oct-93
W	SAN FRANCISCO BAY AREA, CA	OWNED	WFO	01-Nov-93
W	SEATTLE/TACOMA, WA	OWNED	WFO	01-Nov-93
E	CINCINNATI, OH	OWNED	RFC	28-Nov-93
S	NEW ORLEANS/BATON ROUGE, LA	OWNED	RFC	30-Nov-93
S	MOBILE, AL	OWNED	WFO	08-Dec-93
S	AUSTIN/SAN ANTONIO, TX	OWNED	WFO	31-Dec-93
S	ATLANTA, GA	OWNED	RFC	04-Jan-94
E	RALEIGH/DURHAM, NC	L	WFO	07-Jan-94
C	GREEN BAY, WI	OWNED	WFO	10-Jan-94
C	OMAHA, NE	L	WFO	25-Jan-94
S	ALBUQUERQUE, NM	L	WFO	28-Jan-94
S	SAN JUAN PR	OWNED	WFO	21-Feb-94
W	GREAT FALLS, MT	L	WFO	28-Feb-94
S	LAKE CHARLES, LA	OWNED	RFC	07-Mar-94
S	KNOXVILLE/TRI CITIES, TN	OWNED	WFO	07-Mar-94
C	ABERDEEN, SD	OWNED	WFO	28-Mar-94
W	MISSOULA, MT	OWNED	WFO	28-Mar-94
E	CHARLESTON, WV	L	WFO	31-Mar-94
C	MINNEAPOLIS/ST. PAUL, MN	L	RFC	01-Apr-94
E	PORTLAND, ME	OWNED	WFO	04-Apr-94
E	WILMINGTON, NC	OWNED	WFO	13-Apr-94
W	SALT LAKE CITY, UT	L	RFC	22-Apr-94
S	NASHVILLE, TN	OWNED	WFO	27-Apr-94
W	RENO, NV	OWNED	WFO	29-Apr-94
C	BISMARCK, ND	OWNED	WFO	01-May-94
E	ALBANY, NY	L	WFO	01-Jun-94
C	PUEBLO, CO	OWNED	WFO	17-Jun-94
W	EUREKA, CA	OWNED	WFO	20-Jun-94
W	PORTLAND, OR	L	WFO	22-Jun-94
E	ROANOKE, VA	L	WFO	30-Jun-94
C	SPRINGFIELD, MO	OWNED	WFO	22-Jul-94
C	QUAD CITIES, IA	L	WFO	29-Jul-94
C	PADUCAH, KY	OWNED	WFO	29-Jul-94
E	CHARLESTON, SC	OWNED	WFO	01-Aug-94
S	MIDLAND/ODESSA, TX	OWNED	WFO	25-Aug-94
C	CENTRAL ILLINOIS, IL	OWNED	WFO	31-Aug-94
W	SAN DIEGO, CA	L	WFO	02-Sep-94
S	JACKSONVILLE, FL	OWNED	WFO	03-Oct-94
S	SHREVEPORT, LA	OWNED	WFO	10-Oct-94
S	BROWNSVILLE, TX	OWNED	WFO	13-Oct-94
W	SAN JOAQUIN VALLEY, CA	OWNED	WFO	27-Oct-94
S	TAMPA BAY AREA, FL	OWNED	WFO	31-Oct-94
P	HONOLULU, HI	L	WFO	30-Nov-94

W	LAS VEGAS, NV	OWNED	WFO	02-Dec-94
C	MARQUETTE, MI	OWNED	WFO	07-Dec-94
C	GRAND RAPIDS/MUSKEGON, MI	OWNED	WFO	21-Dec-94
S	MIAMI, FL	OWNED	WFO	27-Dec-94
E	BUFFALO, NY	OWNED	WFO	01-Jan-95
C	NORTH PLATTE, NE	OWNED	WFO	12-Jan-95
W	POCATELLO/IDAHO FALLS, ID	OWNED	WFO	18-Jan-95
W	ELKO, NV	OWNED	WFO	24-Jan-95
C	DULUTH, MN	L	WFO	27-Jan-95
C	ALPENA, MI/NCLM	OWNED	WFO	30-Jan-95
A	ANCHORAGE, AK	OWNED	RFC	26-Feb-95
C	GRAND JUNCTION, CO	OWNED	WFO	26-Feb-95
W	FLAGSTAFF, AZ	OWNED	WFO	28-Feb-95
C	RAPID CITY, SD	OWNED	WFO	14-Mar-95
A	JUNEAU, AK	OWNED	WFO	29-Mar-95
C	RIVERTON, WY	OWNED	WFO	29-Mar-95
W	TUCSON, AZ	L	WFO	01-Apr-95
W	MEDFORD, OR	OWNED	WFO	10-Apr-95
W	PENDLETON, OR	OWNED	RFC	12-Apr-95
E	BURLINGTON, VT	L	WFO	24-Apr-95
A	FAIRBANKS, AK	L	WFO	26-Apr-95
C	LaCROSSE, WI	OWNED	WFO	26-Apr-95
W	SACRAMENTO, CA	L	RFC	28-Apr-95
W	SPOKANE, WA	OWNED	WFO	07-May-95
C	FARGO/GRAND FORKS, ND	OWNED	WFO	21-May-95
W	BILLINGS, MT	L	WFO	07-Jun-95
W	GLASGOW, MT	OWNED	WFO	15-Jun-95
C	DENVER, CO	L	WFO	01-Jul-95
S	SAN ANGELO, TX	L	WFO	01-Aug-95
S	EL PASO, TX	OWNED	WFO	02-Aug-95
S	CORPUS CHRISTI, TX	OWNED	WFO	16-Aug-95
E	GREENVILLE/SPARTANBURG	OWNED	WFO	01-Sep-95
C	JACKSON, KY	OWNED	WFO	01-Feb-97
C	NORTHERN INDIANA	OWNED	WFO	01-Sep-98
P	GUAM	OWNED	WFO	24-Feb-00
S	TALLAHASSEE, FL	L	WFO	24-Feb-02
E	CARIBOU	OWNED	WFO	02-Jul-02
S	HUNTSVILLE, AL	L	WFO	FUTURE
S	KEY WEST, FL	OWNED	WFO	FUTURE

