



Grand Coulee Power Office Review of Staffing and Processes

Prepared for:
**United States Bureau of Reclamation
Grand Coulee Power Office**



Date:
April 27, 2012

Grand Coulee Power Office – Review of Staffing and Processes

Document Version Control and Revision History

Date	Version	Description	Author(s)
Sept. 14, 2011	1	Interim Version, End of Task 1	MWH
Jan. 11, 2012	2	Interim Version, End of Task 2	MWH
Feb. 9, 2012	3	Interim Version, Revised Task 2	MWH
Mar. 26, 2012	4	Final Draft, Pre-Implmt. Workshops	MWH
Apr. 27, 2012	5	Final	MWH



Grand Coulee Power Office – Review of Staffing and Processes

This page intentionally left blank.

Grand Coulee Power Office – Review of Staffing and Processes

Contents

1.0	Executive Summary.....	1
2.0	Introduction	6
2.1	Background	6
2.2	Purpose of Study.....	6
2.3	Study Methodology.....	7
2.4	Report Approach and Format	9
3.0	Current Organization	11
3.1	Overview	11
3.2	Risks of No Action	17
3.2.1	Asset Investment Planning Tool.....	17
3.2.2	AIP Tool Inputs	18
3.2.3	Scenarios for Grand Coulee Risk Analysis	20
3.2.4	Results.....	22
3.3	Baseline Risk Assessment.....	23
3.4	Functional Group Assessments	24
3.4.1	Administration	25
3.4.2	Budget.....	35
3.4.3	Cultural Resources (Archaeologist).....	37
3.4.4	Engineering	39
3.4.5	Fire & Physical Security	44
3.4.6	Hungry Horse	47
3.4.7	Maintenance	57
3.4.8	NERC/WECC Compliance.....	65
3.4.9	Operations	67
3.4.10	Project Delivery.....	70
3.4.11	Public Affairs	74
3.4.12	Safety	76
4.0	Staffing Recommendations under Current Organization	79
4.1	Overview	79
4.2	Residual Risks vs. Baseline	80
4.3	Functional Group Recommendations	82
4.3.1	Administration	83

Grand Coulee Power Office – Review of Staffing and Processes

4.3.2	Budget	84
4.3.3	Cultural Resources (Archaeologist)	85
4.3.4	Engineering	86
4.3.5	Fire & Physical Security	87
4.3.6	Hungry Horse	87
4.3.7	Maintenance	88
4.3.8	NERC/WECC Compliance.....	95
4.3.9	Operations	96
4.3.10	Project Delivery	97
4.3.11	Public Affairs	98
4.3.12	Safety	99
5.0	Lessons Learned from Benchmarking Conversations	100
5.1	Approach	100
5.2	Conversation Summaries	100
5.2.1	BC Hydro	100
5.2.2	Manitoba Hydro	101
5.2.3	Chelan County Public Utility District	101
5.2.4	McNary Dam	101
5.3	Common Themes Observed.....	102
6.0	Recommendations for Optimized Organization	103
6.1	Overview	103
6.2	Residual Risks vs. Baseline	108
6.3	Organization Structure Recommendations	110
6.4	Functional Group Recommendations	112
6.4.1	Administration	112
6.4.2	Budget	116
6.4.3	Cultural Resources (Archaeologist)	118
6.4.4	Engineering	119
6.4.5	Fire & Physical Security	122
6.4.6	Hungry Horse	124
6.4.7	Maintenance	126
6.4.8	NERC/WECC Compliance.....	129
6.4.9	Operations	130
6.4.10	Project Delivery	132



Grand Coulee Power Office – Review of Staffing and Processes

- 6.4.11 Public Affairs 135
- 6.4.12 Safety 137
- 6.4.13 Enterprise Planning (*Recommended New Group*) 138
- 6.5 Systems Recommendations 139
- 7.0 Implementation Planning 147
- 8.0 Conclusion..... 147

Exhibits

- Exhibit 1 – Organizational Chart for Existing Organization (as of July 17, 2011)
- Exhibit 2 – Recommended Organization Chart for Optimized Organization
- Exhibit 3 – Process Maps

Appendices

- Appendix 1 – Hiring Strategies and Onboarding Review
- Appendix 2 – Letter from D. Murillo to D. Carriere, 24-May-2006
- Appendix 3 – Detailed tasks lists for Maintenance and Operations
- Appendix 4 – Grand Coulee Project Management Process, 26-Nov-2010
- Appendix 5 – Summary of Data Analysis Methodology
- Appendix 6 – Notes from Benchmarking Conversations
- Appendix 7 – Summary of High Level Systems Review
- Appendix 8 – Staff Survey Analysis
- Appendix 9 – Implementation Planning Workshop Summary



Grand Coulee Power Office – Review of Staffing and Processes

This page intentionally left blank.

Grand Coulee Power Office – Review of Staffing and Processes

1.0 Executive Summary

The Grand Coulee Power Office (GCPO), manager of the 6,809-MW Grand Coulee Dam and 428-MW Hungry Horse Dam, authorized an independent, comprehensive study to assess the current staffing levels, organizational structure, and business processes of the GCPO, and propose an optimized GCPO organization, appropriately structured and staffed to meet long-term operations and maintenance (O&M) and capital needs in an efficient manner.

The study commenced as the GCPO begins a transition from a primarily-O&M focus to a period of significant capital improvements and upgrades. The GCPO is preparing for a major 10-year capital improvement program. Concurrently, they seek to improve upon their preventive maintenance approaches to better ensure the reliability of the existing and newly-constructed critical facilities, recognizing that even without the addition of *capital* projects to the current workload, keeping up with required *routine* O&M activities has proven increasingly challenging. Upon starting the study, the GCPO identified the following trends in its routine performance:

- Inconsistent compliance with Facilities Instructions, Standards, and Techniques (FIST) requirements and best practices
- Increasing ratio of corrective to preventive maintenance, beyond FIST guidelines
- Known resource-driven bottlenecks in delivery of routine activities
- Increasing routine workload due to newly-imposed requirements (e.g., NERC/WECC compliance)
- Growing backlog of routine work (including craft work and engineering support)
- Historical trend of under-running budgets due to staff limitations and vacancies

Independent of the ramp-up in capital work, these trends pose a risk to the GCPO’s ability to meet its mission for the U.S. Bureau of Reclamation (Reclamation) and its many diverse stakeholders. If left unaddressed, the likelihood of future unit outages, lost generation, and decreased equipment availability would increase year after year. The addition of a major capital improvement program only adds stress to an already strained workforce. Therefore, the GCPO authorized MWH to conduct an independent, third-party assessment of the organization’s staffing, structure, processes, and supporting systems. The study was divided into three phases, as summarized in Figure ES - 1.

Task 1	Task 2	Task 3
Assessment of Current Organization	Staffing Analysis under Current Organization	Analysis of Optimized Organization
<ul style="list-style-type: none"> • Review the current GCPO organization and business processes • Understand current and future workload • Collect quantitative data to support future-task analysis • Identify preliminary hypothesized recommendations for future-task verification 	<ul style="list-style-type: none"> • Analyze quantitative data from Task 1 • Recommend staffing to meet current and future workload under current organization and processes • Analyze risks of no action, baseline risks • Analyze residual risk profile if only adjusting staffing levels 	<ul style="list-style-type: none"> • Facilitate management-level discussions with peer projects to benchmark organization, performance, and practices • Analyze quantitative data from Task 1 • Recommend optimized organization (structure, staffing, processes) • Analyze residual risk profile
6 months	3 months	3 months

Figure ES - 1 – Staffing Study Phases

Over the course of the year-long study, MWH employed a variety of qualitative and quantitative approaches to develop, analyze, and support its recommendations. Qualitative methods included workshops and interviews with various cross-sections of GCPO staff, survey distribution and analysis, benchmarking comparisons to peer organizations' best practices, and in-depth reviews of various GCPO and Reclamation documents, manuals, and guidelines. Quantitative analyses utilized historical time-keeping data, historical and projected work order performance information, capital and routine workload projections, historical head counts, employee retention/attrition data, and employee age/tenure information. Collectively, these methods provide for thorough, data-based recommendations aimed at preparing the GCPO for near-term and long-term success.

In Task 1, the qualitative analysis identified nearly 80 findings specific to the various GCPO functional groups, as well as some findings that apply across the entire organization. For each of these findings, the study provides a corresponding recommendation that collectively help to transform the GCPO into an enhanced organization better prepared for the future. Complete descriptions of these findings and recommendations are included in the report; Table ES - 1 presents a summary of the enterprise-wide findings and recommendations.

Key Findings and Challenges	Recommendations
1. Large backlog of work	1. Quantify the work, estimate the effort, and increase staff accordingly
2. Lack of organizational alignment	2. Establish organizational priorities and implement revised organizational structure
3. Challenges in attracting and retaining staff	3. Adjust the hiring strategies
4. Insufficient organizational-level planning	4. Establish centralized planning group
5. Limited ownership of projects from start to finish	5. Establish Project Delivery organization integrated with Engineering with defined governance, life cycle, roles and responsibilities, and standard practices
6. Inconsistent and insufficient use of CARMA	6. Leverage full capabilities of CARMA system for all work, all functional groups
7. Limited transition planning and knowledge transfer	7. Develop a knowledge strategy and information capture approach
8. Ineffective and uncoordinated training	8. Improve training program under a centralized Training Officer
9. Insufficient or ineffective coordination with external partners	9. Set expectations, track performance, and implement a document management system

Table ES - 1 - Summary of Enterprise-wide Findings and Recommendations

In Task 2, the quantitative analysis determined the staffing levels required to meet current and future workload, assuming no changes to current organization structure or processes – how many employees are required if the only change the GCPO makes is to increase its staff levels? As shown in Figure ES - 2, total authorized positions as of July 2011 were 411, excluding the 55 Personnel Security employees (this functional group of the GCPO was excluded from the scope of the staffing study). Considering vacancies and part-time employment, the GCPO actually only employed 355 full-time equivalents (FTEs) in 2011. Quantitative analysis performed in Task 2, based on workload projections, historical trends, and consideration of best practices currently not being performed, resulted in the staffing levels shown in Figure ES - 2 for future years 2013 and beyond. As shown in the figure, these data-supported projections indicate a peak need of 546 FTEs, again excluding the Personnel Security group. Adding these 55 Personnel Security employees to the projected peak need of 546 FTEs shown in Figure ES - 2 results in a total projected staffing requirement for the GCPO of 601 employees, assuming no changes to current organization structure or processes.

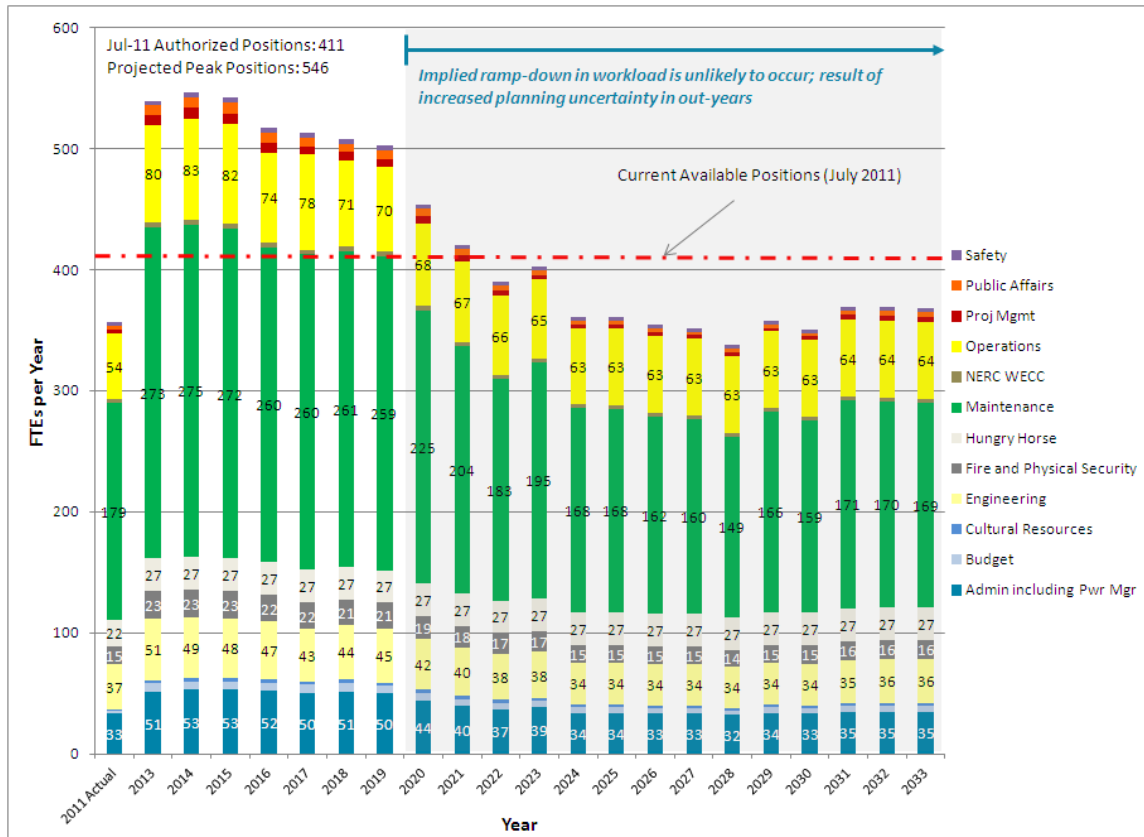


Figure ES - 2 - Projection of FTEs Required by Year under Current Organization, GCPO

In Task 3, the recommendations developed in Task 1 were integrated with the outcomes of the quantitative analyses performed in Task 2 to develop the envisioned optimized GCPO organization. Recommendations from Task 1 were finalized, considering additional lessons gathered over the course of the study and benchmarking conversations conducted with peer organizations. A revised organization structure was developed for the optimized organization, aimed at addressing key findings across the organization (e.g., need for enterprise-wide planning, improved training, and more structured project management). Staffing levels were developed for each functional group within this recommended organization structure based on synthesis of Task 1 qualitative analyses and Task 2 quantitative results. This organization structure, depicted in Figure ES - 3, totals 609 positions (including the 55 Personnel Security employees), a 31% increase over July 2011 authorized positions.

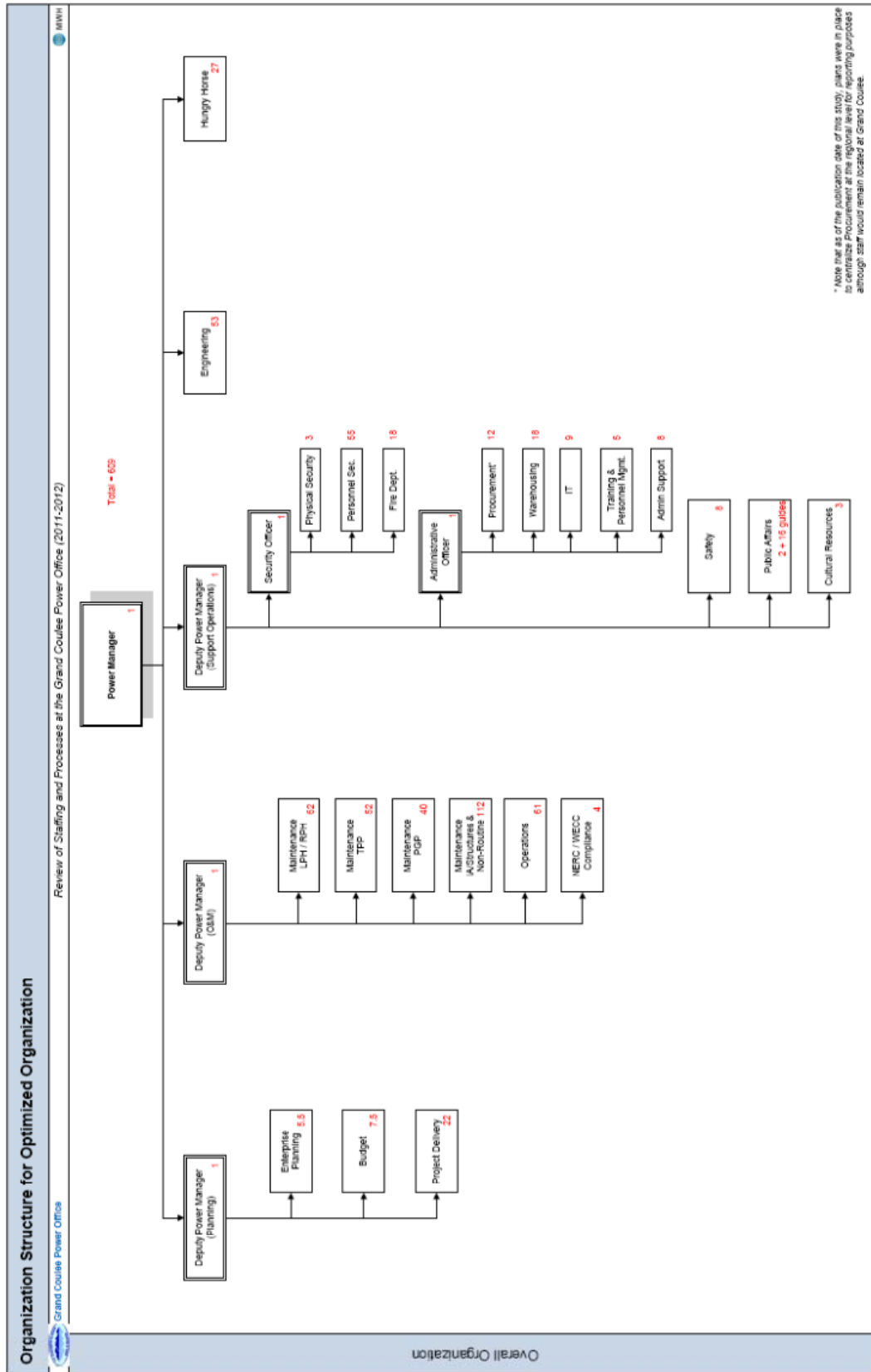


Figure ES - 3 - Organization Structure for Optimized GCPO (See Exhibit 2 for enlarged & detailed structure)

Thus, the staffing study arrived at two possible staffing scenarios to address the challenges facing the GCPO today. The first, developed during Task 2 of the study, suggests simply increasing staffing to 601 positions, an increase of 135 positions over the 466 positions authorized as of July 2011, inclusive of Personnel Security employees. The second, developed during Task 3 of the study, suggests implementing an optimized organization, adjusting organization structure, processes, and supporting systems *in addition to* increasing staffing levels to 609 positions. While these two scenarios arrived at nearly identical total staffing levels, one provides a greater benefit to the GCPO in terms of risk reduction and preparing for long-term success.

Figure ES - 4 summarizes the risk analysis performed in parallel to the staffing analyses of Tasks 2 and 3. First, in Task 2, a risk assessment was conducted for the current organization – the “no-action” or “baseline” case – to establish a basis of comparison for staffing recommendations developed as part of this study. Second, a risk assessment, relative to the baseline case, was performed assuming GCPO only increases staffing (to 601 total positions) as determined by the Task 2 analysis. It was determined that simply adding staff reduces some risks, but likely not enough to justify the investment in a larger labor force. Third, a final risk assessment, again relative to the baseline case, was performed assuming GCPO implemented the optimized organization as determined by the Task 3 analysis. As shown in Figure ES - 4, the optimized organization substantially reduces the risk profile of the GCPO, indicating the benefit gained by the GCPO, Reclamation, and its stakeholders from a larger, more efficient, and properly structured workforce.

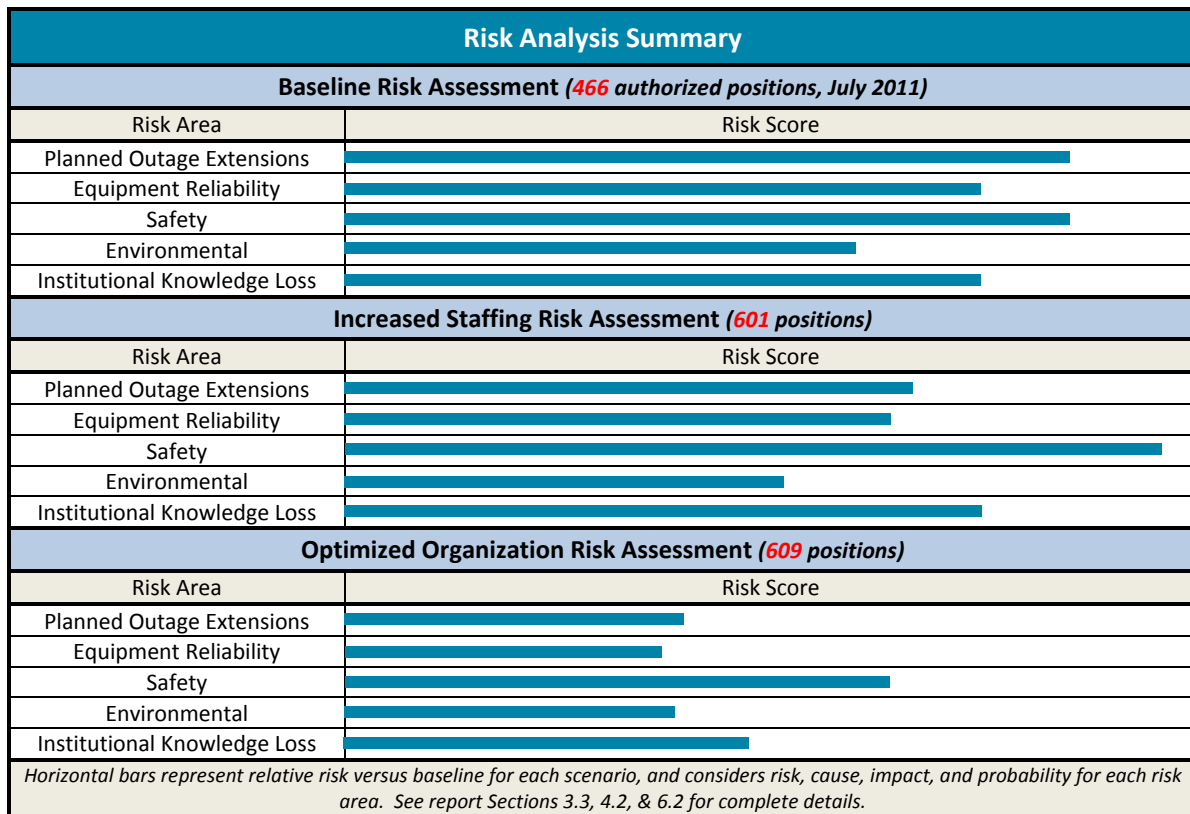


Figure ES - 4 - Risk Analysis Summary

These analyses should be used by decision makers to consider the pros and cons of increased staffing and organizational changes, armed with a clearer understanding of the risks associated with maintaining the status quo.

2.0 Introduction

2.1 Background

The Grand Coulee Power Office (GCPO) manages the 6,809-MW Grand Coulee Dam in central Washington and the 428-MW Hungry Horse Dam in northwestern Montana. Both facilities are owned and operated by the U.S. Bureau of Reclamation (Reclamation), and were originally constructed to support Reclamation's mission to irrigate and reclaim land to promote the economic development of the western United States.

Grand Coulee and Hungry Horse are within Reclamation's Pacific Northwest Region (PNR), headquartered in Boise, Idaho. The PNR centralizes and supports many administrative operations common across the 54 reservoirs and associated facilities within its domain, including contracting, procurement, budget and finance, human resources, and construction management. The PNR is one of five regions that are part of Reclamation's Operations Division. Reclamation is the largest wholesale water supplier and the second largest producer of hydroelectric power in the United States, with operations and facilities in the 17 Western States. Its facilities also provide substantial flood control, recreation, and fish and wildlife benefits. Overall, Reclamation's mission is to assist in meeting the increasing water demands of the West while protecting the environment and the public's investment in these structures.

As part of the Federal Columbia River Power System (FCRPS), the power generated from Grand Coulee and Hungry Horse is marketed and distributed by the Bonneville Power Association (BPA). Using revenues collected through power rates, BPA provides funding to the FCRPS plants to offset the costs allocated to the power generating portion of the hydro projects. This funding is divided into operations and maintenance (O&M) and capital. O&M costs are ongoing costs to the hydro project for routine operations and maintenance; capital costs are costs associated with initial construction and any new major rehabilitations or upgrades to the hydro project. BPA funds Grand Coulee for 92.1% of its O&M costs and 79.7% of its capital costs, and funds Hungry Horse for 70.0% of its O&M costs and 70.0% of its capital costs. The remainder of the O&M and capital costs for Grand Coulee and Hungry Horse are covered by Federal funding and other entities, such as associated irrigation districts.

The GCPO is responsible for all aspects of the facilities including power generation, flood control, irrigation, recreation, and public outreach.

2.2 Purpose of Study

As is common across most hydro facilities, projects oscillate over their life span between an O&M focus and a capital improvement focus. Clearly, original construction is a capital-intensive endeavor at the front-end of the project life cycle. Once complete, the project enters an extended period of O&M to realize the benefit of the facility and maintain it for future decades. With time, however, major improvements or upgrades are required, swinging the pendulum back toward a capital mindset. And yet again, once such modifications are complete, the project transitions back to an O&M mode. And so on.

With each of these swings of the pendulum comes a corresponding change in the managing organization and supporting staff. This can be a gradual, implicit change in culture or an explicit ramp-up/staff-down with a corresponding revision to the organizational chart. In either case, there is a need to find the balance between continuing with routine O&M activities and supporting non-routine capital projects.

Today, the GCPO finds itself on the cusp of a major swing of the pendulum, from a primarily-O&M mindset to a period of capital improvements and upgrades. The GCPO is preparing to embark on a major 10-year capital improvement program. Concurrently, they are seeking to improve upon their preventive maintenance patterns to better ensure the longevity of the existing and newly constructed critical facilities, recognizing that even without the addition of *capital* projects to the current workload, keeping up with required *routine* O&M activities has proven increasingly challenging. Additionally, new tasks, such as compliance with North American Electric Reliability Corporation/Western Electricity Coordinating Council (NERC/WECC) regulations, have been stacked upon the same staff in recent years, further expanding their already large workload and stretching the existing staff.

Figure 1 below conceptually depicts the ramp-up in capital work and the impact this will have on existing staff. For the past 14 years, the combined capital and O&M budget to be managed has been equivalent to approximately \$270,000 per employee. However, going forward (assuming existing staffing levels), that figure more than doubles to greater than \$550,000 per employee.

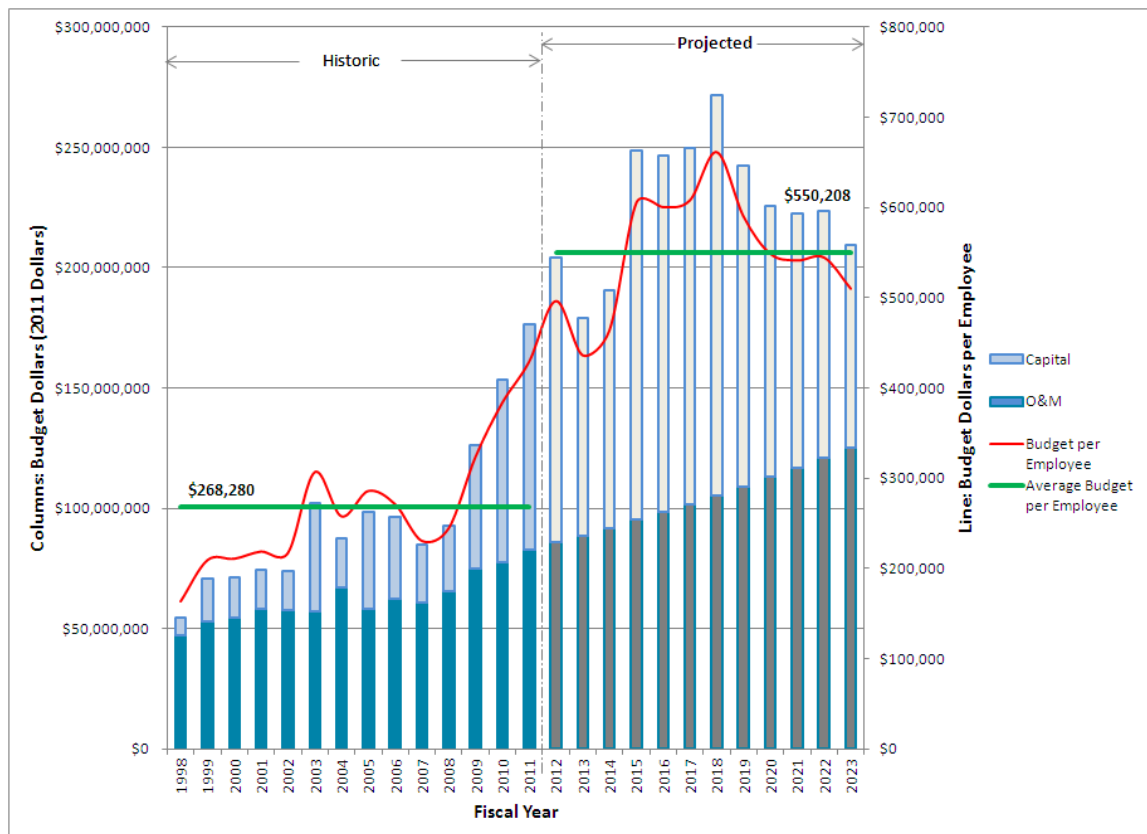


Figure 1 - Budget per Employee, Historical and Projected

To address this situation, the GCPO authorized this study to assess the current staffing levels, organizational structure, and business processes of the GCPO, and propose an optimized organization, structured and staffed appropriately for the long-term to meet O&M and capital needs of the plants within its control in an efficient manner.

2.3 Study Methodology

The GCPO selected MWH to conduct this study because of the firm’s knowledge and understanding of the hydropower business. The MWH team that conducted this study included

a unique blend of hydropower experts and seasoned business consultants with experience in developing, designing, building, owning, operating and maintaining hydropower facilities around the world, along with business process, organizational, and staffing expertise.

The methodology employed incorporated substantial interface with a large cross section of the GCPO staff and combined qualitative assessments with in-depth quantitative analysis. The year-long study was comprised of three major components, or tasks, as shown in Figure 2.

Task 1	Task 2	Task 3
Assessment of Current Organization	Staffing Analysis under Current Organization	Analysis of Optimized Organization
<ul style="list-style-type: none"> Review the current GCPO organization and business processes Understand current and future workload Collect quantitative data to support future-task analysis Identify preliminary hypothesized recommendations for future-task verification 	<ul style="list-style-type: none"> Analyze quantitative data from Task 1 Recommend staffing to meet current and future workload under current organization and processes Analyze risks of no action, baseline risks Analyze residual risk profile if only adjusting staffing levels 	<ul style="list-style-type: none"> Facilitate management-level discussions with peer projects to benchmark organization, performance, and practices Analyze quantitative data from Task 1 Recommend optimized organization (structure, staffing, processes) Analyze residual risk profile
6 months	3 months	3 months

Figure 2 - Study Methodology

Task 1 was essentially an assessment of the current GCPO organization. Through a series of more than 30 workshops with various cross sections of the GCPO organization, MWH gathered qualitative information about how the GCPO organization functions today. Workshops were organized around similar processes that occur within a single GCPO functional group or span multiple groups. Regardless of the focus area, the intent of each workshop was to understand which tasks are performed by whom, the activities new to the GCPO within the past 3-5 years, and the tasks currently not being performed satisfactorily due to limited time or resources. Follow-up discussions were performed as needed for additional information and clarity, and a survey was provided to plant employees to gather feedback from a larger percentage of the organization. This collection of qualitative information (workshops, interviews, surveys, etc.) was used to develop a set of hypothesized, preliminary recommendations to be verified in subsequent tasks.

Under Task 1, MWH also performed a thorough review of GCPO documentation and data. Also gathered for analysis in later tasks was quantitative data from systems such as the Capital Asset and Resource Management Application (CARMA, a Maximo-based maintenance management system) and the Electronic Time and Attendance System (E-TAS).

The purpose of Task 2 was to recommend staffing levels assuming no changes in organization structure or business processes – to address the question, “How many employees are required if the only change the GCPO makes is to increase its staff levels?”. To do so, MWH evaluated quantitative data collected in Task 1 to estimate the volume of work associated with overtime, new tasks added in the past 3-5 years, incomplete best practices, work order backlog, and capital support. The identified volume of incremental work was then translated into staffing adjustments to the status quo and assigned accordingly across the various GCPO functional

groups to arrive at recommended staffing levels per group under current conditions. Workload projections, including capital and routine work, were also gathered and analyzed to forecast staffing needs per year for a 20-year horizon. These efforts are discussed in more detail in Chapter 0.

Finally, Task 3 integrated the recommendations developed in Task 1 with the data-driven staffing levels resulting from the Task 2 analysis, considering the benefits and efficiencies gained in process and supporting systems improvements. This resulted in the desired staffing recommendations within what is referred to herein as the “optimized organization” – aligned staffing, organization structure, and business processes.

In addition to the analyses described above, the study also included first-hand research into approaches taken by similar hydropower organizations to address challenges faced by the GCPO. This research consisted of six face-to-face meetings with management representatives of near-peer organizations across North America. Details of interviewed organizations and insights garnered from these conversations are documented in Chapter 0 and were used to inform the organizational, process, and staffing recommendations outlined in Chapter 6.0.

2.4 Report Approach and Format

This report is structured to document the entire staffing study in one complete document. Included are:

- An assessment of the current organization (Task 1; primarily Chapter 0);
- Staffing recommendations under current operations (Task 2; primarily Chapter 0); and
- Staffing and process recommendations for an optimized organization (Task 3; primarily Chapter 6.0).

For each of these staffing approaches or scenarios, a corresponding assessment of risk is also included to reflect the cost vs. benefit characteristic of each option.

Findings and recommendations are presented at the organization level as well as specific to each functional group. For each finding, there is a corresponding recommendation. They are numbered for clarity and reference throughout the report in accordance with the format presented in Table 1.

Numbering Format: AAA - ## - X		
AAA	##	X
GCP = GCPO (organization-wide)	Finding or recommendation number within that functional group 01, 02, 03, and so on	F = Finding R = Recommendation
ADM = Administration		
BUD = Budget		
CRA = Cultural Resources (Archaeology)		
ENG = Engineering		
FPS = Fire & Physical Security		
HHD = Hungry Horse Dam		
MNT = Maintenance		
OPS = Operations		
PDL = Project Delivery		
PAF = Public Affairs		
SAF = Safety		
SYS = General Systems and Tools		

Table 1 - Numbering Format for Findings and Recommendations

A rating system has also been applied to the findings and recommendations to provide a relative categorization based on magnitude of finding, impact of recommendation, and effort to implement recommendation. This rating system is shown in Table 2.
















Relative Rating System					
Relative Magnitude of Finding		Impact of Recommendation		Effort to Implement Recommendation	
	High		High		High
	High-Medium		High-Medium		High-Medium
	Medium		Medium		Medium
	Medium-Low		Medium-Low		Medium-Low
	Low		Low		Low

Table 2 - Relative Rating System for Findings and Recommendations

3.0 Current Organization

3.1 Overview

As of July 17, 2011, the GCPO organization consisted of 466 positions (34 of which were vacant) organized into various functional groups, as shown in Exhibit 1. Excluding Personnel Security staff from this study (as requested by GCPO), this staffing level drops to 411 positions. As shown in Figure 3, this staffing level has increased slightly over recent years.

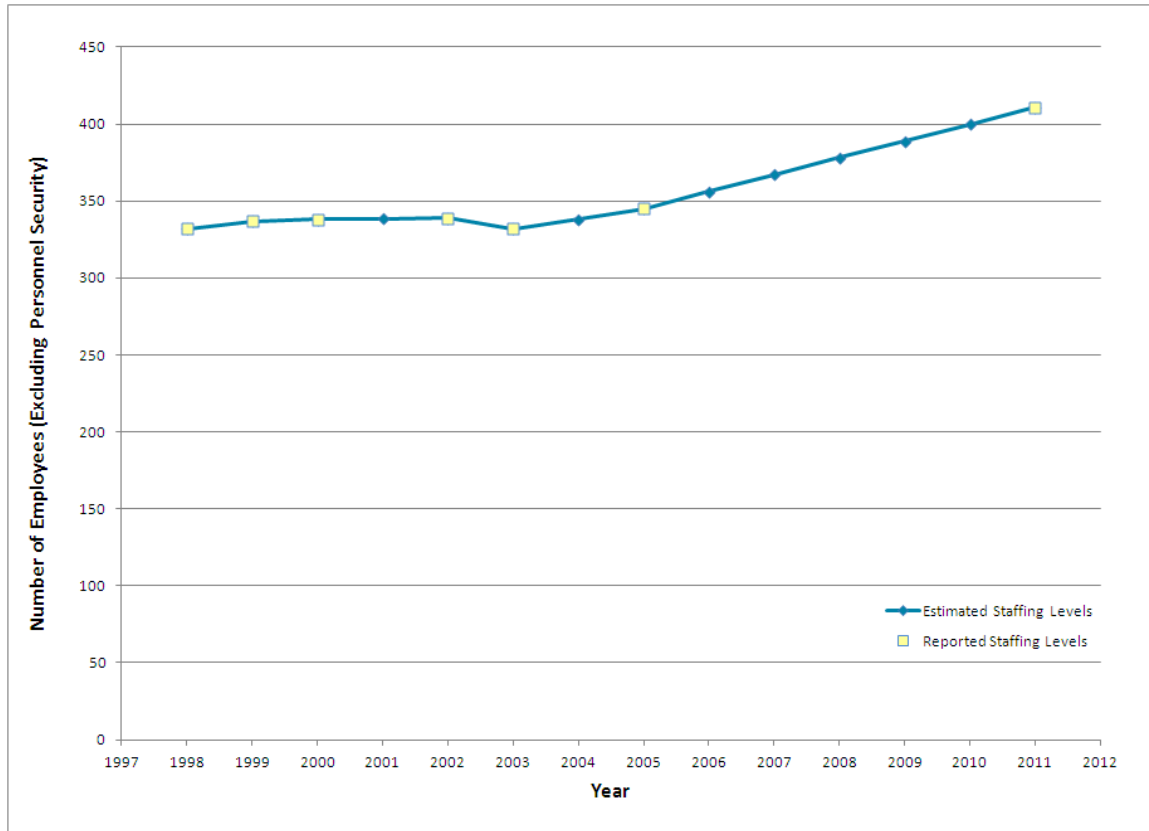


Figure 3 - Historical GCPO Staffing Levels

Figure 4 shows the same historical staffing levels, sub-divided among General Services (GS), Craft Supervisors (XE), and Crafts (BB). Note that the majority of the recent increases in staffing have been in the Crafts personnel.

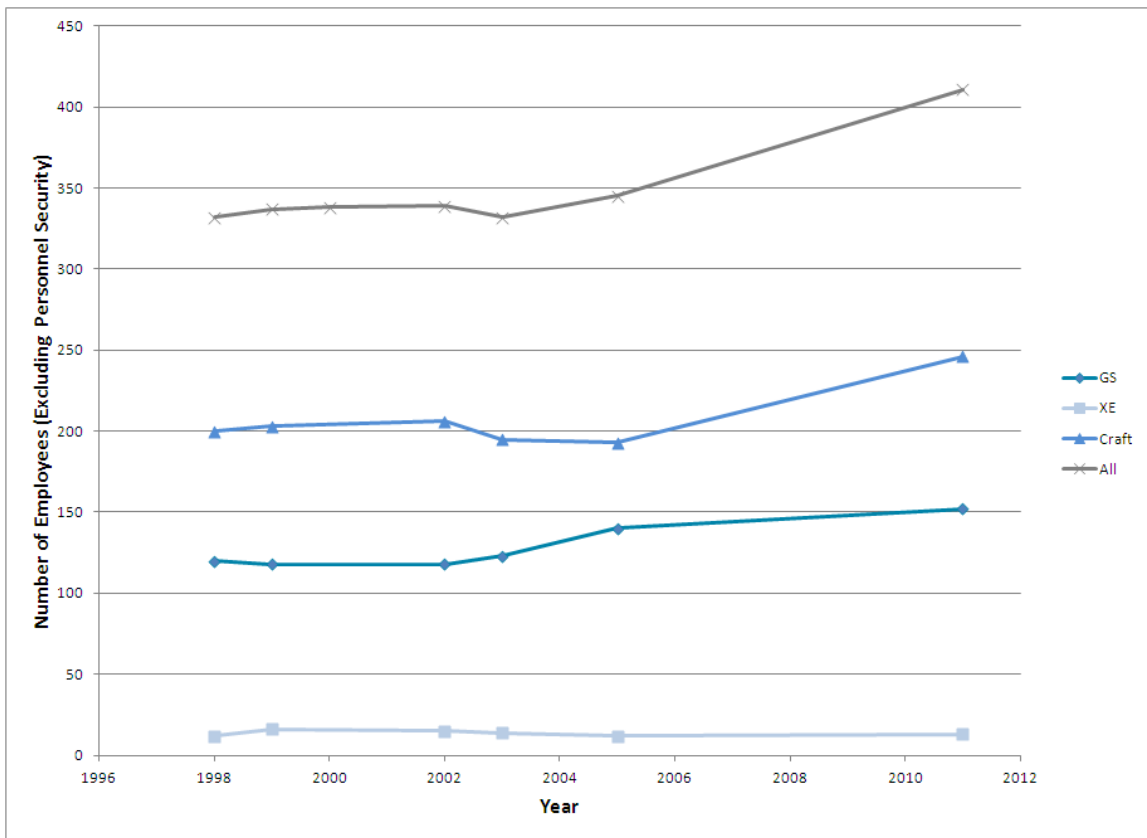


Figure 4 - Historical GCPO Staffing Levels by Designation

Note that for fiscal year 2011 (FY2011), GCPO experienced a 13.6% vacancy rate; therefore, despite having 411 positions available, the current staff equates to only 355 full-time equivalents (FTEs). This current staff accomplished a defined amount of work in FY2011 totaling over 620,000 labor hours (excluding overtime). These actuals are broken out in Figure 5, distributing the workload for the current staff across CARMA work order types or designations:

- **ADMIN** – Administrative
- **CM** – Corrective Maintenance
- **ENG** – Engineering
- **MOD** – Modification
- **OP** – Operations (formerly Trouble Reports)
- **PDM** – Predictive Maintenance
- **PM** – Preventive Maintenance

This volume of work performed in FY2011 by the existing staff establishes the baseline for further analysis in this study and recommended staffing modifications to meet the needs of future years.

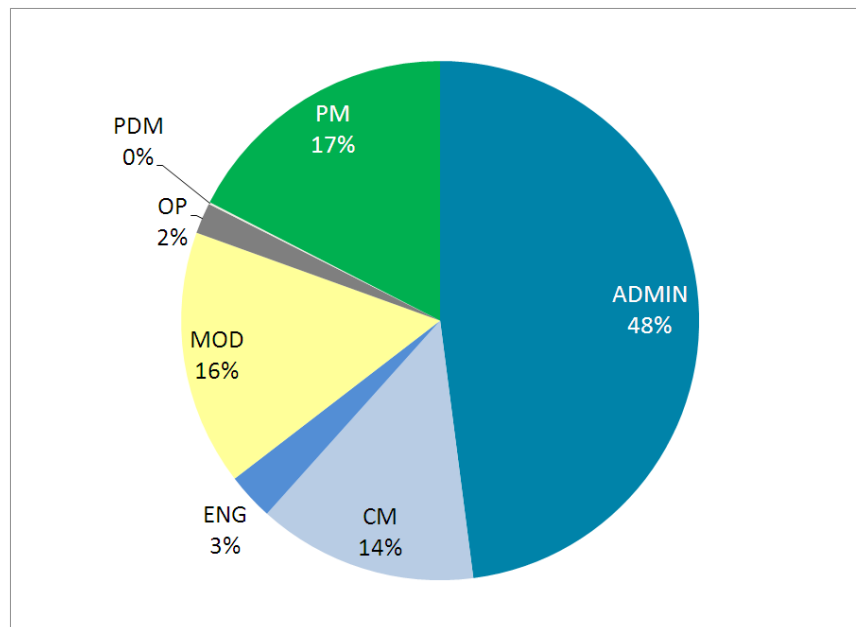


Figure 5 - FY2011 Actuals by Work Order Type, All GCPO

As shown in Exhibit 1, the GCPO is organized into various functional groups. Detailed findings specific to each group can be found in Section 3.4. In addition to the findings specific to each functional group, the collective organization was found to face a number of challenges. These are presented below; recommendations to address these findings are integrated into Chapter 6.0.