APPENDIX B - Generic NWS Facilities Maintenance Organization



APPENDIX C - RIMS Cost Categories

Janitorial Services (JANSVCS). The Regions use actual service contract costs as a means of projection for sites under this type of contract. The schedule of payments is normally on an annual basis, requiring one procurement document for the entire fiscal year. For owned sites, this service includes general housekeeping chores such as cleaning, vacuuming, dusting, and wastepaper basket emptying. It does not generally include trash removal (from the premises), snow removal, or maintenance of any equipment. For leased sites, the janitorial service contract could include trash removal, snow removal, and some equipment maintenance. The contracts for owned sites are usually more expensive than those for the leased sites. For CONUS sites, these contracts range from less than $5,000 to more than $20,000.

Snow Removal Services (SNOWREMSVC). The affected Regions use actual costs incurred during previous seasons as a basis for anticipated costs in future seasons. The contract can be either seasonal or event-based, depending on the local weather pattern. For a seasonal contract, a base amount is paid regardless of whether it snows or not, with additional charges incurred for each snow event. The event-based contract is basically an on-call arrangement triggered by the occurrence of the snow event, and is generally used by sites that incur sporadic, infrequent snowfall. For CONUS sites, these contracts range from $250 to more than $10,000 per season.

Trash Removal Services (TRASHREMSV). The Regions use the actual trash removal contract costs incurred at those sites for which such contracts exist as the basis for future estimates. Depending on the size of the facility and its location, costs for this service range from $75 to $200 per month.

Security (SCTYSVC). To the extent applicable, these costs would be based on the actual agreement and extended as applicable. With recent emphasis on Homeland Security, items that would have previously been covered by this cost category are being picked up under that initiative.

Landscape (LANDSVCS). The Regions use actual costs incurred as the basis for future prediction. This cost category covers the basic landscaping and grounds upkeep contractual package which includes lawn maintenance, leaf removal, edging, seeding, and pesticide treatment. Although these costs can vary widely form site to site, $3,000 per year is estimated. This category is analogous to snow removal in the sense that Southern Region is out of line for obvious geographic reasons - landscape upkeep must be accomplished year round at most sites.

Roads/Parking (ROADSVCS). This category primarily addresses the WFO/RFC parking lots, but could extend to roads leading to and from other site locations, such as radar data acquisition (RDA), Upper Air Inflation Building (UAIB), Automated Surface Observing System (ABOS), and other buildings. Types of costs covered include:

> Sealing. Seal surface, re-stripe spaces, repair and/or replace wheel stops. The parking surface must be re-sealed periodically to prevent cracks from forming and extend the life

of the surface. The parking space markings must be repainted as a minimum when the surface is resealed, but as often as necessary to retain a usable level of visibility. Wheel stops occasionally are damaged due to carelessness, accidents and/or normal wear and tear. Costs are incurred on a three to five year cycle at $5,000 per job; an annualized estimate would be in the $1,500 to $2,000 range.

Pavement. Pavement is subject to normal weathering processes and routine wear and tear. The northern sites incur more severe damage (potholes, plow blade induced rutting and cracking, frost heaves, etc.). Costs are incurred on a 10-year cycle at $15,000 to $20,000 per job; an annualized estimate would be in the $1,500 to $2,000 range.

HVAC Contracts (HVACCONT). The Regions have arranged for HVAC contracts at several facilities. To the extent applicable, the estimates would be based on the actual agreement and extended as applicable. The actual agreement can vary greatly from site to site due to remoteness of location, availability of in-house support, scope of contract, and economic factors.

Services Contract. Self-explanatory. Under ideal circumstances, every site would be covered, to the degree necessary, by a service contract vehicle. For budget purposes, an estimate has been made for every modernized site, whether or not such a contract currently exists, in anticipation of eventually setting up the same. Annualized cost estimate: $5,000 to $15,000 per site.

Controls Services. The controls systems that govern the temperature levels, etc. are different from one site to the next and usually require a separate service contract from the HVAC system, if one is available at all. Annualized cost estimate: $1,000.

DDG Contracts (DDGCONT). The Regions have arranged for DDG contracts at several facilities. To the extent applicable, these costs would be based on the actual agreement and extended as applicable. The actual agreement can vary greatly from site to site due to remoteness of location, availability of in-house support, scope of contract, and economic factors. Annualized estimate: $2,500.