- ***GCP-01-F: Large backlog of work.*** In almost every corner of the organization, there exists a substantial amount of routine and non-routine work piling up due to resource constraints and process limitations. The increasing amount of capital work on the horizon will exacerbate this issue and affect every functional group within the organization.

- **GCP-02-F: Lack of organization alignment.** In many regards, the GCPO functions as a conglomeration of silos or “fiefdoms” with competing objectives rather than a singular organization aligned toward common goals and priorities. Decisions are often driven by individual needs and made without an awareness of broader facility impacts. This single-minded focus hampers the success of the facility by not leveraging opportunities for coordination and prioritization of needs, and can be a hindrance to efficient, collaborative work.
- **GCP-03-F: Challenges in attracting and retaining staff.** Limited by location, Federally-mandated compensation structures, and perceived obstacles in the hiring process, the GCPO is challenged to attract and retain staff. Many employees use a position at GCPO as a “foot in the door” to other Federal government positions. Also, project staff appear to be unfamiliar with some of the special recruiting capabilities that Reclamation can invoke for targeted advertising of positions. Appendix 1, which summarizes the outcomes of the Hiring Strategies and Onboarding Review sub-component of this study, presents further details on the challenges in recruiting staff.

Additionally, the use of term employees versus permanent hires limits the incentive for the term employee to stay with GCPO thereby increasing turnover. Oftentimes a newcomer to the GCPO, the term employee is naturally forced to look for his/her next job outside of the GCPO, knowing that there is an end date to his/her term of employment.
- **GCP-04-F: Insufficient organizational-level planning.** Considering the breadth of routine and non-routine work on the GCPO docket, and the scale of the facilities under its control, well-coordinated, organizational-level planning is essential to achieve maximum output from the resources available, including work planning and coordination and long-term asset planning. However, the GCPO appears to be missing an enterprise-wide work and outage planning and asset management function. Existing schedules do not account for contingencies. And there is limited coordination between plant and construction activities. The master schedule for the year is only accurate for the first month as there is no contingency for unforeseen problems; thus, planning to meet water and power commitments is very difficult, as is justifying long-term capital asset investments.
- **GCP-05-F: Limited ownership of projects from start to finish.** Projects of all sizes and varieties generally lack a single leader to shepherd projects through the entire process, from identification and initiation through design and implementation. This includes routine O&M work as well as major capital work, although there is a shift to a standardized project management approach for major non-routine work. Without such ownership, there is a lack of accountability, an increased potential for rework, schedule delays, budget overruns, and quality issues.
- **GCP-06-F: Inconsistent and insufficient use of CARMA.** The GCPO’s computerized maintenance management system, known as CARMA, is a powerful tool for planning, tracking, decision making, and documenting work to be performed and/or completed, as well as asset/equipment needs for work and warehousing. However, the GCPO uses the system to varying degrees of work order granularity across functional groups; for example, maintenance has a specific work order for every task performed while many administrative tasks fall into a large, non-specific “administration” work order. The system includes incomplete definition of work orders and job plans. Also, completed work orders are not adequately updated based on actual labor expended, which would better inform future work planning. This under-utilization of the system contributes to redundancies, errors, and potential for an increased workload.

- ***GCP-07-F: Limited transition planning and knowledge transfer.*** The GCPO experiences significant turnover in staff and is in the midst or on the verge of a major wave of retirements. Figure 6 depicts the age profile of the existing GCPO staff. This data indicates that the average age of the staff is over 47 years old.

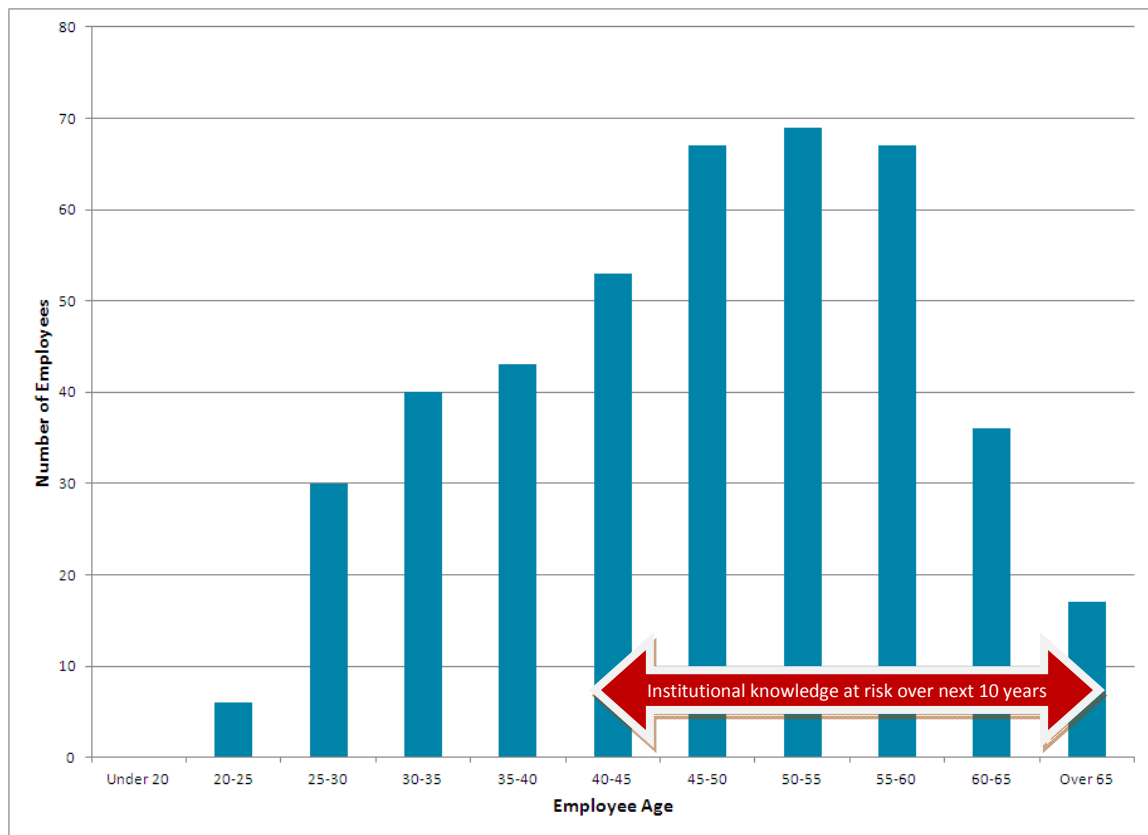


Figure 6 - Age Profile of Existing GCPO Staff

Age alone is not an indicator of pending challenges, as experienced employees provide the institutional and industry expertise required to support facilities such as Grand Coulee and Hungry Horse. However, age is a contributing factor to retirement eligibility. Departing staff, particularly those that have been with the organization for a significant period of time, possess valuable institutional knowledge that should be captured and transferred to remaining staff.

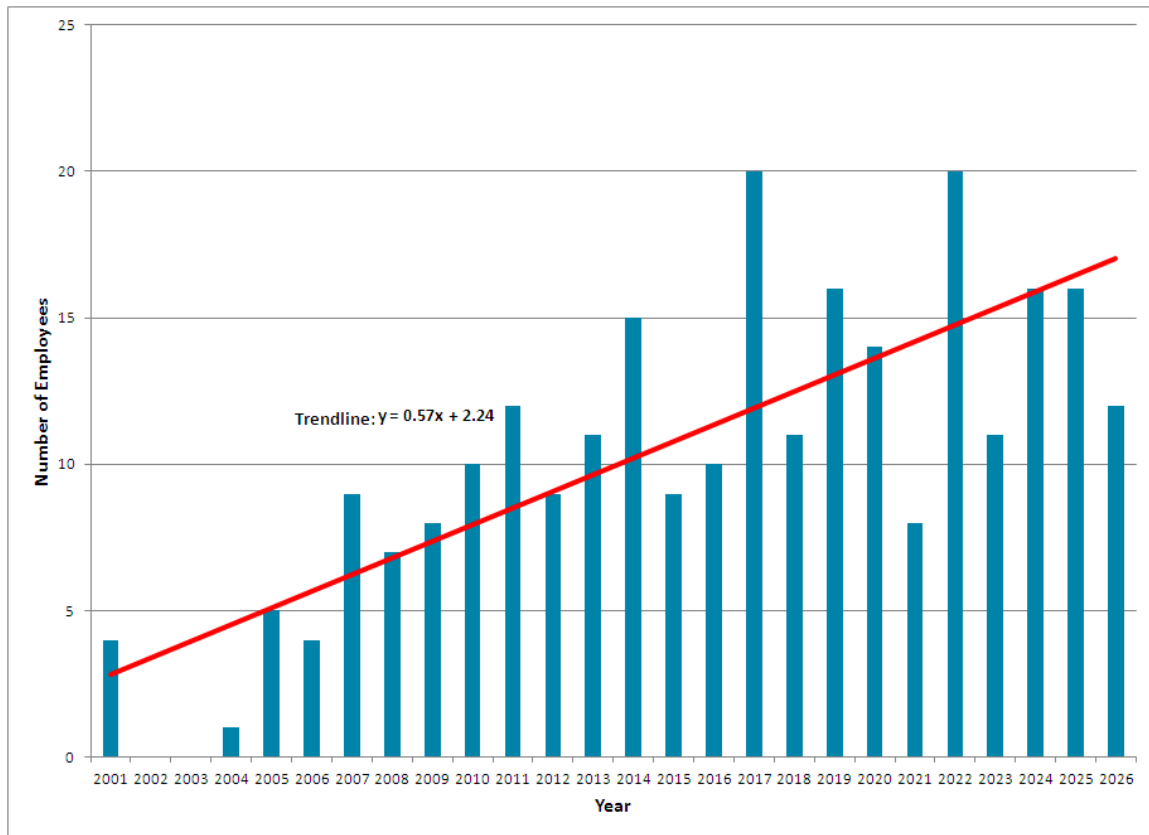


Figure 7 - Retirement Eligibility

Figure 7 depicts the retirement risk facing the GCPO today. The average number of employees newly eligible for retirement each year, over the span of 2012 to 2026, is greater than 13 employees per year. And the year-by-year figure increases by one employee every two years. This represents a significant and increasing retirement risk compared to previous years, concurrent with a ramp-up in workload for the entire GCPO staff. Current practice rarely allows for sufficient overlap between departing and arriving employees, and there is limited effort to date to capture plant-specific knowledge from the soon-to-be-retiring employees.

- ***GCP-08-F: Ineffective and uncoordinated training.*** Coordinated, efficient, and targeted training is a key to supporting staff development, improving staff retention, and elevating the performance of the organization. However, in general terms, much of the current training provided to GCPO employees follows a “one size fits all, check-the-box” approach and is not always aligned with organizational priorities and individual professional development. This contributes to valuable time being spent on redundant training, while necessary and targeted training is not sufficiently executed. Tracking of training per employee is inconsistent and there is limited coordination across the enterprise. Despite a proven and well executed on-boarding process for human resources related matters, physical on-boarding of staff (e.g., plant orientation and tour) is limited and inconsistent.
- ***GCP-09-F: Insufficient or ineffective coordination with external partners.*** External partners that support GCPO include the Regional Office and the Technical Services Center (TSC). A perceived shortfall in performance (schedule delays, received product not aligned with original intent, etc.) of these partners has led to unfavorable views of the partners and the services they provide to the GCPO. The reverse is also true with external partners often viewing the GCPO as a

demanding, unorganized or unreasonable “client.” Very often an issue is idled due to misunderstanding of the next required action and the current responsible party. This can result in significant delays and negative impacts to the projects being built as well as current operations. Yet much of the issue may not be poor performance, but rather unclear definition of expectations between and among the parties, or resource constraints. Limited performance tracking capabilities makes it difficult to quantifiably and definitively assess performance.

3.2 Risks of No Action

As part of this study, MWH has investigated the risks of no action; i.e., the risks of not increasing staffing or improving processes to address the backlog of routine work and rise in scheduled non-routine work in the coming years. These risks were evaluated using two approaches. The first uses an Asset Investment Planning Tool (AIP Tool), originally created for both Reclamation and the United States Army Corps of Engineers (USACE) as part of the Hydropower Modernization Initiative, to give a quantitative value of the risk of no action. The second establishes a subjective risk baseline across five major areas of risk that can be used to comparatively evaluate the changes in the GCPO risk profile based on various staffing, organization, and process changes.

3.2.1 Asset Investment Planning Tool

The AIP Tool was used to examine the impact of work delays at Grand Coulee. The results are shown as changes in the risk profile over the planning horizon of 2012 through 2031. The risk profile is based on the schedule of work, projected condition, and age of the main power train assets, as well as the importance of each power train asset in terms of incremental generation that would be lost in the event of an unplanned outage.

The AIP Tool is designed to look at a portfolio of hydropower assets (at the lowest level, the main power train equipment), and prioritize asset replacements based on a quantitative risk approach. This approach uses the simple concept that risk equals the likelihood of an event multiplied by the consequence of the event; in this case, the event is a major failure requiring replacement or major refurbishment of the asset. The likelihood of failure is a function of the asset age and condition. The consequence of failure is a function of the outage duration of an unplanned and planned outage, as well as the generation associated with each “logical” unit (logical units refer to the final unit, second to last unit, etc., as opposed to specific physical units).

The risk profile for any grouping of assets is determined by summing the risk exposure of the individual assets that make up the group and comparing them to investment schedules. The risk profiles show cumulative risk; i.e., risk rises due to inherent uncertainty in future condition as it moves away from the known conditions from the hydroAMP input. Generally, if an asset or set of assets has an acceptable level of risk in the start year, it is acceptable for risk to rise over the 20-year timeframe. However, when assets are in need of refurbishment or replacement or require an increased level of service at present, sufficient funding should produce a bell-shaped curve where, at some point, funding overcomes the rise in risk and, furthermore, reduces risk to an acceptable level.

In addition to a risk cost, the AIP Tool calculates economic indicators, including the Net Present Value (NPV) and Benefit Cost Ratio (BCR) for replacing each asset. Together, the monetary risk value, NPV, and BCR are weighted to yield asset priority.

The AIP Tool calculations are done at the power train asset level, and results can be aggregated up to view results for a unit, plant, and/or region. Power train assets in the AIP Tool include:

- Turbines
- Governors
- Generators
- Exciters
- Main unit transformers
- Main unit circuit breakers

3.2.2 AIP Tool Inputs

Figure 8, below, shows the data parameters incorporated in the AIP Tool. Each oval on the left side of the diagram represents an input to the model.

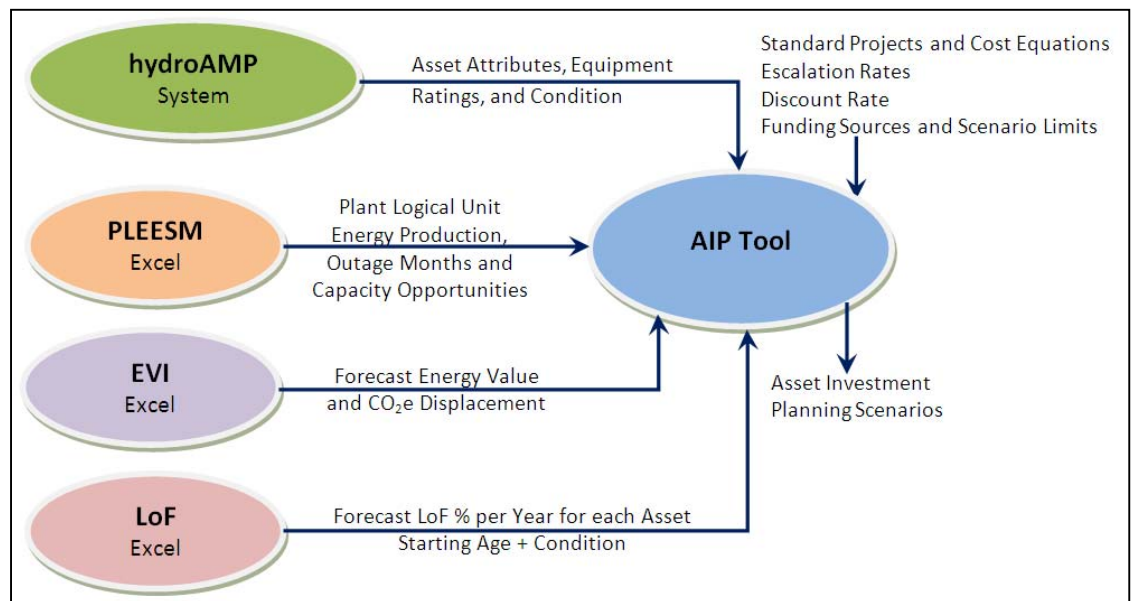


Figure 8 - Overview of AIP Tool Planning Process and Inputs

These inputs are described below:

- **hydroAMP** – The hydroAMP system is used by the USACE, Reclamation, Hydro-Québec, and BPA to support the process and data for asset condition assessment. HydroAMP provides the asset data including the condition assessment data, asset age and upgrade dates, plus some key asset attributes. This input is provided for each power train component.
- **PLEESM** – PLEESM is a Microsoft Excel-based model used to provide estimated on-peak and off-peak energy production by logical units at each plant, as well as the potential additional energy production from hydraulic capacity increases, if available. The PLEESM model also identifies the month to begin a scheduled outage to minimize replacement energy cost. This input is provided on a plant level.
- **EVI** – The EVI provides short-term, long-term, on-peak and off-peak energy values in dollars per megawatt hour (\$/MWh) for the AIP Tool. These are

monthly values for the 20-year planning horizon for each electricity market region.

- **LoF** – The Likelihood of Failure (LoF) forecasting curves were developed by the USACE and are based on a large historic failure and replacement data set for turbines, generators, and transformers. The curves define the probability of an asset failing in a given year of the planning horizon, dependent on the asset’s age, type, and condition at the start of the planning horizon. To supplement the data provided by Reclamation and USACE, estimations were used to develop similar curves for circuit breakers. The LoF data is mapped to each asset.
- **Other inputs** include: cost parameters (including planning-level cost estimates for standard projects), sources of funding, and investment funding scenarios. Planning-level cost estimates were developed for each project, and are inclusive of costs from planning through construction of an asset replacement or refurbishment project. Standard project costs are developed for each asset type. Investment funding scenarios define the boundaries for the 20-year investment plans, amount of investment dollars available each year, and source of funding. The input criteria determine the scheduling methodology for individual project planning.

The following inputs were used in each scenario created for the risk analysis associated with this GCPO staffing study:

- Start year: 2012
- Years in the planning horizon: 20
- Number of years in the cash flow assessments: 50
- Inflation: 1.8%
- Cost escalation: 0.5%
- Discount rate: 4.375%

These values are the same that were used for federal hydropower projects during the HMI scenario creation, and were agreed upon by the USACE and Reclamation.

3.2.3 Scenarios for Grand Coulee Risk Analysis

The current rehabilitation and replacement schedule for Grand Coulee was used to create the baseline risk profile for the period 2012 through 2031. Based on this schedule, there is a wave of planned work, peaking in year 2017. The number of components scheduled for repair or refurbishment per year is summarized in Table 3, below.

Components Scheduled per Year - Baseline							
Year	Total	Turbine	Generator	Governor	Exciter	Transformer	Breaker
2012	13	0	0	4	4	5	0
2013	8	1	0	1	1	5	0
2014	8	1	0	0	2	5	0
2015	11	1	1	0	2	4	3
2016	17	2	4	4	6	1	0
2017	20	1	4	6	6	0	3
2018	15	0	3	6	6	0	0
2019	15	1	4	5	5	0	0
2020	11	1	3	3	3	1	0
2021	2	0	2	0	0	0	0
2022	2	0	2	0	0	0	0
2023	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0
2028	2	1	1	0	0	0	0
2029	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0
2031	0	0	0	0	0	0	0

Table 3 - Components Scheduled per Year, Baseline

The scheduled work in the planning horizon is very aggressive in early years, considering the current staffing level. A limit was placed on the number of components that could be replaced per year to create a schedule that reflects no increases in staffing; it was assumed that existing staff can accommodate 12 equipment replacement projects. This is considered an optimistic assumption. Preference was given to keep turbines and generators in the years in which they were scheduled in the baseline. This scenario is shown in Table 4.

Components Scheduled per Year – Max 12 Per Year							
Year	Total	Turbine	Generator	Governor	Exciter	Transformer	Breaker
2012	12	0	0	3	4	5	0
2013	9	1	0	2	1	5	0
2014	8	1	0	0	2	5	0
2015	11	1	1	0	2	4	3
2016	12	2	4	0	5	1	0
2017	12	1	4	4	3	0	0
2018	12	0	0	6	4	0	2
2019	12	0	3	2	6	0	1
2020	12	1	4	4	3	0	0
2021	12	1	3	5	2	1	0
2022	10	0	4	3	3	0	0
2023	0	0	0	0	0	0	0
2024	0	0	0	0	0	0	0
2025	0	0	0	0	0	0	0
2026	0	0	0	0	0	0	0
2027	0	0	0	0	0	0	0
2028	0	0	0	0	0	0	0
2029	0	0	0	0	0	0	0
2030	0	0	0	0	0	0	0
2031	2	1	1	0	0	0	0

Table 4 - Schedule with Maximum of 12 Components per Year

3.2.4 Results

As shown in Figure 9, this increases the risk of failure by a maximum of approximately \$100 million (in year 2021).

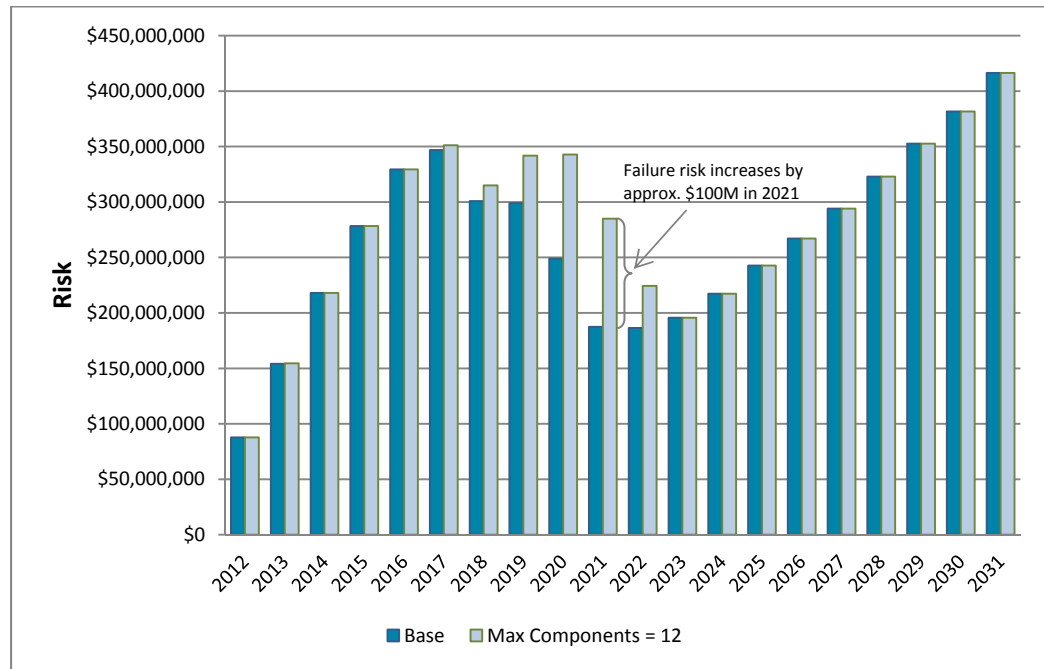


Figure 9 - Annual Risk Profile

As a sensitivity case, the maximum number of components to be replaced per year was changed to 8. As shown in Figure 10, this nearly doubled the annual risk with the highest risk seen in year 2023.

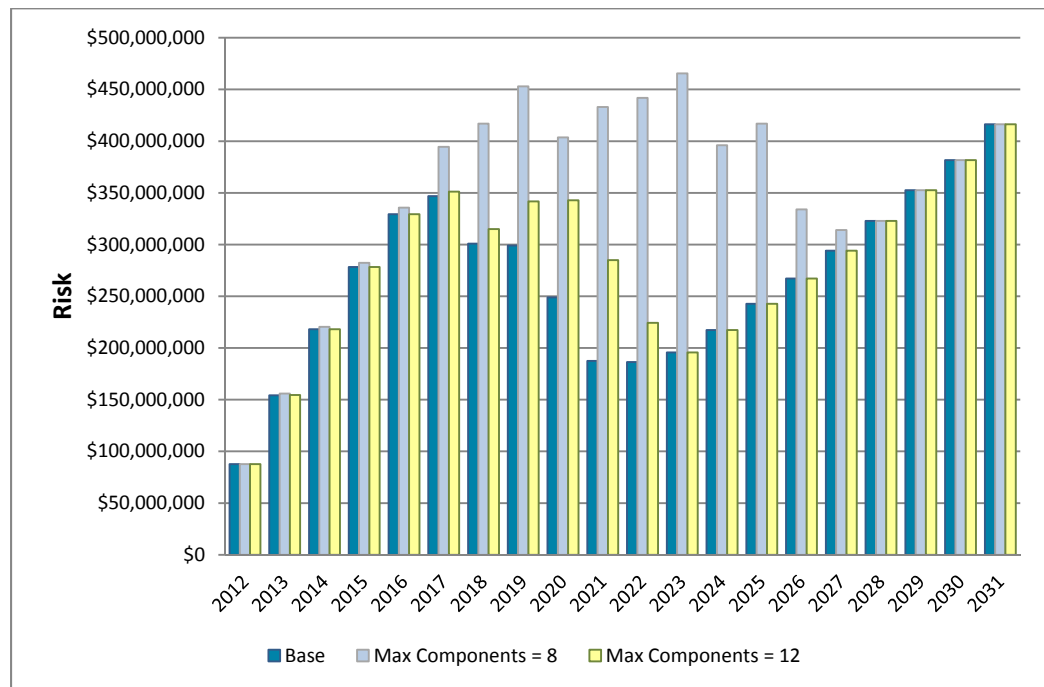


Figure 10 - Annual Risk profile for Base Scenario, Max 8 Scenario, and Max 12 Scenario

Without changes to staffing levels, corrective maintenance needs will increase, and unit outages will be extended or delayed. If planned work is delayed, Grand Coulee will have an increased risk of unscheduled outages and generation loss. At present, the risk for year 2021 grows by approximately \$100 million if the staff is not able to maintain the planned schedule, and cannot complete more than 12 planned projects per year. Although increasing staff or streamlining processes has a cost, one of the benefits is reduced risk, which results in greater reliability for the plant and system.

3.3 Baseline Risk Assessment

This risk assessment establishes a subjective risk baseline across five major areas of risk that can be used to comparatively evaluate the changes in the GCPO risk profile based on various staffing, organization, and process changes. This baseline risk assessment is used in Chapter 0 to evaluate the effects of staffing changes alone on the baseline risks. In Chapter 6.0, the effects of staffing, organizational, and process changes – the “optimized organization” – are compared against this baseline risk to assess the value provided by those changes.

Baseline Risk Assessment						
Risk Areas	Risks	Causes	Impact	Probability	Risk Score	Area Risk Score
Planned Outage Extensions	Lost generation and capacity from extended maintenance outages	Insufficient resources and planning	3	4	12	14
	Lost generation and capacity from extended project rehabilitation outages	Insufficient project management, planning, and support resources	4	4	16	
Equipment Reliability	Lost generation and capacity from forced outages	Deteriorating condition of equipment and inadequate maintenance	3	4	12	12
	Major equipment damage due to failure	Inadequate maintenance/aging equipment	4	3	12	
Safety	USBR personnel injury, accident, disability, or fatality	Inadequate safety monitoring and training	4	3	12	14
	Contractor personnel injury, accident, disability, or fatality	Inadequate construction management	4	4	16	
Environmental	Environmental incident - on project	Inadequate maintenance oversight or construction management	3	2	6	9.3
	Water control incident	Equipment Failure/operational error	5	2	10	
	Bi-op violation	Operational error/inadequate planning	4	3	12	
Institutional Knowledge Loss	Operations error	Improper operational actions	4	3	12	12
	Maintenance re-work	Inadequate maintenance training or planning	3	4	12	

Table 5 - Baseline Risk Assessment

Table 5 lists the five major areas of risk assessed with sub-areas of risk and their associated root causes. The impacts were subjectively evaluated on a scale from one to five, and are held constant in similar comparative risk assessments presented in Chapters 0 and 6.0. The probability was subjectively evaluated and will be adjusted based on risk mitigation for each sub-area of risk for the changes proposed in Chapters 0 and 6.0.

3.4 Functional Group Assessments

As shown in Exhibit 1, the GCPO is organized into various functional groups responsible for a specific set of tasks in support of the overall organization. This section summarizes the tasks performed at the time of the assessment by each of these functional groups and provides a summary of the key findings, both staffing- and process-related, unearthed through this study pertinent to each group. Tasks for each group are meant to be representative of major activities, not all-inclusive of every activity performed within that functional group. Findings are

in addition to the GCPO-wide challenges defined above in Section 3.1; recommendations to address these findings are integrated into Chapters 0 and 6.0.

3.4.1 Administration

Table 6 through Table 11 collectively present a summary of the major tasks performed by the Administration Office, a qualitative assessment of the group's ability to "keep up" with each task, and a high-level assessment of the current staffing levels for the group.

The Administration Office has subgroups within it that address major business activities of Information Technology (IT) support, Contracts, Supply Management, Personnel Management, Staff Training, and General Administration Support. For clarity, these major business areas are discussed separately in the assessment of the current organization; however, recommendations in subsequent sections of the report are provided for the Administration Office as a whole.

Task Status & Summary Staffing Assessment – Administration, IT				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Provide general IT support and help desk activities	IT Specialist		X	
Acquire PCs and associated equipment	Supv IT Specialist	X		
Develop and implement IT support for NERC CIP	All		X	
Perform systems accreditation	IT Specialist		X	
Facilitate VPN access	IT Specialist	X		
Support video conferencing use	All	X		
Support SharePoint use	All	X		
Help GCPO identify commercial IT solutions as opposed to creating solutions	All	X		
Monitor copiers, printers, and vides conference room contracts	IT Specialist	X		
Current staffing levels appear:		Adequate X Borderline Insufficient		

Table 6 - Task Status & Summary Staffing Assessment, Administration, IT

Task Status & Summary Staffing Assessment – Administration, Contracts				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Review specifications to ensure conformance to regulations	All			X
Control the purchasing process	All		X	
Expedite delivery	All		X	
Review invoices	All			X
Review P-card purchases	All			X
Filing and records retention	All			X
Warranty and repair process support	All		X	
Ratification of discrepancies	Contract Specialist		X	
Support to Hungry Horse purchasing	Contract Specialist			X
Respond to Region reporting requests	Contract Specialist		X	
Process 4,000+ obligations	All			X
Current staffing levels appear:		Adequate Borderline X Insufficient		

Table 7 - Task Status & Summary Staffing Assessment, Administration, Contracts

Task Status & Summary Staffing Assessment – Administration, Supply Mgmt.				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Receive material	Warehouse III	X		
Provide warehouse function	Warehouse III	X		
Perform fleet management	Supply Tech	X		
Develop greenhouse gas emissions data per federal directive	Supv Supply Mgmt Specialist	X		
Perform property disposal	Supply Tech	X		
Perform building inspections	Supply Tech	X		
Current staffing levels appear:		X Adequate Borderline Insufficient		

Table 8 - Task Status & Summary Staffing Assessment, Administration, Supply Mgmt.

Task Status & Summary Staffing Assessment – Administration, Personnel Mgmt.				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Union coordination	Administrative Officer	X		
Staff on-boarding/exit	Support Services Supervisor	X		
Support staff inquiries for benefits, etc.	Support Services Supervisor	X		
Address conduct and performance issues, oversee awards and incentives	Administrative Officer (with others outside Admin. Office)		X	
Administer, track and report staffing status	All			X
Support managers and supervisors to effectively manage staff performance	All			X
Current staffing levels appear:		Adequate X Borderline Insufficient		

Table 9 - Task Status & Summary Staffing Assessment, Administration, Personnel Mgmt.

Task Status & Summary Staffing Assessment – Administration, Training				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Deliver mandatory training (Safety, HR)	Administrative Officer, Support Services Supervisor	X		
Coordinate development training	Administrative Officer		X	
Update and improve curriculum for training program	Administrative Officer, Support Services Supervisor			X
Analyze training needs	Administrative Officer			X
Coordinate training across organization	Administrative Officer			X
Assess effectiveness of training Program	Administrative Officer			X
Current staffing levels appear:		Adequate Borderline X Insufficient		

Table 10 - Task Status & Summary Staffing Assessment, Administration, Training

Task Status & Summary Staffing Assessment – Administration, General Support				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Provide clerical support	Support Services Supervisor, Office Aide		X	
Oversight and management of timekeeping system	Administrative Officer, Support Services Supervisor, Office Aide		X	
Manage document management materials/systems, project/photographic archives, etc.	Mail and File Clerk, Photographic Technician			X
Serve as point-of-contact for Emergency Action Plan	Administrative Officer		X	
Administer reimbursement and expense programs (bankcards, relocation, vouchers, travel)	Facility Services Specialist, Administrative Officer		X	
Current staffing levels appear:		Adequate X Borderline Insufficient		

Table 11 - Task Status & Summary Staffing Assessment, Administration, General Support

The Administration Office is led by an Administrative Officer who oversees each of the major business areas, and also performs a number of administrative functions. There are a number of areas where bottlenecks are apparent that indicate while some areas of the Administration Office are appropriately staffed or at least making due, other areas are significantly underperforming due to lack of resources. One essential issue is that this group is the key to recruiting and hiring. Shortfalls in staff availability in the hiring process aggravate the staffing shortages throughout the plants. Addressing the staffing needs specifically related to recruiting and training would have a positive trickle-down effect on the entire organization.

The current Administration staff accomplished a defined amount of work in FY2011. This is represented in Figure 11, distributing the workload for the current staff across CARMA work order types or designations. This volume of work performed in FY2011 by the existing Administration staff establishes the baseline for further analysis in this study and recommended staffing modifications to meet the needs of the future years.

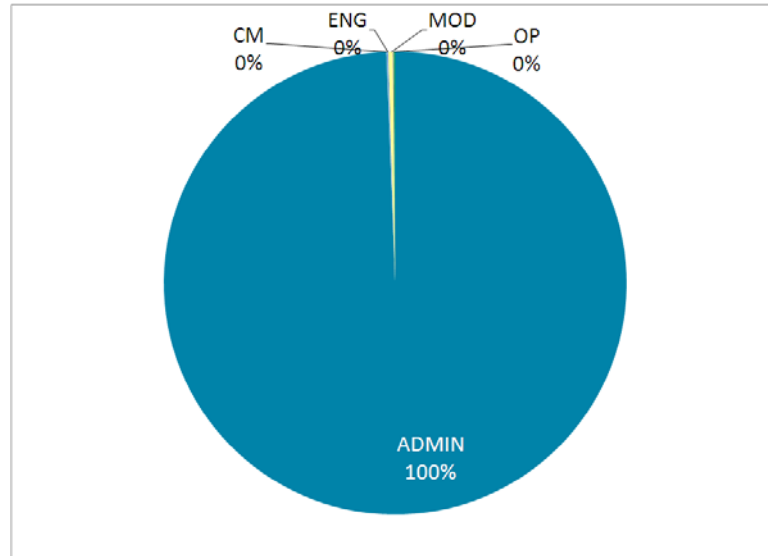


Figure 11 - FY2011 Actuals by Work Order Type, Administration

Information Technology

The Information Technology (IT) group provides outstanding support to the GCPO. Approximately 50% of this department's time is spent performing help desk type activities; the group is providing very good support with no complaints heard. However, the group is stretched very thin and barely keeps up with normal IT demand. The NERC-related Critical Infrastructure Protection (CIP) requirements have placed additional burden on the IT group and will continue to do so into the foreseeable future. In addition, new and changing purchasing requirements have added complexity to acquiring new equipment. The purchasing requirements are coming from outside the GCPO and are in a state of flux, adding additional workload steps for the IT department. These steps are not overbearing but are more than what previously had to be done.

The following are the key findings for the IT department:

- ***ADM-01-F: Limited capability to keep up with IT demand.*** As use of technology increases at the GCPO, so does the complexity of the technologies involved. This involves everything from researching new technology to managing contracts for copiers and printers. In addition, with the U.S. Government allowing more remote work, the IT department must maintain vigilance on allowing and controlling virtual private network (VPN) access. Due to the nature of its work, the GCPO does not lend itself to much remote work; however, the IT group will be responsible for maintaining the VPN and access to it.

- ADM-02-F: Increasing workload on IT due to NERC CIP. NERC CIP requirements have placed additional workload burden on the IT Department. Presently the IT Department is developing and implementing CIP mitigation plans and strategies for the GCPO. The peak additional work load which caused much overtime in FY2011 seems to have subsided, but there will be continuous CIP maintenance required. The maintenance will include updating CIP documentation, modifying as needed, and responding to any CIP changes.

Contracts

The Contracts group is doing an excellent job supporting the GCPO contracting needs. They have a very difficult task as not everyone needing their support understands the Federal contracting guidelines under which the GCPO operates. The group is understaffed and continues to lose personnel while trying very hard to maintain the same level and quality of service they have provided over the years.

Process maps depicting the GCPO purchase requisition process and the contracting processes performed by the Regional Office Contracting group are presented in Exhibit 3.

The following are the key findings for the Contracts department:

- ADM-03-F: Limited understanding of specification requirements by non-Contracts staff. Many GCPO personnel are providing the specifications required to contract for and purchase items and services. When material, parts, or equipment is needed there is no standard way for plant personnel to specify their needs in a format that meets the procurement requirements. Therefore, these employees do not always provide proper specifications from a contracting standpoint. For example, the specification may call out a specific manufacturer and part number when the type of procurement requires that the called out part or an equivalent is allowable. Contracts personnel often send back improper specifications to the originator for correction. This lends itself to a cycle of reviewing, sending back, and reviewing again. This places additional workload on the Contracts staff as well as on the GCPO staff writing the specifications.
- ADM-04-F: Limited awareness of product lead times among plant personnel. Each item ordered has a lead time associated with it. This may be a small lead time of a day or so for shipping a common product that is on a shelf to weeks or months if something has to be fabricated. Plant personnel should attempt to research and document lead time while preparing requisitions, and plan accordingly.
- ADM-05-F: Insufficient Contracts involvement early in the acquisition process. Early Contracts involvement can help smooth the entire contracting process for projects, especially the larger, more capital-intensive projects. Contracts personnel can be aware of what will be needed and an approximate timing, and will be able to provide better up-front project support to reduce the amount of improper specifications and make sure items are purchased and delivered when needed, taking into account the appropriate lead times. This will help keep projects on schedule and will reduce the need to expedite purchases, saving the GCPO money not only in purchasing, but in returning equipment to operational status in a more timely fashion.
- ADM-06-F: Inefficient use of plant personnel time with respect to specification development. Many of the plant personnel such as the supervisors, planners, and

schedulers are spending a very high percentage of their time developing contract specifications. Contract specialists are not experts on plant operations and cannot be expected to write all the specifications. However, for every minute of plant personnel time being spent to create specifications, other critical plant work is not being accomplished.



ADM-07-F: Reclamation-driven transition toward performance based acquisition.

Performance based acquisition (PBA) is a technique for structuring all aspects of an acquisition around the purpose and outcome desired as opposed to the process by which the work is to be performed. The stated PBA goal is 50-55% of all contracts (see www.gsa.gov/pbsc). The GCPO may benefit from using more PBA contracting vehicles. By allowing the contractors flexibility to accomplish the goals of the projects, the GCPO may be able to obtain better pricing while accomplishing the desired end result. However, to make PBA effective, GCPO personnel involved in the contracting process must understand PBAs, how to create specifications for this type of contract, and how to monitor these contract types.



ADM-08-F: Increasing workload for Contracts. In FY 2009, 2,107 contracts were awarded totaling \$6.4 million. In FY 2010, 2,862 contracts were awarded totaling \$11.7 million (although these figures are skewed due to one-time expenditures on Generic Data Acquisition and Control System (GDACS) and American Recover and Reinvestment Act (ARRA) requisitions). Through the first six month of FY 2011, Contracts processed over 1,300 requisitions and awarded \$7.5 million in contracts. This places the Contracts department on a path to have a larger increase in contract awards, based on dollars, than last year, continuing the increasing path of awards. It is estimated that in 2012 and beyond, there will be approximately 2,800 requisitions totaling around \$8.5 million. This represents an approximate 33% increase in the number of requisitions above 2009 for the same number of contracting personnel.



ADM-09-F: Limited purchasing authority. GCPO Contracts personnel have purchasing authority capped at \$25,000. Anything above this amount must be signed by the Regional Office. Adding the additional steps of sending contracts to the Regional Office for signature often slows down the speed of getting contracts awarded. The amount of time delay by sending contracts to the Regional Office varies based upon the Region's workload. Once with the Regional Office, the process is generally out of GCPO control. If someone at GCPO was to obtain contracting authority for more than \$25,000, Reclamation policies indicate they would then report to the Regional Office. Therefore, even if the employee were located at GCPO, they may not be able to devote 100% of their time to GCPO contracting needs. As a result, a GCPO employee obtaining additional contracting authority may result in a net decrease of personnel, the opposite of intended. It is not anticipated that the time savings would counteract this decrease in availability.

Supply Management

The Supply Management group operates the main warehouse and performs all warehousing functions that include receiving material, kitting material for work orders, and warehousing material for future requirements. In addition, they perform fleet management, handle property disposal, perform building inspections, and a new function of monitoring the greenhouse gas emissions for each GCPO building. The supply management function is doing an excellent job receiving materials, distributing

material, kitting materials for work orders, indentifying items no longer needed and surplusng the items, and keeping the warehouse well-maintained. This vital behind-the-scenes function is typically taken for granted until something needed is not available.

The following are the key findings for the Supply Management department:

ADM-10-F: Increased workload due to greenhouse gas emission monitoring requirements. This group is responsible for determining the amount of greenhouse gases each GCPO building creates. The difficulty of this task is that there is a single meter into each GCPO site/facility as opposed to each building being monitored.

Personnel Management

The Administration Office leads a variety of personnel related activities including hiring, union coordination, disciplinary actions, and personnel management activities such as annual performance reviews and career planning activities. Due to the nature of these activities, the implementation is typically plant-wide and requires active involvement by managers, supervisors, and employees. The evaluation in this section reflects the work by the Administration Office as well as issues identified with how personnel management is implemented throughout the organization.

This group serves as the main interface with the Regional Office Human Resources. This interface is primarily handled by the Administrative Officer and the Support Services Supervisor, though both have a number of other responsibilities as well. Note that a recruiting/hiring process is presented with Exhibit 3.

Findings and challenges specific to Personnel Management are presented here:

ADM-11-F: Limited capability to effectively manage staff performance. Managers and supervisors are not skilled in having performance conversations with their staff, and the tools and processes in place are not perceived as supporting performance management. With the heavy workloads and large staff/supervisor ratios, it is easy to put off the things that are “hard to do.” To avoid conflict, many managers score all employees the same regardless of performance. As a result of same ratings, constructive feedback is not provided. Managers are making due by addressing conduct issues in lieu of performance. The lack of management of performance, and recognition of excellence, impacts morale and results in a complacent “why try harder” mentality.

ADM-12-F: Perception that pay is not competitive. Many statements were made that the pay ranges for all staff at GCPO are not competitive with the market and this has had negative impact on recruiting and staff retention. Other Federal agencies as well as private industry appear to target GCPO as prime recruiting ground for their organizations. In addition, “poaching” happens within GCPO due to the discrepancies between General Services (GS) and Union pay scales. Data was not available to support or refute the competitiveness of pay at GCPO or of the other variables that make up total employee compensation. Evaluating regional salary data would be beneficial to determine if pay and compensation is in fact an issue.

Training

The Administration Office leads the management and implementation of the training program for all of GCPO. The Administration Office is responsible for assessing training

needs, approving training requests, arranging courses, tracking employee training, and evaluating the effectiveness of the training. The training program is delivered to all staff at GCPO based on their role and responsibilities. Training is conducted by a variety of internal, partner and external resources depending on the type of training required. For example, mandatory safety training is conducted by an in-house Safety and Occupational Health Specialist; supervisor training is provided by Reclamation in a one-time 40-hour course for new managers; equipment training is provided by the manufacturer.

There are a number of shortfalls with the current training program. Mandatory training is delivered, however the program is not considered effective in delivering the learning objectives. Employee development and training needs are not clearly identified and managed. Therefore, specific skill shortfalls are not addressed and this negatively impacts other parts of the operations. There is also a lack of coordination between groups delivering training resulting in unnecessary repetition of courses.

Overall, there are limited resources to assess, coordinate, update, and deliver the training program and curriculum. Current training staff indicated that the program can be significantly modified for better use of people's time and improved learning/retention of knowledge.

Due to the GCPO-wide nature of the training issues, findings and recommendations pertaining to training are presented in Section 3.1.

General Administrative Support

In addition to the functions described in each section above, the Administration Office also provides the clerical, administrative, and management support to perform the business functions of the Power Manager and the GCPO. The responsibilities of this small team are diverse. Each member of this team performs a unique function with little overlap. Most of the staff on this team has not had the time to document the procedures for their roles and tasks, or time to train others to provide backup thereby creating single points of failure.

The members of this team provide clerical and receptionist support, ensure compliance with Reclamation guidelines for all correspondence, serve as the primary point-of-contact with the PNR in regards to administration and personnel issues, administer reimbursement and expense programs, and oversee the timekeeping system including providing initial review of every timesheet.

They are also responsible for current and historical documents of the GCPO. This includes mail, filing, photography, document management and management of the Technical Data Center. Keeping up with day-to-day demand is borderline, but archiving and management of the Technical Data Center fall into the routine tasks that are not getting done. The Technical Data Center in the Grand Coulee office building needs significant effort to assess, digitize, and organize the documents.

Accomplishing all of these functions stretches the staff beyond a standard workload, and is aggravated by turnover. For example, the Office Aide position has been a stepping stone to advancement to other positions in the GCPO, and therefore experiences significant turnover. This turnover combined with the aging workforce issues all of GCPO is experiencing aggravates an already resource constrained function.

3.4.2 Budget

Table 12 presents a summary of the major tasks performed by the Budget Office, a qualitative assessment of the group's ability to "keep up" with each task, and a high-level assessment of the current staffing levels for the group.

Task Status & Summary Staffing Assessment – Budget				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Monthly funds status reports	Officer, Analyst		X	
Regional Office requests	All		X	
Budget development & updating	Officer, Analyst		X	
Day-to-day activities (such as voucher reviews, diversion rates, etc.)	All		X	
Accruals/obligations review & reporting	All		X	
<i>Benchmarking activities</i>	Analyst		X	
CARMA cleanup/tracking/analysis	All			X
Link budgets to work plans to show funding needs for staffing, prioritization, etc.	All			X
Communicate budget (by business line) to each manager to track and control	Officer			X
Track, report status, and adjust accordingly for two previous items	All			X
Program analysis	Analyst, Tech			X
Current staffing levels appear:		Adequate Borderline X Insufficient		

Table 12 - Task Status & Summary Staffing Assessment, Budget

This functional group is one of the smallest at GCPO and is focused on the day-to-day requirements of complying with three different major budgeting cycles: BPA for power activities, the local irrigation district for North Dam activities, and the Federal budget process for appropriated activities. As a result, this group struggles with developing standardized processes for bottom-up budget development, proactive analysis of future needs, and communication of the importance of developing realistic budgets for future years.

The current Budget staff accomplished a defined amount of work in FY2011. This is represented in Figure 12, distributing the workload for the current staff across CARMA work order types or designations. This volume of work performed in FY2011 by the existing Budget staff establishes the baseline for further analysis in this study and recommended staffing modifications to meet the needs of the future years.

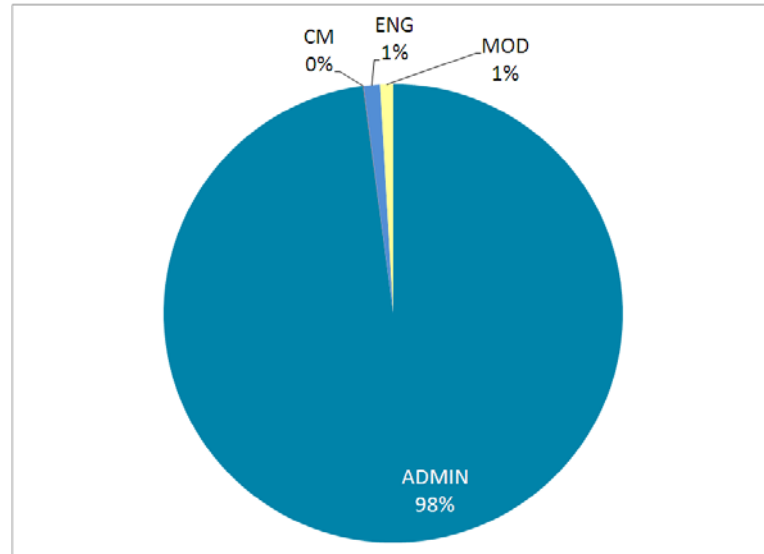


Figure 12 - FY2011 Actuals by Work Order Type, Budget

Unanticipated benefits of discussions during the initial workshops conducted under Task 1 include a greater visibility and enhanced understanding of the budgeting process among other GCPO functional groups. The budget processes outlined in those discussions are included as part of Exhibit 3.

Findings and challenges specific to the Budget Office are presented here:

- **BUD-01-F: Insufficient analysis, validation, and verification of budget performance.** While the Budget Office manages to keep in compliance with the various budgeting cycles and deadlines, they have minimal time available to conduct meaningful data analysis, validation, and verification of the performance, trends, or variations. Deeper and more detailed analysis may provide useful information to the Budget Office, as well as other managers within GCPO, such as trends in budgeting and spending, project successes and risks, and funding surpluses and shortfalls.
- **BUD-02-F: Reactive approach in budgeting versus proactive.** The budgeting information currently provided by superintendents is generally reactive, or “top-down,” considering prior-year funding levels and with an applied escalation factor based on estimated needs. Ideally, budget development would be risk-based, proactive, and “bottom-up,” and would utilize a more thorough analysis of CARMA backlog trends, capital project activity levels, and life-cycle cost analysis for each major asset type.
- **BUD-03-F: Unrealistic budget status tracking for longer-term projects.** Due to the large volume of modification and capital work in progress, it is difficult to obtain accurate estimates at completion (EACs) of work outstanding. As a result, the Budget Office generally reports status of these projects as simply *Budget – Spent = Forecast* rather than a more accurate bottom-up forecast based on actual work remaining. This is

especially an issue for longer-term, large work orders and capital projects, and does not facilitate proactive budget management.



BUD-04-F: Inconsistent processes for developing budgets. Currently, various supervisors provide information in different formats, with varying degrees of detail. This creates difficulty in analyzing true needs consistently across the GCPO. Further adding to the difficulty, misunderstandings exist about the specific definition of power- versus joint-funded projects.



BUD-05-F: Labor money is left over at end of the year. While not specifically a Budget Office issue, this raises concerns related to justifying additional positions in future years. Further analysis of the root cause of this (unfilled vacancies, overtime caps, etc.) is warranted. This finding is likely due in part to the large number of current vacancies.

3.4.3 Cultural Resources (Archaeologist)

Table 13 presents a summary of the major tasks performed by Cultural Resources, a qualitative assessment of the group’s ability to “keep up” with each task, and a high-level assessment of the current staffing levels for the group.

Task Status & Summary Staffing Assessment – Cultural Resources (Archaeologist)				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Support of O&M and capital projects	Archaeologist		X	
Tracking and maintaining historical preservation	Archaeologist		X	
FCRPS cultural program involvement	Archarologist		X	
Tribal entity coordination (coordinated with Public Affairs)	Archaeologist	X		
Reporting and plan updates including Historic Properties Management Plan	Archaeologist			X
Current staffing levels appear:		Adequate X Borderline Insufficient		

Table 13 - Task Status & Summary Staffing Assessment, Cultural Resources (Archaeologist)

Currently, this functional group consists of one individual, the Archaeologist. The distribution of FY2011 hours for this individual, across work order types, is shown in Figure 13. This volume of work performed in FY2011 establishes the baseline for further analysis in this study and recommended staffing modifications to meet the needs of the future years.

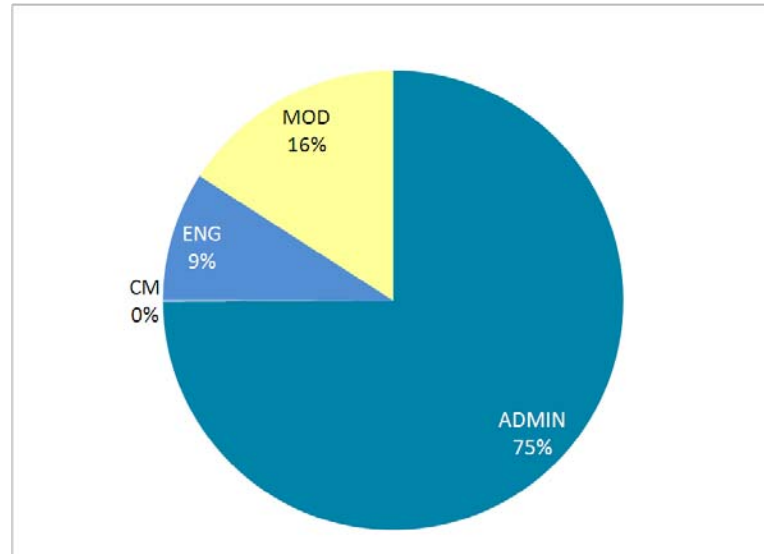


Figure 13 - FY2011 Actuals by Work Order Type, Cultural Resources

Particular findings specific to Cultural Resources include:



CRA-01-F: Inconsistent involvement of Cultural Resources in project planning and delivery. Prior to the Archaeologist being on staff, planning, design, and construction projects moved forward with little to no recognition for the archaeological and historical impacts of the work. With the Archaeologist on board, attempts were made to increase awareness of and integrate the mitigation of historical preservation matters in project delivery. However, the Archeologist is typically brought in as a reactive measure or is notified late in the project. Neglecting to involve Cultural Resources early in the engineering process creates potential for delays, especially when a historical feature/artifact is uncovered. With the increase in capital projects, the necessary review within the project life cycle is taking up more of the Archaeologist's time.



CRA-02-F: Increase in requirements, reporting and plan updates. Along with the increase of O&M and capital work comes an increase in documentation, audits, and annual reporting. Additionally, it is noted that a number of required plans have either not been created or are outdated. In particular, a Historical Properties Management Plan needs to be developed and maintained as well as a Museum Property Management Plan. Additionally, increase funding to the FCRPS cultural program has increased the workload for this functional group.

3.4.4 Engineering

Table 14 presents a summary of the major tasks performed by Engineering, a qualitative assessment of the group's ability to "keep up" with each task, and a high-level assessment of the current staffing levels for the group.

Task Status & Summary Staffing Assessment – Engineering				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Provide engineering design services to support O&M needs	Engineer			X
Provide engineering services to support capital projects	Engineer		X	
Provide drafting services	Drafter		X	
Provide input into procurement specifications (market research, spec drafting, review)	Engineer		X	
Provide construction-phase technical reviews	Engineer	X		
Provide environmental support	Env. Spec.	X		
Manage hazardous waste program	Env. Spec.	X		
Monitor downstream slope stability	Hydrologic Tech.	X		
Review SOP updates	Engineer			X
Prepare/update HydroAmp condition assessment data for BPA and TSC	Engineer			X
Provide testing and commissioning engineering services	Engineer			X
Current staffing levels appear:		Adequate Borderline X Insufficient		

Table 14 - Task Status & Summary Staffing Assessment, Engineering

The current Engineering staff accomplished a defined amount of work in FY2011. This is represented in Figure 14, distributing the workload for the current staff across CARMA work order types or designations. This volume of work performed in FY2011 by the existing Engineering staff establishes the baseline for further analysis in this study and recommended staffing modifications to meet the needs of the future years.

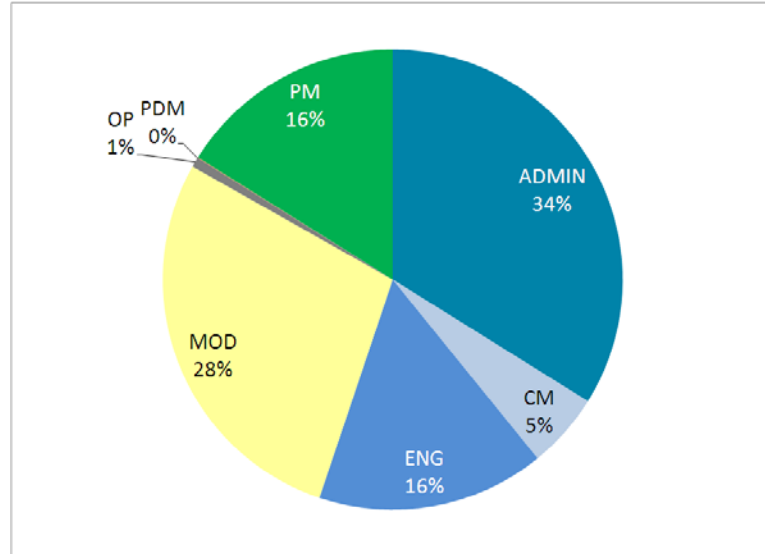


Figure 14 - FY2011 Actuals by Work Order Type, Engineering

This functional group is currently in a transitional phase experiencing a change in leadership. They are also potentially one of the most understaffed groups in the GCPO, as exhibited by the substantial number of work orders pending engineering support. Figure 15 depicts the build-up and resulting backlog of ENG work orders currently in the CARMA system. Note that this does not include the pending wave of engineering support likely required to keep the 10-year capital plan on target. The group is predominately focused on supporting capital work, leaving little engineering support for O&M efforts.

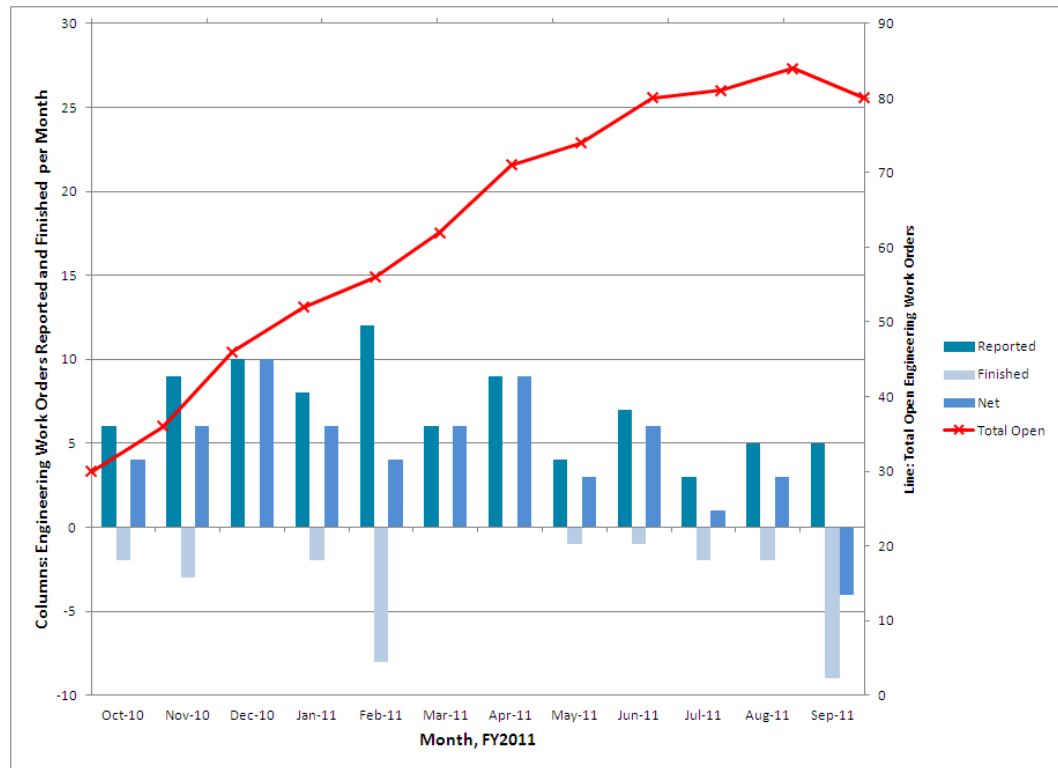


Figure 15 - Engineering Backlog, ENG Work Orders

Also, there is a backlog of non-ENG work orders with a status of Waiting for Engineering (WENG), as shown in Figure 16, some of which have been in the WENG status for well over two years.

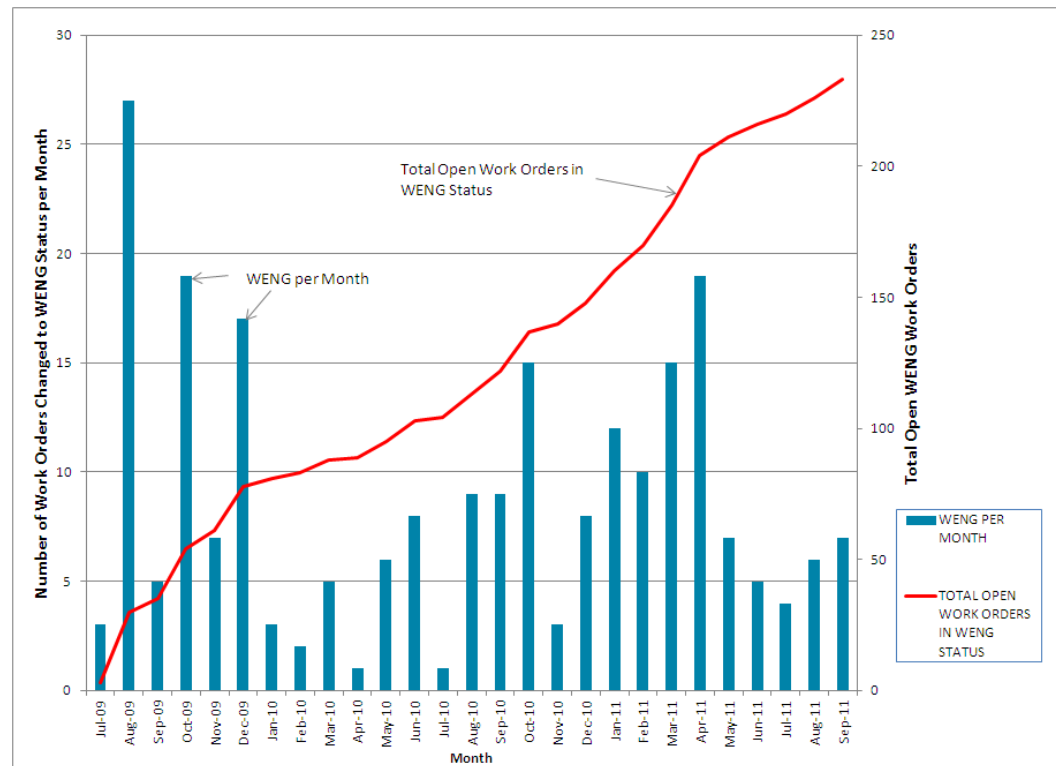


Figure 16 - Engineering Backlog, WENG Work Order Status

In addition to this large backlog of work, Engineering is also a prime example of some of the other GCPO-wide challenges identified in Section 3.1. In particular, this group lost a few key resources to retirement in recent years and with their departure, lost a substantial foundation of plant-specific knowledge. Organizational-level work planning, efficient use of the CARMA system, project ownership, and coordination issues with non-GCPO partners (i.e., the TSC) are additional examples of GCPO-wide challenges in place within this functional group.

Beyond these challenges pervasive to the broader GCPO are a set of findings specific to Engineering:

ENG-01-F: Unable to keep up with as-builts. Project drawings require updates to reflect major modifications or capital works and minor, routine alterations to plant physical characteristics. In the case of the former, best practice dictates updating project drawings with as-built data (typically initiated by the contractor and Construction Office) prior to closing out the modification or capital project. In the case of the latter, hand mark-ups are typically tracked in a structured fashion on “sticks” within the plant, then incorporated into official electronic drawings on a predefined, routine basis. Currently, neither of these processes is keeping up with the workload. Hard copy mark-ups and outdated electronic versions of drawings exist on central drawing repositories and individual workstations. This negatively impacts the ability of the entire plant, future engineering, and non-GCPO Reclamation entities to support the plant O&M and capital

efforts, and represents a potentially major quality issue that can and has resulted in substantial rework.

- ENG-02-F: Inefficiencies in initiating, prioritizing, assigning, and tracking work. Related to one of the organization-wide findings described in Section 3.1 (ref. GCP-04-F), Engineering does not have a structured manner for internally assigning and tracking work. As work arrives into Engineering, timesheet spreadsheets (staff availability) and skill sets are qualitatively assessed to determine who receives the new work. Organizational-level priorities are not considered (other than priority functions embedded in the CARMA work order). Work orders, often originated by plant staff, appear in CARMA as “waiting for engineering” (WENG), yet no automated notice (e.g., CARMA workflow functionality) is provided to Engineering that the work order is pending their action, and embedded scopes are basic and non-specific.
- ENG-03-F: Limited understanding of plant specifics. Variations exist across the GCPO power plants and equipment. Therefore, engineering solutions in support of both O&M and capital efforts requires some degree of plant-specific knowledge. However, a large percentage of the existing GCPO engineering staff lacks deep institutional plant-specific knowledge. This can result in rework and quality issues as well as inefficiencies in design.
- ENG-04-F: Inefficiencies in providing purchasing support. Successful procurement relies on sufficient definition of requirements. This applies to procurement of parts and equipment as well as services, both within and external to GCPO. Increased investment upfront in developing and defining specifications and requirements has proven to result in exponential savings downstream in project delivery. Under its current structure, Engineering is understaffed to provide the necessary support to the procurement process in specification writing and review and bid evaluation (where appropriate).
- ◐ ENG-05-F: Inconsistent consideration of environmental factors in design. Environmental considerations are often passed over in the early stages of design. In some cases, engineering does not take environmental considerations into account. In other cases, environmental solutions are implemented without fully taking into account engineering considerations. Either can result in project delays or rework later in the design or construction phases.
- ENG-06-F: Protection engineering not located at Grand Coulee makes coordination difficult with PSCCs. The PSCC’s work is not being fully supported by the TSC engineers due their remote location and use of drawings that may not be accurate. Familiarity with the plant would improve the design process and end product. Design engineers’ participation in testing would also be beneficial. However, it is difficult to get TSC engineers to Grand Coulee.

3.4.5 Fire & Physical Security

Table 15 presents a summary of the major tasks performed by Fire & Physical Security, a qualitative assessment of the group’s ability to “keep up” with each task, and a high-level assessment of the current staffing levels for the group.

Task Status & Summary Staffing Assessment – Fire & Physical Security				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
FIRE				
Emergency response (fire, medical, hazmat, rope rescue)	Firefighters		X	
System inspections, testing, and maintenance, incl. CO2 systems	Fire Protection Inspectors		X	
<i>Support regional Reclamation facilities with studies, services</i>	Firefighters	X		
Hot work permits	All	X		
Emergency training and exercises	All			X
<i>Support planning activities and contract preparation</i>	All			X
PHYSICAL SECURITY				
POV card activation	Security Assistant		X	
Order all HECP locks	Security Assistant		X	
Order all door locks, keys, etc.	Security Assistant		X	
Manage key-card access systems	Security Assistant		X	
<i>Support NERC reporting with respect to security systems</i>	Security Assistant		X	
Current staffing levels appear:		Adequate X Borderline Insufficient		

Table 15 - Task Status & Summary Staffing Assessment, Fire & Physical Security

Despite the independent tasks of Fire and Physical Security, this functional group is considered singular as both Fire and Physical Security report to the same manager.

The current Fire & Physical Security staff accomplished a defined amount of work in FY2011. This is represented in Figure 17, distributing the workload for the current staff across CARMA work order types or designations. This volume of work performed in FY2011 by the existing Fire & Physical Security staff establishes the baseline for further analysis in this study and recommended staffing modifications to meet the needs of the future years.

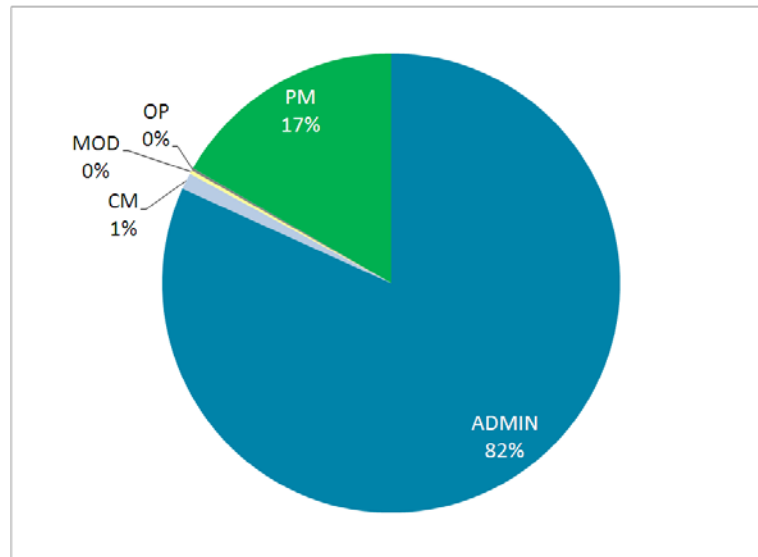


Figure 17 - FY2011 Actuals by Work Order Type, Fire & Physical Security

The Fire Department provides 24-hour service to the Grand Coulee facility. They are responsible for providing initial emergency response to all fires, including wildfires, and medical emergencies at the Grand Coulee power plants, switchyards, offices, warehouses, and associated facilities. Additionally, the Fire Department responds to similar emergencies occurring in the various surrounding towns and counties. Through a set of service contracts, the neighboring towns provide similar volunteer support in return to the Grand Coulee facility, although their priority lies with their local community's needs over those of the GCPO.

A study of the Fire Department was performed in January 2007 by Fire Risk Management, Inc. to assess the staffing levels and requirements to provide adequate fire protection throughout the facility. The report concluded that "the need to maintain a full-time presence of firefighters does not appear to be warranted," and that existing staffing was adequate (8-9 employees). However, the report only considered fire response capabilities, not medical, hazmat, or rope rescue. GCPO management elected to maintain the Fire Department at a 24-hour level. The analysis performed within this study assumes the continuation of a 24-hour fire department as a boundary condition.

The Physical Security Office manages the issuance of all identification and access cards. The Grand Coulee office is the only POV card activation office within a 150-mile radius. The Physical Security Office also manages all access card systems, locks, and keys, and has a considerable burden associated with NERC CIP reporting.

Worth noting is the disproportionate amount of overtime logged by this functional group versus all others, as shown in Figure 18. This is primarily due to the 24-on/24-off work schedule of the Fire Department, but is also a key indicator of the staffing needs of this particular functional group.

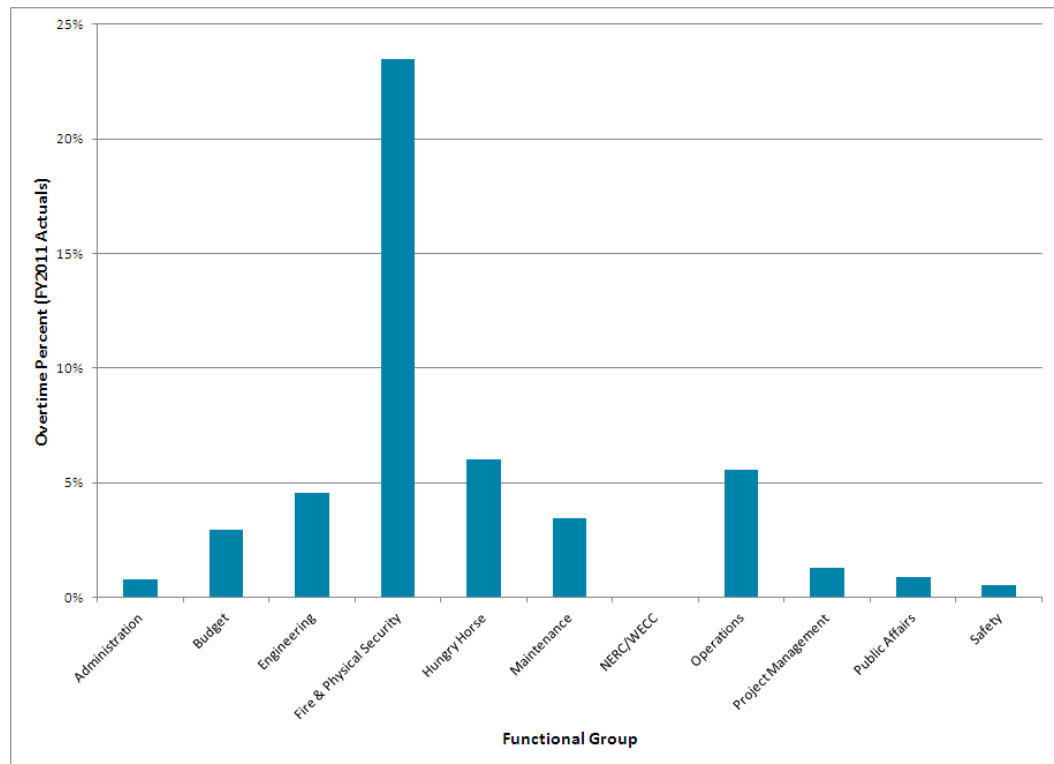


Figure 18 - Overtime Percentage by Functional Group (FY2011)

Key findings and challenges associated with this group are:

FPS-01-F: Concerns that Fire Department is not meeting NFPA requirements of four firefighters per truck, 24/7. Currently, the Fire Department provides two firefighters 24 hours per day. According to Clause 5.2.3.1.1 of NFPA 1710, “Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments,” a minimum of five firefighters are required per Engine Company (Grand Coulee has one fire truck) to respond to public emergencies in geographically restricted and/or high hazard areas. Therefore, the Fire Department cannot respond to off-project emergencies during periods outside the normal weekday working hours. Internally, during these periods outside of normal weekday working hours when the Fire Department cannot provide four firefighters under current staffing, the office has been directed to function as a “Fire Brigade 1,” meaning that fire suppression activities will be limited to those that can be accomplished safely and reasonably (ref. letter from D. Murillo to D. Carriere, 24-May-2006, included as Appendix 2). While in all other instances, Grand Coulee abides by NFPA requirements, there appears to be an inconsistency in application with respect to 24/7 staffing of the Fire Department.

- *FPS-02-F: Current Fire Chief also serves as head of Physical Security.* Considering the workload associated with running the Fire Department and the workload associated with managing the Physical Security requirements for the massive Grand Coulee facility, one employee cannot reasonably provide the required level of service to both leadership positions.
- ◐ *FPS-03-F: Current processes do not engage a medically-trained dispatch officer.* Under existing procedures, an emergency call from a Grand Coulee employee to the emergency number is answered by a Personnel Security representative, not a medically-trained dispatcher that can immediately dispatch the appropriate emergency responders and maintain contact with the caller until such responders arrive. As it currently stands, in the case of a medical or fire emergency, the Personnel Security representative that receives the call gathers the minimum pertinent information, terminates the call, then calls the Fire Department to relay the information. This introduces time and the potential for errors into the process.
- *FPS-04-F: Overloaded Physical Security staff.* In the Physical Security Office, one staff member manages the majority of all access card issuances and POV card activations. Considering the turnover rates at the GCPO and the growing number of contractors on site, this is a very time consuming job. In addition, maintaining the access card readers around site is a critical component of site security, adding to the workload. Currently, one employee, technically a PSCC within Operations, is stretched to keep up with the maintenance requirements for such physical security equipment/software.

3.4.6 Hungry Horse

Table 16 presents a summary of the major tasks performed at Hungry Horse, a qualitative assessment of the group's ability to "keep up" with each task, and a high-level assessment of the current staffing levels for the group.

Task Status & Summary Staffing Assessment – Hungry Horse				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
ADMINISTRATION, IT				
Provide general IT support and help desk activities	Admin	X		
Acquire PCs and associated equipment	Admin	X		
Monitor copiers, printers, and vides conference room contracts	Purchasing	X		
ADMINISTRATION, CONTRACTS				
Review specifications to ensure conformance to regulations	Purchasing			X
Control the purchasing process	Purchasing		X	
Expedite delivery	Purchasing		X	
Review invoices	Purchasing			X
Review P-card purchases	Purchasing	X		
Process 400+ obligations	Purchasing		X	
ADMINISTRATION, SUPPLY MGMT.				
Receive material	Purchasing		X	
Provide warehouse function	Purchasing			X
Perform fleet management	Purchasing		X	
Develop greenhouse gas emissions data per federal directive	Purchasing		X	
Perform property disposal	Purchasing		X	
Perform building inspections	Purchasing		X	
ADMINISTRATION, PERSONNEL MGMT.				
Union coordination	Facility Mgr		X	
Staff on-boarding/exit	Admin	X		
Support staff inquiries for benefits, etc.	Admin	X		
Address conduct and performance issues, oversee awards and incentives	Facility Mgr		X	
Support managers and supervisors to effectively manage staff performance	Facility Mgr/ Foreman III		X	
ADMINISTRATION, TRAINING				
Deliver mandatory training (Safety, HR)	Facility Mgr/ Foreman III		X	
Track development training	Admin		X	
Update and improve curriculum for training program	Admin/ Facility Mgr			X
Analyze training needs	Facility Mgr/ Foreman III			X

Task Status & Summary Staffing Assessment – Hungry Horse				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Coordinate training across organization	Facility Mgr/ Foreman III		X	
Assess effectiveness of training Program	Facility Mgr/ Foreman III			X
ADMINISTRATION, GENERAL SUPPORT				
Provide clerical support	Admin		X	
Management of timekeeping system	Admin	X		
Manage document management materials/systems, project/photographic archives, etc.	Admin			X
Serve as point-of-contact for Emergency Action Plan	Facility Mgr		X	
Administer reimbursement and expense programs (bankcards, relocation, vouchers, travel)	Admin		X	
BUDGET				
Monthly funds status reports	Facility Mgr	X		
Regional Office requests	Facility Mgr	X		
Budget development & updating	Facility Mgr	X		
CARMA cleanup/tracking/analysis	Maintenance Specialist			X
CULTURAL RESOURCES				
Tribal entity coordination (coordinated with Public Affairs)	Facility Mgr/ GCPO	X		
Reporting and plan updates including Historic Properties Management Plan	Facility Mgr	X		
ENGINEERING				
Provide engineering design services to support O&M needs	Engineer			X
Provide engineering services to support capital projects	Engineer	X		
Provide drafting services	Engineer Tech.			X
Provide input into procurement specifications (market research, spec drafting, review)	Engineer	X		
Provide construction-phase technical reviews	Engineer	X		
Provide environmental support	Foreman III		X	
Manage hazardous waste	Foreman III		X	
Review SOP updates	Engineer			X
Prepare/update HydroAmp condition assessment data for BPA and TSC	Engineer		X	

Task Status & Summary Staffing Assessment – Hungry Horse				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Provide testing and commissioning engineering services	Engineer		X	
FIRE & PHYSICAL SECURITY				
Coordinate emergency response (fire, medical, hazmat, rope rescue)	Facility Mgr			X
System inspections, testing, and maintenance, incl. CO2 systems	Foreman III		X	
Hot work permits	Foreman III			X
Emergency training and exercises	Facility Mgr		X	
Order all HECP locks	O&M		X	
MAINTENANCE				
Preventive maintenance – high priority <i>including NERC/WECC/CIP</i>	Facility Mgr/ Foreman III		X	
Preventive maintenance – low priority	O&M			X
Corrective maintenance	O&M		X	
Modification work orders	O&M			X
Operations work orders – trouble reports	N/A			
Major CM – FWG overhauls	Facility Mgr			X
Major Mod - GDACS	Elect., PSCC	X		
PFR/CFR recommendation work orders	O&M			X
Predictive maintenance	O&M			X
Miscellaneous standing work orders	O&M	X		
Specifications for procurement	Facility Mgr/ Foreman III		X	
Work planning	Facility Mgr/ Foreman III		X	
Work scheduling	Facility Mgr/ Foreman III	X		
Apprenticeship training	N/A			
Specialized and orientation training	Facility Mgr/ Foreman III			X
Job hazard analysis	O&M	X		
Dam infrastructure maintenance	O&M		X	
<i>Capital projects support</i>	O&M		X	
Job closeout including as-builts	O&M/Elect/ PSCC		X	
PO&M annual, CFR, and PFR reviews	All Staff	X		
<i>Condition assessments</i>	Facility Mgr	X		

Task Status & Summary Staffing Assessment – Hungry Horse				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Review of design criteria and submittals for capital projects	O&M			X
<i>HECP/SWP clearance holder for contractors</i>	Foreman I		X	
Testing and commissioning	Engineer		X	
<i>PSCC ops vulnerability assessments</i>	N/A			
Data gathering for designers	Engineer Tech	X		
<i>Crane operations and inspections for contractors</i>	O&M	X		
NERC/WECC COMPLIANCE				
<i>Collect and process required NERC/WECC compliance data</i>	Engineer	X		
<i>Coordinate externally on NERC/WECC matters</i>	Engineer	X		
OPERATIONS				
Coordination with external agencies to meet flow, level, BiOp, and power constraints	Facility Mgr/ Ops	X		
Routine operations to meet load, voltage, and flow demands	Operator	X		
Operator rounds and routine inspections	Operator	X		
Scheduling of generation, pumping, transmission and distribution outages	Facility Mgr	X		
HECP preparation, switching and placement and JHA review	Operator	X		
Operational logs, check-sheets, and document maintenance	Operator	X		
<i>WECC-required testing, training, and reporting</i>	Facility Mgr	X		
Response to alarms and preparing trouble reports	Operator	X		
SOP preparation and review, nameplates, and directories	Operator		X	
Internal communications and shift turnover	Operator		X	
Testing of alarms, gates, valves, and lockout relays	Operator		X	
PO&M monthly, annual, and incident reporting and review	Facility Mgr		X	
Operator training, certification, reading assignments, and reviews	Facility Mgr/ Foreman III			X
Testing of new or returning-to-service equipment	Operator		X	

Task Status & Summary Staffing Assessment – Hungry Horse				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
<i>Review of design criteria and submittals for capital projects</i>	Operator			X
PROJECT MANAGEMENT				
Coordinate project activities	Facility Manager		X	
Develop project plan	Facility Manager			X
Lead communication/ coordination with stakeholders	Facility Manager		X	
Develop service agreements with Regional Office and TSC	Facility Manager		X	
Oversight/management of project delivery	Facility Manager		X	
PUBLIC AFFAIRS				
Manage the Visitor Center (resources, exhibits, public tours, etc.)	Facility Mgr/ GCPO PAO		X	
Special tours, information requests (FOIA and non-FOIA), etc.	Facility Mgr		X	
Public relations and community outreach including special events permits, media relations, public meetings, etc.	Facility Mgr/ GCPO PAO		X	
Management/coordination of plans (e.g., museum property mgmt., stakeholder involvement, Visitors Center succession)	Facility Mgr/ Admin/ Purchasing		X	
SAFETY				
Health and Safety Programs and Policies	Facility Mgr/ Foreman III		X	
Equipment replacement (assessing, testing/monitoring)	Foreman III			X
Safety training (new employee training, block training)	Facility Mgr/ Foreman III		X	
Incident reporting	Facility Mgr/ Operations	X		
Reviews/inspections (O&M safety committee)	Foreman III			X
MSDS tracking	Foreman III			X

Task Status & Summary Staffing Assessment – Hungry Horse				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
CONSTRUCTION				
Submittal response (drawings, RFIs, procedures, etc.)	Facility Mgr/ Engineer/ Foreman III		X	
Contractor orientation (security, safety, material handling)	Facility Mgr	X		
Contractor safety monitoring	Foreman III		X	
Special work permits	Operations	X		
Coordination with project managers	N/A			
Pre-bid conferences and tours	Facility Mgr/ Foreman III	X		
Specification review	Facility Mgr/ Foreman III/ Engineer		X	
Value engineering studies	Facility Mgr/ Foreman III/ Engineer	X		
OTHER				
<i>Janitorial</i>	All		X	
<p style="text-align: right;"> Adequate X Borderline Insufficient </p>				

Table 16 - Task Status & Summary Staffing Assessment, Hungry Horse

The current Hungry Horse staff accomplished a defined amount of work in FY2011. This is represented in Figure 19, distributing the workload for the current staff across CARMA work order types or designations.

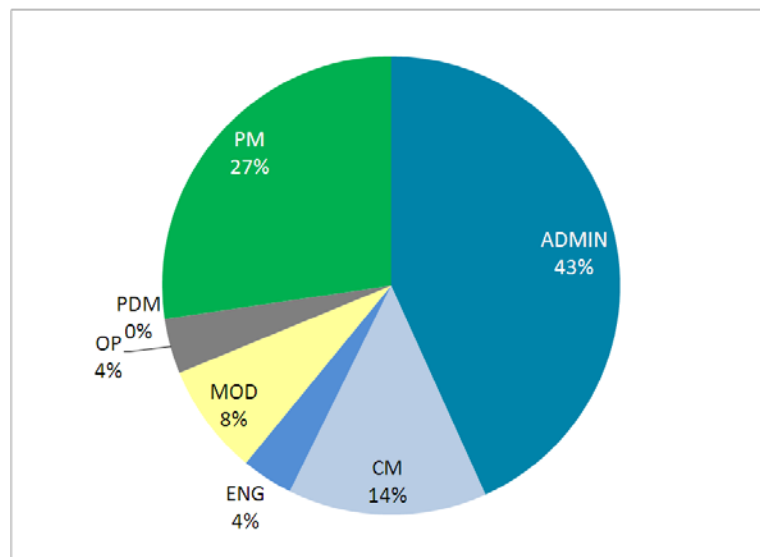


Figure 19 - FY2011 Actuals by Work Order Type, Hungry Horse

This functional group has the overall responsibility for many of the individual functional groups studied at Grand Coulee. Due to the support provided by Grand Coulee and the smaller relative size of the Hungry Horse facility, staff at Hungry Horse are often required to “wear multiple hats” related to the facility’s operation and maintenance. One example is the requirement for all staff to provide janitorial service in their individual work areas since the elimination of a part-time janitor position. Due to a wage board labor contract (versus a bargaining board contract at Grand Coulee), there are additional opportunities to cross-train staff at Hungry Horse, which contributes to increased flexibility in work assignments.

Figure 20 shows the distribution of the Hungry Horse O&M workload across CARMA work order types or designations. Figure 21 details the breakdown of workload for all Hungry Horse work orders not included in O&M.

As shown in Figure 20, 27% of Hungry Horse O&M work hours are for administrative work order types and 18% are for corrective maintenance work order types. The breakdown of administrative hours is shown in Figure 22 while the breakdown of corrective maintenance hours is depicted in Figure 23.