UPS Contracts (UPSCONT). The Regions have arranged for UPS contracts at several facilities. To the extent applicable, these costs would be based on the actual agreement and extended as applicable. The actual agreement can vary greatly from site to site due to remoteness of location, availability of in-house support, scope of contract, and economic factors. Generally speaking, the in-house staff is not trained to repair the UPS beyond basic troubleshooting/fault isolation and circuit board/battery replacement. Because of the relatively high cost, full service UPS contracts are avoided, and arrangements are made locally to cover emergencies only. The combined estimate of this cost category with UPSOTH is $3,000/year.

WFO Building Contracts (BLDGCONT). In addition to janitorial services, the buildings typically require other contractual help to remain functional.

Carpet/floor tile replacement. Carpet simply wears out and must be periodically replaced to maintain any sort of appearance standard. Floor tile replacement is less common and less frequent, but possible. Replacement can be expected on a 7-year cycle at $5,000/job. An annualized estimate would be in the $750 range.

Interior painting. To maintain a minimally acceptable work environment, painting must be accomplished every five to seven years. At $5,000/job, an annualized estimate would be in the $1,000 range.

Exterior lights. A variety of exterior lights surround the WFO building and other systems at a particular location. A $200/year allowance is estimated.

Furniture cleaning and replacement. Furniture in any office environment endures excessive wear and tear; furniture in a 24-hour operational environment experiences maximum deterioration. Although outright replacement of major items is covered elsewhere (in the NWS budget), a minimal allowance ($200/year) for routine repair and replacement of minor items is included in this cost category.

Facilities - General Contracts (FACGENCONT). The facilities complex consists of the building itself and all of the other mission support systems that are assigned. Some of these systems are covered by other NWS offices; others are not clearly assigned. The latter are picked up by the facilities maintenance program to ensure operational availability. Service contracts are used for the following:

Cabling. Cabling is one of the more labor intensive and invisible tasks associated with facilities modernization and upkeep. A $1000 annual allowance is estimated.

Bottled Water. Taken for granted as an inclusion, bottled water must be separately budgeted and paid for outside of the realm of utilities. The RIMS budget accommodates such costs at an annualized estimate of $600.

River Gages. These items collectively can average $1,000 per site per year and are not necessarily covered by other budgets/organizations.

NOAA Weather Radio (NWR) Tower Site Maintenance and Repair. Costs can vary. An estimate of $1,000 per site is included.

UAIBs. An estimate of $500 per year is included based on history to date.

Survival Shelter. For the two Regions that have these shelters, the maintenance costs are real and estimated at $5,000/year.

OPMAINTEQ. Western Region and Central Region (one site) own special equipment to access remote sites during winter. This cost category is included to cover the maintenance of Snowcat vehicles.

Cyclical Replacements (CYCREP). Cyclical replacements are those projects or equipment that are not annually recurring and are characteristically of a higher dollar value than the average annual category cost. To some extent, these costs are deferrable from year to year and unpredictable due to variances in usage, weather, and general wear and tear. This category is meant to cover larger (in both scope and monetary value), non-routine projects and is not redundant with any previously described categories.

Roof. Although it is predicted to occur late in the life cycle, roof replacement is an expensive reality, especially when incurred at multiple sites within a Region. Due to the compacted WFO construction schedule, the latter assertion is a probability (two-thirds of the WFOs were constructed within a 48-month window). Replacement cost: $50,000 every 20 Years. Even so, placing $2,500 in the budget, a 20+ year window is not deemed to be a sound budgeting technique.

DDG. All DDGs will eventually be replaced, some sooner than others. Replacement cost for one DDG is on the order of $35,000 to $40,000. Therefore, if averaged over 20 years, the site cost would be $1,750 to $2,000.

UPS Circuit Boards. Although identified above under UPSOTH, circuit boards range widely in price and life cycle. Certain of the more expensive components can be expected to fail with aging, requiring not only acquisition of the replacement component, but also the expertise to perform the maintenance action. Replacement cost: $15,000 to $20,000 every 10 years. Annualized estimate: $1,500 to $2,000.

Survival Shelter. Replacement of the shelter itself is a distinct possibility that must be considered. Replacement Cost: $15,000 to $20,000 every 10 years. Once again, it is not deemed appropriate to place an annual amount in the budget for this type of expense.

Furniture Replacement. Costs included here are for the major pieces and could be covered elsewhere within the NWS budget. This item is not redundant with the furniture repair mentioned earlier. Replacement cost: $100,000 every 15 years. Annualized cost: $7,500.

Capital Improvements (CAPIMP). Capital improvements are those projects that result in a net increase to the value of the asset. The most common occurrence to date is the upgrade of UAIBs. An annualized estimate of $5,000 is deemed reasonable, but must be based on site-specific projects on a case-by-case basis.

Landscape - Other (LANDOTH). The Regions use a combination of costs incurred for specific examples and estimates based on best judgement to arrive at an annual site cost for this category. As shown in the attachment, four subcategories historically incur costs:

Irrigation system. Sprinkler heads are frequently damaged. Typical costs are in the $300/year range.

Trees, shrubs, and other plants. These items typically require replacement due to harsh weather or other damage. Typical costs are in the $500/year range.

Drainage, fencing, and trash enclosure. These items can suffer damage due to weather, accident, and vandalism. Typical costs are in the $500/year range.

Concrete repair. Concrete also suffers damage due to weather, accident, and vandalism. Typical costs are incurred on a five-year cycle at $1,500 to $2,000; an annualized estimate would be in the $300 to $400 range.

Roads/Parking Other (ROADOTH). Non-contractual costs range from purchase of road/paving materials, such as gravel and sand. Annualized costs are estimated at $1,000.

HVAC Other (HVACOTH). Supplemental to the service contract, spare parts and replacement components are required, especially for those sites not under contract. Some contracts include these items.

Canisters, Belts, Filters. These are the most commonly replaced items and generally run $3,000 per site.

Compressors, bearings, fans. Less commonly replaced but nevertheless needed, these items average about $7,000 every 10 years, for an average of $700/year for budget purposes.

Window Units. Sometimes overlooked, these units average $300/year per site.

Vestibule Heaters. An estimate of $1,000 every 10 years is included, or an average of $100/year at each site.

Duct Heaters. An estimate of $500 every 5 years is included, or an average of $100/year at each site.

DDG - Other (DDGOTH). This cost category captures the costs of component/parts replacement and repairs that would not be covered by the DDG service contract. Components include filter, belts, batteries, and fuses. Repair candidates include the DDG building, fuel tank, and associated piping. To the extent that costs have been incurred in these areas, they are used as the basis for future projections. Annualized estimate: $2,500.

UPS Other (UPSOTH). This cost category captures the costs of component replacement, the most common of which are the batteries, fan motors, circuit boards, and fuses. See combined estimate above.

WFO Building Other (BLDGOTH). Several items are not serviceable by contract vehicle and must be handled by whatever means available.

Ceiling Tiles. Ceiling tiles occasionally need replacement due to leakage or human-induced damage. A $100/year allowance is estimated.

Doors. Not often considered a maintenance candidate, doors eventually require repair and/or, in extreme cases, replacement. At $500 every 10 years, an annualized estimate of $50 is deemed reasonable.

Appliances. It is not clear whether or not appliances belong under the Facilities Maintenance (FMAINT) umbrella. Nevertheless, appliances do not last forever, especially when used heavily. At $1,000 every 10 years, an annualized estimate of $100 is deemed appropriate.

Windows. Windows occasionally break due to weather or human-induced damage. However, the primary costs of concern here are those for winterizing. An annualized estimate of $50 is included.

Roof. Cleaning and servicing the flashing, as well as painting the coping are the primary known costs identified here. At $1,500 every 3 years, an annualized estimate of $300 is deemed reasonable.

Louvers, Vents, and Hoods. These items are subject to damage from neglect and the elements. An annualized estimate of $100 is deemed appropriate.

Water Heater. Water heaters and/or water heater elements can and do fail and must be replaced for sanitary and comfort purposes. Full replacement is in the $500 range every 5 to 10 years; an annualized estimate of $50 to $100 is deemed reasonable.

Light Bulbs, Ballasts. Although some janitorial service contracts include the costs for light bulb replacement, most do not. An annualized estimate of $300 is included.

Miscellaneous Exterior Building Repairs. All conceivable external building repairs cannot be separately identified and listed here; an estimate of $500 annually per site is deemed rational to cover these unknowns.

Miscellaneous Architectural Repairs. Those repairs made to sustain the architectural essence of the structure are included here, although no good examples are readily available. A $500 allowance is included.

Facilities General Other (FACGENOTH). Facilities "wild card" items not covered by service contract include:

Fire Extinguishers. To meet safety requirements, all fire extinguishers must be tested and serviced as necessary. Annualized NWS estimate: $750 to $1,000 per CONUS Region.

RDA Site Maintenance and Repair. Those costs not directly covered by RDA maintenance within other Office of Operational Systems (OPS) budgets are captured here. Annualized NWS estimate: $1000 per CONUS Region.

Office Equipment Maintenance and Repair. Although mentioned here, office equipment is deemed to be non-facilities related. It is not clear that the Regions treat this item as a facilities maintenance cost due to lack of clear traceability within the Financial Information Management and Accounting (FIMA) system.

Pump Septic Tank. Estimate $250 every 10 years; annualized estimate: $25 per tank.

Well Test and Chlorination. Those sites with wells must be tested and the water chlorinated on a recurring basis. Annualized estimate: $25.

Grinder Pump Maintenance and Repair. Several sites are equipped with a sewage system that requires a pair of grinder pumps to direct the sewage flow upward and outward from the building. The paired pumps are designed to be operationally redundant to ensure complete coverage in case of failure. Failure of one pump presents a risk during its restore/repair time period. Annualized estimate: $50.

Plumbing, Water Treatment Systems. Annualized estimate: $100/year.

Well Pumps. For those sites that have wells, the well pumps require attention to remain operational and reliable. Annualized estimate: $50.

Facilities Support Vehicles (FACSPTVEH). The Regions must lease vehicles from GSA to support the high volume of travel inherent in the facilities support mission. As a minimum, these vehicles are assigned to the Regional Headquarters and to each SFT, at an average cost of $7,000 per vehicle.