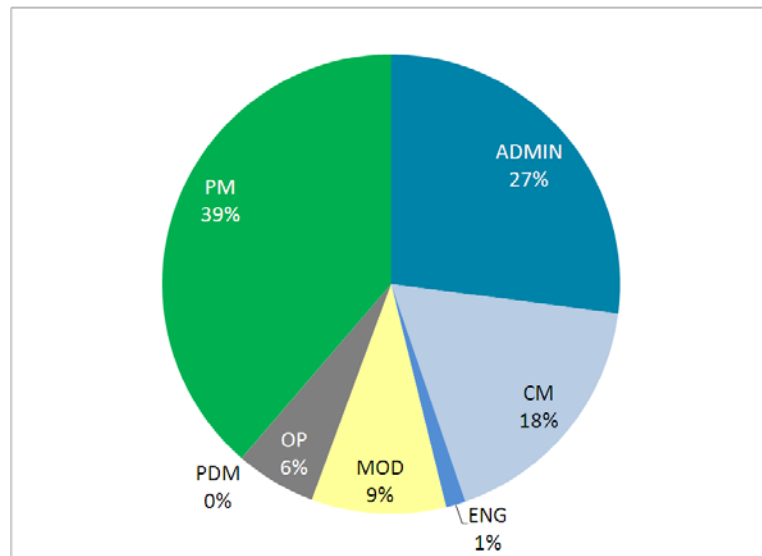


Figure 20 - FY2011 Actuals by Work Order Type, Hungry Horse O&M

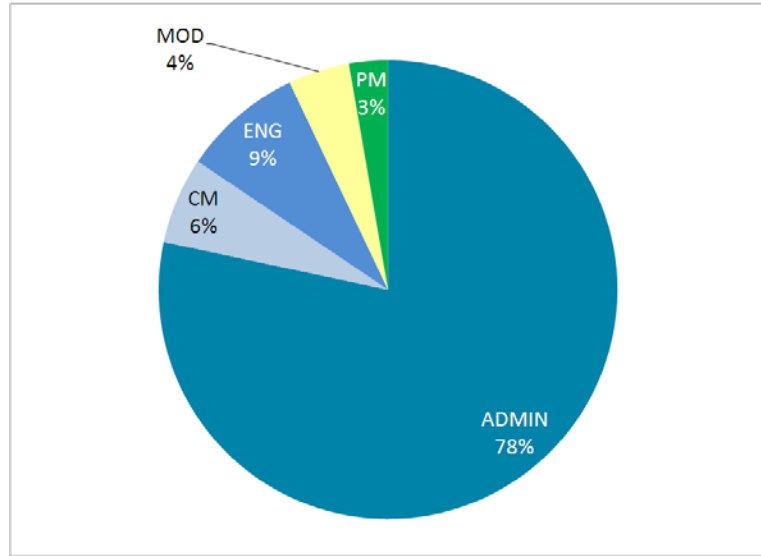


Figure 21 - FY2011 Actuals by Work Order Type, Hungry Horse Non-O&M

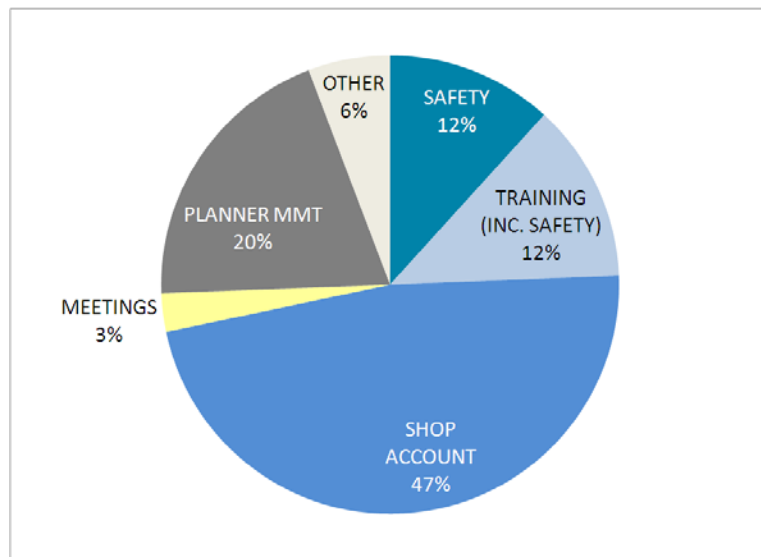


Figure 22 – Breakdown of FY2011 ADMIN Work Orders, Hungry Horse O&M

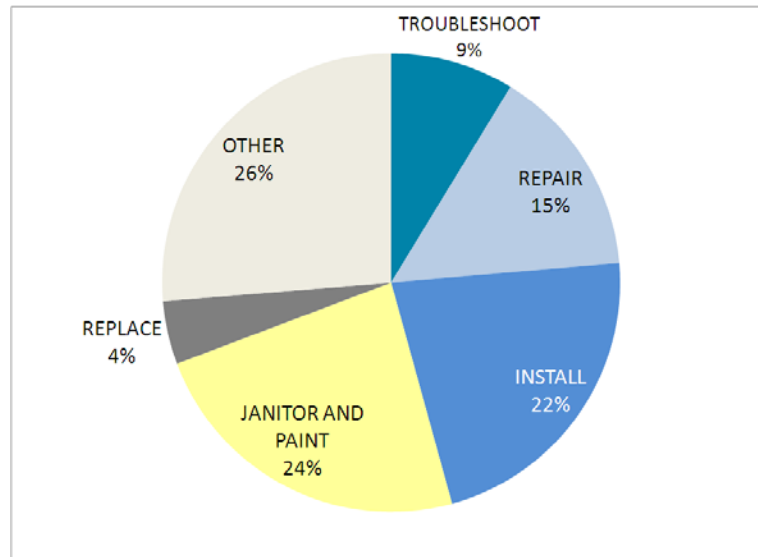


Figure 23 – Breakdown of FY2011 CM Work Orders, Hungry Horse O&M

An analysis of Hungry Horse 2010 CARMA and ETAS data determined that the actual time spent on PM work is 52% of the labor estimate stated in the work order. This could be due to insufficient resources expended to perform the work to the intended level of effort, and/or inflated or inaccurate estimated hours in the CARMA work orders. The use of skipped PM status is encouraged at Hungry Horse as a local business practice, and there are 71 skipped PM work orders in the past two years. This also is an indication that the workforce is not adequately staffed to conduct preventive maintenance as planned.

CARMA data was also analyzed to look at the work order backlog. There are 102 Modification (MOD) and Engineering (ENG) work orders in the system that have not been closed. There are 19 Corrective Maintenance (CM) work orders that are in Waiting for Engineering (WENG) status. This backlog is an indication that the engineering resources are not adequate to keep up with the work orders.


Other key findings specific to Hungry Horse include:



HHD-01-F: Growing backlog of preventive maintenance (PM) work orders. As the CARMA system is more fully implemented at Hungry Horse, there is an obvious growth in PM backlog. In addition, there are indications that trouble reports are increasing at the same time. If PM backlog continues to increase, there is an increased likelihood of unscheduled downtime, directly affecting the power revenue generated by the Hungry Horse facility.




HHD-02-F: Insufficient flexibility between electrician/mechanics and operators. Although some cross training is allowed under the current wage board contract, there are still significant limits on the scope and degree, preventing further cross training. Cross training would be especially useful between the maintenance staff (electricians and mechanics) and operators.


- 

HHD-03-F: Incomplete CARMA implementation. This finding is related to GCP-06-F. Although the Facility Maintenance Specialist has allowed Hungry Horse to make progress in CARMA implementation, there are a number of areas where that implementation remains incomplete, including:


 - Fire system, FIST, etc., not yet input into CARMA
 - Work order generation/closeout process still includes multiple manual steps
 - Work orders not updated based on actual labor estimates
 - Not getting to proactive safety inspections and monitoring
 - Basic job plans included, but not updated

- 


HHD-04-F: Standard operating procedures (SOPs) need review and further development. Due to staffing limitations, the SOPs currently in place at Hungry Horse are not necessarily current, and lack many of the details needed for a new operator to utilize them effectively. This has not been an issue to date, due to the relatively low staff turnover at the facility, but does present a concern if there is any significant change in staff.

- 

HHD-05-F: Unable to keep up with as-builts. This finding is similar to first finding for the GCPO Engineering functional group (ref. ENG-01-F). The situation at Hungry Horse is exacerbated by vacancies in the local engineering staff. The majority of as-builts still need to be updated and field verified, which creates problems when performing non-routine/contracted work. Further complications are due to the fact that GCPO uses a different system (Meridian) than the TSC (REDS).

- 

HHD-06-F: Security after hours is minimal/non-existent outside of GCPO remote monitoring. In order to achieve operational efficiencies, Hungry Horse is monitored remotely by GCPO security via sensors and closed-circuit television (CCTV). However, due to the remote location of the facility, combined with a current lack of communication and mutual aid methods, the lack of on-site security poses a concern for both the facility and staff performing operations checks during unstaffed periods. For instance, if a staff member performing a weekend maintenance check were to fall outside of an area monitored by CCTV, there would be limited opportunities to call for help. During workshop discussions performed as part of this study, staff repeatedly mentioned that they feel “unsafe” in such instances. It was also noted that Hungry Horse staff must contact two individuals at Grand Coulee to report incidents.

- 

HHD-07-F: Limited input into design documents and contract requirements. Due to the quick turnaround required during design reviews and contract finalization, the staff at Hungry Horse has limited opportunities to thoroughly review design documents. In addition, Hungry Horse staff are often not even provided with a full copy of contract documents. This creates many issues during capital work (e.g., schedule delays, end product not meeting original intent), as well as quality issues during commissioning and operation.

3.4.7 Maintenance

Table 17 presents a summary of the major tasks performed by Maintenance, a qualitative assessment of the group’s ability to “keep up” with each task, and a high-level assessment of the current staffing levels for the group. In Appendix 3 the maintenance tasks are listed with the requirement reference from the Reclamation standards (FIST, FAC, etc.).

Task Status & Summary Staffing Assessment – Maintenance				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Preventive maintenance – high priority <i>including NERC/WECC/CIP</i>	All	X		
Preventive maintenance – low priority	All			X
Corrective maintenance	All		X	
Modification work orders	All		X	
Operations work orders – trouble reports	All	X		
Major CM – ring seal gates	Mechanics		X	
Major Mod - GDACS	Elect., PSCC	X		
PFR/CFR recommendation work orders	All		X	
Predictive maintenance	All / ENG			X
Miscellaneous standing work orders	All	X		
Specifications for procurement	Planners		X	
Work planning	Planners		X	
Work scheduling	Supv II		X	
Apprenticeship training	Supv II Mechanics	Mechanics	PSCC	Electricians
Specialized and orientation training	All		X	
Job hazard analysis	All	X		
Dam infrastructure maintenance	Mechanics			X
<i>Capital projects support</i>	All		X	
Job closeout including as-builts	Elect., PSCC		X	
PO&M annual, CFR, and PFR reviews	All	X		
<i>Condition assessments</i>	All	X		
Plant review of design criteria and submittals for capital projects	Supv II			X
<i>HECP/SWP clearance holder for contractors</i>	Foreman		X	
Testing and commissioning	All		X	
<i>PSCC ops vulnerability assessments</i>	PSCC Ops		X	
Data gathering for designers	All		X	
<i>Crane operations and inspections for contractors</i>	Mechanics		X	
Current staffing levels appear:		Adequate	X Borderline	Insufficient

Table 17 - Task Status & Summary Staffing Assessment, Maintenance

The current Maintenance staff accomplished a defined amount of work in FY2011. This is represented in Figure 24, distributing the workload for the current staff across CARMA work order types or designations. This volume of work performed in FY2011 by the existing Maintenance staff establishes the baseline for further analysis in this study and recommended staffing modifications to meet the needs of the future years.

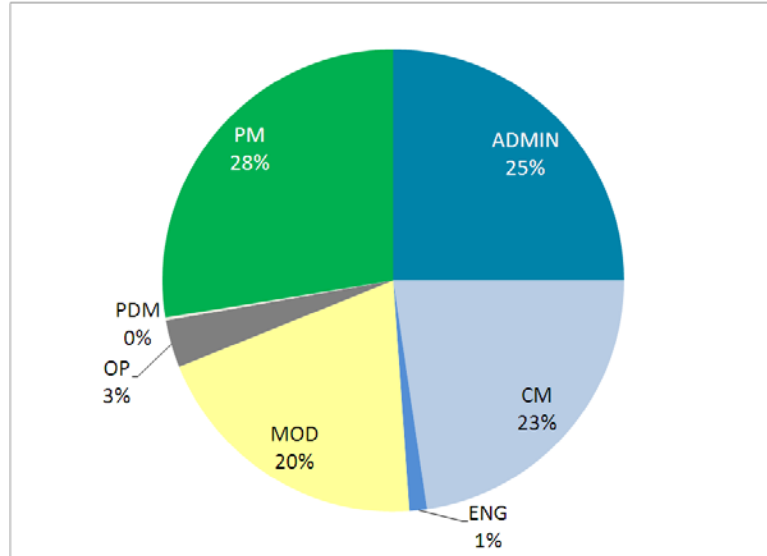


Figure 24 - FY2011 Actuals by Work Order Type, Maintenance Overall

A summary of the work orders completed in the past year by type and the major work orders for each craft across all three areas is shown in the following figures.

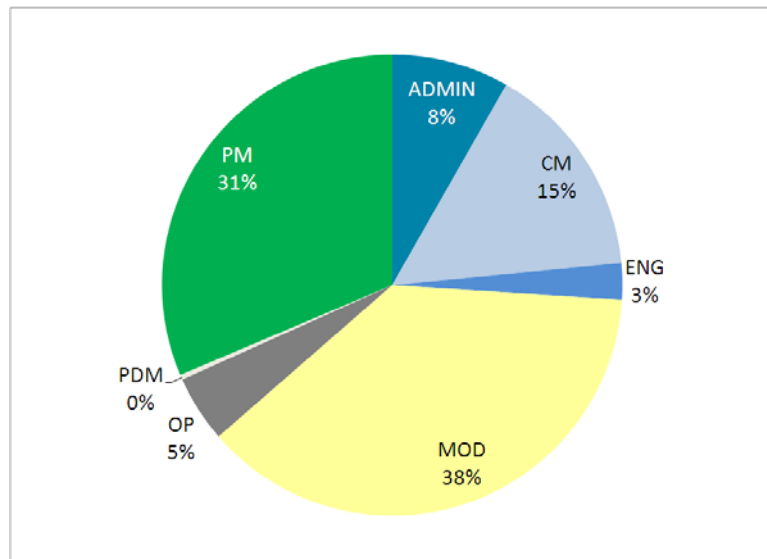


Figure 25 - FY2011 Actuals by Work Order Type, Maintenance Electricians

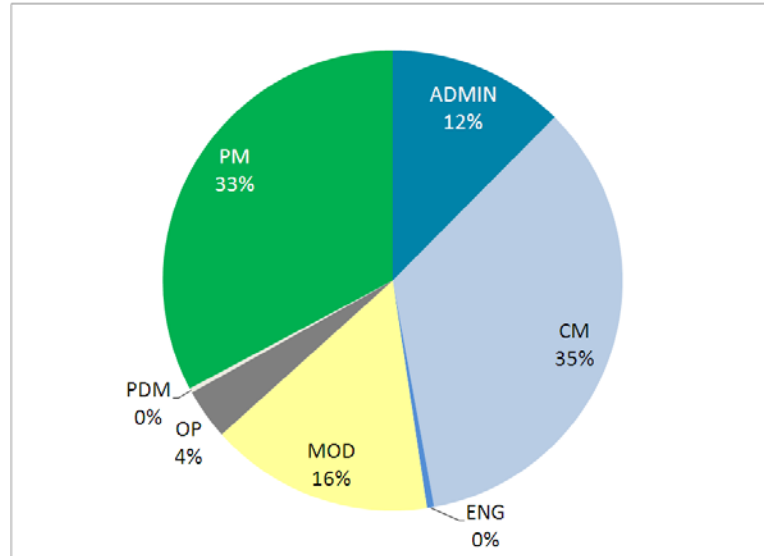


Figure 26 - FY2011 Actuals by Work Order Type, Maintenance Mechanics

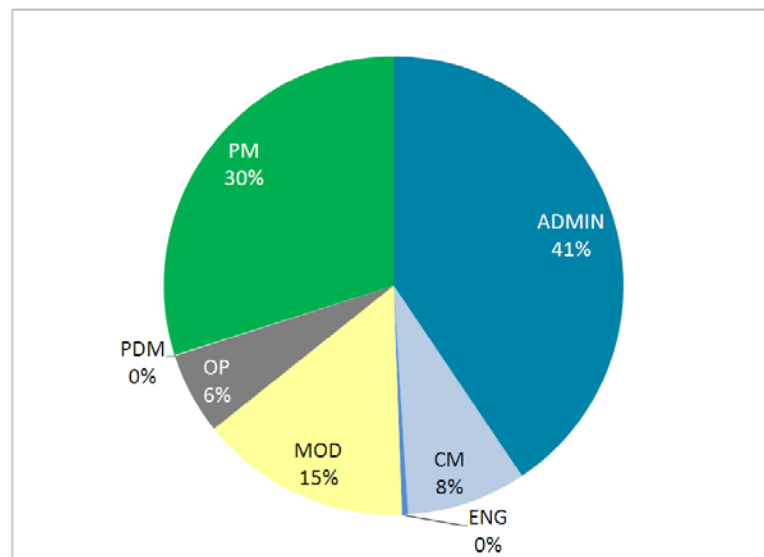


Figure 27 - FY2011 Actuals by Work Order Type, Maintenance PSCCs

The Maintenance group is divided in the three separate areas: Left Powerhouse / Pump Generating Plant (LPH/PGP), Right Powerhouse / Third Powerplant (RPH/TPP), and the Industrial Area (IA).

The LPH/PGP and the RPH/TPP are essentially structured the same, each with a Superintendent over the Mechanics, Electricians, PSCCs, and the Planners. Supervisor IIs are over the Mechanics, Electricians, and PSCCs at each plant. In addition to the routine maintenance staff, there are crews dedicated to capital projects; in the LPH/PGP there is the GDACS crew and in the RPH/TPP there is the Third Powerhouse Overhaul crew, each with its own Supervisor II. These capital project crew positions are not permanent positions but are working under a fixed term assignment (term employee).

The Industrial Area has a Superintendent over three groups: General Maintenance, Switchyard, and Machine Shop, each with a Supervisor II. In addition there is a planning group.

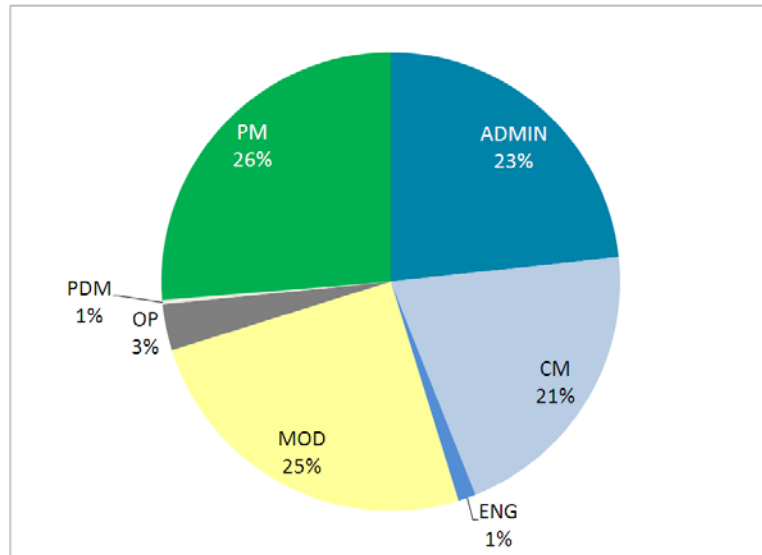


Figure 28 - FY2011 Actuals by Work Order Type, Maintenance, LPH/PGP Area

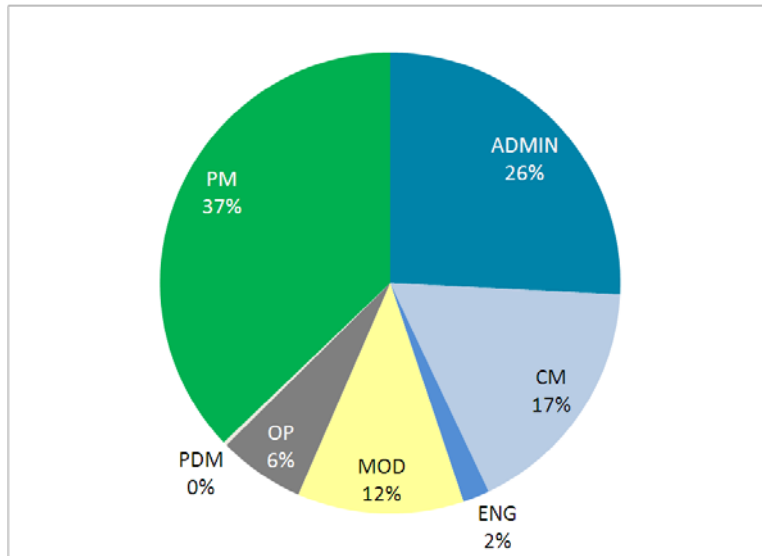


Figure 29 - FY2011 Actuals by Work Order Type, Maintenance, RPH/TPP Area

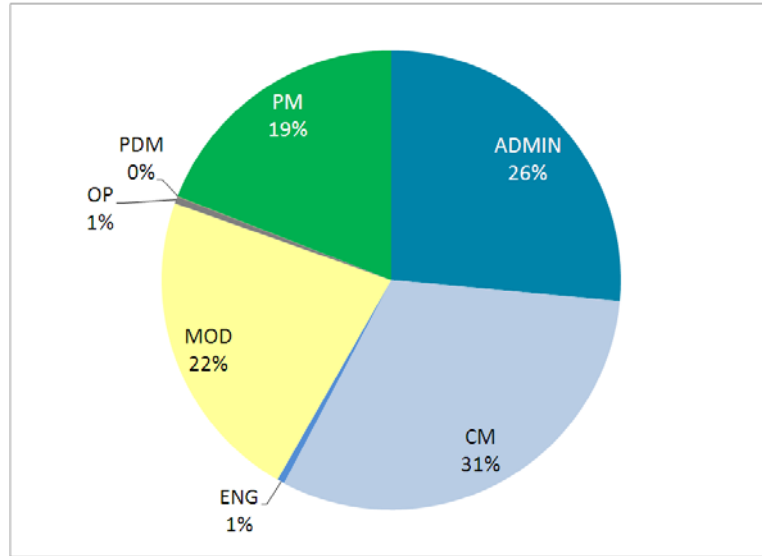


Figure 30 - FY2011 Actuals by Work Order Type, Maintenance, IA Area

As shown in Figure 28 through Figure 30, a large percentage of time for each Maintenance area is charged to the work types of ADMIN and CM. In the Maintenance areas, these work types are used for a variety of work, so they were further broken down in Figure 31 and Figure 32 provide some definition of the activities performed within each Maintenance area under the work order types of ADMIN and CM.

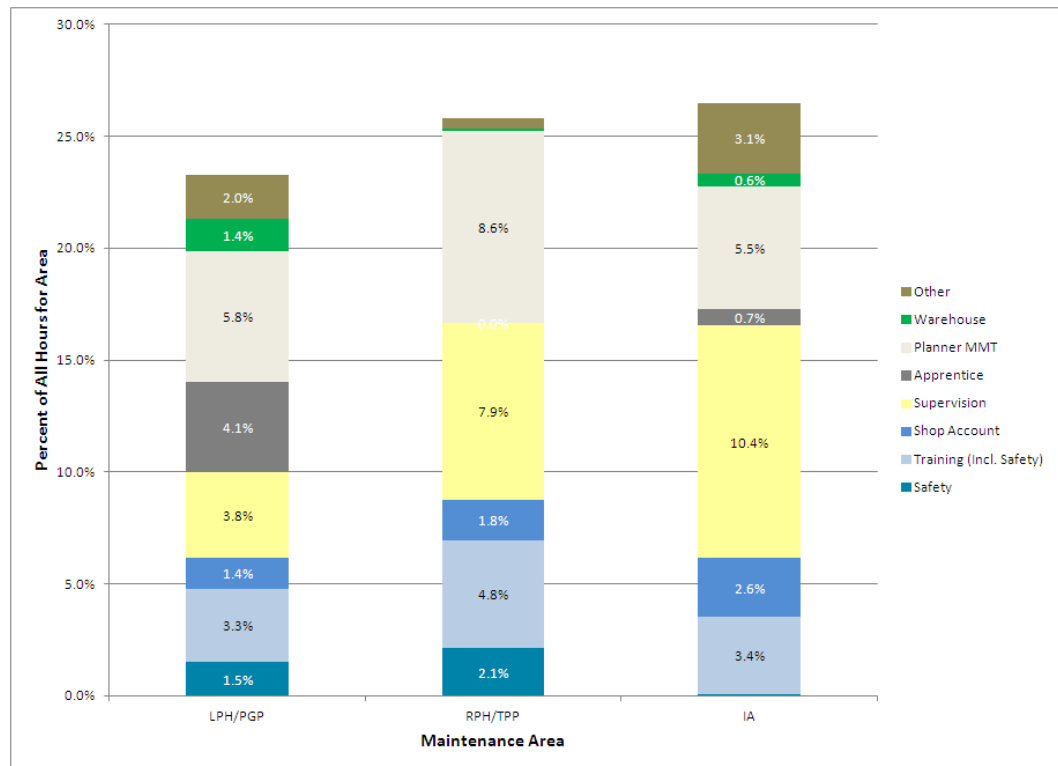


Figure 31 - Breakdown of FY2011 ADMIN Work Orders by Maintenance Area

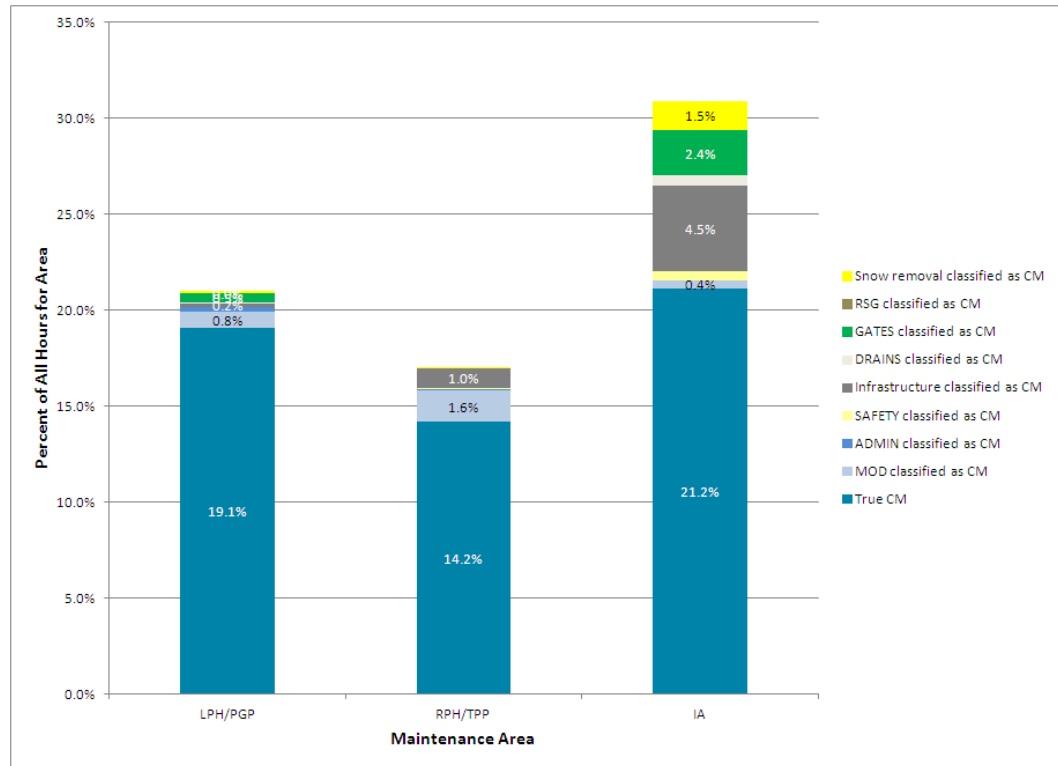


Figure 32 - Breakdown of FY2011 CM Work Orders by Maintenance Area

Maintenance is attempting to keep up with the increasing workload but the increasing number of CM and MOD work orders is making the core function of preventive maintenance increasingly difficult to complete. Additionally, Maintenance is supporting the capital projects and rehabilitation and extraordinary maintenance (RAX) modification work. Finally, the number of CM work orders is growing as a result of the aging equipment. The combination of these factors implies that the existing staffing approach, intended to cover the PM work, is no longer adequate.

A process map depicting the maintenance work planning process is included with Exhibit 3.

In addition to the organization-wide findings listed in Section 3.1, the following are findings specific to the Maintenance group:



MNT-01-F: “Fiefdoms” exist within crews. Finding GCP-02-F described the “fiefdoms” that exist at the macro level across the GCPO. However, the Maintenance group exhibits similar behavior at the micro level, within crews. Crews are assigned to one area and are entrenched with the same employees. This gives limited interaction for knowledge transfer between crews and across areas. Each of the plant areas are managed independently as if separate organizations, with inconsistent priorities and procedures between the areas. And within those areas, friction or complacency has been reported between coworkers and/or their supervisors.



MNT-02-F: Insufficient job closeout documentation (limited time, resources). Work orders are closed without the drawings and SOPs being marked up and processed for revisions. Some of the work order notes are minimal and items noted do not always get incorporated into the work plan. If these items are not revised in the work plan, they

must be readdressed when the work order comes due again. The work notes are one of the prime methods for knowledge transfer and to improve the work plans.

MNT-03-F: Incomplete performance on PM work orders. Some PMs are not getting completed before coming due again; rather, they are being skipped. Additionally, higher priority PMs are being signed off as completed, but due to time constraints, portions of the work may not have been accomplished as thoroughly as intended in the job plan. As shown in Figure 33, based on FY2011 actuals, none of the Maintenance areas is investing PM effort consistent with the estimated hours in the CARMA system for PM work orders. This could be due to insufficient resources expended to perform the work to the intended level of effort, and/or inflated or inaccurate estimated hours in the CARMA work orders.

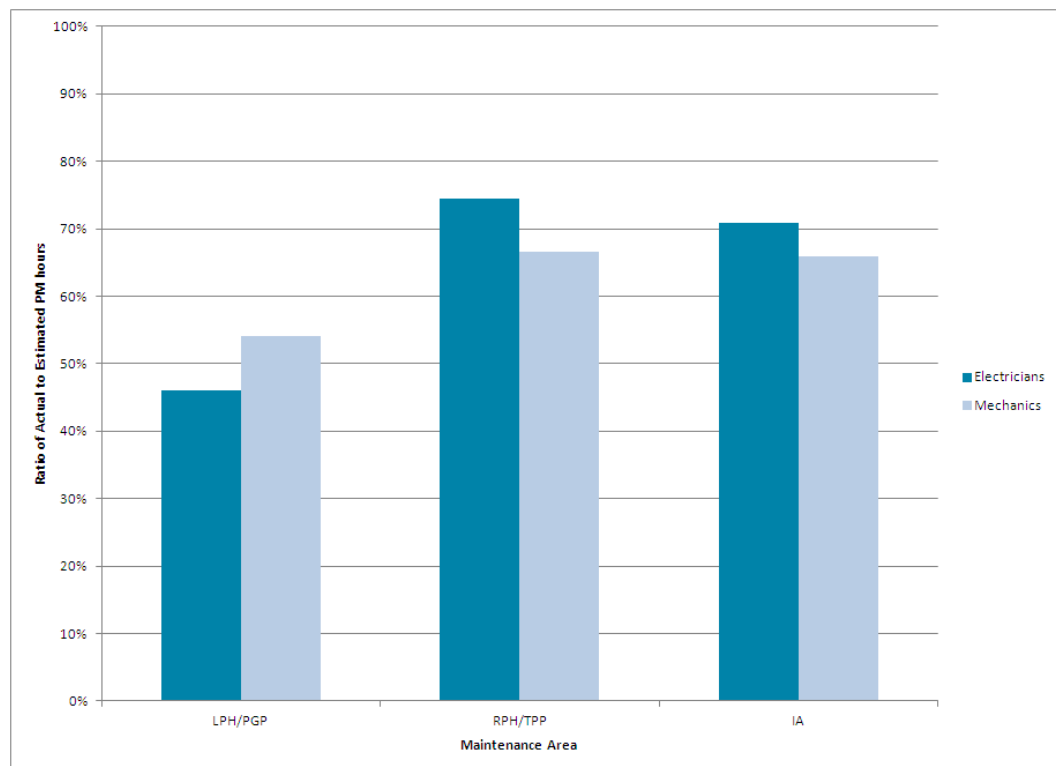


Figure 33 - Actual vs. Estimated PM Hours by Maintenance Area

MNT-04-F: Procurement is currently consuming a large portion of planner's time. Planners within the Maintenance group are investing large amounts of time supporting procurement efforts, from requisition supporting materials (research, specifications, etc.), to requisitions themselves, on through to reviewing bids. This takes away from the actual job planning and results in job plans that are less detailed than needed, adding to increased crew time needed to do the work. This finding is also referred to in ADM-06-F from the contracting perspective.

MNT-05-F: Unit outages run longer than scheduled due to lack of resources. Some unit outages run longer than scheduled due to unforeseen problems and lack of additional resources to confront the additional workload.

MNT-06-F: Ring seal and drum gate maintenance should be separated from plant maintenance. The ring seal gate is an extended maintenance project that will continue

for years as there are 40 outlet tubes with two gates each. The ring seal gate work is conducted with hydromechanics from the LHP/PGP work force. Annual drum gate maintenance takes two months and uses hydromechanics from LPH/PGP and IA. Due to resources being used for gate maintenance, the ability to complete the required plant maintenance is limited.

3.4.8 NERC/WECC Compliance

Table 18 presents a summary of the major tasks performed by NERC/WECC Compliance, a qualitative assessment of the group's ability to "keep up" with each task, and a high-level assessment of the current staffing levels for the group.

Task Status & Summary Staffing Assessment – NERC/WECC Compliance				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
<i>Validate accuracy of technical data provided for 693 standards</i>	Electrical Engineer, EE Tech			X
<i>Validate accuracy of technical data provided for 706 standards</i>	Electrical Engineer, IT Specialist		X	
<i>Perform annual NERC 706 reviews and assessments</i>	Electrical Engineer, IT Specialist	X		
<i>Update NERC/WECC tracking system and archive data</i>	All	X		
<i>Annual certifications of NERC/WECC 693 and 706 standards</i>	Electrical Engineer, IT Specialist, EE Tech	X		
<i>Coordinate externally on NERC/WECC matters</i>	Electrical Engineer		X	
<i>Create, track, and coordinate NERC/WECC self-reports and mitigations</i>	Electrical Engineer, IT Specialist, EE Tech	X		
<i>Conduct FISMA internal controls reviews</i>	Electrical Engineer, IT Specialist	X		
<i>Conduct FISMA certifications and accreditations</i>	Electrical Engineer, IT Specialist	X		
<i>FISMA plan of action and milestones tracking and management - CSAM</i>	IT Specialist	X		
<i>Provide adhoc electrical engineering support</i>	Electrical Engineer, EE Tech		X	
<i>Coordinate POM-172 correspondence</i>	Electrical Engineer	X		
<i>Coordinate local business practice and variance correspondences</i>	Electrical Engineer	X		
<i>Track and coordinate AVR/PSS reporting</i>	Electrical Engineer	X		
Current staffing levels appear:		X	Adequate	Borderline
			Insufficient	

Table 18 - Task Status & Summary Staffing Assessment, NERC/WECC Compliance

The current NERC/WECC staff accomplished a defined amount of work in FY2011. This is represented in Figure 34, distributing the workload for the current staff across CARMA work order types or designations. This volume of work performed in FY2011 by the existing NERC/WECC staff establishes the baseline for further analysis in this study and recommended staffing modifications to meet the needs of the future years.

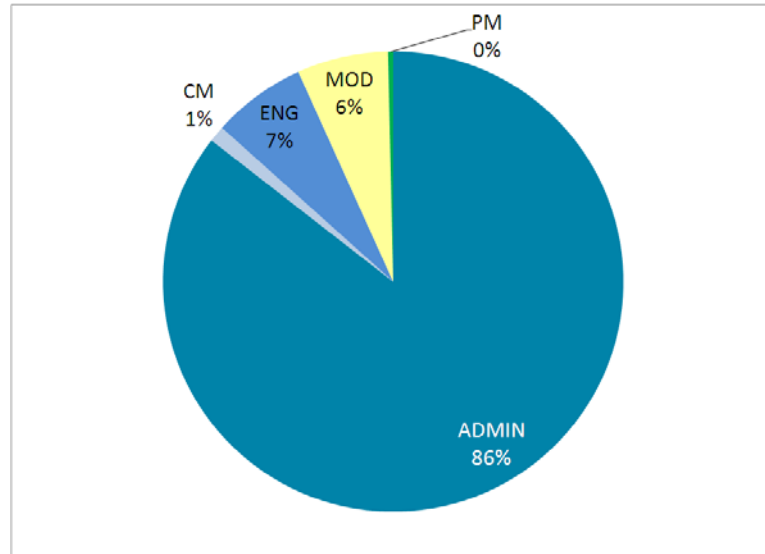


Figure 34 - FY2011 Actuals by Work Order Type, NERC/WECC Compliance

Generally speaking, this functional group is responsible for externally communicating matters relating to and internally monitoring NERC/WECC compliance. They address the requirements specific to the GCPO (some are managed by the Regional office), primarily through data provided by other functional groups. Although this sounds basic, there is a substantial amount of work processed under this group, all relatively “new” in the past 3 to 5 years.

Assessment of this group identified no major issues or challenges, including resourcing.

3.4.9 Operations

Table 19 presents a summary of the major tasks performed by Operations, a qualitative assessment of the group’s ability to “keep up” with each task, and a high-level assessment of the current staffing levels for the group. In Appendix 3 an expanded list of the operations tasks are listed with the requirement reference from the Bureau of Reclamation standards (FIST, FAC, etc.).

Task Status & Summary Staffing Assessment – Operations				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Coordination with external agencies to meet flow, level, BiOp, and power constraints	Dispatcher	X		
Routine operations to meet load, voltage, and flow demands	Dispatcher, Operator	X		
Operator rounds and routine inspections	Operator	X		
Scheduling of generation, pumping, transmission and distribution outages	Dispatcher		X	
HECP preparation, switching and placement and JHA review	Dispatcher, Operator		X	
Operational logs, check-sheets, and document maintenance	Dispatcher, Operator	X		
<i>WECC-required testing, training, and reporting</i>	Dispatcher, Operator	X		
Response to alarms and preparing trouble reports	Dispatcher, Operator	X		
SOP preparation and review, nameplates, and directories	Power Ops Specialist		X	
Internal communications and shift turnover	Dispatcher, Operator		X	
Testing of alarms, gates, valves, black-start, and lockout relays	Dispatcher, Operator		X	
PO&M monthly, annual, and incident reporting and review	Supv II Ops	X		
Operator training, certification, reading assignments, and reviews	Supv II Ops, Power Ops Specialist	X		
Testing of new or returning-to-service equipment	Operator		X	
<i>Review of design criteria and submittals for capital projects</i>	Supv II Ops			X
Adequate Current staffing levels appear: X Borderline Insufficient				

Table 19 - Task Status & Summary Staffing Assessment, Operations

The current Operations staff accomplished a defined amount of work in FY2011. This is represented in Figure 35, distributing the workload for the current staff across CARMA work order types or designations. This volume of work performed in FY2011 by the existing Operations staff establishes the baseline for further analysis in this study and recommended staffing modifications to meet the needs of the future years.

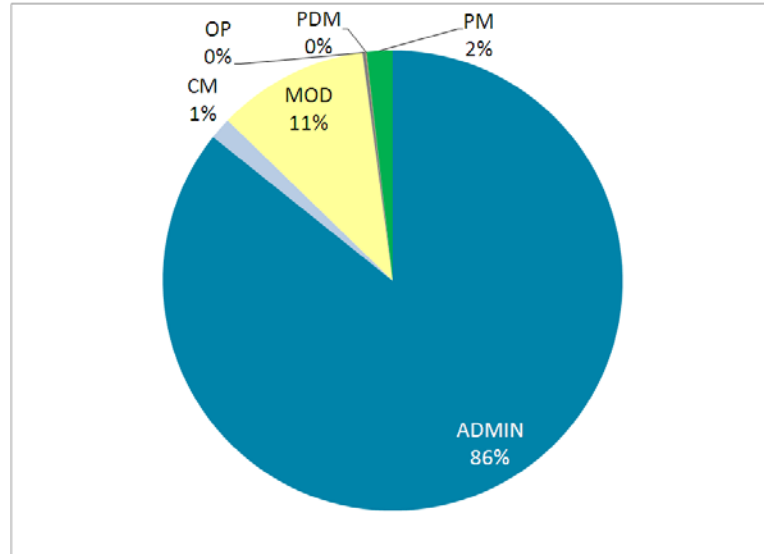


Figure 35 - FY2011 Actuals by Work Order Type, Operations

The increasing number of maintenance work orders and capital projects has an impact on Operations, as safety (Hazardous Energy Control Program, or HECP) clearances need to be placed and outages coordinated while meeting the increasing operational constraints. Additionally, the Technical Procedures and Training Office (SOP Shop) under Operations is under increasing workload to keep up with documentation changes. As new systems are turned over during capital projects the burden will increase further.

In addition to the organization wide findings specified in Section 3.1, the following are findings specific to the Operations group:

- *OPS-01-F: Struggling to keep up with increasing amount of switching orders.* The increasing amount of Special Work Permits for contractors and the increasing amount of CM and MOD work is creating a heavy burden of work for HECP switching orders. This impacts the scheduling of crews and contractors and potential delays. With many newer operators, familiarity with the systems and identification of the clearance boundaries needs special attention to maintain worker safety.
- *OPS-02-F: Limited communication from Maintenance to Operations at completion of work.* After a maintenance work order is completed, the crew notifies Operations for removal of the clearance to return the equipment to service. There is no formal communications with Operations or sign-off on the work order by Operations about the work completed. By the time the clearance is lifted and the equipment put back into service, the crews may have left for the day or weekend.
- *OPS-03-F: SOP shop cannot keep up with workload.* The FIST requirements for SOPs, Power Board Directory, Annunciator book, and OD Drawing preparation and annual review cannot be met due to resource constraints. This is in addition to other duties of orientation and training.
- *OPS-04-F: Insufficient review and participation on capital projects.* Operations should review and comment on all preliminary designs and contractor submittals to confirm that they meet the operational needs of the plant to prevent rework after the systems are installed. The designers need to solicit this review and build time into the schedule

for these reviews. Operations needs time to complete these reviews and provide comment from the perspective of the end-user of the completed work.

- OPS-05-F: Incomplete performance on required testing. FAC 02-04 requires all outlet gates and valves be exercised through a full opening and closing cycle annually. Due to resource limitations or not being able to take operating equipment out of service, this may not always be completed.
- OPS-06-F: Manual operator interface is required for unit start/stops. Dispatch-initiated start/stops from SCADA periodically require intervention from a plant operator as reported by Operations, although there are no records as to the number or percentage of start/stops that require such plant operator assistance.
- OPS-07-F: Backlog of recurring equipment trouble reports. It was reported by Operations that there are recurring trouble report issues that never are fully resolved which may be the cause of operation assisted start/stops listed in finding OPS-07-F.
- ◐ OPS-08-F: Insufficient completion of incident root cause analysis. After a power incident, an incident report (PO&M 171) is completed according to FAC-TRMR-18 (replacement for FAC 04-02). Due to a lack of engineering support, the root cause analysis of these incidences may not be fully performed.

3.4.10 Project Delivery

Table 20 presents a summary of the major tasks performed by Project Delivery, a qualitative assessment of the group’s ability to “keep up” with each task, and a high-level assessment of the current staffing levels for the group.

Task Status & Summary Staffing Assessment – Project Delivery				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Coordinate project activities	Project Manager		X	
Develop project plan	Project Manager			X
Lead communication/ coordination with stakeholders	Project Manager		X	
Develop service agreements with Regional Office and TSC	Project Manager		X	
Oversight/management of project delivery	Project Manager		X	
Establish and implement standards for project delivery (e.g. appoint PMs; resolve problems; establish and enforce overarching PM processes/ policies)	Deputy Power Manager (current PM group leader)			X
Current staffing levels appear:		Adequate Borderline X Insufficient		

Table 20 - Task Status & Summary Staffing Assessment, Project Delivery

The current Project Delivery staff accomplished a defined amount of work in FY2011. This is represented in Figure 36, distributing the workload for the current staff across CARMA work order types or designations. This volume of work performed in FY2011 by the existing Project Delivery staff establishes the baseline for further analysis in this study and recommended staffing modifications to meet the needs of the future years.

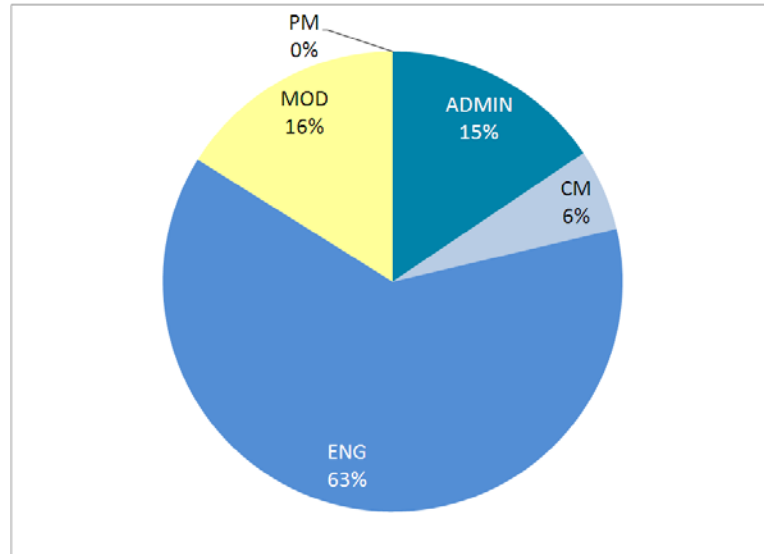


Figure 36 - FY2011 Actuals by Work Order Type, Project Delivery

This functional group is in a development phase. The Project Delivery group was recently created to address the increase in the number of projects to be executed within the plants (specifically capital projects at Grand Coulee) as well as advance the GCPO in the direction of best practices in the industry.

Throughout this document, references to “project delivery” or “project management” refer to the standard industry (e.g. PMI) definition encompassing the full realm of responsibility for successful delivery of a project. This definition refers to active management of the competing requirements of scope, time and cost while ensuring the required quality is achieved. The project manager is the person responsible for and has primary authority over the active management of the project including requirements identification, establishment of clear and achievable objectives, balancing quality, scope, time and cost, and adapting the project definition to expectations of the stakeholders.

Due to the developmental nature of this group, much of their function currently remains in the establishment phase, and the current staffing levels do not correspond to the intended functions. The current staffing levels would be insufficient to implement the robust Project Delivery Office outlined in the “Grand Coulee Project Management Process” document dated November 26, 2010, a copy of which is included in Appendix 4. Also, considering the number of projects planned for the next ten years, as shown in Figure 37, the existing staffing levels appear insufficient to manage upwards of 50 projects per year, maintaining control of scope, schedule, budget, quality, and risk.

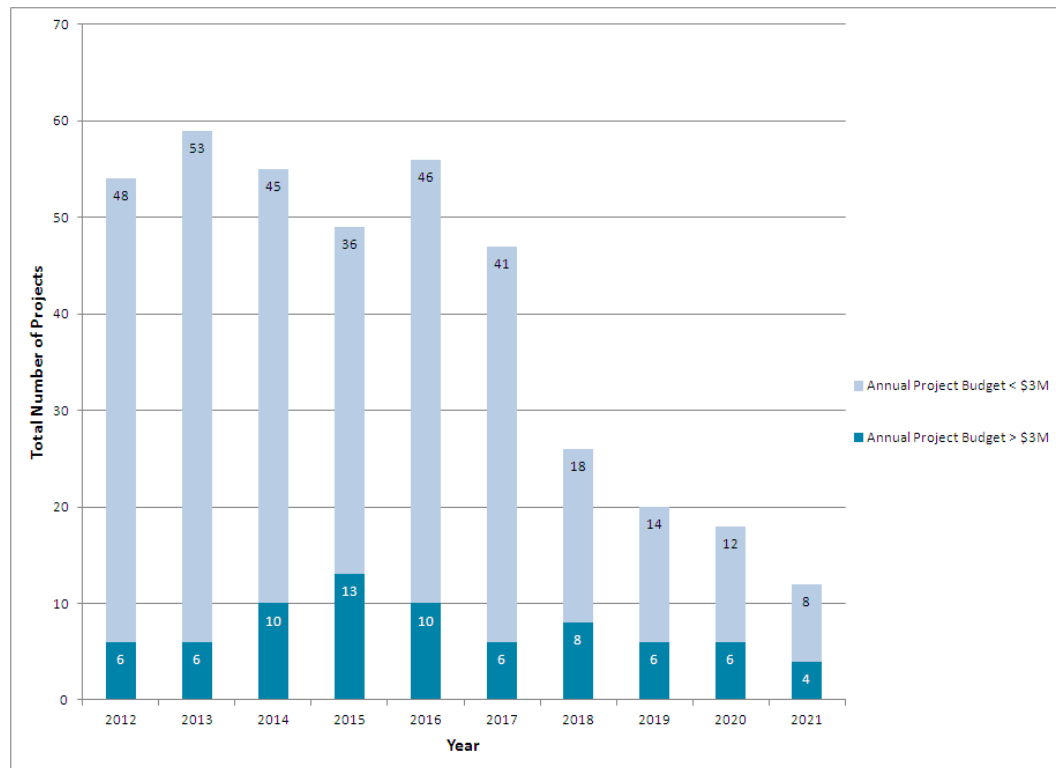


Figure 37 - Non-Routine Projects in Progress per Year

This group faces many of the GCPO-wide issues including challenges in attracting and retaining staff, insufficient organizational-level planning, limited ownership of projects from start to finish, limited transition planning and knowledge transfer, and insufficient or ineffective coordination with external partners.

The Project Delivery group is excelling at establishing themselves as a valuable resource for the plant and the Construction group in delivering projects. Developing “raving fans” in the plants and the Construction group will help ensure the success of the project delivery discipline at Grand Coulee.

Findings and challenges specific to the Project Delivery Group are presented here:

- **PDL-01-F: Lacking sufficient project delivery resources and capabilities to match backlog of work.** Project load is increasing, and the Project Delivery functional group is not yet fully implemented. A good plan for implementation of this group has been developed. Rapid implementation of this group will ensure that impact on the growing project load can be made in a timely manner.
- **PDL-02-F: Limited authority to truly manage projects from start to finish.** Proper project delivery spans the entire life cycle of the project, from project identification through construction and closeout. Current policies transfer authority, particularly with respect to contractors employed on the job, over to the Regional Construction Office. Large technical projects need project management during the life of the project including the construction phase. These projects need management of all aspects of the project including:

- Coordination of Grand Coulee, Region, TSC, and A&E contractor for submittal review and RFIs
- Scheduling, planning, and coordination between contractual matters, operational limitations, and resources
- Plant support resource planning, scheduling, and management
- Technical QA/QC program and inspection test procedure management
- Inspectors dedicated to a single project experienced in the work they are inspecting
- Engineering management of change orders
- Commissioning coordination
- Logistics and coordination in a working plant environment
- Document management
- Turnover procedures and training

The above activities are not being accomplished by the Construction office (not to say they are the intended responsibility of the Construction office). To fill that void, however, project delivery activities as listed above must be addressed, likely by the project managers in coordination with the Construction office.



PDL-03-F: Lack of clear project information. Project information is not presented in a format that allows management to quickly ascertain most significant issues. Therefore, management attention is eaten up on less significant issues. Effective management teams have the information to focus the majority of their attention on the most critical issues. Without the information to know what the most critical issues are, management often spends significant time on issues that will not have the greatest impact on the facility.



PDL-04-F: Lack of up-front planning negatively impacts delivery success. An end-to-end project plan addressing scope, schedule, risk, quality, and resources is rarely prepared. The greatest opportunity to impact project delivery at the lowest cost is during the planning stage. Missing this key opportunity to proactively prepare for success hurts the successful execution of projects and can result in increased costs, schedule delays, and poor quality results. Lack of up-front planning also impacts clarity of requirements for service providers such as the Technical Service Center creating friction between groups within Reclamation and affecting the end quality of the design and construction.



PDL-05-F: Limited understanding of past decisions and institutional knowledge. Decisions are often revisited due to lack of institutional knowledge about why they were made. Personnel changes and lack of end-to-end responsibility aggravate this. This disconnect requires additional effort to be expended and decisions to be remade. Without the context for the original actions, these repeat decisions may not be the best path forward for the facility.



PDL-06-F: QA/QC may be inadequate for large technical capital jobs. The current QA/QC in the plant is for the inspector with limited expertise to sign off on the site record sheets. The industry standard for large technical projects is to have a very intensive QA/QC program with a dedicated QA/QC manager monitoring all phases of the project. Even though the contractor is responsible for a QA program, the plans and procedures normally referred to as Inspection Test Procedures need to be reviewed for

adequacy and managed for compliance by Reclamation as applied at the factory and the site.



PDL-07-F: Limited coordination during commissioning. Commissioning is a critical stage in the project life cycle and is a joint process that involves the project manager, contractor, Construction Office, designers, engineers, operations, and maintenance. The commissioning requires scheduling with the plant operating constraints.



PDL-08-F: Limited application of a formal project closeout process. Project closeout is also a critical component of the project life cycle and needs to be managed according to an established process to ensure proper transfer of all documentation and contractual requirements to the plant.

3.4.11 Public Affairs

Table 21 presents a summary of the major tasks performed by Public Affairs, a qualitative assessment of the group’s ability to “keep up” with each task, and a high-level assessment of the current staffing levels for the group.

Task Status & Summary Staffing Assessment – Public Affairs				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Manage the Visitor Centers at Grand Coulee & Hungry Horse (resources, exhibits, public tours, etc.)	Public Affairs Officer	X		
Public Affairs including VIP/special tours, information requests (FOIA and non-FOIA), etc.	Public Affairs Officer	X		
Public relations and community outreach including special events permits, media relations, chamber meetings, website information, trade groups, water information notices, etc.	Public Affairs Officer		X	
Coordination with the Leavenworth fish hatchery	Public Affairs Officer		X	
Management of tribal relations including coordinating agreements, addressing/reporting on instances/issues	Public Affairs Officer		X	
Management/coordination of plans (e.g., museum property mgmt., stakeholder involvement, Visitors Center succession)	Public Affairs Officer			X
Current staffing levels appear:		Adequate X Borderline Insufficient		

Table 21 - Task Status & Summary Staffing Assessment, Public Affairs

The current Public Affairs staff accomplished a defined amount of work in FY2011. This is represented in Figure 38, distributing the workload for the current staff across CARMA work order types or designations. This volume of work performed in FY2011 by the existing Public Affairs staff establishes the baseline for further analysis in this study and recommended staffing modifications to meet the needs of the future years.

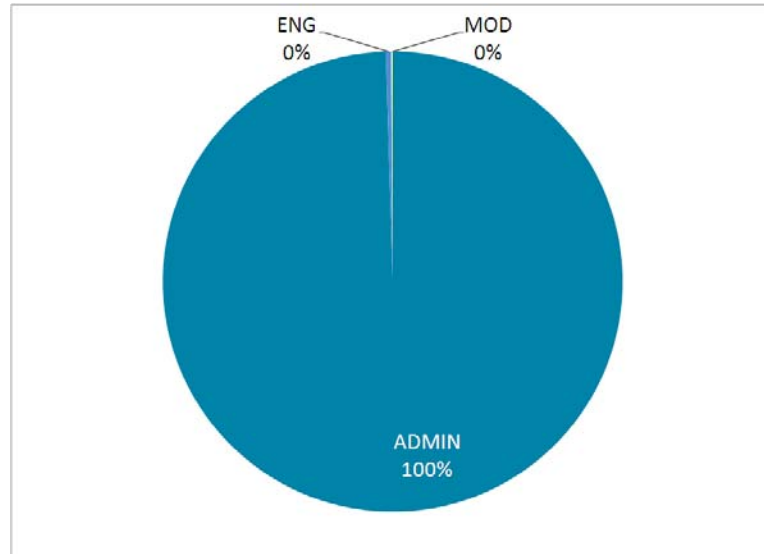


Figure 38 - FY2011 Actuals by Work Order Type, Public Affairs

This functional group manages the Visitors Centers at each GCPO site, coordinates all public relations and community outreach, and manages tribal relations on behalf of the GCPO. Most of the activities performed by this group are reactive in nature and are thus difficult to plan for outside of regularly scheduled items such as Chamber and Rotary Meetings. Based on the reactionary nature of a majority of the work tasks, priorities change on a regular, unscheduled basis and do not occur due to shifting priorities (e.g., time-critical press releases, previously announced VIP tours, etc.). Additionally, the amount of requests, coordination, and plan updates are increasing and will continually add to the effort to support.

Particular areas that are posing a significant challenge to Public Affairs include:

- *PAF-01-F: Work is primarily reactionary in nature.* On a regular basis, unanticipated requests come into Public Affairs, forcing a reallocation of efforts and postponement of a less critical task or deliverable. Planning work under such conditions is extremely challenging and requires substantial flexibility in resources.
- *PAF-02-F: Plans are out of date.* In many cases, Public Affairs are either involved in or have ownership of particular plans, including the Community Outreach Plan, Emergency Action Plan, and Scope of Collections Statement. Many of these are out of date or nonexistent.
- *PAF-03-F: Support and response requirements to outside agencies are increasing.* Time spent addressing and managing the relationships with the tribal entities and fish hatcheries is increasing, including dealing with lawsuits, monitoring/managing agreements, and meeting presentations and preparations.

- *PAF-04-F: Limited external community education/involvement program.* As a large entity within the local communities around the Grand Coulee facility, it is vital that the GCPO engage in proactive involvement within the community through educational and outreach programs. At this time, neither exists. One potential benefit of such programs is the educational opportunities within schools that could lead to future vested employees for GCPO.

3.4.12 Safety

Table 22 presents a summary of the major tasks performed by the Safety Office, a qualitative assessment of the group’s ability to “keep up” with each task, and a high-level assessment of the current staffing levels for the group.

Task Status & Summary Staffing Assessment – Safety				
Task <i>(Italics indicate new tasks within last 3-5 years)</i>	Primary Responsibility	Status		
		Keeping Up	Borderline	Not Getting Done
Health and safety programs and policies	Safety Office Group Leader	X		
Equipment replacement (assessing, testing/monitoring)	Safety & Occupational Health Specialists	X		
Safety support to plants on planning and execution of work	Safety & Occupational Health Specialists		X	
Safety training (new employee training, block training)	Safety & Occupational Health Specialists	X		
Incident reporting	GCPO Staff		X	
Reviews/inspections (O&M safety committee)	Safety Office Group Leader	X		
MSDS tracking	Safety Office Group Leader	X		
Current staffing levels appear:		X Adequate Borderline Insufficient		

Table 22 - Task Status & Summary Staffing Assessment, Safety

The current Safety staff accomplished a defined amount of work in FY2011. This is represented in Figure 39, distributing the workload for the current staff across CARMA work order types or designations. This volume of work performed in FY2011 by the existing Safety staff establishes the baseline for further analysis in this study and recommended staffing modifications to meet the needs of the future years.

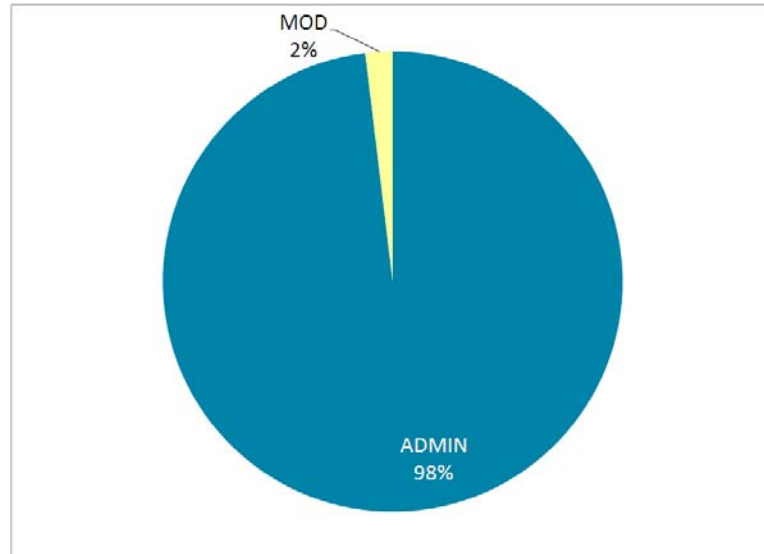


Figure 39 - FY2011 Actuals by Work Order Type, Safety

The Safety Office is responsible for defining and monitoring performance against health and safety standards and ensuring that the workplace is a safe environment to work. Generally speaking, GCPO staff place a high priority on employee safety and are supportive of basic safety measures. Unfortunately, however, as is common in many organizations, safety “rules” are sometimes viewed as a hindrance by plant staff rather than a necessary and beneficial asset. Despite this mindset, there is a vocalized desire to increase the role of safety in plant activities, including the placement of a dedicated safety representative in each maintenance area.

The Safety Office has been proactive in making sure that defined health and safety programs and policies are in place and are implemented in the plants. One positive is the O&M Safety Committee which consists of union and management representation and meets once a month to review safety concerns while referencing against the safety database (SMIS – Safety Management Information System). Items discussed at the meetings are reported back to GCPO staff.

Key findings related to the Safety Office include:

- SAF-01-F: Limited safety presence in plants. The GCPO Safety Officer cannot physically monitor all work in all plants and areas on a daily basis. Presently, the crew foreman is responsible for safety, but he does not have the time to provide the level of safety oversight equal to that of a dedicated in-plant safety officer.
- ◐ SAF-02-F: Inconsistency between GCPO safety requirements and contractor safety requirements. Whether valid or not, there is a pervasive perception that contractors follow a different set of safety rules than GCPO employees, despite the fact that contractor and GCPO employees may be working side-by-side.

- SAF-03-F: Inconsistent or incomplete incident reporting. An incident reporting process is in place within GCPO including a Safety Management Information System (SMIS) for reporting injuries and near misses; however, the process is not being implemented fully. For example, only two instances have been reported within the SMIS; root cause analysis is not being fully conducted due to lack of time by the staff; lessons learned are not being fully documented and presented to the staff; and near miss reporting is discouraged as it can have a negative impact on an individual's performance evaluation.
- SAF-04-F: Inconsistent understanding of Stop Work policies. The current Stop Work process is not fully understood across GCPO staff. Some believe that anyone can stop work; official policy is "no." Superintendents can stop work when presented with an issue by the staff. However, in practice, permanent employees will defer to temporary employees to carry the stop work request. Additionally, the Safety Office is pressured from the plants that the safety-related work stoppages are unnecessarily costing GCPO revenue. The Safety Office is in the process of drafting a formal Stop Work policy, but the feeling is that it will be difficult to gain acceptance within the plant.
- SAF-05-F: Misalignment in the contractor Special Work Permit safety process. The Special Work Permit HECP is held by a Foreman I from Grand Coulee that may not be involved in the project. This system makes the Foreman I responsible for the safety of the contractor, but he does not have involvement in the contract work or authority over the contractor. The Foreman that holds the clearance needs to have the time to become involved in the work being done under the clearance by the contractor.

4.0 Staffing Recommendations under Current Organization

4.1 Overview

This chapter presents recommended staffing adjustments to address the challenges presented in Chapter 0, assuming no changes to organizational structure or business process. To develop these projected staffing needs, MWH performed a detailed quantitative analysis to estimate the volume of work associated with upcoming capital and O&M requirements. The analysis also included estimations of the staffing required above FY2011 baseline levels to address incomplete tasks or best practices, excessive overtime, and skipped PM work orders.

Figure 40 depicts the division of FY2011 actuals, in terms of FTEs across the following categories. Note that this analysis and associated figure do not include the 55 Personnel Security staff positions.

- **Regular Time** – 355 FTEs account for the regular or straight time actually logged by GCPO employees in FY2011
- **Overtime** – 17 FTEs account for the overtime logged by GCPO employees in FY2011. This represents an average of approximately 5% overtime per employee. In actuality, of course, some functional groups experienced much higher overtime rates, as shown in Figure 18.
- **Skipped PMs** – 21 FTEs account for the hours associated with PM work orders skipped plus the difference between the estimated and the actual PM work order hours in the CARMA system in FY2011
- **Incomplete Tasks** – 59 FTEs account for the estimated hours associated with tasks identified as “Not Getting Done” or “Borderline” in the tables presented in Section 3.4.

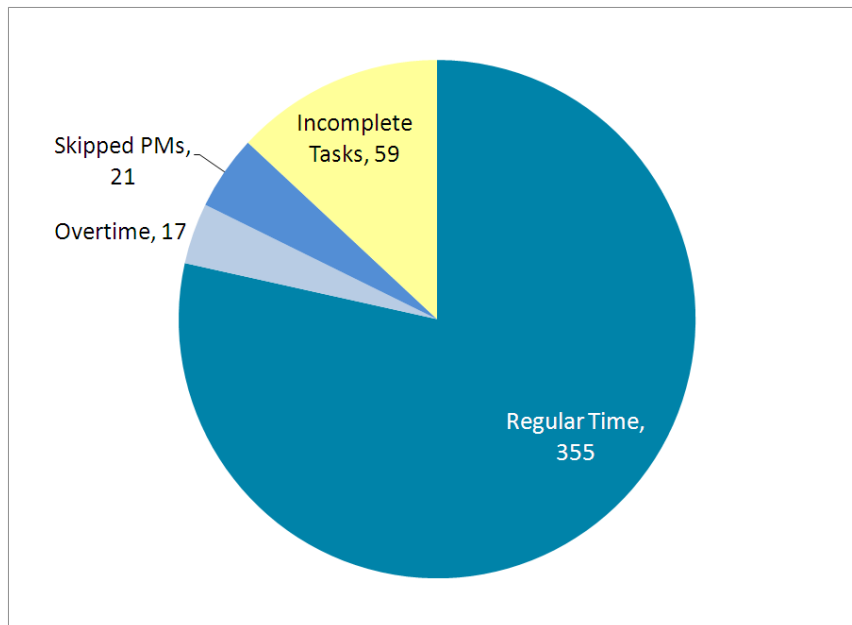


Figure 40 - Gap in FY2011 Actuals

In other words, the work actually accomplished in FY2011 represents approximately 372 FTEs, the sum of the regular time and overtime logged in the E-TAS system (excluding all Personnel Security personnel, as is the case throughout this study). However, the work intended to be performed, inclusive of skipped PMs and incomplete tasks, represents an additional 80 FTEs in

FY2011 alone. In an ideal setting, the GCPO could have benefited from additional 80 FTEs in FY2011 to accomplish of the work scheduled for that period.

Projecting forward, starting with FY2013, MWH analyzed the FTEs required to meet the needs of the GCPO and its increasing workload associated with upcoming O&M and capital plans. A detailed explanation of the analysis performed and the methodology utilized is presented in Appendix 5. Results of this analysis, across the entire GCPO, are summarized in Figure 41. Further details for each functional group are presented in Section 4.3.

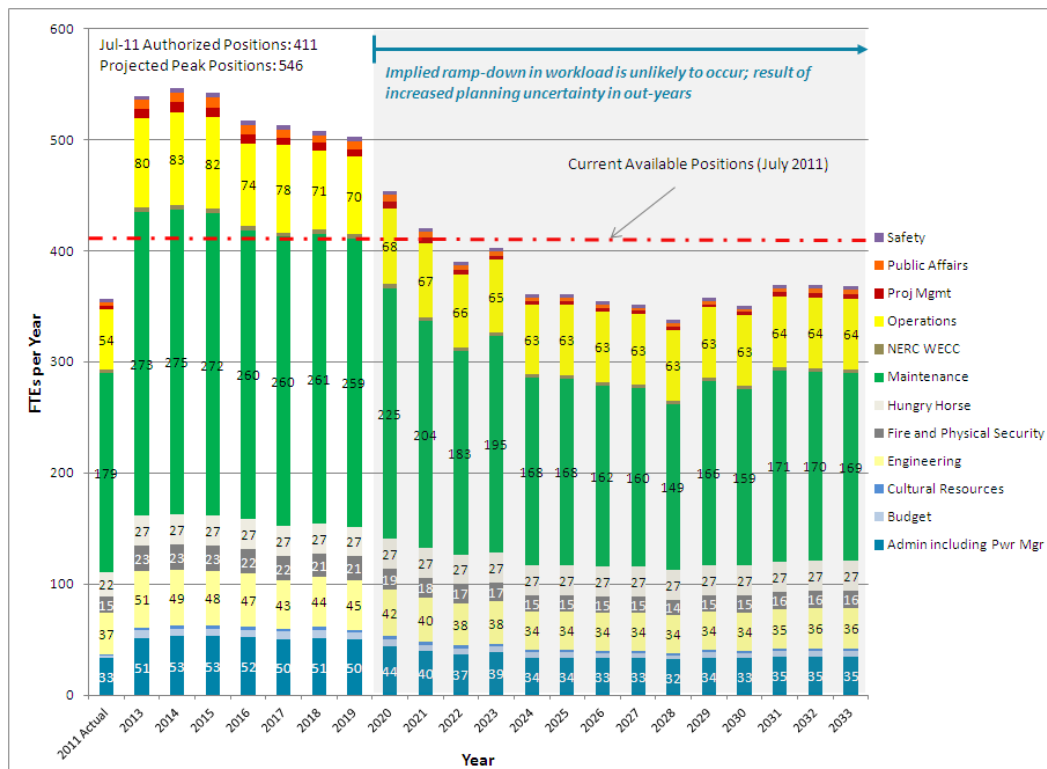


Figure 41 - FTEs Required Per Year Under Current Organization, GCPO

As Figure 41 implies, a major increase in staffing levels is required to meet the capital and O&M demands of the coming years, with the peak need coming in 2014. Although the figure implies a drop off in staffing requirements in later years, it is anticipated that additional capital work will be identified for those years, and/or the peak workload will be leveled out over the 10 to 15 year planning horizon, justifying the need for sustained increased staffing over the long term.

4.2 Residual Risks vs. Baseline

Section 3.3 presented the baseline risk assessment, the qualitative analysis of the risks inherent in the GCPO organization under the current, no-action scenario. Table 23 presents an updated version of this same analysis, considering the proposed staffing changes presented in this Chapter 0, representative of the data-driven staffing levels required should the GCPO only increase staffing to address its workload challenges (no changes to organization, processes, or systems). The effects of the proposed staffing levels on the cause of each risk sub-area are listed in Table 23; incremental changes versus the baseline risk analysis shown in Table 5 are highlighted in red. The impact risk scores do not change as they are not affected by the

proposed adjustments in staffing levels, but the probability risk scores change due to Chapter 0, data-supported staffing adjustments.

Increase Staffing Risk Assessment						
Risk Areas	Risks	Effect of Increased Staffing on Risk Causes	Impact	Probability	Risk Score	Area Risk Score
Planned Outage Extensions	Lost generation and capacity from extended maintenance outages	Increased resources reduces probability	3	3 (-1)	9 (-3)	10.5 (-2.5)
	Lost generation and capacity from extended project rehabilitation outages	Increased support resources reduces probability	4	3 (-1)	12 (-3)	
Equipment Reliability	Lost generation and capacity from forced outages	Increase maintenance resources reduces probability	3	4 (-1)	12 (-3)	10 (-2)
	Major equipment damage due to failure	Increase maintenance resources reduces probability	4	2 (-1)	8 (-3)	
Safety	USBR personnel injury, accident, disability, or fatality	Adding inexperienced staff without increased supervision increased risk	4	4 (+1)	16 (+4)	16 (+2)
	Contractor personnel injury, accident, disability, or fatality	No effect	4	4 (0)	16 (0)	
Environmental	Environmental incident - on project	No effect	3	2 (0)	6 (0)	7.7 (-1.6)
	Water control incident	Increase maintenance resources reduces probability	5	1 (-1)	5 (-5)	
	Bi-Op violation	No effect	4	3 (0)	12 (0)	
Institutional Knowledge Loss	Operations Error	No effect	4	3 (0)	12 (0)	12 (0)
	Maintenance Re-Work	Increased maintenance without adequate training and supervision results in no change in probability	3	4 (0)	12 (0)	

Table 23 - Risk Assessment assuming only Increases in Staffing

Increasing staffing alone does improve the risk profile of the GCPO across these five categories. Note that with respect to safety, the risk position worsened (+2) due to the large number of additional staff inserted into the organization without improvements to factors such as training, employee integration, and supervisor-to-employee ratios. Also, increases in staffing alone have no effect on the existing risk of institutional knowledge loss.

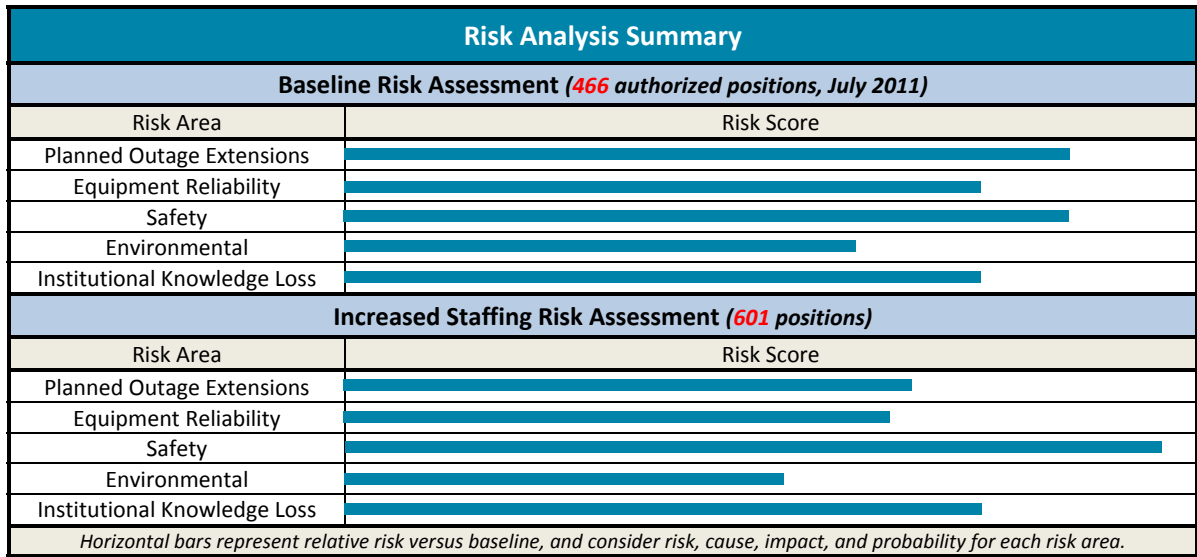


Figure 42 - Risk Analysis Summary

4.3 Functional Group Recommendations

The analysis performed as described in Appendix 5 also provided staffing estimates for each functional group, using 2011 actuals for each functional group (regular time only, not overtime) as the baseline for forecasted years. Figures similar to Figure 41 are provided below for most functional groups with a brief discussion or explanation of the results. Within this chapter, detailed staffing recommendations by job title/position are not provided; this is reserved for Chapter 6.0, Recommendations for Optimized Organization, representative of the final recommendations of this study for implementation. This chapter is intended to provide the context for those recommendations, considering only staffing adjustments without any changes to organization structure or business process.

4.3.1 Administration

Figure 43 depicts the projected Administration staffing requirements under the current organization structure and business processes. Administration staff requirements are assumed to be proportional to the capital and O&M workload of the GCPO organization and the staffing increases projected for other functional groups such as, but not limited to, Engineering, Maintenance, and Operations. As shown in the figure, Administration staff would need to increase from the current level of 38 available positions (existing staff plus vacancies as of July 17, 2011) to a peak of approximately 50 employees.

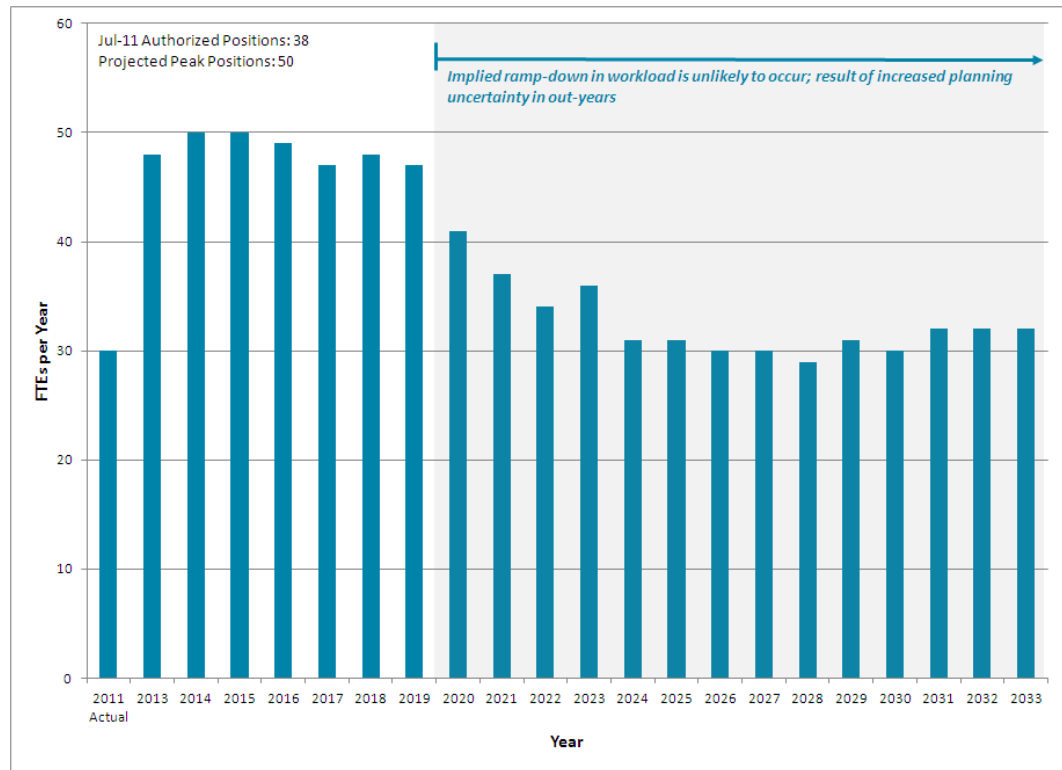


Figure 43 - FTEs Required per Year under Current Organization, Administration

4.3.2 Budget

Figure 44 depicts the projected Budget staffing requirements under the current organization structure and business processes. Budget staff requirements are assumed to be proportional to the capital and O&M workload of the GCPO organization and the staffing increases projected for other functional groups such as, but not limited to, Engineering, Maintenance, and Operations. As shown in the figure, Budget staff would need to increase from the current level of 4 available positions (existing staff plus vacancies as of July 17, 2011) to a peak of approximately 7 employees.

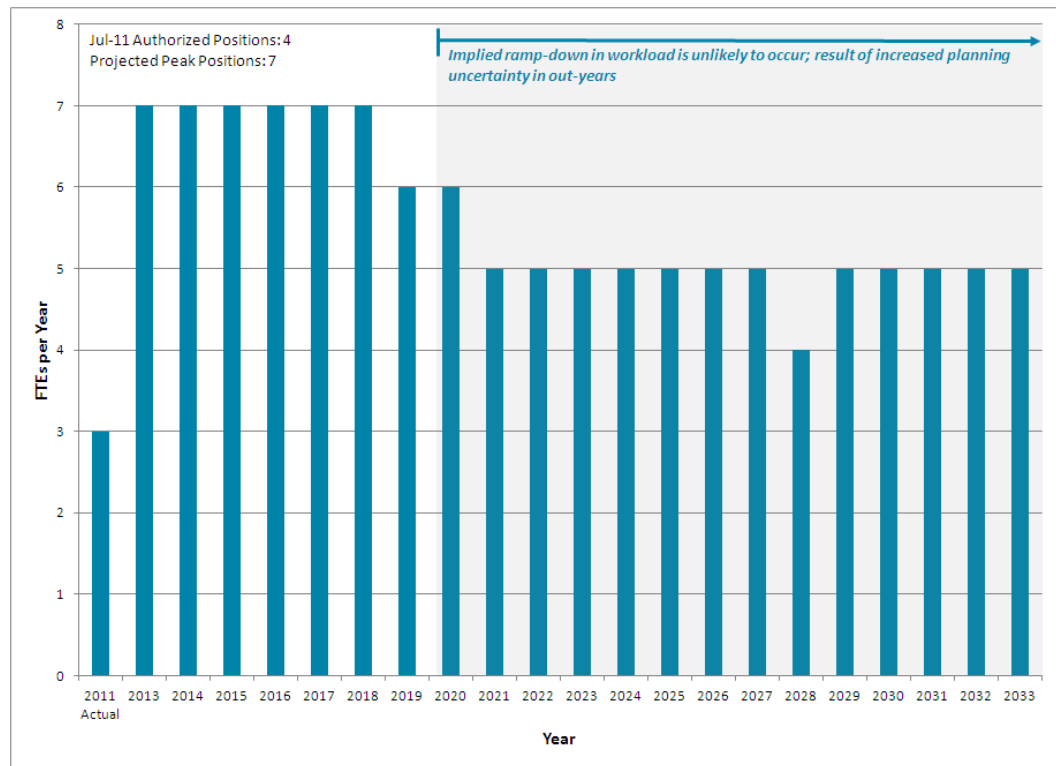


Figure 44 - FTEs Required per Year under Current Organization, Budget

4.3.3 Cultural Resources (Archaeologist)

Figure 45 depicts the projected Cultural Resources staffing requirements under the current organization structure and business processes. Cultural Resources staff requirements are based upon the analysis outlined in Appendix 5. As shown in the figure, Cultural Resources staff would need to increase from the current level of 1 position (as of July 17, 2011) to a peak of approximately 3 employees.



Figure 45 - FTEs Required per Year under Current Organization, Cultural Resources

4.3.4 Engineering

Figure 46 depicts the projected Engineering staffing requirements under the current organization structure and business processes. Engineering staff requirements are based upon the analysis outlined in Appendix 5. As shown in the figure, Engineering staff would need to increase from the current level of 40 available positions (existing staff plus vacancies as of July 17, 2011) to a peak of approximately 51 employees.

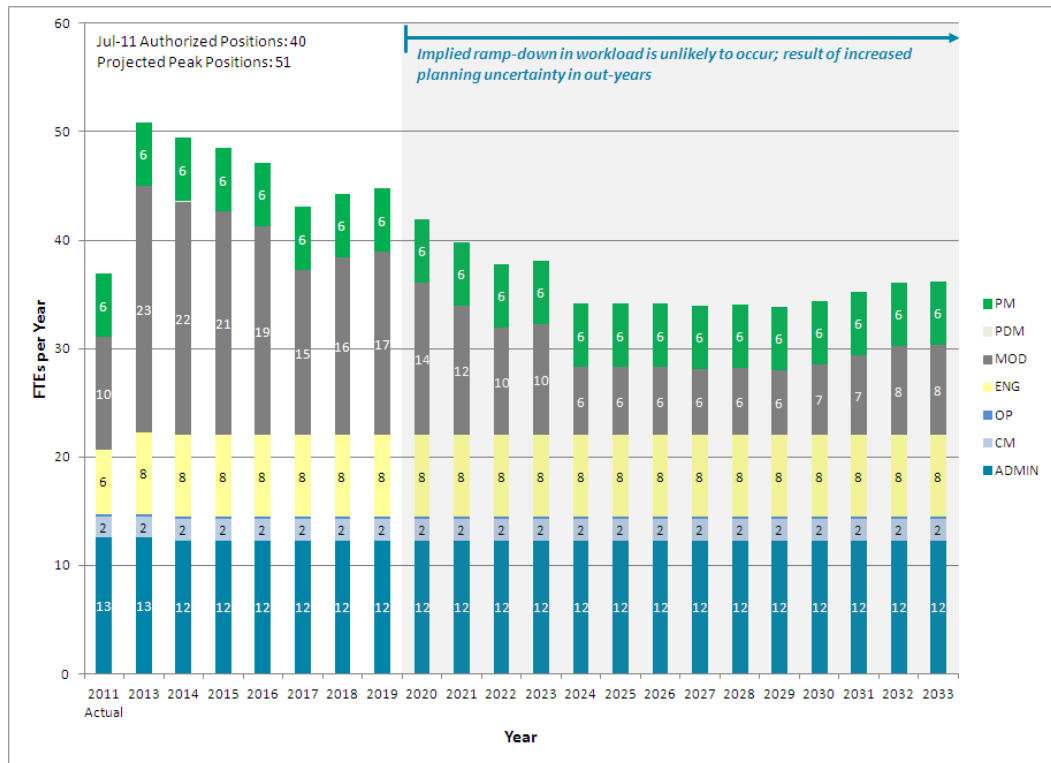


Figure 46 - FTEs Required per Year and Work Order Type under Current Organization, Engineering

4.3.5 Fire & Physical Security

Figure 47 depicts the projected Fire & Physical Security staffing requirements under the current organization structure and business processes. Fire & Physical Security staff requirements are assumed to be proportional to the capital and O&M workload of the GCPO organization and the staffing increases projected for other functional groups such as, but not limited to, Engineering, Maintenance, and Operations. As shown in the figure, based on this analysis, Fire & Physical Security staff would need to peak at approximately 23 employees, above its current level of 13 available positions (existing staff plus vacancies as of July 17, 2011).

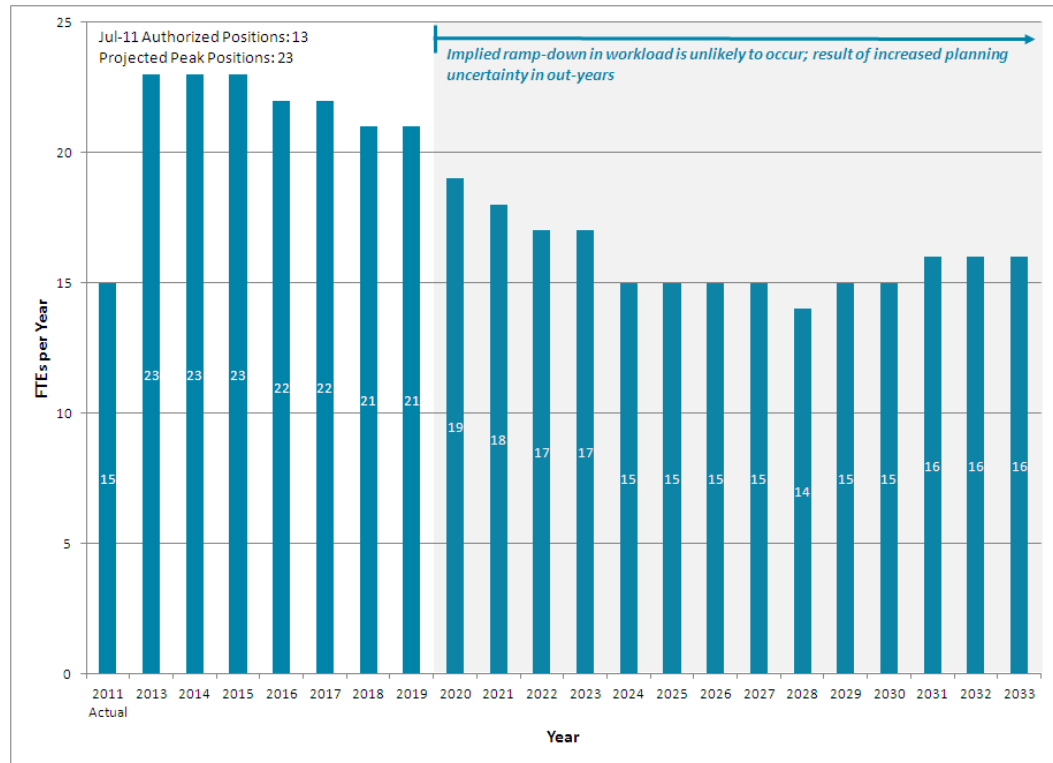


Figure 47 - FTEs Required per Year and Work Order Type under Current Organization, Fire & Physical Security

4.3.6 Hungry Horse

Due to the limited availability of CARMA data for Hungry Horse, the analysis methodology described in Appendix 5, applied to most other functional groups as part of this study, could not be applied to Hungry Horse. Therefore, only a qualitative estimate of the staffing needs under current organization structure and business processes could be achieved. Based on a review of the capital and O&M plans for this facility and workshops conducted under Task 1, it is estimated that staff would need to increase from the current level of 23 available positions (existing staff plus vacancies as of July 17, 2011) to a peak of approximately 27 employees.