Facilities Travel (TRAVELFAC). The Regional Headquarters facilities personnel and SFTs spend a high percentage of time traveling to accomplish the maintenance mission:

SFTs. An SFT typically travels 36 weeks of the year at an average cost of $500 to $600 per week.

Equipment Specialists. Where they are assigned, the HVAC and Power System Specialists typically spend one week at each site within the Region per year at an average cost of $1,000 per visit.

Headquarters Personnel. Regional Headquarters personnel travel to selected sites, WSH, other Regional Headquarters, the Administrative Support Center (ASC), and training requiring one trip per person per month, $1000 per trip.

APPENDIX D - NWS Facilities Maintenance Budget
FY02 RIMS DATA

RIMS CATEGORY	EASTERN	SOUTHER	CENTRAL	WESTERN	ALASKA	PACIFIC	NHC	NWSH	TOTALS
JANSVCS	271250	216105	352000	189805	50600	14500	0	0	1094260
SNOWREMSVC	24558	0	65024	32000	7200	0	0	0	128782
TRASHREMSV	18820	19746	20000	36500	4280	0	0	0	99346
SCTYSVCS	46000	4200	0	24500	0	0	0	0	74700
LANDSVCS	55800	100099	115500	68000	7200	10500	0	0	357099
LANDOTH	15780	52300	80025	34000	0	0	0	0	182105
ROADSVCS	58000	32000	55011	47900	4000	0	0	0	196911
ROADOTH	30000	28000	17985	22800	0	0	0	0	98785
HVACCONT	148700	60141	128023	112000	4500	0	0	0	453364
HVACOTH	7500	65783	112071	55500	0	0	0	0	240854
DDGCONT	71851	120554	37999	27650	0	15800	0	0	273854
DDGOTH	68500	162500	32005	72450	0	0	0	0	335455
UPSCONT	0	98500	38988	0	4200	2500	0	0	144188
UPSOTH	190000	139500	57000	217500	3000	0	0	0	607000
BLDGCONT	845831	39853	68013	72600	0	16240	100600	0	1143137
BLDGOTH	154081	727450	177969	19200	6000	0	0	0	1084700
FACGENCONT	246800	208000	38000	93000	600	20000	50000	0	656400
FACGENOTH	246300	40700	93990	61850	0	0	29400	0	472240
OPMAINTEQ	0	0	0	155400	0	0	0	0	155400
CYCREP	400000	61520	371010	259928	0	20500	0	0	1112958
CAPIMP	100000	600000	275000	24000	0	0	0	0	999000
FACSPTVEH	113874	66000	55000	80650	0	0	0	0	315524
TRAVELFAC	100352	50000	75000	105079	8820	0	0	0	339251
DESDRA	0	150000	0	50979	0	0	0	0	200979
Totals:	3213997	3042951	2265613	1863291	100400	100040	180000	0	10766292

APPENDIX E - Facilities Maintenance Cost Accounting

This Appendix provides the current set of accounting codes used for tracking facilities maintenance costs. The WFO Maintenance budget covers non-labor related operational and maintenance costs necessary to sustain the WFO building and associated systems at a readiness level supportive of the NWS mission. The budget is almost totally allocated to the Regional level, and subsequently to the site level.

The WFO Maintenance budget is executed by the Regions using combinations of task codes and phase codes directly related to the type of cost, equipment, and/or function being performed. When combined with the other mandatory data fields in the financial system, these codes distinguish costs in a manner that is logical, understandable, and related to the budget.

FACILITIES MAINTENANCE MANAGEMENT PHASE CODES

		TASK CODES					
PHASE	**DESCRIPTION/TITLES**	**8M1JFS**	**8M1JMF**	**8M2LA7**	**BM1JAM**	**8M2LN7**	**8M1JUA**
2A	RESERVED FOR FUTURE USE						
2B	FACILITIES - GENERAL (OUT BUILDINGS)	X	X			X	
2C	HOUSING	X	X			X	
2D	DDG/EPG	X	X			X	
2E	RESERVED FOR FUTURE USE						
2F	OVERHEAD SUPPORT (TOOLS & SUPPLIES)	X	X	X	X	X	X
2G	WATER/SEWER	X	X			X	
2H	HVAC	X	X	X	X	X	
2I	NOT USED						
2J	JANITORIAL SERVICES	X	X				
2K	SECURITY	X	X	X	X	X	
2L	LANDSCAPE	X	X	X	X	X	
2M	GARAGES/SHELTERS	X	X				
2N	SPECIAL PURPOSE VEHICLES	X	X				
2O	NOT USED						
2P	ROADS/PARKING/SITE	X	X	X	X	X	X
2Q	DESIGN/DRAFTING	X	X			X	X
2R	TOWERS	X	X			X	
2S	SNOW REMOVAL	X	X			X	
2T	TRASH REMOVAL	X	X			X	
2U	UPS/ELECTRICAL	X	X			X	X
2V	VEHICLES	X	X				
2W	BUILDING - OTHER (WFO/WSO)	X	X			X	
2X	FURNITURE	X	X				
2Y	PEST CONTROL	X	X	X	X	X	X
2Z	RESERVED FOR FUTURE USE						
FT	TRAVEL	X	X				
3D	DDG/EPG PM	X	X	X		X	
3H	HVAC PM	X	X	X		X	
3U	UPS PM	X	X	X		X	
3X	DISPOSAL	X	X				
9B	RH: FACILITIES - GENERAL (OUT BUILDINGS)	X	X				
9D	RH: DDG/EPG	X	X				
9E	RH: SAFETY						
9F	RH: OVERHEAD SUPPORT (TOOLS & SUPPLIES)	X	X				X
9G	RH: WATER/SEWER	X	X				
9H	RH: HVAC	X	X				
9K	RH: SECURITY	X	X				
9L	RH: LANDSCAPE	X	X				
9N	RH: SPECIAL PURPOSE VEHICLES	X	X				
9P	RH: PARKING/ROADS/SITE	X	X				X
9Q	RH: DESIGN	X	X				
9R	RH: TOWERS	X	X				
9S	RH: SNOW REMOVAL	X	X				
9U	RH: UPS	X	X				
9V	RH: VEHICLES	X	X				
9W	RH: BUILDING - OTHER (WFO/WSO)	X	X				
9Y	RH: PEST CONTROL	X	X				X
9Z	RH: ENVIRONMENTAL						
Task Code Descriptions:							
8M1JFS	WFO Maintenance						
8M1JMF	WFO Maintenance Supplemental (Used when 8M1JFS Depleted)						
8M2LA7	NWS Owned ASOS Maintenance and Repair						
BMIJAM	FAA Owned ASOS Maintenance and Repair						
8M2LN7	NEXRAD Maintenance and Repair						
8M1JUA	Upper Air						
8M1JEC	Environmental Compliance (No Phase Codes)						
8M1JSY	Safety/Health (No Phase Codes)						

APPENDIX F - Requirements Determination Task Analysis

This appendix is included to define and bound the scope of the program by establishing minimum requirements. It is included for reference and to ensure consistency, since it will serve as the basis for development of AWPs and as an input source for the work order based management system.

MAINTENANCE CANDIDATE	Task Description	Maint-enance Concept	Task Frequency	Annual Hours
OFFICE SITE				
	Perform Condition Survey	G	Annual	16.0
INTERIOR				
	Conduct Safety Inspection	G	Annual	8.0
	Conduct Environmental Inspection	G	Annual	8.0
	Clean/Service (Janitorial, Trash Pickup)	C	Daily	8
Ceiling				
	Repair, Remove/Replace Tiles	G	Annual	8.0
Walls				
	Repair	C	Annual	8.0
	Service, Paint	C	5 Year Cycle	N/A
	Service, Replace Wall Coverings	C	5 Year Cycle	N/A
Drapes/Blinds				
	Clean, Repair	G	Annual	3.0
Floors/Carpets				
	Replace	C	7 Year Cycle	N/A
Doors				
	Repair	G	Annual	8.0
	Replace	G	10 Year Cycle	N/A
Appliances				
	Replace Refrigerator	G	10 Year Cycle	N/A
	Replace Microwave	G	10 Year Cycle	N/A
EXTERIOR				
	Service/Caulk/Weatherstrip	G	Annual	16.0
Roof				
	Repair Roof	G	5 Year Cycle	N/A
	Remove/Replace Roof	C	20 Year Cycle	N/A
Walls				
Doors				
	Repair Door	G	5 Year Cycle	Incl
	Remove/Replace Door	G	10 Year Cycle	Incl
Windows				
	Repair Window	G	Unscheduled	8.0
	Remove/Replace Window	G	10 Year Cycle	Incl
Lighting, Exterior				
	Generic Repair	G	Annual	4.0
HVAC SYSTEM				
	Troubleshoot/Fault Locate/Monitor	G	Quarterly	16
	Routine Maintenance (Summarized)	G	Quarterly	32.0
	Preventive Maintenance (Contract)	G	Annual	16.0
	Generic Major Repair	G	5 Year Cycle	24.0
	Control System Repair	G	5 Year Cycle	24.0
Air Handling Unit				
	Repair, Remove/Replace Filter	G	Quarterly	Incl

MAINTENANCE CANDIDATE	Task Description	Maint-enance Concept	Task Frequency	Annual Hours
	Repair, Remove/Replace Coil	G	Unscheduled	Incl
	Repair, Remove/Replace Distributor	G	Unscheduled	Incl
	Repair, Remove/Replace Blower	G	Unscheduled	Incl
	Repair, Remove/Replace Valve	G	Unscheduled	Incl
Condenser				
	Service, Charge with Refrigerant	G	Quarterly	Incl
	Service, Clean Coils	G	Quarterly	Incl
	Repair, Remove/Replace Thermostat	G	Unscheduled	Incl
	Repair, Remove/Replace Pressure Switch	G	Unscheduled	Incl
	Repair, Remove/Replace Solenoid Valve	G	Unscheduled	Incl
	Repair, Remove/Replace Filter-Drier	G	Unscheduled	Incl
Packaged Air Cond (PAC) Unit				
	Fault Locate	G	Unscheduled	Incl
	Service, Remove/Replace Filters	G	Unscheduled	Incl
	Repair, Remove/Replace Humidifier Lamp	G	Unscheduled	Incl
	Repair, Remove/Replace Humidifier Canister	G	Unscheduled	Incl
Remote Control Box				
	Repair, Remove/Replace Relay	G	Unscheduled	Incl
	Repair, Remove/Replace Indicator Light	G	Unscheduled	Incl
	Repair, Remove/Replace Switch	G	Unscheduled	Incl
Variable Air Volume (VAV) Unit				
	Repair, Remove/Replace Pneumatic Actuator	G	Unscheduled	Incl
	Repair, Remove/Replace Reset Controller	G	Unscheduled	Incl
Fan Terminal Unit (FTU)				
	Repair, Remove/Replace Pneumatic Actuator	G	Unscheduled	Incl
	Repair, Remove/Replace Reset Controller	G	Unscheduled	Incl
Humidifiers				
	Service, Clean Steam Generator	G	Quarterly	Incl
	Repair, Remove/Replace Steam Generator	G	Unscheduled	Incl
	Repair, Remove/Replace Pressure Switch	G	Unscheduled	Incl
Duct Heaters				
	Service, Clean	G	Annual	Incl