4.3.7 Maintenance

Figure 48 and Figure 49 depict the projected Maintenance staffing requirements under the current organization structure and business processes, by work order type and job title/role, respectively. Maintenance staff requirements are based upon the analysis outlined in Appendix 5. As shown in the figure, Maintenance staff, across all areas, would need to increase from the current level of 200 available positions (existing staff plus vacancies as of July 17, 2011) to a peak of approximately 275 employees.

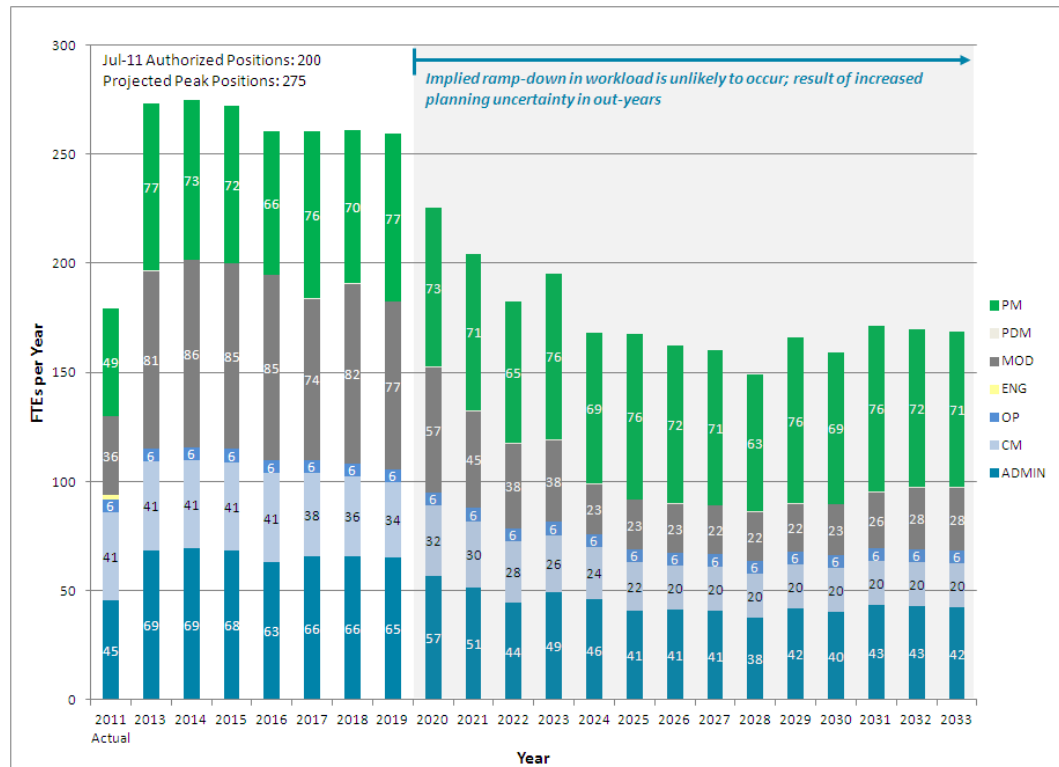


Figure 48 - FTEs Required per Year and Work Order Type under Current Organization, Maintenance

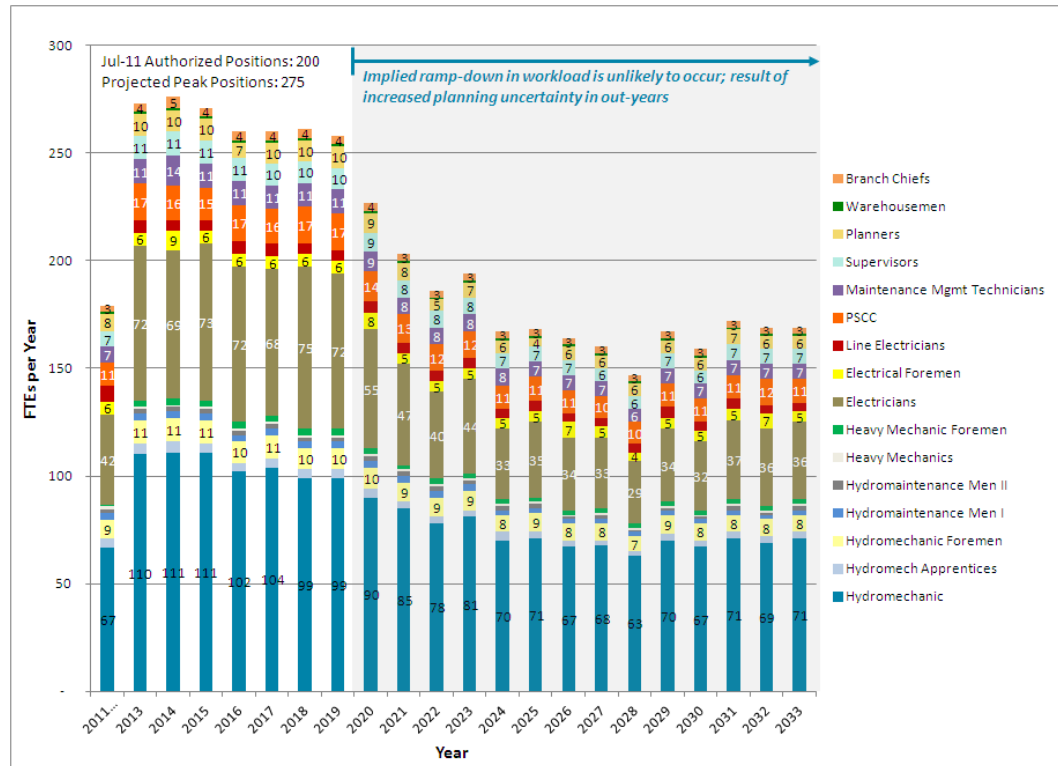


Figure 49 - FTEs Required per Year and Job Title/Role under Current Organization, Maintenance

The following figures show the same information, sub-divided by electricians, mechanics, and PSCCs. As shown in these figures, staff levels for these three crafts would need to increase to approximately 91 electricians, 126 mechanics, and 16 PSCCs to manage the peak years.

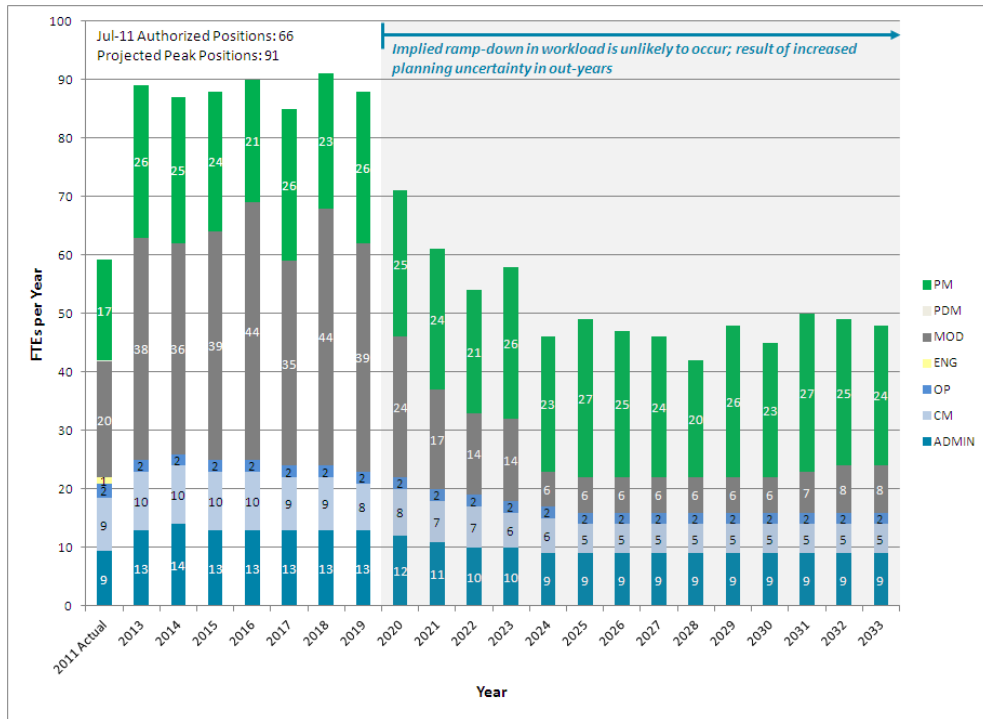


Figure 50 - FTEs Required per Year and Work Order Type under Current Organization, Maintenance Electricians

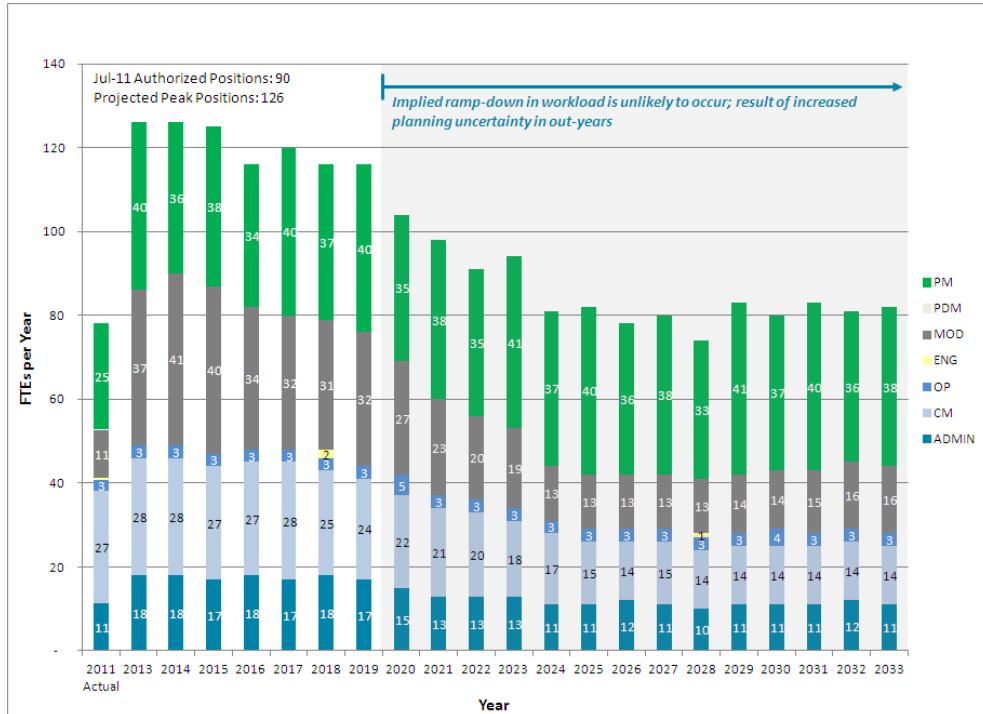


Figure 51 - FTEs Required per Year and Work Order Type under Current Organization, Maintenance Mechanics

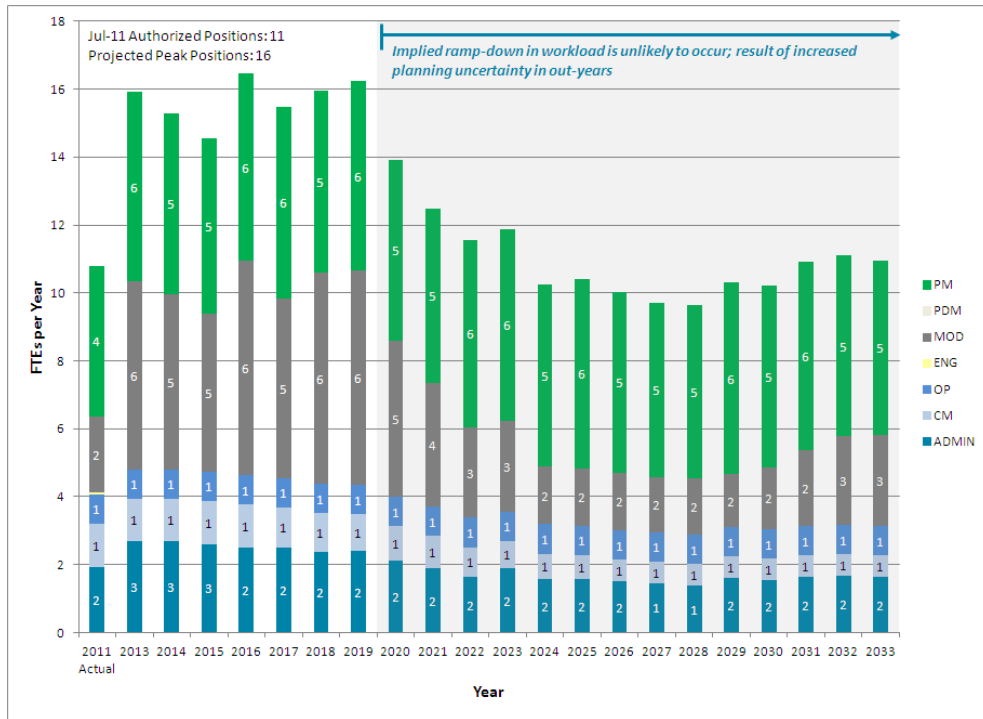


Figure 52 - FTEs Required per Year and Work Order Type under Current Organization, Maintenance PSCCs

Similar breakdowns are presented for each of the three Maintenance areas in Figure 53 through Figure 58.

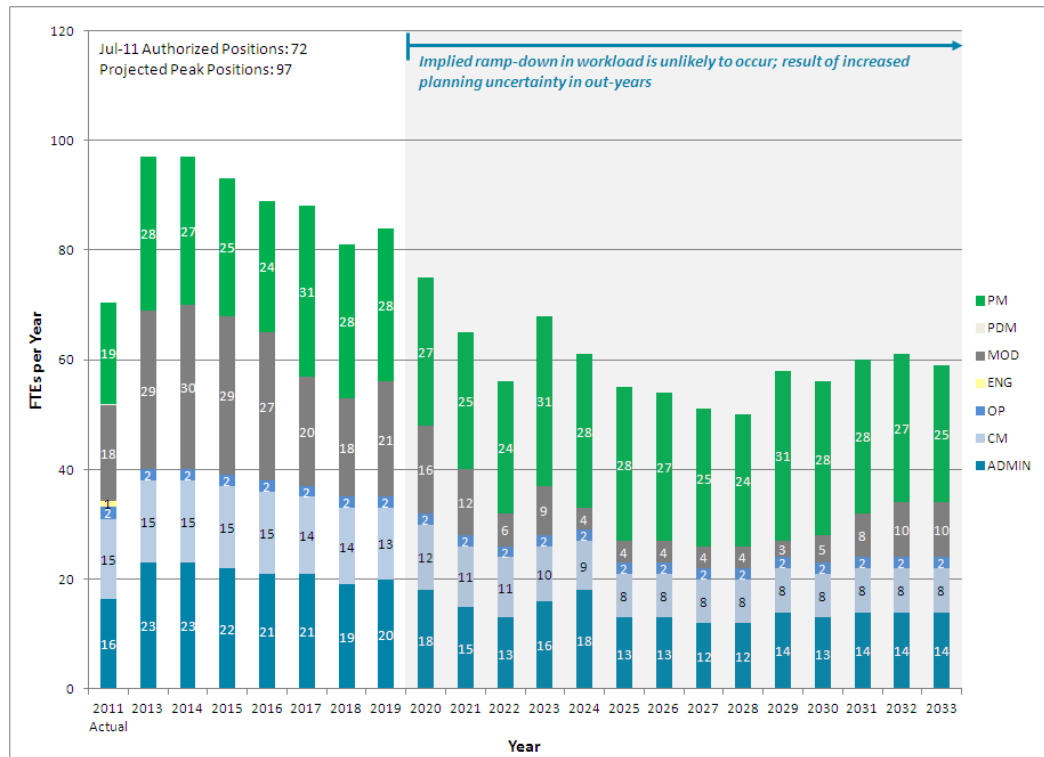


Figure 53 - FTEs Required per Year and Work Order Type under Current Organization, Maintenance, LPH/PGP Area

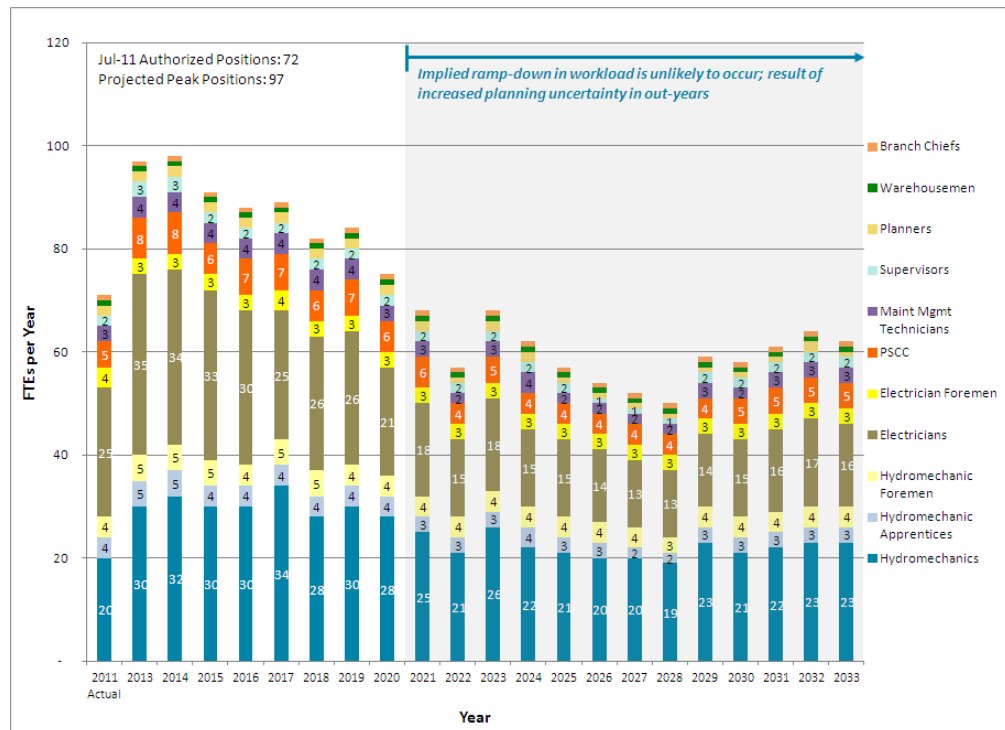


Figure 54 - FTEs Required per Year and Job Title/Role under Current Organization, Maintenance, LPH/PGP Area

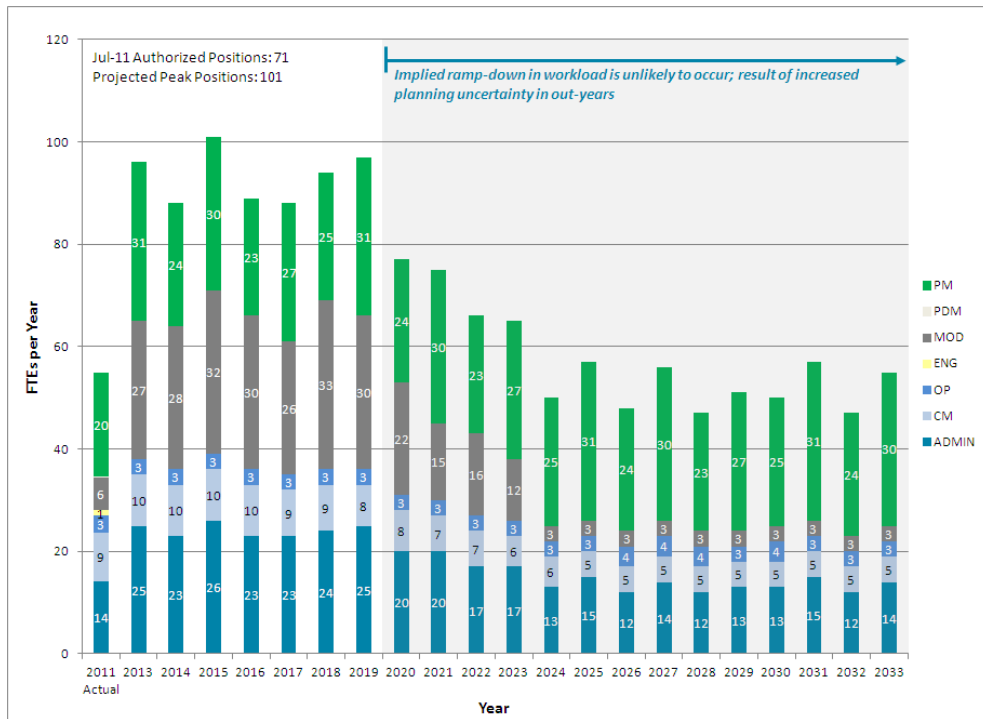


Figure 55 - FTEs Required per Year and Work Order Type under Current Organization, Maintenance, RPH/TPP Area

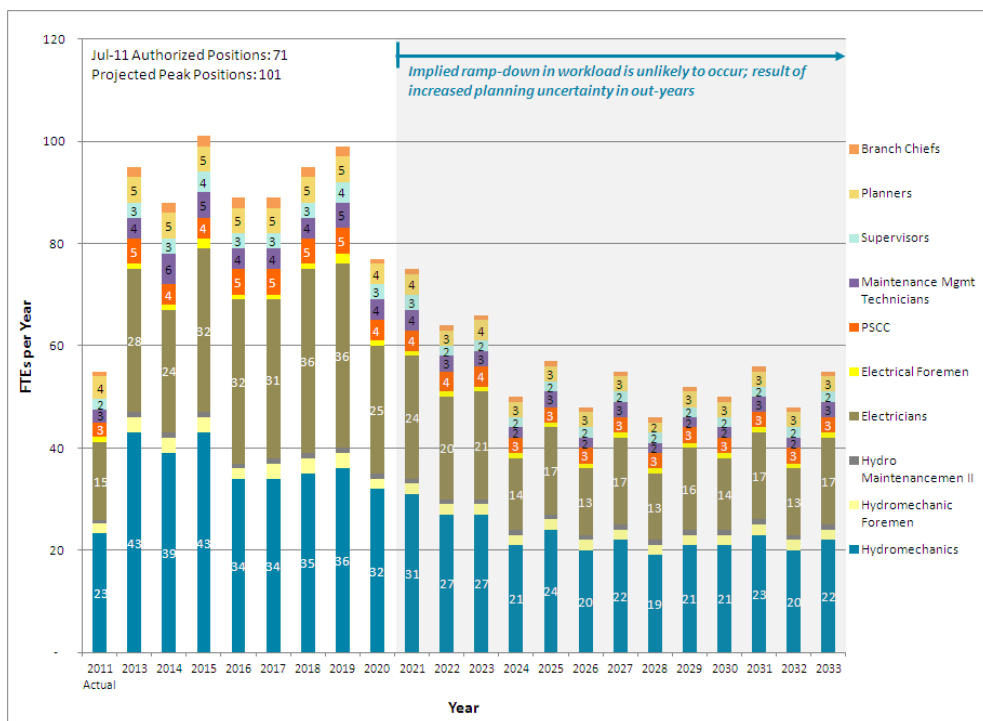


Figure 56 - FTEs Required per Year and Job Title/Role under Current Organization, Maintenance, RPH/TPP Area

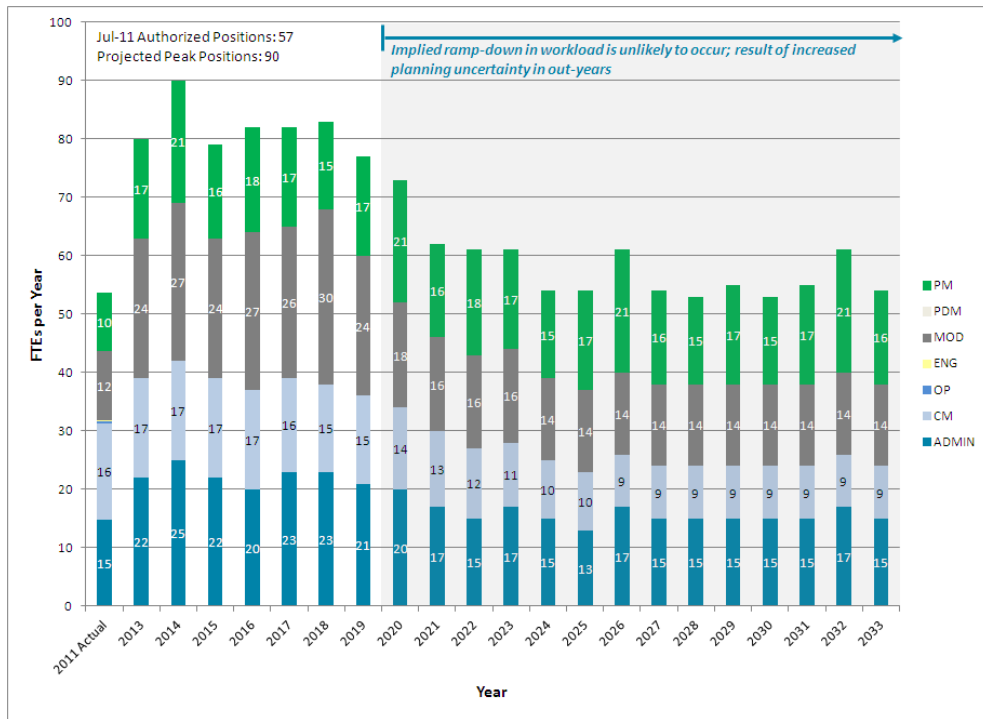


Figure 57 - FTEs Required per Year and Work Order Type under Current Organization, Maintenance, IA Area

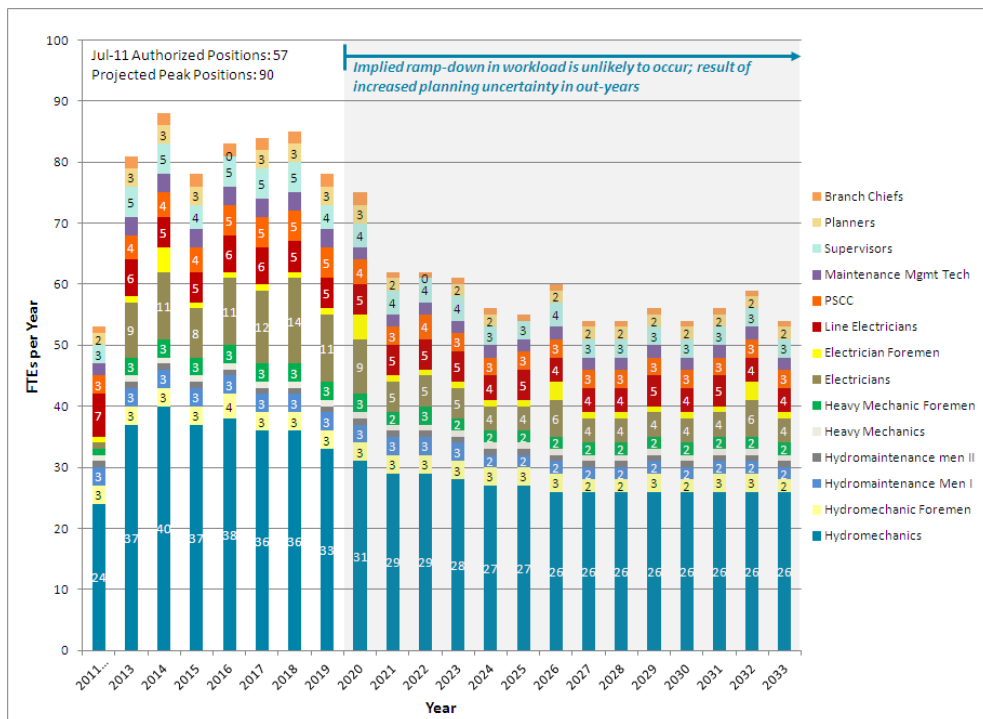


Figure 58 - FTEs Required per Year and Job Title/Role under Current Organization, Maintenance, IA Area

4.3.8 NERC/WECC Compliance

Figure 59 depicts the projected NERC/WECC Compliance staffing requirements under the current organization structure and business processes. NERC/WECC Compliance staff requirements are assumed to be proportional to the capital and O&M workload of the GCPO organization and the staffing increases projected for other functional groups such as, but not limited to, Engineering, Maintenance, and Operations. As shown in the figure, NERC/WECC Compliance staff could remain at its current level of four (4) available positions (existing staff plus vacancies as of July 17, 2011).

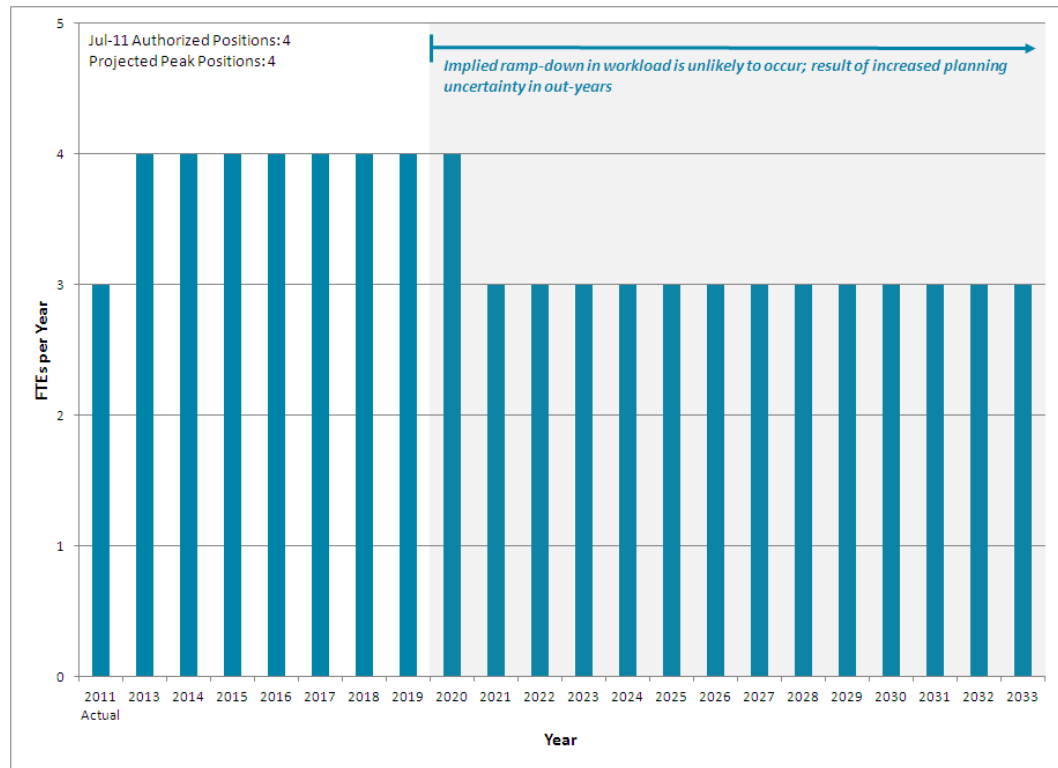


Figure 59 - FTEs Required per Year under Current Organization, NERC/WECC Compliance

4.3.9 Operations

Figure 60 depicts the projected Operations staffing requirements under the current organization structure and business processes. Operations staff requirements are based upon the analysis outlined in Appendix 5. As shown in the figure, Operations staff would need to increase from the current level of 59 available positions (existing staff plus vacancies as of July 17, 2011) to a peak of approximately 83 employees.

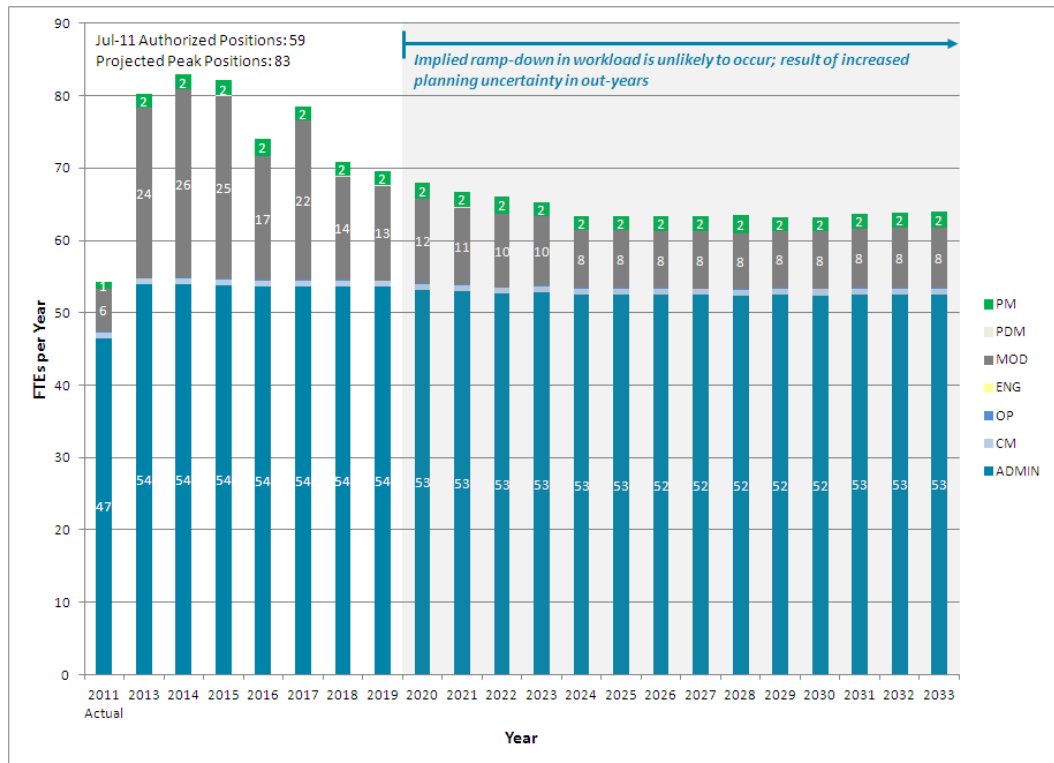


Figure 60 - FTEs Required per Year and Work Order Type under Current Organization, Operations

4.3.10 Project Delivery

Figure 61 depicts the projected Project Delivery staffing requirements under the current organization structure and business processes. Project Delivery staff requirements are based upon the analysis outlined in Appendix 5. As shown in the figure, Project Delivery staff would need to increase from the current level of four (4) available positions (existing staff plus vacancies as of July 17, 2011) to a peak of approximately nine (9) employees.

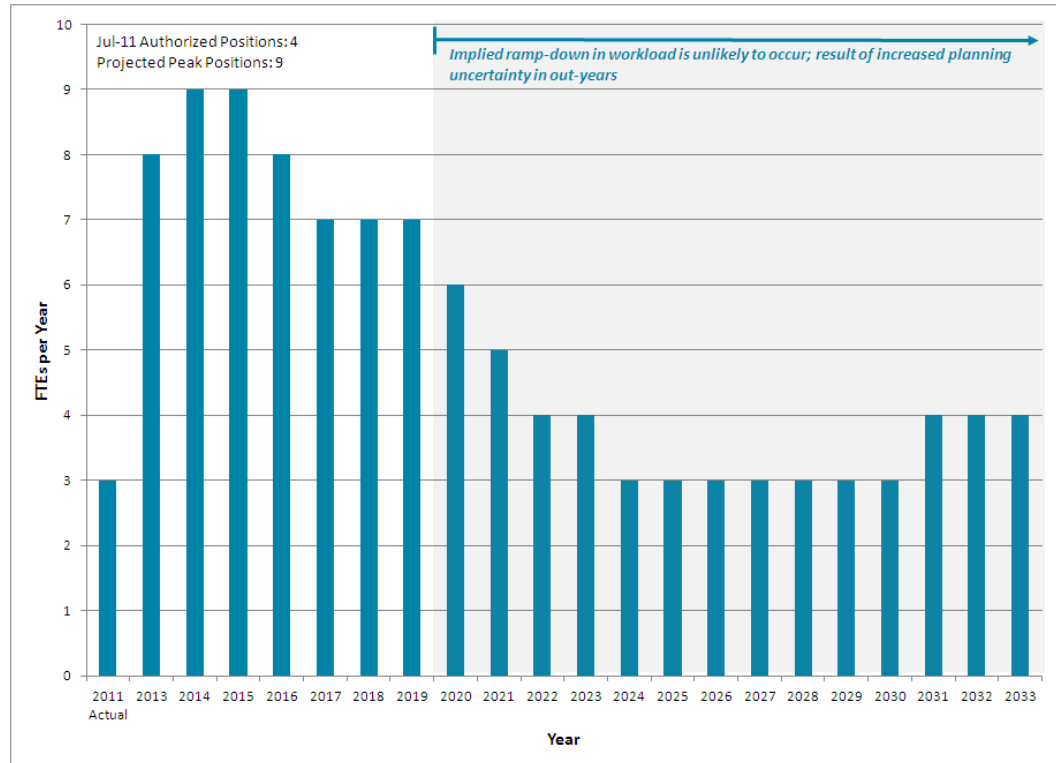


Figure 61 - FTEs Required per Year under Current Organization, Project Delivery

4.3.11 Public Affairs

Figure 62 depicts the projected Public Affairs staffing requirements under the current organization structure and business processes. Public Affairs staff requirements are assumed to be proportional to the capital and O&M workload of the GCPO organization and the staffing increases projected for other functional groups such as, but not limited to, Engineering, Maintenance, and Operations.

As of July 17, 2011, the staff level for Public Affairs was 17 positions. However, most of these are part-time Reclamation Guides. Analysis of 2011 actuals for Public Affairs staff indicates that these 17 positions are approximately equivalent to 10 FTEs. As shown in the figure, Public Affairs staff would need to increase from this current level to a peak of approximately 14 FTEs. These additional positions should primarily be full-time, permanent positions in order to address the year-round issues associated with the O&M and capital programs.

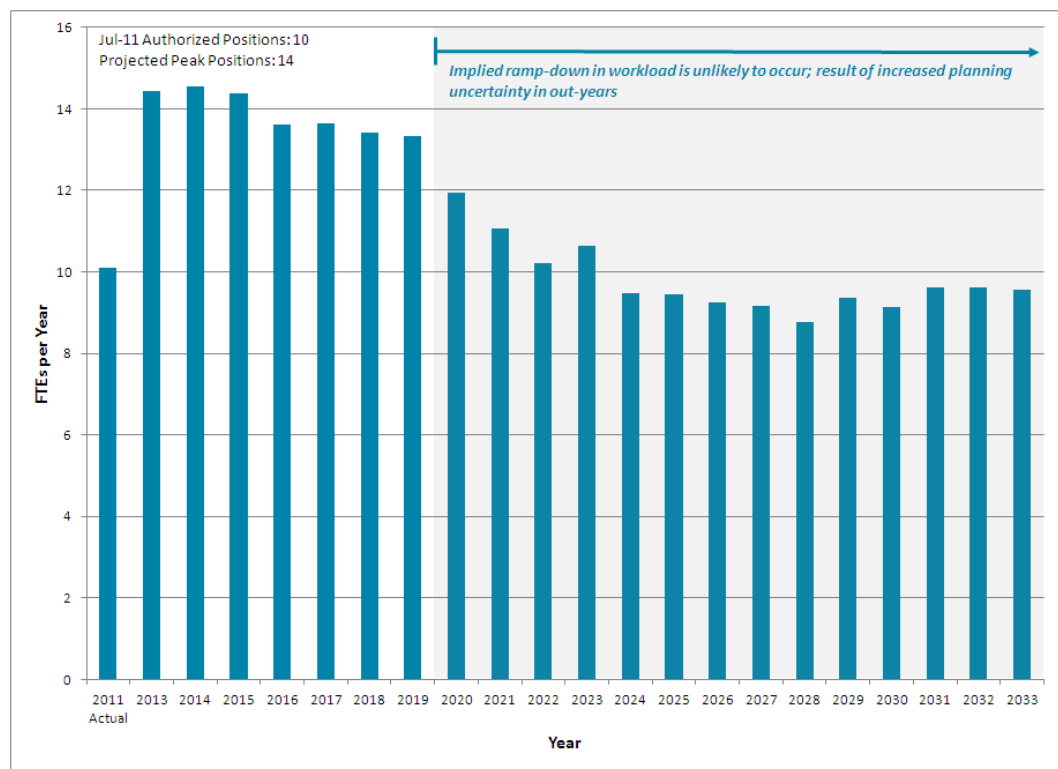


Figure 62 - FTEs Required per Year under Current Organization, Public Affairs

4.3.12 Safety

Figure 63 depicts the projected Safety staffing requirements under the current organization structure and business processes. Safety staff requirements are assumed to be proportional to the capital and O&M workload of the GCPO organization and the staffing increases projected for other functional groups such as, but not limited to, Engineering, Maintenance, and Operations. As shown in the figure, existing staffing levels for this group would be sufficient to meet the forecasted need.

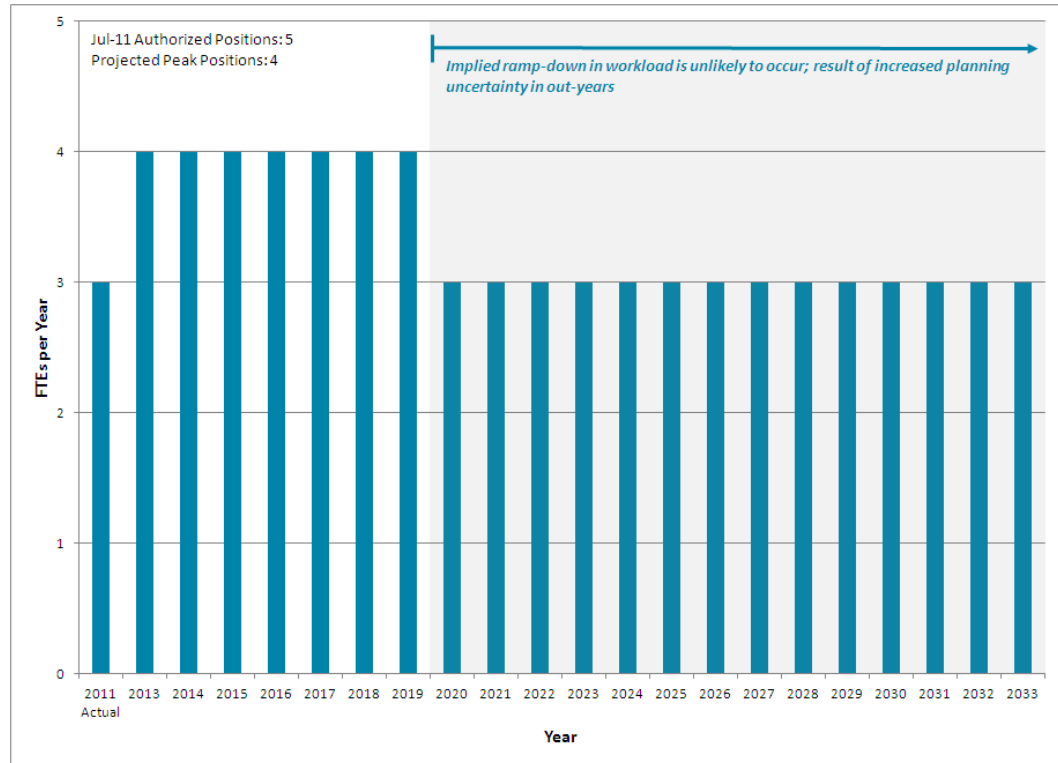


Figure 63 - FTEs Required per Year under Current Organization, Safety

5.0 Lessons Learned from Benchmarking Conversations

5.1 Approach

GCPO is not the first organization to go through a shift from an O&M focus to a capital program delivery focus, struggle with keeping up with preventive maintenance requirements, or recognize the need for organizational and staffing changes. A number of other large North American hydropower facilities have already gone through similar changes. The purpose of this component of the study was to facilitate conversations and an exchange of lessons learned with such peer facilities and organizations that have experienced or are experiencing similar challenges as the GCPO. The conversations were used to gather insight from peer entities that may assist the GCPO in navigating their current challenges. These visits were arranged and facilitated by MWH, and included:

- BC Hydro, Vancouver, British Columbia (November 16, 2011)
- Manitoba Hydro, Winnipeg, Manitoba (December 14, 2011)
- Chelan County Public Utility District, Wenatchee, Washington (January 12, 2012)
- McNary Dam, USACE Walla Walla District, Umatilla, Oregon (March 8, 2012)

These discussions are documented in detail in the meeting minutes included in Appendix 6. In addition, each participant from the GCPO came away with their own perspectives. While there was not a set agenda for each of the discussions, they included an overview of the subject organization/facility; review of the engineering, project/program management, operations, and maintenance functions; recruitment, hiring, and retention issues; and other topics relevant to the GCPO.