MAINTENANCE CANDIDATE	Task Description	Maint-enance Concept	Task Frequency	Annual Hours
	Repalce	G	Unscheduled	Incl
Exhaust Fan				
	Service, Clean Blower	G	Quarterly	Incl
	Lubricate Motor	G	Quarterly	Incl
Transfer Air Fan				
	Service, Clean Blower	G	Quarterly	Incl
	Lubricate Motor	G	Quarterly	Incl
Convector Heater				
	Repair, Remove/Replace Thermostat	G	Unscheduled	Incl
Thermostat & Controls				
	Fault Locate Controls	G	Unscheduled	Incl
Global Control Module (GCM)				
	Remove/Replace GCM	G	Unscheduled	Incl
Global Control Satellite (GCS)				
	Remove/Replace GCS	G	Unscheduled	Incl
Direct Digital Controller				
	Remove/Replace Controller	G	Unscheduled	Incl
Safety Interlocks				
Smoke Detectors				
	Remove/Replace Smoke Detector	G	Unscheduled	Incl
Pressure Switch				
	Remove/Replace Pressure Switch	G	Unscheduled	Incl
Flow Switch				
	Remove/Replace Flow Switch	G	Unscheduled	Incl
Temperature Sensors				
	Remove/Replace Temperature Sensor	G	Unscheduled	Incl
Alarm and Indication Panel				
	Fault Locate Panel	G	Unscheduled	Incl
EMERGENCY POWER SYSTEM (EPS)				
DDG				
	Inspect, Service, Repair (Generic)	G	Quarterly	48.0
	Troubleshoot/Fault Locate/Monitor	G	Quarterly	16.0
	Repair, Remove/Replace Drive Belt	G	Unscheduled	Incl
Generator Disribution Panel				
	Repair, Remove/Replace Ckt Bkr	G	Unscheduled	Incl
Fuel Containment				

MAINTENANCE CANDIDATE	Task Description	Maint-enance Concept	Task Frequency	Annual Hours
Enclosure				
	Inspect	G	Quarterly	Incl
	Service, Drain/Clean Out	G	Semiannual	Incl
DDG Shelter				
Alternator				
	Remove/Replace	G	Unscheduled	Incl
Fuel Pump				
	Remove/Replace	G	Unscheduled	Incl
Oil Pump				
	Remove/Replace	G	Unscheduled	Incl
Thermostat				
	Remove/Replace	G	Unscheduled	Incl
Turbocharger				
	Remove/Replace	G	Unscheduled	Incl
Water Pump				
	Remove/Replace	G	Unscheduled	Incl
Starter Motor				
	Remove/Replace	G	Unscheduled	Incl
Diesel Fuel Tank				
	Inspect Fuel Tank	G	Monthly	Incl
	Service, Paint	G	Annual	8.0
SPCCM				
	Repair, Remove/Replace Detectors	G	Unscheduled	Incl
	Repair, Remove/Replace Alarm	G	Unscheduled	Incl
Battery Charger				
	Remove/Replace Battery Charger	G	Unscheduled	Incl
Battery Heaters				
	Remove/Replace Battery Heater	G	Unscheduled	Incl
Engine Heater				
	Remove/Replace Engine Heater	G	Unscheduled	Incl
Automatic Transfer Switch				
	Remove/Replace Switch Assembly	G	Unscheduled	Incl
Switch Assembly				
	Remove/Replace Switch Assembly	G	Unscheduled	Incl
Control Assembly				
	Remove/Replace Control Assembly	G	Unscheduled	Incl
Battery Charger				
	Remove/Replace Battery Charger	G	Unscheduled	Incl
Uninterruptible Power Supply (UPS)				
	Inspect	G	Quarterly	5.0
	Fault Locate	G	Annual	16
	Service	G	Unscheduled	Incl
	Repair, Remove/Replace Battery	G	4 Year Cycle	N/A
	Replace Board (Generic)	G	2 Year Cycle	N/A
Power				