5.2 Conversation Summaries

5.2.1 BC Hydro

BC Hydro operates 31 hydro plants, with a total generation capacity of 11,000 MW, but seven plants produce 80% of the output. Participants from BC Hydro included Chris O’Riley (Executive Vice President, Generation), Roy Grout (Vice President and Chief Engineer), and Mark Poweska (Director of Generation Operations).

In general, BC Hydro’s capital improvement program has been driven by aging infrastructure and dam safety. This ramp up in capital projects began about five years ago; prior to that, the organization primarily had an O&M focus. They embraced project management as a way to ensure the capital work was delivered on schedule and on budget. A dedicated project manager is accountable for projects from start to finish.

Engineering at BC Hydro is viewed as a provider of services to the project delivery organization (capital work) or to the maintenance organization. In general, their plant engineers are generalists that handle routine support issues. If more complicated issues arise, they are referred back to a centralized group. During the ramp up in capital work, their engineering staff has increased from 160 to 300, even while more than 50% of the engineering work has been outsourced.

Operations and Dispatch is centralized across the entire system, with nearly exclusively remote operations. The limited operations staff at plants follow up on alarms, but do not start/stop the units. Maintenance is kept at the plant level, but planning and scheduling occurs at the regional level. The maintenance group was staffed up to support the increase in capital work, including supporting commissioning activities.

5.2.2 Manitoba Hydro

Manitoba Hydro operates 14 hydro plants, 2 thermal plants, and several small diesel plants. Participants from Manitoba Hydro included Ken Adams (Senior Vice President, Power Supply), John Clouston (Division Manager, Generation South), and Randy Raban (Division Manager, Engineering Services).

Due to the availability of resources, growth in demand, and low cost of production, Manitoba Hydro has an aggressive capital program in place. It includes 200 MW of recently-commissioned hydro facilities, 700 MW under construction, and another 1,500 MW in planning phases. Project management is part of their Engineering Services group. Here again, project managers have responsibility for projects from initiation through construction. Manitoba Hydro believes the formalization of project management has played a big role in breaking down silos.

Engineering is viewed as a service provider to operations. A major focus is to get engineers out in the field at existing facilities and construction sites. Due to the remote nature of many of their sites, engineers spend three weeks on site, followed by one week at home.

Operations and Maintenance is provided by the Generation South group. Maintenance crews are shared within a region, with standardized practices driven by the central office in Winnipeg. The plants in the southern portion of the system are in an O&M mode, while the northern plants are newer and just beginning to need rehab work.

5.2.3 Chelan County Public Utility District

Chelan County Public Utility District (PUD) operates three hydro plants with a total generation capacity of over 2,000 MW, making it the nation's second-largest nonfederal, publicly-owned hydroelectric generating system.

Chelan PUD has gone through a period of significant rehab work at its facilities over the past five years, and has utilized a formal project management approach to deliver that work. They have transitioned to a projectized organization.

Their Engineering staff are divided between Plant Engineers, who are generally more experienced and are physically located in the plants, and Engineering Services, that supports larger projects.

Maintenance and operations are also divided between Plant Maintenance, focused on preventive and predictive maintenance activities, and Central Maintenance, which performs the non-routine, capital, and RAX maintenance. The two groups' leadership meets weekly to review resource needs, align priorities, and shift as needed.

5.2.4 McNary Dam

McNary Dam is a facility operated by the USACE Walla Walla District on the Columbia River. The project has a total capacity of 980 MW. A variety of staff from the facility and USACE Walla Walla participated in the discussions.

As part of the USACE organization, project management is provided by the District and has responsibility from cradle to grave. USACE uses an electronic PM system that drives consistent management practices, and provides dashboard views that show the status of individual projects.

Keeping engineering staff at McNary has been an ongoing issue. Additional engineering support is provided by the USACE Hydroelectric Design Center (HDC) in Walla Walla.

Maintenance activities are focused on critical component preventive maintenance and responding to corrective maintenance issues. Their maintenance group serves as an apprenticeship program for the Walla Walla District.

5.3 Common Themes Observed

While each of the organizations interviewed is unique, and faces its own specific challenges, there were a number of best practices that appeared to be common to all four. To the extent that these best practices are relevant at the GCPO, they will be carried forward in consideration of the optimized organization recommendations.

Separation of Plant and Capital Engineering. The Engineering group in each organization is viewed as a support organization to the “owners” of the facilities (the maintenance group) or to the capital project delivery organizations. Since these two organizations may require different skill sets, response times, institutional knowledge, etc., most peer organizations to the GCPO separate the two functions. In reality, the two groups may share resources or exchange personnel to allow greater flexibility during times of increased or decreased capital work and to promote knowledge sharing between the groups.

Separation of Central and Plant Maintenance. Similar to engineering, the maintenance function in peer organizations to GCPO is often split between a central group, responsible for capital and extraordinary maintenance activities at a group of facilities, and plant maintenance, responsible for day-to-day preventive maintenance and troubleshooting. The two groups’ skill sets may vary. For instance, at Chelan PUD, the plant maintenance group is considered a training ground for new employees to hone their skills. After rotation among various foremen, these employees may advance to become foremen in the plant maintenance group, or move into the central maintenance group and become responsible for larger maintenance projects.

Centralized Planning and Prioritization for Maintenance Groups. To maximize the effectiveness and utilization of maintenance personnel, most organizations have instituted some form of centralized planning, prioritization, and scheduling. There are a variety of benefits to this approach. For instance, workload projections generated by the maintenance management systems may be used to feed into a higher-level resource planning tool, such as Primavera, to identify longer-term periods of over- or under-utilization. A centralized planning group then uses that information to make adjustments accordingly.

Formalized Project Management. Peer organizations that have gone through periods of significant capital work have adopted a formalized approach to project management. This ensures consistent delivery, utilizing appropriate gateways and project performance tracking. Project managers in these organizations generally have “cradle to grave” ownership (and responsibility) for project delivery. This approach is scaled-down accordingly for smaller capital, RAX, and non-routine projects.

Innovative Approaches to Recruitment and Retention Challenges. Most of the organizations face challenges with finding and keeping quality employees, including crafts, engineers, and managers. These challenges are due to a variety of circumstances. Each organization has responded in unique ways, but in general these responses focus on entry-level employees through the use of apprenticeships, formalized training programs, and recruiting from the local labor pool.

6.0 Recommendations for Optimized Organization

6.1 Overview

Chapter 0 contains key findings across the GCPO organization and within each functional group. Chapter 0 presents recommended staffing adjustments to address these challenges assuming no changes to organizational structure or business process. This chapter presents the recommended “optimized organization,” incorporating changes to staffing, organizational structure, and business process to address the findings presented in Chapter 0.

Revisiting the GCPO-wide findings from Chapter 0, Table 24 presents a summary of the corresponding recommendations to address these findings. Details for each recommendation are provided thereafter.

Key Findings and Challenges <i>(Ref. Section 3.1)</i>	Recommendations
1. Large backlog of work	1. Quantify the work, estimate the effort, and increase staff accordingly
2. Lack of organizational alignment	2. Establish priorities of organization and implement revised organizational structure
3. Challenges in attracting and retaining staff	3. Adjust the hiring strategies
4. Insufficient organizational-level planning	4. Establish centralized planning group
5. Limited ownership of projects from start to finish	5. Establish Project Delivery organization with defined governance, life cycle, roles and responsibilities, and standard practices
6. Inconsistent and insufficient use of CARMA	6. Leverage full capabilities of CARMA system for all work, all functional groups
7. Limited transition planning and knowledge transfer	7. Develop a knowledge strategy and information capture approach
8. Ineffective and uncoordinated training	8. Improve training program under a centralized Training Officer
9. Insufficient or ineffective coordination with external partners	9. Set expectations, track performance, and implement a document management system

Table 24 - GCPO-wide Findings and Recommendations for Optimized Organization



GCP-01-R: Quantify the work, estimate the effort, and increase staff accordingly. One of the primary drivers for this study is the large backlog of work, both routine O&M and non-routine capital. Current staffing is unable to keep up with the preventive maintenance essential for the long-term success of the plants while adequately supporting the capital work associated with the 10-year capital plan. Based on the analysis conducted under this study and presented by functional group throughout the remainder of this Chapter 6.0, it is recommended that GCPO staffing levels be increased to a total of 609 employees, organized in accordance with the structure presented in Exhibit 2 and described in Section 6.3. This represents an increase of 143 positions above the current 466 GCPO positions (as of July 17, 2011). Details of the recommended resource adjustments are presented in Section 6.3.



GCP-02-R: Establish priorities of organization and implement revised organizational structure. Establishing organizational-level priorities will help to guide the necessary cultural shift from a siloed organization to a “facility rules” approach, in which decisions are made based on what is best for the GCPO and its facilities, not individual, often competing, functional groups. Such priorities should be defined and published on an annual basis by the GCPO Power Manager in consultation with the Deputy Power Managers and functional group leaders. Decisions,

expectations, and incentives thereafter should be in alignment with these enterprise-level objectives to encourage that the best actions for the overall facility reign. Doing so will ensure that the multiple ongoing projects at the plants (capital and O&M) are executed effectively with minimal disruption to operations. Without organizational alignment in place, GCPO staff are hindered from working together efficiently. Additionally, establishing organization-level priorities and targeting organizational alignment will help breakdown existing “fiefdoms” at all levels of the organization and improve cross-group transparency.



GCP-03-R: Adjust the hiring strategies. Recruiting talented employees to the GCPO has been a challenge to date using the standard posting of positions. The current recruitment process is not effective. There are 34 positions currently open (July 17, 2011) and long lead times in posting and hiring. It is important also to recognize that if additional positions are needed, it will continue to be difficult to bring in new people with the current system in place. Currently the recruiting approach does not take advantage of all possible avenues allowable for Reclamation/Federal hiring. Appendix 1 includes a complete assessment of the recruiting process and detailed recommendations for adjusting hiring strategies, in light of the staffing increases recommended herein. Some key elements to improve the recruiting process include:

- Identify resources for recruiting staff (contract or permanent)
- Coordinate with Regional Office human resources
- Dedicate an on-site resource to manage the recruitment function and coordinate between the plan and Boise
- Update position descriptions
- Review and revamp screening and suggested interview questions
- Utilize professional publications/organizations for targeted recruiting and consider leveraging social media
- Re-assess job fairs in the region

Additionally, it is recommended that the use of term employees be phased out, or at a minimum, used only when absolutely necessary. Uncertainty is the foundation for instability. A basic need for employees is job stability, which is not provided under the term assignment. The intended purpose of using term employees is to staff up for projects and to have the ability to ramp down after the completion of the project. However, as shown in Figure 64, the GCPO has a historical turnover rate of 0.11 employees per day, or roughly 40 employees per year. Due to this high turnover rate, the ramp down can be achieved rapidly if needed through natural attrition, so there is no reason to use term employees. A benefit of using permanent employees is the retention of the experience gained when working on new projects.

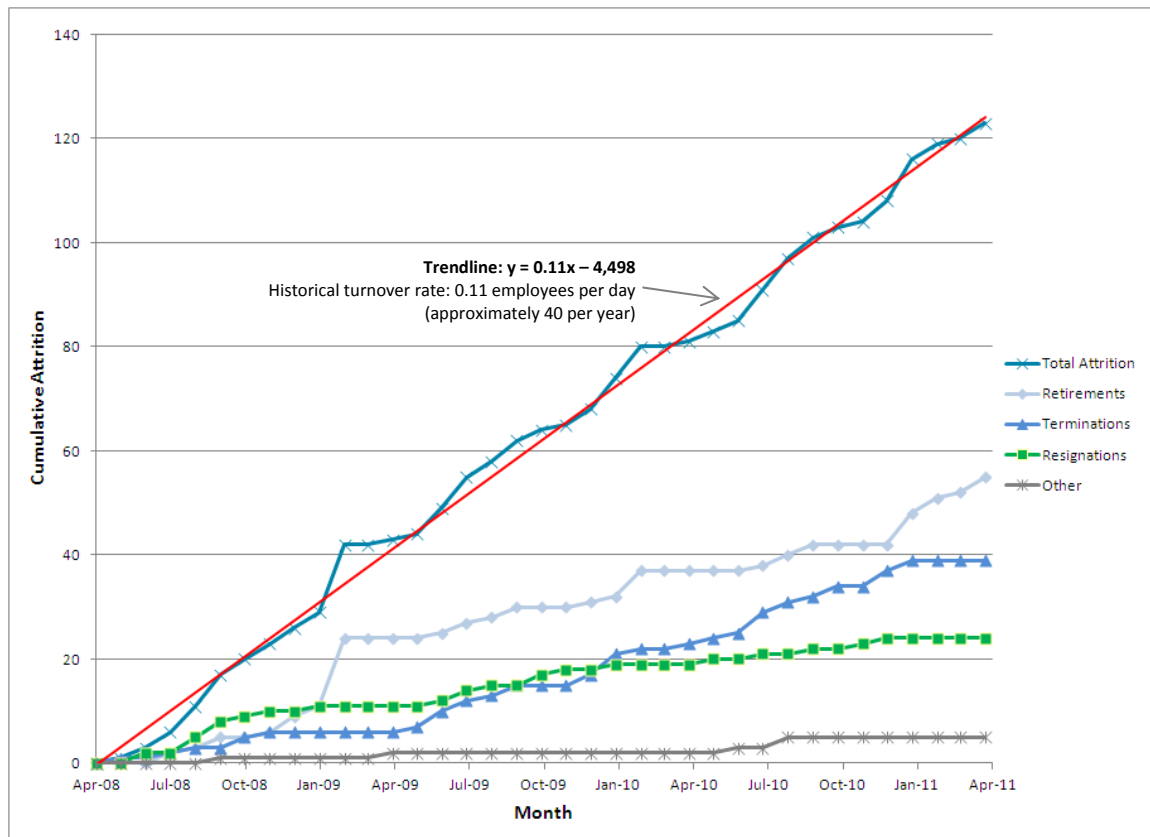


Figure 64 - GCPO Staff Attrition



GCP-04-R: Establish centralized planning group. To support a programmatic and enterprise-wide approach to work planning, an Enterprise Planning functional group should be established as shown in the proposed organizational chart in Exhibit 2. The objective of this group is to integrate work scheduling across all areas and functional groups while ensuring that all plant activities align with organizational priorities and operational constraints. This group would also be responsible for all long-term asset investment planning and the associated budget justification development.

The Enterprise Planning group's responsibilities would include soliciting the enterprise-wide priorities and drivers from the Power Manager, collecting the needs of the organization and all required asset data, analyzing the costs and benefits of all identified projects, leading project prioritization efforts (routine and non-routine), providing short- and long-term capital planning and corresponding project justifications, and collating internal and external boundary conditions. Its enterprise support responsibilities would include facilitating enterprise-wide outage planning with support from pertinent functional groups, balancing water, power, contractor schedules, etc., to identify openings for routine work, and prioritizing routine versus non-routine work in alignment with Power Manager-defined enterprise priorities and drivers. Input into the Enterprise Planning group would be required from project managers, plant superintendents, operations staff, power managers, etc., to ensure alignment with agreed-upon enterprise priorities.

As shown in Exhibit 2, the Enterprise Planning group would be staffed by an Asset Manager who is responsible for leading project prioritization efforts and justifications. The group would also have a Senior Scheduler, whose duties include setting and enforcing standard scheduling

practices, overseeing outage scheduling, and serving as the primary interface to external partners with respect to scheduling. Other staff in the Enterprise Planning group include a scheduler, a budget analyst, a cost estimator, and an office aide. Further discussion of the Enterprise Planning group is provided in Section 6.4.13.

To support the Enterprise Planning group's efforts, standardization of the enterprise project structure (EPS, a logical project grouping across the organization) and work breakdown structure (WBS, a means by which a project is broken down into smaller, and more manageable, measurable components), and implementation of a scheduling and resource management tool such as Primavera P6 is strongly encouraged. Such structures would need to be aligned with funding streams and processes. Individual resource-loaded schedules for each O&M and capital project could be developed by plant superintendents and project managers and "rolled-up" into one master facility schedule under the Enterprise Planning group. Work planning, facility-wide coordination, outage scheduling, resource planning, and budget planning/tracking would all be substantially improved under such an approach.

Lastly, contingencies need to be integrated into all work planning. Without contingencies for additional resources or time ("float") built into the schedule, it is not likely to be met. This then impacts other projects in the master schedule and affects the ability to meet operational commitments for water and power. Contingencies allow for better planning and improve the likelihood of meeting commitments. Conversations may be required with external partners such as BPA to communicate the integration of such contingencies in GCPO work planning.



GCP-05-R: Establish Project Delivery organization with defined governance, life cycle, roles and responsibilities, and standard practices. Internal efforts are currently underway to establish a Project Delivery organization and culture. Such efforts should be emphasized, accelerated, and augmented. GCPO project managers should be assigned to manage all large projects; senior engineers, as appropriate, should be trained to serve as project managers for smaller O&M engineering support projects. In both cases, the project managers should be fully accountable for project delivery, be task driven, and granted proper authority to manage all project aspects across the entire life cycle.

To support this undertaking, a consistent delivery approach, inclusive of a defined project life cycle (similar to that included with Exhibit 3), established project governance and decision-making criteria, standardized templates, forms, processes and practices, defined roles and responsibilities, and supporting systems and tools should be implemented. Collectively, these approaches and practices will provide consistency in project delivery, regardless of project size, and limit rework, redundancies, schedule and budget overruns, and quality-related issues.

To support the newly defined life cycle, governance criteria, processes, forms, and standard practices, a user-friendly, lightweight, web-based project delivery system should be implemented. The system could provide a central location for all users to view GCPO project delivery content, identify roles and responsibilities in the process, review checklists and necessary steps to move a project forward, and obtain pertinent forms and documentation to complete. Proper administration of the system would include defined system and content ownership and structured user training.



GCP-06-R: Leverage full capabilities of CARMA system for all work, all functional groups. Maximo, the foundation of the CARMA system, is a powerful tool that should be further leveraged to support work planning and delivery as well as budgeting activities. Specific work orders should be defined for most GCPO functional groups, to a sufficient level of granularity to

facilitate proper planning and reporting. For example, a single “administration” work order is too broad to support proper work planning and managerial analysis. Additional resources should be allocated to job planning efforts to ensure that all work orders in the system are uploaded with the proper details. When work orders are completed, labor and equipment details in the work order should be updated based on historical actuals from the E-TAS timekeeping system. Reporting from the CARMA system should be optimized to assure the proper reports exist or are created allowing GCPO to leverage CARMA data for decision making. Finally, to reduce delays and improve internal coordination, automated workflows should be leveraged to ensure that work orders continue to progress across functional groups. For example, when a work order is labeled as “waiting for engineering,” the automated workflow should immediately notify the Engineering group manager of this pending work order (e.g., email). Collectively, these improvements to CARMA use would support annual budgeting activities with accurate data to educate future needs.



GCP-07-R: Develop a knowledge strategy and information capture approach. High turnover rates and retirements are increasing the potential for lost institutional knowledge. A proactive strategy to address this issue is strongly recommended and should include planned overlaps between departing and arriving employees where feasible, particularly supervisory positions; proactive succession planning to identify and train the “next John/Mary” before John or Mary departs; and documented project procedures, including text and video.



GCP-08-R: Improve training program under a centralized Training Officer. As shown in Exhibit 2, it is recommended that a centralized Training Officer be added to the Administration group to efficiently coordinate all GCPO training efforts, assess the effectiveness of all training delivered, improve training content and delivery methods, and align training with organizational priorities and professional development goals. Note that the intent is not that the Training Officer be responsible for all GCPO training, but rather serve as the evaluator and coordinator of such efforts.

An assessment of all training is needed to determine the effectiveness and efficiency of the programs and whether they meet the requirements for each of the targeted positions. This includes completing the ongoing assessment and restructuring of block training. This program needs to be revisited to make it applicable to the staff and their work while achieving the learning objectives. The update of this program should be a priority. It is recommended that a team is formed to assess the best delivery method (on-line vs. face-to-face training or combination of both) and what changes should be made to the structure and curriculum of the program. In addition, a centralized process needs to be developed for assessing and updating all courses to ensure they are applicable and relevant. “Measuring” each program and its direct match to the positions involved would be beneficial.

Additionally, it is recommended that the GCPO leverage its apprenticeship programs to make Grand Coulee *the* training platform for the PNR and Reclamation, and potentially get funded as such. GCPO employees are proud of the work they do and of their facilities; rather than view the departure of newly-trained apprentices as a loss, leverage that pride to establish the GCPO as the training hub for Reclamation. Upon the completion of each cycle of the apprentice program, the GCPO would have “first pick” of the graduates to bring on as full-time employees. Those that elect to move on to other Reclamation facilities would carry with them the knowledge of how things work at the GCPO and promote the GCPO best practices across Reclamation.

Finally, new employee orientation should be improved. The Administration Office currently provides valuable and consistent human resources-related orientation to all new employees (i.e., benefits descriptions, necessary paperwork, etc.). However, plant orientation is inconsistent and often insufficient. To encourage new employees to support the “facility rules” approach described in GCP-02-R and provide them with an awareness of overall GCPO activities, both within and beyond their assigned functional group, facility-wide orientation is strongly encouraged within the first month of employment. This should also include a facility-wide tour and consistent orientation training on safety and other plant basics.



GCP-09-R: Set expectations, track performance, and implement a document management system. Proactively addressing issues with engineering, contracting, and procurement can prevent costly project delays. A key element that has impacted the GCPO is when “the ball” gets dropped between the GCPO, the Regional Office, and/or the TSC. A method/tool to track the handoff of actions and the current responsible party would prevent the delays that occur during non-action, as well as allow analysis of where bottlenecks are occurring and what processes/staffing changes would improve the timeliness of this essential element of project delivery. Properly setting expectations early in a project among the parties involved would also help improve coordination and ensure that products received are in alignment with the original intent.

Overall, the optimized organization employs 597 staff versus the 466 GCPO positions today and the 601 total positions required to meet current and future demands under the existing organizational structure and business processes. Specifics of these recommended staffing changes are presented graphically in Exhibit 2 and discussed at the functional group-level in Section 0.

6.2 Residual Risks vs. Baseline

Section 3.3 presented the baseline risk assessment, the qualitative analysis of the risks inherent in the GCPO organization under the current, no-action scenario. Table 23 presented an updated version of this same analysis, considering the proposed staffing changes presented in Chapter 0, representative of the data-driven staffing levels required should the GCPO only increase staffing to address its workload challenges (no changes to organization, processes, or systems).

Replicating that same analysis, Table 25 presents the updated risk profile for the optimized organization, considering changes to staffing, organization, processes, and systems. The effects of these recommended staffing levels on the cause of each risk sub-area are listed in Table 25; incremental changes versus the baseline risk analysis shown in Table 5 are highlighted in red. The impact risk scores do not change as they are not affected by the proposed adjustments in staffing levels, but the probability risk scores change due to the implementation of the optimized organization.

Optimized Organization Risk Assessment						
Risk Areas	Risks	Effect of Increased Staffing on Risk Causes	Impact	Probability	Risk Score	Area Risk Score
Planned Outage Extensions	Lost generation and capacity from extended maintenance outages	Increased planning and scheduling will reduce the risk probability and maximize the benefit of increased staffing	3	1 (-3)	3 (-9)	5.5 (-8.5)
	Lost generation and capacity from extended project rehabilitation outages	Increased planning and project management will keep outages on schedule	4	2 (-2)	8 (-8)	
Equipment Reliability	Lost generation and capacity from forced outages	By keeping replacement project on schedule through increase planning will reduce the risk of aging equipment failing before replacement	3	2 (-2)	6 (-6)	5 (-7)
	Major equipment damage due to failure	By keeping replacement project on schedule through increase planning will reduce the risk of aging equipment failing before replacement	4	1 (-2)	4 (-8)	
Safety	USBR personnel injury, accident, disability, or fatality	Increased supervision and safety officers in plant reduce safety risk	4	2 (-1)	8 (-4)	10 (-4)
	Contractor personnel injury, accident, disability, or fatality	Increased project management improves monitoring of contractor safety plans	4	3 (-1)	12 (-4)	
Environmental	Environmental incident - on project	Increased project management improves monitoring of USBR and contractor environmental plans and monitoring	3	1 (-1)	3 (-3)	5.3 (-4)
	Water control incident	No effect	5	1 (-1)	5 (-5)	
	Bi-Op violation	Increased scheduling and planning of projects will ensure units are available to pass water requirements.	4	2 (-1)	8 (-4)	
Institutional Knowledge Loss	Operations Error	Improved SOPs will reduce operator errors	4	2 (-1)	8 (-4)	7 (-5)
	Maintenance Re-Work	Improved SOPs, work plans, and supervisors will reduce rework	3	2 (-2)	6 (-6)	

Table 25 - Risk Assessment assuming Optimized Organization

Relative to the baseline, no-action case and the scenario presented in Chapter 0 (only increasing staffing), the optimized organization provides substantially greater reductions in risk to the GCPO across these risk areas, indicating an improved position for near-term and long-term success for the GCPO and its stakeholders.

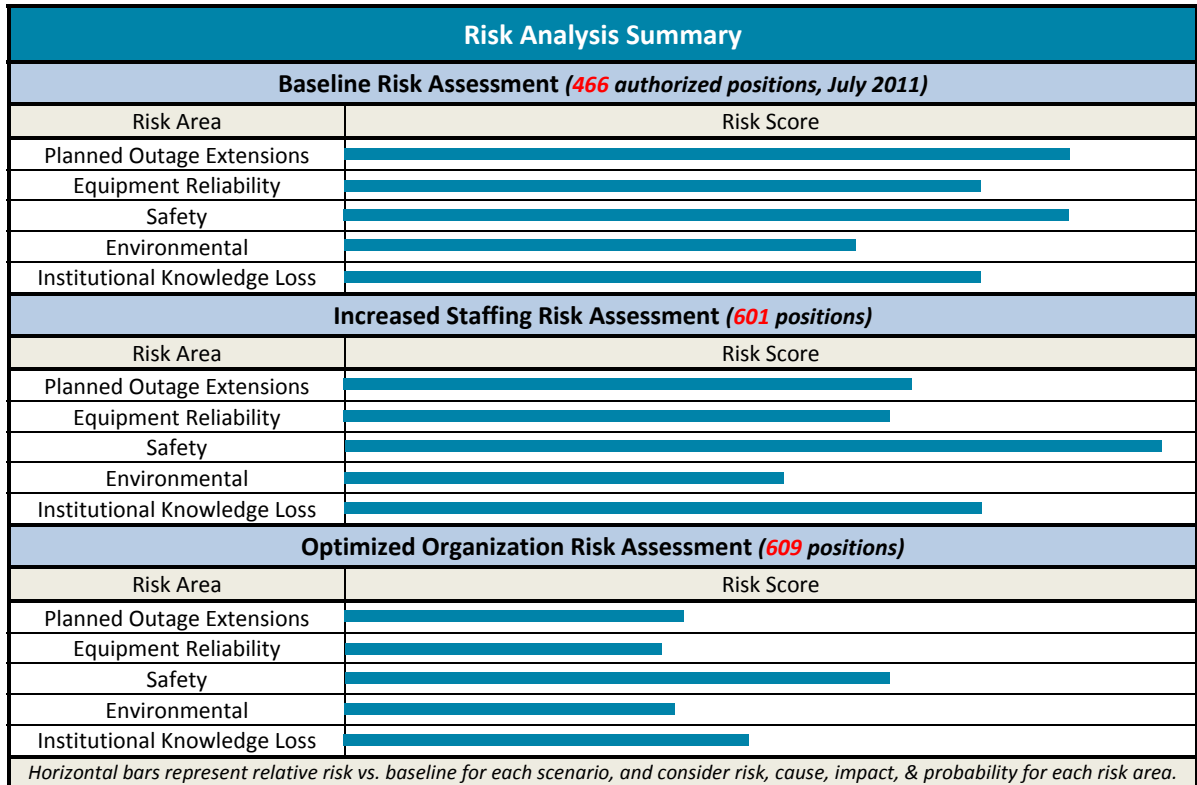


Figure 65 - Risk Analysis Summary

6.3 Organization Structure Recommendations

Exhibit 2 presents the recommended organization structure for the optimized GCPO organization. Following are some of the key principles considered in the development of this recommended structure, all of which are based on findings and recommendations identified through this study:

- Effectively address routine and non-routine work in a concurrent and balanced manner
- Reduce the span of control of each manager to a reasonable number of direct reports, within the same scope or area
- Break down “fiefdoms” or “silos” to the greatest extent possible within the organization
- Establish Enterprise Planning function that provides strategic asset investment planning guidance and facility-level work planning and scheduling support
- Establish Engineering as a service organization to both routine and non-routine work
- Facilitate cross-training, career path definition, staff retention, and succession planning
- Improve capability to control routine and non-routine project delivery (project management, budgets, project controls, scheduling, planning, etc.)

With these principles in mind, following are some highlights of the recommended organization structure depicted in Exhibit 2:

- The number of direct reports to the Power Manager was reduced significantly from the July 2011 structure, and a third Deputy Power Manager was added to support the highest-level management team of the GCPO. One Deputy Power Manager oversees the closely-related Enterprise Planning, Budget, and Project Delivery groups; a second oversees all O&M activities, and a third oversees all facility support services.
- An Enterprise Planning group was formed with an objective to integrate work scheduling across all areas and functional groups while ensuring that all plant activities align with organizational priorities and operational constraints. This group would also be responsible for all long-term asset investment planning and the associated budget justification development.
- Maintenance areas were reorganized from LPH/PGP, RPH/TPP, and IA to LPH/RPH, TPP, PGP, and IA/Structures & Non-Routine. This allows for improved consistency between the Left and Right powerhouses, removes some of the routine structures-related work from the plant-specific superintendents, and allows for increased focus on preventive maintenance. Note that the IA/Structures & Non-Routine area includes a dynamic non-routine maintenance pool of resources that can be seconded to a project manager for a particular project or assignment as well as backfill any emergency needs.
- Across most functional groups – particularly Maintenance – employee-to-supervisor ratios were reduced to support personnel management, safety, work planning, and other related activities and tasks.
- Support operations were primarily divided into two sub-groups, one focused on plant and personnel safety, the other on supporting administrative tasks.
- A new Training and Personnel Management group was formed to support the envisioned increase in recruiting, staffing, and onboarding and the associated training required to integrate new employees and improve staff retention, knowledge transfer, and knowledge capture.
- Engineering was established as a stand-alone unit under a GS-14 (same as Deputy Power Managers), envisioned to function as a local service entity for routine and non-routine work. Within this group, engineers are dedicated to routine plant support and non-routine capital support.

6.4 Functional Group Recommendations

In addition to the GCPO-wide recommendations described above, there are changes recommended at the functional group-level that address the findings and challenges identified for each group in Section 3.4.

6.4.1 Administration

Table 26 restates the key findings specific to the Administration Office as described in Section 3.4.1 and lists recommendations to address each within the optimized organization.

Key Findings and Challenges <i>(Ref. Section 3.4.1)</i>	Recommendations
1. Limited capability to keep up with IT demand	1. Adjust IT staffing accordingly
2. Increasing workload on IT due to NERC CIP	2. Adjust IT staffing accordingly
3. Limited understanding of specification requirements by non-Contracts staff	3. Create standard specification templates
4. Limited awareness of product lead times among plant personnel	4. Create internal reference document showing typical lead times
5. Insufficient Contracts involvement early in the acquisition process	5. Include Contracts in major purchase acquisitions at the beginning of project planning
6. Inefficient use of plant personnel time with respect to specification development	6. Create and staff technical purchasing writer position
7. BOR-driven transition toward performance based acquisition	7. Provide performance based acquisition training
8. Increasing workload for Contracts	8. Adjust Contracts staffing accordingly
9. Limited purchasing authority	9. Create GCPO-specific position with warrant of \$100,000
10. Increased workload due to greenhouse gas emission monitoring requirements	10. Develop greenhouse gas emissions program
11. Limited capability to effectively manage staff performance	11. Improve performance management
12. Perception that pay is not competitive	12. Assess compensation

Table 26 - Findings and Recommendations for Optimized Organization, Administration



ADM-01-R, ADM-02-R: Adjust IT staffing accordingly. As shown in Table 27, it is recommended that the IT staff backfill its open position. In addition, the added workload caused by maintaining the NERC CIP requirements needs to be monitored to determine if additional staffing is required beyond the backfilled position to maintain compliance.



ADM-03-R: Create standard specification templates. Contracts should create a standard set of specification templates that show how various commodities must be specified in order to procure the items. The templates should be made available on the GCPO intranet in order to allow GCPO personnel the opportunity to view and use them as needed. Ideally, such templates would be accessible via a newly implemented project delivery system (ref. GCP-05-R). It will also be important that GCPO personnel be trained on the templates to include:

- What types of specifications are needed depending on contract type
- Why the specifications must be created a certain way
- What the templates provide
- Where to find the templates
- How to use the templates



ADM-04-R: Create internal reference document showing typical lead times. It is recommended that Contracts create an internal reference document with typical lead times, available to all GCPO personnel involved in purchasing material, accessible through a newly implemented project delivery system via the GCPO intranet.



ADM-05-R: Include Contracts in major purchase acquisitions at the beginning of project planning. By involving Contracts early in project planning, they will be able to provide guidance as to how key products and services should be purchased, what approximate lead times are, and any special contracting requirements that may be involved. For projects that must go to the Regional Office, GCPO Contracts personnel can begin coordinating with the Regional Office and prepare them for the upcoming request. This proactive approach reduces the chances of contracting surprises late in a project that may delay projects (e.g., material not on-site when needed), causing them to be over budget and behind schedule.



ADM-06-R: Create and staff technical purchasing writer position. It is recommended that a technical purchasing writer position be created that will assist plant personnel in writing specifications. This position will perform, at a minimum, the following tasks:

- Interview plant personnel for needs
- Draft specifications based on plant technical data in a standard procurement format
- Create corresponding purchase request
- Review the specifications and purchase request with appropriate plant personnel
- Obtain appropriate signature for purchase request

Though plant personnel will still be involved, having a technical purchasing writer will free up the time of these personnel (see ENG-06-R). This technical writer can also be viewed as an “apprentice” to become a future Contract Specialist.



ADM-07-R: Provide performance based acquisition training. The GCPO has the potential to benefit from the move towards performance based acquisition (PBA), including lower project costs and shorter project schedules, both of which are valuable when embarking on a major capital improvement program. To take advantage of PBAs, GCPO personnel need to understand PBAs, and thus training is recommended. This training should cover, at a minimum, the purpose of PBAs, how GCPO can take advantage of them, how to prepare a PBA contract, and the difference between traditional and PBA contracts.



ADM-08-R: Adjust Contracts staffing accordingly. To be able to provide excellent service and fill the purchase requests now and in the future, it is vital that the Contracts department be staffed accordingly. As shown in Table 27, it is recommended that the Contracts staff increase by five (5) employees to effectively managing the upcoming increase in requests.



ADM-09-R: Create GCPO-specific position with warrant of \$100,000. With the upcoming capital program, many of the contracts required will be more than \$25,000, the current limit for anyone to approve a contract at GCPO. Although the Department of Interior (DOI) has mandated that anyone with a warrant over \$25,000 must report directly to a senior acquisitions chief, it is recommended that a person be allowed to obtain a warrant for \$100,000, but remain dedicated to the GCPO (as opposed to becoming an employee of the Regional Office).



ADM-10-R: Develop greenhouse gas emissions program. A greenhouse gas emissions program should be implemented to facilitate a comprehensive plan for monitoring emissions. The program should leverage strategies and methodologies to estimate properly the emissions without adding individual meters, establish baselines, and make recommendations on how to reduce emissions.



ADM-11-R: Improve performance management. Need to re-energize the management staff on conducting reviews and utilizing the tools that they have in place; if there is no room for change because of a Federal regulation, more education to both management and staff should occur to ensure everyone knows the value of performance feedback and how it is tied to career development at the GCPO. Effective performance management will impact employee morale, quality of the workforce, and employee retention.



ADM-12-R: Assess compensation. Throughout the discussions with GCPO staff as part of this study, many statements were made that pay ranges are not competitive; it would be helpful to assess regional salary data to determine whether pay is in fact an issue. In addition to pay ranges, there is an opportunity to assess how other types of compensation are leveraged. For example, use of incentive awards should be revisited to determine how to use consistently and for the highest impact things. There is also the potential to review the plant policies regarding overtime. Understanding the competitive advantage/disadvantage of compensation and coupling that with the other advantages that the GCPO can provide would be an excellent basis for informing decision making and actions for recruiting and employee retention.

Considering the GCPO-wide recommendations presented in Section 6.1 and the functional group-specific recommendations provided in this section, MWH recommends that the staffing levels and mix for this functional group under the optimized organization be as shown in Table 27. The proposed organizational structure for this group is included in Exhibit 2.

Recommended Staffing for Optimized Organization – Administration¹		
Title	Current Positions <i>(as of July 2011)</i>	Recommended Positions
Administrative Officer ²	1	1
PROCUREMENT (Contracts)		
Supervisory Contract Specialist	1	1
Purchasing Agent	5	6
Office Automation Clerk	1	2
Tech Writer/Supply Tech	0	3
SUBTOTAL	7	12
WAREHOUSING		
Supervisory Supply Mgmt Specialist	1	1
Supv 1 Warehouse	1	1
Warehouse I	3	3
Warehouse III	5	6
Supply Technician	6	6
Office Aide	1	1
SUBTOTAL	17	18
TRAINING & PERSONNEL MGMT.³		
Supervisory Training Officer	0	1
Support Services Supervisor ⁴	0.5	0
Support Services Technician	0	2
Training Coordinator	0	2
SUBTOTAL	0.5	5
INFORMATION TECHNOLOGY (IT)		
Supervisory IT Specialist	1	1
IT Specialist	5	8
SUBTOTAL	6	9
ADMIN SUPPORT		
Support Services Supervisor ⁴	0.5	1
Office Automation Clerk	1	2
Office Aide	1	1
Mail and File Clerk	1	1
Facilities Services Specialist	1	1
Fiscal Assistant	1	1
Photographic Technician	1	1
SUBTOTAL	6.5	8
TOTAL	38	53
It is also recommended that Warehousing hire 2 temporary contract staff to assist with cleaning out outdated stores and tracking down hidden stores, and that Admin Support hire 2 temporary contract staff to assist with archiving documents in the Technical Data Center.		
Notes:		
1. Existing staffing chart lists all Administration positions under one heading.		
2. The Administrative Officer is responsible for overseeing the Procurement, Warehousing, Public Affairs, Cultural Resources, IT, Training & Personnel Mgmt., and Admin Support groups as per the organizational chart in Exhibit 2.		
3. There is currently a hiring freeze for IT staff; however, the additional positions recommended herein are critical to supporting the mission of the GCPO.		
4. Support Services Supervisor is currently one Admin position that performs duties related to training and personnel management as well as administrative support.		

Table 27 - Recommended Staffing for Optimized Organization, Administration

6.4.2 Budget

Table 28 restates the key findings specific to the Budget Office as described in Section 3.4.2 and lists recommendations to address each within the optimized organization.

Key Findings and Challenges <i>(Ref. Section 3.4.2)</i>	Recommendations
1. Insufficient analysis, validation, and verification of budget performance	1. Increase budget analyst staffing
2. Reactive approach in budgeting versus proactive	2. Better customize (or utilize) systems to generate proactive budgets, across all functional groups
3. Unrealistic budget status tracking for longer-term projects	3. Leverage project managers to report actual performance
4. Inconsistent processes for developing budgets	4. Implement training and materials to encourage more consistent budget development
5. Labor money is left over at end of year	5. Better justify/track labor needs

Table 28 - Findings and Recommendations for Optimized Organization, Budget



BUD-01-R: Increase budget analyst staffing. During initial comparisons with peer organizations of similar size, the GCPO has a significantly smaller Budget group. Currently, there is a lack of detailed analysis, validation, and verification of performance information. More resources to perform thorough program analysis would allow the GCPO to better explain their needs, help managers prioritize work efforts, and complete necessary reporting. More specialization would also promote better interaction between the Budget Office and other areas of the GCPO, as well as outside organizations.

The design of the optimized organization has recommended that budget analysts be added to the Budget Office, Project Delivery and (recommended new) Enterprise Planning groups. The budget analysts in each group will have a specific focus area. For example, budget analysts in the Enterprise Planning group will be focused on forward-looking financial needs, budget analysts in the Project Delivery group will be focused on current project/work execution, and budget analysts in the Budget Office will be focused on keeping GCPO current with accounting and reporting requirements of Reclamation, BPA, and other key stakeholders, and manage current-year accounts, obligations, and expenditures.



BUD-02-R: Better customize (or utilize) systems to generate proactive budgets, across all functional groups. There are a number of existing systems (CARMA, Federal Financial System, Grand Coulee database, etc.) that are used to track historical spending as well as future needs. At present, there is little linkage or reporting from those systems to help estimate future, zero-based budgets. Especially in times of fiscal scarcity, the use of zero-based or bottom-up budgets (based on needs and criticality) allows for more effective advocacy for funding.

Additionally, budgets for future years should include input or contributions from all functional groups. For example, maintenance superintendents should not be estimating engineering requirements to support their routine maintenance work; such input should come directly from Engineering. Similarly, administrative costs should not be allocated

to projects in a surprise fashion, but should be integrated into project budgets from the start in accordance with a pre-determined, standard allocation approach.

The recommendation to create a new Enterprise Planning group (GCP-04-R) supports this as well as other recommendations. The Enterprise Planning group will lead the implementation of this recommendation and coordinate with other groups at GCPO, including the Budget Office, and outside to develop proactive risk-based budgets for the benefit of GCPO and its stakeholders.



BUD-03-R: Leverage project managers to report actual performance. With the envisioned growth of the Project Delivery group, there is opportunity for more effective tracking of work orders, capital projects, and interagency work. By utilizing and integrating more robust schedule and resource tracking tools (such as Primavera), the Project Delivery group will be able to provide timely and useful information as projects are in progress to support the Budget Office and the Enterprise Planning group in budgeting, funding, and reporting activities. This will require project managers to provide accurate, routine, bottoms-up estimate-to-completion analyses rather than assuming that projected budget to completion is equivalent to original budget less expenditures to date.



BUD-04-R: Implement training and materials to encourage more consistent budget development. As noted previously, there is a general lack of understanding around the various budget processes at the GCPO. If the Budget Office had more resources available, better training could be provided to the rest of the staff that will aid in the long-term interaction during budget development and review. In addition, a user-friendly budget “dictionary” of terms will help ensure consistent communications. Finally, a consistent high-level process for the appropriated and power budgets would also promote efficiency and better coordination.



BUD-05-R: Better justify/track labor needs. The Federal appropriations process (and likely rate case justifications) is often a “use it or lose it” situation. If a significant amount of labor money is left at the end of a budget cycle, it will inhibit the GCPO’s ability to justify additional staffing. Further analysis and intra-year tracking of labor costs should help to minimize this situation in the future by establishing realistic budgets for out-years, and by achieving reallocation of available funds to pending projects. This will provide value to the Enterprise Planning group in performing long-term investment plans and supporting budget request justifications.