MAINTENANCE CANDIDATE	Task Description	Maint-enance Concept	Task Frequency	Annual Hours
Semiconductor Module				
Thyristor Rectifier				
	Remove/Replace Rectifier	G	Unscheduled	Incl
Transistor Inverter				
	Remove/Replace Inverter	G	Unscheduled	Incl
Thyristor Switch (SBS)				
	Remove/Replace Switch	G	Unscheduled	Incl
Manual Maintenance Bypass				
	Remove/Replace Switch	G	Unscheduled	Incl
SBS Input Switch				
	Remove/Replace Switch	G	Unscheduled	Incl
Inverter Output Transformer				
	Remove/Replace Transformer	G	Unscheduled	Incl
PLUMBING				
	Generic Breakdown	G	5 Year Cycle	N/A
Hot Water Heater				
	Service, Drain and Flush	G	Quarterly	Incl
	Fault Locate	G	Unscheduled	Incl
	Repair, Remove/Replace Heating Element	G	Unscheduled	Incl
Water Cooler				
	Provide Bottled Water	C	Annual	N/A
Fixtures (Toilet, Sinks)				
Water Softener				
Water Treatment Plant				
Water Distribution System				
	Inspect Water Distribution System	G	Quarterly	Incl
Sanitary Sewage System				
	Inspect Sewage System	G	Quarterly	Incl
Well				
Well Pump	Service/Replace	G	4 Year Cycle	N/A
ELECTRICAL				
Panel Boards				
	Inspect	G	Annual	4.0
	Service, Tighten Lugs	G	Annual	1.0
Switchboards				
Light Fixtures -				

MAINTENANCE CANDIDATE	Task Description	Maint-enance Concept	Task Frequency	Annual Hours
Interior				
	Repair, Remove/Replace Bulbs	G	Monthly	24.0
FIRE DETECTION SYSTEM				
	Inspect/Test	G	Quarterly	4.0
	Repair, Remove/Replace Smoke Detectors	G	Unscheduled	2.0
Fire Extinguisher				
	Inspect/Service/Test	G	Quarterly	4.0
	Replace	G	Unscheduled	8.0
LIGHTNING PROTECTION/GROUNDING				
	Inspect/Test Lightning Protection	G	Annual	2.0
INSTRUMENT PLOT/EQUIPMENT PADS				
GROUNDS				
Parking				
	Service, Clear Snow	C	Unscheduled	8.0
	Resurface, Reseal & Stripe	C	3 Year Cycle	N/A
Access Road				
Sidewalk				
Landscape				
Lawn				
	Service, Mow Lawn	C	Weekly	
Trees/Shrubs				
Irrigation System				
Trash Enclosure				
Equipment Pads & Towers				
Storm Drainage System				
	Service, Pump Out Manholes	C	Quarterly	32.0
FENCING				
	Inspect	G	Weekly	Incl
	Repair	G	Annual	Incl
DDG STORAGE BUILDING				
	General Repair/Upkeep	G	Annual	8.0

MAINTENANCE CANDIDATE	Task Description	Maint-enance Concept	Task Frequency	Annual Hours
UPPER AIR INFLATION BUILDING				
	General Repair/Upkeep	G	Annual	8.0
STRUCTURE				
Doors				
	Repair	G	Unscheduled	Incl
DOME				
	Service, Paint	G	3 Year Cycle	N/A
OBSTRUCTION LIGHTS				
	Remove/Replace Lights	G	Unscheduled	Incl
GROUNDS	No Tasks Predicted			
SIGNAGE	No Tasks Predicted			
FENCING	No Tasks Predicted			
LANDSCAPING				
	Service, Lawn Mowing	G	Unscheduled	Incl
HYGROGEN GENERATOR				
HYDROGEN BOTTLES				
CABLES - POWER & SIGNAL				
RAILINGS				
HELIUM				
ROAD/TURNAROUND				
RADAR SITES				
	Inspect Radar Sites	G	Weekly	Incl
TOWER				
	Service, Paint (Obstruction)	G	5 Year Cycle	N/A
RADOME				
	Service, Paint	G	3 Year Cycle	N/A
ROADS & PARKING				
	Service, Remove Snow	G	Unscheduled	Incl
	Maintain Roads (Remote)	C	Annual	N/A
	Resurface, Regrade (Remote)	C	5 Year Cycle	N/A
CABLES - POWER & SIGNAL	Inspect	G	Unscheduled	
LANDSCAPING				
	Service, Weed Control	G	Quarterly	Incl
HVAC				
	General Repair	G	Quarterly	8.0
	Replace	G	5 Year Cycle	N/A
GENERATORS				
	General Repair	G	Quarterly	48.0

MAINTENANCE CANDIDATE	Task Description	Maint-enance Concept	Task Frequency	Annual Hours
ASOS SITES				
	General Inspect/Repair	G	Quarterly	32.0
	Relocate Site (See Region HQ)	N/A	N/A	N/A
	Service, Remove Snow	G	Unscheduled	Incl
LANDSCAPING	Included Above			
TOWER	Included Above			
FENCING	Included Above			
NWR SITES				
	General Inspect/Repair	G	Quarterly	32.0
	Relocate Site (See Region HQ)	N/A	N/A	N/A
GENERATORS				
	General Inspect/Repair	G	Quarterly	Incl
REMOTE SENSING EQUIPMENT				
	Inspect/Repair/Replace	G	Unscheduled	8.0
	Relocate (See Region HQ)	N/A	N/A	N/A
REMOTE SURVIVAL SHELTER				
	Maintain/Winterize	G	Unscheduled	8.0