Considering the GCPO-wide recommendations presented in Section 6.1 and the functional group-specific recommendations provided in this section, MWH recommends that the staffing levels and mix for this functional group under the optimized organization be as shown in Table 29. The proposed organizational structure for this group is included in Exhibit 2.

Recommended Staffing for Optimized Organization – Budget		
Title	Current Positions <i>(as of July 2011)</i>	Recommended Positions
Supervisory Budget Officer	1	1
Budget Analyst	1	2
Budget Tech	1	4
Office Aide	1	0.5
TOTAL	4	7.5

Table 29 - Recommended Staffing for Optimized Organization, Budget

6.4.3 Cultural Resources (Archaeologist)

Table 30 restates the key findings specific to Cultural Resources as described in Section 3.4.3 and lists recommendations to address each within the optimized organization.

Key Findings and Challenges <i>(Ref. Section 3.4.3)</i>	Recommendations
1. Inconsistent involvement of cultural resources in project planning and delivery	1. Integrate regulatory approvals into standardized project life cycle
2. Increase in requirements, reporting and Plan updates	2. Add junior archeologist and GIS specialist roles to support manager with associated reporting and Plan updates

Table 30 - Findings and Recommendations for Optimized Organization, Cultural Resources (Archaeologist)



CRA-01-R: Integrate regulatory approvals into standardized project life cycle. Cultural Resource needs to be proactively involved at proper stages in the project life cycle, including earlier in the design than is currently occurring. A suggested project life cycle is shown in Exhibit 3. Early and active involvement of cultural resources representation can decrease the likelihood and duration of delays due to historical preservation matters. Additionally, continuing to educate the staff on the importance of historical preservation will increase the breadth of understanding by the staff involved and again, assist in mitigating delays or loss of historical structures.



CRA-02-R: Add junior archaeologist and GIS specialist roles to support manager with associated reporting and Plan updates. An additional resource would help to alleviate the documentation-related workload on the existing Archaeologist position. This additional resource, under the supervision of the existing Archaeologist, could handle the majority of initial documentation preparation and Plan updates, as well as help to free up the group manager to concentrate on FCRPS program requirements. Additionally, a GIS specialist would help to support report production and help to maintain, upgrade, and support archaeology programs GIS database.

Considering the GCPO-wide recommendations presented in Section 6.1 and the functional group-specific recommendations provided in this section, MWH recommends that the staffing levels and mix for this functional group under the optimized organization be as shown in Table 31. The proposed organizational structure for this group is included in Exhibit 2.

Recommended Staffing for Optimized Organization – Cultural Resources		
Title	Current Positions <i>(as of July 2011)</i>	Recommended Positions
Supervisory Archaeologist	1	1
Archaeologist	0	1
GIS Specialist	0	1
TOTAL	1	3

Table 31 - Recommended Staffing for Optimized Organization, Cultural Resources (Archaeologist)

6.4.4 Engineering

Table 32 restates the key findings specific to Engineering as described in Section 0 and lists recommendations to address each within the optimized organization.

Key Findings and Challenges <i>(Ref. Section 0)</i>	Recommendations
1. Unable to keep up with as-builts	1. Increase staff (craft, engineering, drafting) where bottlenecked; integrate as-built process into standard project closeout procedures
2. Inefficiencies in initiating, prioritizing, assigning, and tracking work	2. Leverage Enterprise Planning group to understand work prioritization in support of O&M and capital projects
3. Limited understanding of plant specifics	3. Rotate engineers through plants to ensure pipeline of engineers with plant knowledge
4. Inefficiencies in providing purchasing support	4. Improve purchasing support from Engineering through increased staffing
5. Inconsistent consideration of environmental factors in design	5. Integrate environmental review into standard project life cycle
6. Protection engineering not located at Grand Coulee makes coordination difficult with PSCCs	6. Assign a dedicated protection engineer for PSCC support and coordination with TSC

Table 32 - Findings and Recommendations for Optimized Organization, Engineering



ENG-01-R: Increase staff; integrate as-built process into standard closeout procedures.

Increased staffing at the craft, engineering, and drafting level will help to release the backlog of existing as-built work and ensure sufficient resourcing to keep up with the as-builts going forward, especially considering the ramp up in capital work. As shown in Table 33 and Exhibit 2, staff has been added to the Engineering group to address this need, include techs and plant support. A necessary sub-step is to identify the backlog of as-builts and quantify the need.

Integrating the as-built process as a requirement of work order/project closeout, and building time and budget into the work plan to carry out the as-built process, would also help increase the likelihood that this work gets accomplished. With respect to as-builts from externally contracted services, contract language should include penalties substantially greater than existing to incentivize contractors to provide satisfactory as-built information at the conclusion of their work.



ENG-02-R: Leverage Enterprise Planning group to understand work prioritization. GCP-04-R recommends the formation of a Enterprise Planning group to centralize work planning and scheduling efforts at the enterprise level. This group would align plant activities with organizational priorities and operational constraints. Engineering work thereafter should be prioritized based on the enterprise-wide schedule provided by this Enterprise Planning group. Internal to the Engineering group, work should be assigned based on staff availability and skill set and tracked at the work order level in a coordinated manner through integrated systems (versus offline spreadsheets).



ENG-03-R: Rotate engineers through plants. Senior engineering positions located in the plants should remain situated in the plants; however, when a new junior engineer arrives to start in the Engineering group, the new engineer should work under the senior plant engineers in the plants. The junior engineer will be able to gain in-plant knowledge and experience by working in the plant. This will not only improve the plant knowledge of the engineering staff, but better connect those in the plant with staff “on the hill” and support longer-term succession planning and knowledge transfer.



ENG-04-R: Increase staffing to improve purchasing support. Increasing the number of engineers in this functional group, across disciplines and career levels as shown in Table 33 and Exhibit 2, would create the necessary capacity to better support the procurement process through specification definition and review and bid evaluation support.



ENG-05-R: Integrate environmental review into the standard project life cycle. Being aware of and considering environmental issues early in any design reduces the risk of later rework or environmental compliance issues. To better encourage this early awareness and consideration of environmental matters, the project life cycle should specifically include environmental considerations. A suggested project life cycle is shown in Exhibit 3.



ENG-06-R: Assign a dedicated protection engineer for PSCC support and coordination with TSC. Protection engineering requires a thorough understanding of the systems for proper application and testing. Grand Coulee needs a protection engineer on-site to work with the PSCCs for coordination with external engineers such as TSC. It is recommended that a current electrical engineer position be reclassified as a protection engineer.

Considering the GCPO-wide recommendations presented in Section 6.1 and the functional group-specific recommendations provided in this section, MWH recommends that the staffing levels and mix for this functional group under the optimized organization be as shown in Table 33. The proposed organizational structure for this group is included in Exhibit 2.

Recommended Staffing for Optimized Organization – Engineering		
Title	Current Positions <i>(as of July 2011)</i>	Recommended Positions
Supvy General Engineer	1	1
Activity Manager	1	0
Supv Mechanical Engineer	1	1
Supv Electrical Engineer	1	1
Supv Maintenance Engineer	0	1
IT Specialist (Drafting Supervisor)	1	1
Mechanical Engineer <i>(Incl. 1 TPP Overhaul Mechanical Engineer)</i>	4	6
TPP/RPH Mechanical Engineer	1	2
TPP/RPH Electrical Engineer	2	2
Civil Engineer	1	1
Civil Engineer Tech	1	0
Commissioning Engineer	0	1
Protection Engineer	0	1
IA Electrical Engineer	1	0
Electrical Engineer <i>(Incl. 4 GDACS Electircal Engineers)</i>	10	12
LPH/PGP Mechanical Engineer	1	2
LPH/PGP Electrical Engineer	1	2
Engineering Tech (Drafter)	6	8
Engineering Tech TPP-OH	1	0
TPP/RPH Electrical Engineering Tech	0	1
LPH/PGP Electrical Engineering Tech	0	1
Supv Civil	0	1
Environmental Protection Specialist	2	2
Geologist	1	1
Hydrologic Technician	1	1
Natural Resource Specialist	1	1
Student Trainee	1	1
Office Aide	0	1
Maintenance Mgmt Technician	0	1
TOTAL	40	53

Table 33 - Recommended Staffing for Optimized Organization, Engineering

6.4.5 Fire & Physical Security

Table 34 restates the key findings specific to Fire & Physical Security as described in Section 0 and lists recommendations to address each within the optimized organization.

Key Findings and Challenges <i>(Ref. Section 0)</i>	Recommendations
1. Concerned the Fire Department is not meeting NFPA requirements of four firefighters per truck, 24/7	1. Explore staffing through new positions and/or transfer of inspectors to firefighters to reduce OT, meet NFPA
2. Current Fire Chief also serves as head of Physical Security	2. Separate existing role of Fire Chief; split Fire and Physical Security into two functional groups
3. Current processes do not engage a medically-trained dispatch officer	3. Investigate optimal solution to increase safety precautions
4. Overloaded Physical Security staff	4. Add staff to address resource issue

Table 34 - Findings and Recommendations for Optimized Organization, Fire & Physical Security



FPS-01-R: Explore staffing through new positions and/or transfer of inspectors to firefighters. So as to achieve NFPA compliance, options include adding firefighter positions, and/or transferring existing inspector positions to firefighter positions. Note that there are age limitations on firefighters, but not on inspectors. The transition from inspector positions to firefighter positions could be gradual versus immediate, making the change on a position-by-position basis as current inspectors leave GCPO voluntarily via retirement or other reasons. Upon the departure of an existing inspector, the position can be revised to a firefighter.



FPS-02-R: Separate existing role of Fire Chief; split into two functional groups. To best serve the GCPO and to enable leadership to prioritize decisions effectively, the responsibility for managing firefighting and physical security activities should fall under two distinct positions/groups. It is recommended that the existing Fire and Physical Security group be split into a Fire group and a Physical Security group under the organizational structure shown in Exhibit 2. Recommended staffing levels for each group are provided in Table 35.



FPS-03-R: Investigate optimal solution to increase safety precautions. Options include hiring a medically-trained dispatcher(s) with Telecommunicator I and II training (per NFPA 1710) to receive non-personnel security emergency calls, dispatch Fire Department services, and maintain contact with the caller, or potentially contracting with a local or regional 911 service.



FPS-04-R: Add staff to address resource issue. Additional staff in the Physical Security Office are required to keep pace with the existing and growing workload. It is recommended that leadership of Physical Security operations be the sole responsibility of a Security Assistant, rather than being an additional responsibility of the Supervisory Fire Protection Specialist, as discussed in recommendation FPS-02-R above. Further, it is recommended that additional personnel be added to this group as per Table 35.

Considering the GCPO-wide recommendations presented in Section 6.1 and the functional group-specific recommendations provided in this section, MWH recommends that the staffing levels and mix for this functional group under the optimized organization be as shown in Table 35. The proposed organizational structure for this group is included in Exhibit 2.

Recommended Staffing for Optimized Organization – Fire & Physical Security		
Title	Current Positions <i>(as of July 2011)</i>	Recommended Positions
Security Officer ¹	0	1
FIRE		
Supvy Fire Protection Spec	0.5	1
Assistant Fire Chief	0	2
Lead Firefighter	2	2
Firefighter	4	10
Lead Fire Protection Inspector	0	1
Fire Protection Inspector	3	2
Office Automation Clerk	0.5	0
SUBTOTAL	10	18
PHYSICAL SECURITY		
Supvy Fire Protection Spec	0.5	0
Supervisory Security Assistant	0	1
Security Assistant	2	2
Office Automation Clerk	0.5	0
SUBTOTAL	3	3
TOTAL	13	22
Notes:		
1. The Security Officer is responsible for overseeing the Fire, Physical Security, Personnel Security, and Safety groups as per the organizational chart in Exhibit 2.		

Table 35 - Recommended Staffing for Optimized Organization, Fire & Physical Security

6.4.6 Hungry Horse

Table 36 restates the key findings specific to Hungry Horse as described in Section 3.4.6 and lists recommendations to address each within the optimized organization.

Key Findings and Challenges <i>(Ref. Section 3.4.6)</i>	Recommendations
1. Growing backlog of preventive maintenance (PM) work orders	1. Increase staff levels and degree of self-direction
2. Insufficient flexibility between electrician/mechanics and operators	2. Investigate better cross-training opportunities
3. Incomplete CARMA implementation	3. Train mid-level CARMA users; leverage complete team for work order and SOP creation
4. Standard operating procedures (SOPs) need review and further development	4. Assign one operator to assist with SOP development
5. Unable to keep up with as-builts	5. Temp/contractor support for conversion and consolidation of as-builts
6. Security after hours is minimal/non-existent outside of GCPO remote monitoring	6. Investigate support agreements and/or security contract
7. Limited input into design documents and contract requirements	7. Assign a project manager to Hungry Horse

Table 36 - Findings and Recommendations for Optimized Organization, Hungry Horse



HHD-01-R: Increase staff levels and degree of self-direction. In order to address the growing backlog in work orders, additional resources are needed at Hungry Horse. There is currently a plan in place to hire three electrician sub-ops to make progress in addressing this area. In addition, Hungry Horse staff believes they could be more efficient with an increased level of self-directed activities. With the recent turnover in Foreman III, it appears this might be possible and should be considered to some extent.



HHD-02-R: Investigate better cross-training opportunities. The workloads for the maintenance and operations staff vary from week to week. Hungry Horse should utilize support from the Region human resources and legal department to further investigate flexibility in the job board contract for additional cross-training opportunities.



HHD-03-R: Train mid-level CARMA users; leverage complete team for work order and SOP creation. The majority of work orders currently in CARMA contain basic information, but there is minimal “ground truthing” of that information due to limited resources. By training one mechanic and one electrician to be mid-level CARMA users, coordinated with a GCPO CARMA “users group,” Hungry Horse could more efficiently update job plans, SOPs, and actual labor and materials estimates. Another option would be to hire a temporary worker to work with the maintenance staff to support a more comprehensive loading of PM work orders.



HHD-04-R: Assign one operator to assist with SOP development. Although Hungry Horse has a limited number of operators, they often are not fully utilized. By creating a list of SOPs that need to be updated or created, Hungry Horse could more effectively capture and utilize operator knowledge. This knowledge capture will be especially important during periods of higher staff turnover. HH may also want to investigate best practices in electronic O&M and SOP systems.



HHD-05-R: Temporary/contractor support for conversion and consolidation of as-builts.

Due to limited staffing in engineering, there is a significant backlog in as-built drawing verification and conversion. Hungry Horse has utilized (paid for) TSC staff to help with the backlog, but progress has been slow. A more effective alternative may be hiring temporary or contractor personnel to work with maintenance staff to verify as-builts and capture them. This will become more important as additional capital construction work takes place at the facility.



HHD-06-R: Investigate support agreements and/or service contract. Several times during staff interviews associated with this study, the lack of on-site security was brought up as a concern. Since Hungry Horse is staffed at “four 10’s,” there are significant periods of time when the only monitoring that takes place is done by Grand Coulee security personnel, 300 miles away. This presents a safety and security concern for Hungry Horse staff and facilities. Hungry Horse should investigate alternative security options, including a private security service or more extensive mutual aid agreements with local law enforcement. This agreement might include the provision of a more reliable radio/pager system that would allow staff on weekend rounds to be able to directly contact local law enforcement and/or Grand Coulee.



HHD-07-R: Assign a project manager to HH. The Regional contracting and construction office make reasonable attempts to allow for Hungry Horse review of design documents and contracts, but there is often not enough time for thorough analysis. To help address such issues, a project manager should be assigned to Hungry Horse from within the GCPO Project Delivery group for non-routine work.

Considering the GCPO-wide recommendations presented in Section 6.1 and the functional group-specific recommendations provided in this section, MWH recommends that the staffing levels and mix for this functional group under the optimized organization be as shown in Table 37. The proposed organizational structure for this group is included in Exhibit 2.

Recommended Staffing for Optimized Organization – Hungry Horse		
Title	Current Positions <i>(as of July 2011)</i>	Recommended Positions
Supv. Facility Operations Specialist	1	1
Administrative Operations Assistant	2	3
Electrical Engineer	1	1
Facility Maintenance Specialist	1	1
Electrical Engineering Tech	1	1
Reclamation Guide	4	4
Foreman III, Pwrplt. Maintenance	1	1
Powerplant Operator	2	2
Power System Control Craftsman	1	1
Electrician Sub-Op	2	4
Foreman I, Pwrplt. Maintenance	1	1
Mechanic Sub-Op	2	2
Safety & Occupational Health Spec.	0	1
Utilityman	4	4
TOTAL	23	27

Table 37 - Recommended Staffing for Optimized Organization, Hungry Horse

6.4.7 Maintenance

Table 38 restates the key findings specific to Maintenance as described in Section 3.4.7 and lists recommendations to address each within the optimized organization.

Key Findings and Challenges <i>(Ref. Section 3.4.7)</i>	Recommendations
1. "Fiefdoms" exist within crews	1. Rotate craftsmen on each crew on a regular basis; rotate across areas as well
2. Insufficient job closeout documentation (limited time, resources)	2. Build time and resources into every job plan for closeout documentation
3. Incomplete performance on PM work orders	3. Increase staffing levels to keep up with routine PMs
4. Procurement is currently using 50% of planner's time	4. Adjust staffing levels in Procurement and Project Delivery
5. Unit outages run longer than scheduled due to lack of resources	5. Estimate the cost of extended outages to justify adding resources and/or adjusting shift schedules
6. Ring seal and drum gate maintenance should be separated from plant maintenance	6. Contract out ring seal and drum gate maintenance

Table 38 - Findings and Recommendations for Optimized Organization, Maintenance



MNT-01-R: Rotate craftsmen on each crew on a regular basis; rotate across areas as well. The more exposure new journeymen have to experienced journeymen, the more knowledge transfer there will be. To increase this exposure, the crews in the newly-defined LPH/PGP and RPH/TPP areas should be rotated on a periodic basis (e.g., 6 months, 1 year) to get a variety of knowledge transfer from different foremen, other crew members, and different areas. Foremen can remain in their current positions/locations. This will also help to relieve any frictional or complacent foreman/journeymen relationships. This recommendation does not apply to specially trained crews nor does it apply to crews in the industrial area or the recommended non-routine maintenance group.



MNT-02-R: Build time and resources into every job plan for closeout documentation. All jobs and projects, large and small, should designate an accountable person as well as schedule adequate time for proper closeout and completion of documentation. The specific documentation requirements according to established policies should be listed on the work order and should include descriptions of work performed, as-builts, SOP updates, safety, job hazard plans, etc. If these steps and the time required are not included in existing work order estimates, they should be revised.

Procedures need to be established for processing and assigning responsibility for the completion of the as-builts and SOPs. The completion of this work needs to be tracked through the process, and resources need to be scheduled or added as needed to ensure completion.

PM work notes are critical for knowledge transfer and future work planning. If these are not entered directly into CARMA there is a possibility that the notes could be incorrect and incomplete. The crews should have the time, training, and responsibility to enter their own work notes. The cost of additional craft time to enter the notes will be offset by the benefit of better and more efficient job plans in the future.

To facilitate this recommendation, among other reasons, employee-to-supervisor ratios in the Maintenance groups have been reduced, as shown in Table 39 and Table 40.



MNT-03-R: Increase staffing levels to keep up with the routine PMs. As part of this staffing study, labor for skipped or partially conducted PMs has been totaled for each craft for each area to estimate the additional craft resources required. The same analysis was conducted for additional engineering or other resources required. In addition to this analysis, the recommended organization structure, as shown in Exhibit 2, separates non-routine maintenance crews from routine crews, allowing these crews to focus on keeping up with preventive maintenance requirements.



MNT-04-R: Adjust staffing levels in Procurement and Project Delivery. To allow the planners to focus on job planning, a dedicated person for procurement, as recommended in ADM-06-R, is needed to prepare specifications and work within the Federal Acquisition Regulations (FAR) to obtain the materials needed. Procurement staff would work closely with counterparts in the Maintenance and Project Delivery areas.



MNT-05-R: Estimate the cost of unit outages to justify adding resources and/or adjusting shift schedules. In coordination with the recommended Enterprise Planning group, Maintenance should routinely evaluate staffing levels and alternative shift schedules (e.g., 24-hour coverage, 7 days) on a project-by-project basis. Such evaluation should consider the cost of unit outage durations/extensions against the cost of staffing or shift adjustments for routine and non-routine maintenance and/or contractor support.



MNT-06-R: Contract out ring seal and drum gate maintenance. The long-term jobs of ring seal gates and drum gate maintenance are separate from plant maintenance and distract from the duties of the plant supervisors. The work is repetitive and does not require maintenance personnel who are familiar with the plants. This work could be effectively contracted out, reducing the overall maintenance headcount (and required staffing/hiring increases).

Considering the GCPO-wide recommendations presented in Section 6.1 and the functional group-specific recommendations provided in this section, MWH recommends that Maintenance functional group be reorganized from the existing three groups (LPH/PGP, RPH/TPP, and IA) into four groups (LPH/RPH, TPP, PGP, and IA/Structures & Non-Routine). The following tables show the staffing levels and mix under the current organization and under the recommended optimized organization. The proposed organizational structure for this group is included in Exhibit 2.

Staffing Under Current Organization – Maintenance				
Title	LPH/PGP	RPH/TPP	IA	Total
Supvy Facility Operations Specialist	1	0	1	2
Supv II, Hydromaintenance (M)	1	2	2	5
Supv II, Hydromaintenance (E)	2	1	1	4
Supvy General Engineer	0	1	0	1
Planner/Estimator	2	3	2	7
Warehouse III	1	0	0	1
Foreman I, Hydromechanic	4	2	4	10
Hydromechanic	17	19	24	60
Hydromechanic – Term	0	6	0	6
Hydromechanic – Term, TPP Overhaul	0	4	0	4
Hydromechanic (Ring Seal Gates)	2	0	0	2
Hydromechanic Apprentice	5	0	0	5
Maintenance Mgmt Technician	3	3	2	8
Hydromaintenanceman I	0	0	4	4
Hydromaintenanceman II	0	0	1	1
Heavy Mechanic	0	0	3	3
Foreman I, Electrician	0	2	1	3
Foreman I, Electrician (Power Sys)	4	0	0	4
Foreman I, Elec. (Power Sys) – GDACS	2	0	0	2
Electrician (Power Sys)	13	13	6	32
Electrician (Power Sys) – Term	2	3	0	5
Electrician (Power Sys) – GDACS	3	0	0	3
Electrician (Power Sys) – GDACS, Term	6	0	0	6
Electrician (Power Sys) – Term, RPH BLG	0	2	0	2
Electrician (Power Sys) – Term, TPP BLG	0	1	0	1
Electrician (Power Sys) – Term, GDACS	0	1	0	1
Electrician (Power Sys) – Term, TPP OVHL	0	4	0	4
Foreman I, Lineman	0	0	1	1
Lineman	0	0	2	2
Foreman I, PSCC	0	1	0	1
Power System Control Craftsmen	4	2	2	8
PSCC, Trainee	0	1	1	2
TOTAL	72	71	57	200

Table 39 - Staffing Under Current Organization – Maintenance

Recommended Staffing for Optimized Organization – Maintenance					
Title	LPH/RPH	TPP	PGP	IA/Structures & Non-Routine	Total
Supv Facility Ops Specialist	1	0	1	1	3
Deputy Facility Ops Specialist	1	1	1	1	4
Sup II, Hydromaintenance (E)	2	2	2	3	9
Sup II, Hydromaintenance (M)	2	1	1	3	7
Planner/Estimator	2	2	1	3	8
Warehouse III	1	0	0	0	1
Supv General Engineer	0	1	0	0	1
Foreman I, Hydromechanic	4	3	2	7	16
Hydromaintenanceman II	0	0	0	1	1
Hydromaintenanceman I	0	0	0	3	3
Hydromechanic	17	18	8	38	81
Hydromechanic Apprentice	5	0	2	0	7
Heavy Mechanic	0	0	0	3	3
Maintenance Mgmt Technician	3	2	1	3	9
Foreman I, PSCC	1	1	1	1	4
Power Systems Control Craftsman	5	2	3	4	14
Foreman I, Electrician	0	2	0	2	4
Foreman I, Electrician (Power Sys)	3	1	3	5	12
Electrician	0	0	0	2	2
Electrician (Power Sys)	15	16	14	28	73
Foreman I, Lineman	0	0	0	1	1
Lineman	0	0	0	3	3
TOTAL	62	52	40	112	266

Table 40 - Recommended Staffing for Optimized Organization, Maintenance

6.4.8 NERC/WECC Compliance

Assessment of the NERC/WECC functional group identified no major issue or challenges, including resources. Quantitative results presented in Section 4.3.8 supported this assessment. Therefore, MWH recommends that the staffing levels and mix for this functional group under the optimized organization be as shown in Table 41, consistent with current staffing levels. The proposed organizational structure for this group is included in Exhibit 2.

Recommended Staffing for Optimized Organization – NERC/WECC Compliance		
Title	Current Positions <i>(as of July 2011)</i>	Recommended Positions
Supvy Electrical Eng. (NERC/WECC)	1	1
IT Specialist (Security)	1	1
Elec. Engineer Tech (NERC/WECC)	2	2
TOTAL	4	4

Table 41 - Recommended Staffing for Optimized Organization, NERC/WECC Compliance

6.4.9 Operations

Table 42 restates the key findings specific to Operations as described in Section 3.4.9 and lists recommendations to address each within the optimized organization.

Key Findings and Challenges <i>(Ref. Section 3.4.9)</i>	Recommendations
1. Struggling to keep up with increasing amount of switching orders	1. Improve enterprise-wide work planning, including clearances, to better coordinate advanced placement
2. Limited communication from Maintenance to Operations at completion of work	2. Adjust procedures to require Operations to sign off on complete work order after being briefed by Maintenance crew
3. SOP shop cannot keep up with workload	3. Set policies for SOP shop requirements and staff accordingly
4. Insufficient review and participation on capital projects	4. Integrate Operations into review of capital project design requirements and submittals
5. Incomplete performance on required testing	5. Schedule and implement all FAC 02-01 required testing
6. Manual operator interface is required for unit start/stops	6. Track and fix automation issues as a performance goal
7. Backlog of recurring equipment trouble reports	7. Coordinate (operations and maintenance staff) to determine root cause and test after rectification
8. Insufficient completion of incident root cause analysis	8. Increase engineering support to conduct root cause analysis

Table 42 - Findings and Recommendations for Optimized Organization, Operations



OPS-01-R: Improve enterprise-wide work planning, including clearances, to better coordinate advanced placement. Increased planning that considers all crew work, contractor work, operations schedules and unforeseen trouble work orders would allow for increased advanced clearance placement. This would reduce the wasted crew time and delays to contractors waiting for clearances to be prepared and placed. Such planning could be provided by the Enterprise Planning group recommended in GCP-04-R.



OPS-02-R: Adjust sign-off procedures to require Operations to review completed work orders after being briefed by Maintenance crew. A revised sign off procedure for work orders would increase accountability, allow the operators to read the work notes, and the foreman to brief the operator on the work completed. This information allows the operator to be aware of any potential problems when returning the equipment to service and adds a level of check to the work order closeout process.



OPS-03-R: Set policies for SOP requirements and staff accordingly. The FIST requirements for annual review of all existing SOPs, Control Board Directories, OD Drawings, and Annunciator books cannot be accomplished by the existing staff due to the volume of documents. A variance should be written to the FIST requirements to a level that can be achieved. New SOPs need to be written for the new equipment associated with the capital program and this will require additional SOP-support resources. When jobs are bid, providing an SOP and training for personnel if necessary should be included in the requisition. The company/contractor should be required to

provide a draft SOP for the work up front for Operations review and a final SOP before final payment for services. Additional staff should be added to the SOP team, including two (2) FTEs, plus two (2) temporary contract staff to help address the current backlog of SOP edits.



OPS-04-R: Integrate Operations into review of capital project design requirements and submittals. Procedures need to be part of the overall project delivery of the capital projects to include input and review from Operations. This will prevent rework of systems that do not meet the plant needs. The review time needs to be included in the design schedule and time for Operations review needs to be part of the capital support labor estimates.



OPS-05-R: Schedule and implement all FAC 02-01 required testing. FAC 02-01 requirements for annual testing of outlet gates and valves should be scheduled in CARMA and if the requirements cannot be met, adequate resources should be in place or an appropriate variance should be written.



OPS-06-R: Track and fix automation issues as a performance goal. All unit start/stops are initiated by the Dispatches through SCADA, although periodic assistance by the plant operator is needed to complete the automatic sequence. The automatic sequence issues that require operator assistance need to be entered as CM work orders and the root cause of the issues should be identified and addressed. The number of operator-assisted start/stops needs to be tracked to identify problem areas and appropriate performance goals should be set.



OPS-07-R: Coordinate to determine root cause and test after rectification. Maintenance crews should work with Operations when working on an Operation work order to communicate the problem, review the repairs conducted, and test while the crew is present. Repetitive Operations work orders for the same issue should be given high priority and may need engineering support.



OPS-08-R: Increase engineering support to conduct root cause analysis. PO&M 171 power incident reports root cause analysis and rectification may need engineering support. Without a comprehensive root cause analysis, incidents may reoccur creating a personnel safety and equipment hazard. The new Maintenance Engineering Supervisor added to the Engineering group can make root cause analysis a priority with assistance from plant engineers.

Considering the GCPO-wide recommendations presented in Section 6.1 and the functional group-specific recommendations provided in this section, MWH recommends that the staffing levels and mix for this functional group under the optimized organization be as shown in Table 43. The proposed organizational structure for this group is included in Exhibit 2.

Recommended Staffing for Optimized Organization – Operations		
Title	Current Positions <i>(as of July 2011)</i>	Recommended Positions
Power Operations Superintendent	1	1
Supv II, Hydromaintenance	2	2
Supv II, Specialist (Sys Analyst)	1	1
Supervisory Power Ops Specialist	1	1
Powerplant Dispatcher	5	5
Outage Dispatcher	1	1
Powerplant Dispatcher Assistant	5	5
Powerplant Operator, Senior	6	6
Powerplant Operator	19	19
Foreman I, PSCC	1	1
PSCC	8	8
IT Specialist	4	4
Power Operations Specialist	2	4
Editorial Assistant	1	1
Program Support Assistant	1	1
Planner/Estimator	1	1
TOTAL	59	61
It is also recommended that Operations add 2 temporary contractors to help the SOP team get through its backlog of work.		

Table 43 - Recommended Staffing for Optimized Organization, Operations

6.4.10 Project Delivery

Table 44 restates the key findings specific to Project Delivery as described in Section 3.4.10 and lists recommendations to address each within the optimized organization.

Key Findings and Challenges <i>(Ref. Section 3.4.10)</i>	Recommendations
1. Lacking sufficient project delivery resources and capabilities to match backlog of work	1. Continue with ongoing formation of GCPO Project Delivery organization
2. Limited authority to truly manage projects from start to finish	2. Improve coordination between COTR and Project Delivery
3. Lack of clear project information	3. Implement project and program-level reporting capabilities
4. Lack of up-front planning negatively impacts delivery success	4. Engage in up-front project planning
5. Limited understanding of past decisions and institutional knowledge	5. Establish system to record decisions, priorities, and justifications
6. QA/QC may be inadequate for large technical capital jobs	6. Implement industry standard QA/QC program and coordinate with Construction
7. Limited coordination during commissioning	7. Increase coordination through commissioning
8. Limited application of a formal project closeout process	8. Implement a closeout and turnover process

Table 44 - Findings and Recommendations for Optimized Organization, Project Delivery



PDL-01-R: Continue with ongoing formation of GCPO Project Delivery organization.

Ongoing efforts to develop a Project Delivery organization within the GCPO should be continued and emphasized. In order to complete the implementation, the organizational structure needs to be modified and new positions filled. Standardized processes and policies (e.g., project chartering, cost estimation, risk management, resource leveling, etc.) should be developed and supporting systems and tools defined and implemented for proper project controls.



PDL-02-R: Improve coordination between COTR and Project Delivery. Projectized project delivery teams are the industry standard for large hydro rehabilitation projects as being implemented at Grand Coulee. To implement all the required technical control and management of the project as a whole, the Construction office's services need to be aligned under the GCPO project manager. The project manager should be the primary point of contact and decision maker representing the GCPO for all the support services provided by the TSC and Regional Office, including the Construction Office. Maintaining the Contracting Officers Technical Representative (COTR) as a position assigned to the Construction Office is consistent with Reclamation practice; however, close coordination between the project manager and the COTR is necessary to ensure effective execution of the project consistent with GCPO-wide prioritizes and project requirements.



PDL-03-R: Implement project and program-level reporting capabilities. The Power Manager and Deputy Power Managers have a wide span on control and extensive responsibilities. The capability to focus their attention on the most critical areas will benefit the plant. When executives have the right information available to identify issues and trends and know where to prioritize, the most critical issues get their attention, and get it early while there is still time to have impact before a crisis occurs. Implementation of project and program level reporting/dashboarding capabilities would turn existing data into valuable information to provide the Power Manager and Deputy Power Managers the insight to focus on the right issues, at the right time.

Some efforts are already underway to improve project and program-level reporting; these efforts should be accelerated and reinforced. Reports developed today by the Project Delivery group represent a good start toward robust project-level reporting that can be rolled up to the program level. However, the manual manipulation required today to produce these reports is inefficient and prone to human error. Portions of these reports should be automated or semi-automated by leveraging systems currently in place, such as the Program and Budget Database and future systems such as Primavera P6/ERD.

If earned value management (EVM) will not be a standard used on all projects for reporting variances in schedules and budgets, a less detailed but still rigorous "EVM lite" approach should be adopted. In addition to an EVM-type solution, reporting should include other aspects of project delivery, such as key performance indicators around communications, public relations, quality management, regulatory compliance and permitting, and change orders. These should be part of a robust reporting model.



PDL-04-R: Engage in up-front project planning. The greatest potential to impact the success of a project with the least amount of cost is in the planning phase. Effective planning establishes the foundation for the subsequent execution of the work. A standard "kick-off" process that includes a project plan, task assignments, team meetings and communication protocols will benefit the project from day 1 to close out.



PDL-05-R: Establish system to record decisions, priorities, and justifications. The GCPO staff identified challenges that have arisen in the past, and negative impacts to the facility due to a lack of understanding of decisions/priorities or justifications for past decisions. A system of record for these decisions could be used to ensure there is understanding of the rationale behind past decisions, and that current decisions are made based on the best available information. Such a system would be used to make decisions that affect the delivery of a project as it is progressing and act as an archive, providing an auditable single source of record, that details how decisions were reached and the individuals that were party to them.



PDL-06-R: Implement industry standard QA/QC program and coordinate with Construction. An ISO 9000 three phase quality control plan needs to be required of the contractors and monitored by a dedicated technical QA/QC officer reporting to the Grand Coulee project manager. QA/QC requirements should be specified in the contract.



PDL-07-R: Increase coordination through commissioning. A commissioning team needs to be established at Grand Coulee that reports to the Project Delivery group, Superintendents, and Power Manager. The commissioning phase involves establishing boundaries for sub-systems, detailed pre-commissioning procedures for all systems, turnover procedures for sub-systems to commissioning, detailed commissioning procedures, detailed performance test procedures, commissioning reports, and turnover procedures to operations. This effort needs coordination by the project manager as it involves many entities such as the Contractor, Construction Group, Engineers (GCPO, Regional Office, TSC), Maintenance, and Operations.



PDL-08-R: Implement a closeout and turnover process. The designers and the plant need to confirm the project is complete along with all documentation (design records, contractor submittals, RFIs, as-builts, SOPs, O&M manuals, required training, etc.) and implement this into the O&M system. The Grand Coulee project manager could coordinate these activities. Once gathered, documentation should be loaded into a robust, easily updateable, easily accessible electronic asset documentation system containing SOPs, equipment manuals, photographs, and more, forming a comprehensive electronic O&M manual.

Considering the GCPO-wide recommendations presented in Section 6.1 and the functional group-specific recommendations provided in this section, MWH recommends that the staffing levels and mix for this functional group under the optimized organization be as shown in Table 45. The proposed organizational structure for this group is included in Exhibit 2.

Recommended Staffing for Optimized Organization – Project Delivery		
Title	Current Positions <i>(as of July 2011)</i>	Recommended Positions
Supervisory Senior Project Manager	0	1
Project Managers	4	12
Budget Analyst	0	1
Budget Tech ¹	0	1
Cost Estimator	0	1
Project Controller	0	3
Clerk / Office Aide / Doc Controller	0	2
Quality Manager	0	1
TOTAL	4	22
Notes:		
1. Budget tech is recommended at 1 employee based on P6 CARMA integration (ref. SYS-05-R); otherwise increased staffing will be needed		

Table 45 - Recommended Staffing for Optimized Organization, Project Delivery

6.4.11 Public Affairs

Table 46 restates the key findings specific to Public Affairs as described in Section 3.4.11 and lists recommendations to address each within the optimized organization.

Key Findings and Challenges <i>(Ref. Section 3.4.11)</i>	Recommendations
1. Work is primarily reactionary in nature	1. Implement a Request Monitoring System and increasing staffing
2. Plans are out of date	2. Add a resource to update plans
3. Support and response requirements to outside agencies are increasing	3. Proactively maintain communication with the outside entities and increase staffing to support
4. Limited external community education/involvement program	4. Develop and implement an education outreach program to local schools

Table 46 - Findings and Recommendations for Optimized Organization, Public Affairs

PAF-01-R: Implement a Request Monitoring System and increase staffing. Similar to an IT Help Desk, implement a Request Monitoring System to allow for the logging of public affairs requests. With such a system, it will allow for managing, monitoring, archiving, and tracking of those requests and the time necessary to respond. The system can be implemented in a multitude of ways from an automated, database process to the use of manual documentation and spreadsheets. ADMIN work orders could also be created in CARMA to track such requests/actions. Also, an additional resource could help temper the impact of unplanned requests and ensure that base load work is still progressed.

PAF-02-R: Add a resource to update plans. The same resource recommended above in PAF-01-R could also invest significant time in developing and updating plans, such as the



Succession Plan/Continuity Plan for the Visitors Center, the Stakeholder Involvement Plan, and the Scope of Collections Statement.



PAF-03-R: Proactively maintain communication with the outside entities and increase staffing to support. Continuing to proactively coordinate and communicate with tribal entities, fish hatcheries, etc., will provide increase advanced notice of required work associated with such agencies. An investment in additional proactive outreach would generate multiple benefits, such as increased employee morale, employee recruitment and retention, and potentially contribute to supporting the local economy. The additional staff member recommended in the previous two recommendations would also help manage increasing requests. Alternatively, it is recommended that some of the coordination efforts be transferred from GCPO responsibility; in particular, coordination efforts with the Leavenworth fish hatchery could be transferred to the Regional Office.



PAF-04-R: Develop and implement an education outreach program to local schools. By developing such a program, the potential exists for educated and interested future employees directly from the local community. Additionally, a formal program with GCPO and the surrounding communities would benefit from a combined effort to support tourism, increase awareness, and maintain mutually beneficial relations. This program would likely involve Public Affairs staff supporting a wider group of trained “volunteers,” made up of GCPO employees from various functional groups.

Note that the above recommendations are primarily focused on external communications; however, this functional group could also play a role in supporting internal communications. For example, Public Affairs could assist management, safety, security, and other program staff raise awareness about their programs.

Considering the GCPO-wide recommendations presented in Section 6.1 and the functional group-specific recommendations provided in this section, MWH recommends that the staffing levels and mix for this functional group under the optimized organization be as shown in Table 47. The proposed organizational structure for this group is included in Exhibit 2.

Recommended Staffing for Optimized Organization – Public Affairs		
Title	Current Positions <i>(as of July 2011)</i>	Recommended Positions
Supervisory Public Affairs Specialist	1	1
Public Affairs Specialist	0	1
Supv Reclamation Guide	2	2
Reclamation Guide	14	14
TOTAL	17	18

Table 47 - Recommended Staffing for Optimized Organization, Public Affairs

6.4.12 Safety

Table 48 restates the key findings specific to the Safety Office as described in Section 3.4.12 and lists recommendations to address each within the optimized organization.

Key Findings and Challenges <i>(Ref. Section 3.4.12)</i>	Recommendations
1. Limited safety presence in plants	1. Assign safety officer to each plant (rather than leveraging craftsmen as CDSOs)
2. Inconsistency between GCPO safety requirements and contractor safety requirements	2. Evaluate and align contractor safety and GCPO safety policies
3. Inconsistent or incomplete incident reporting	3. Encourage cultural shift toward acceptance
4. Inconsistent understanding of Stop Work policies	4. Implement revised Stop Work policy and train plant leadership and staff accordingly
5. Misalignment in the contractor Special Work Permit safety process	5. Make the Foreman I clearance holder also the inspector

Table 48 - Findings and Recommendations for Optimized Organization, Safety



SAF-01-R: Assign safety officer to each plant. Safety is the responsibility of all GCPO personnel and must remain a part of the culture. However, additional staff dedicated to safety could help drive the culture while enforcing proper safety practices. Safety in the plant should not be a side duty of foremen or supervisors but needs the full-time attention of a plant safety officer. This safety officer could also coordinate with the Construction Safety Officer to establish common safety requirements for plant personnel and contractor personnel (ref. SAF-02-R). It is certainly not intended or recommended that this safety representative in the plant simply take on the safety duties that others are not willing to take on; his/her role is to drive the culture and support the plant teams in doing so.



SAF-02-R: Evaluate and align contractor safety and GCPO safety policies. Application of safety policies needs to be consistent across the GCPO facilities, and across contractor and GCPO staff. Considering the expected increase in contractor employees supporting capital work over the next decade, achieving and applying consistent safety policies for all on-site employees is critical.



SAF-03-R: Encourage cultural shift toward acceptance. Incident reporting is intended to benefit the entire organization, not penalize the subject party. Root cause analysis needs to be enforced to allow for continual process improvement and potential predictive analysis. Lessons learned need to be better conducted, documented and communicated. Short reports of all safety incidents should be provided to all employees to enhance overall safety awareness. Incentives to encourage (or at least not discourage) near-miss reporting should be investigated and implemented; near miss reports should not have a negative impact on a performance evaluation.



SAF-04-R: Implement revised Stop Work policy and train plant leadership and staff accordingly. With safety as a high priority, every employee should be encouraged to vocalize his or her safety concerns without penalty.



SAF-05-R: Make the Foreman 1 clearance holder also the inspector. The inspector needs to be familiar with the work they are inspecting. The clearance holder should be familiar with the work being done under the clearance. As it is now, the construction inspector may not be familiar with the work and the Foreman is holding a clearance on job that he is not involved in. The Foreman I assigned to hold the HECP for the contractor's work could perform both roles, also being an inspector for the contract. The Forman I would then be familiar with the contractor's work and have authority over the contractor making it a safer environment.

Considering the GCPO-wide recommendations presented in Section 6.1 and the functional group-specific recommendations provided in this section, MWH recommends that the staffing levels and mix for this functional group under the optimized organization be as shown in Table 49. The proposed organizational structure for this group is included in Exhibit 2.

Recommended Staffing for Optimized Organization – Safety		
Title	Current Positions <i>(as of July 2011)</i>	Recommended Positions
Supervisory Safety and Occupational Health Group Leader	1	1
Safety and Occupational Health Specialist	2	2
Safety Assistant	1	1
Safety Hygienist	0	3
Office Aide	1	1
TOTAL	5	8

Table 49 - Recommended Staffing for Optimized Organization, Safety

6.4.13 Enterprise Planning (*Recommended New Group*)

Recall that GCP-04-R recommends the formation of a Enterprise Planning group with dual responsibility for strategic asset planning and enterprise support to work scheduling and planning. MWH recommends that the staffing levels and mix for this new functional group under the optimized organization be as shown in Table 50. The proposed organizational structure for this group is included in Exhibit 2.

Recommended Staffing for Optimized Organization – Enterprise Planning		
Title	Current Positions <i>(as of July 2011)</i>	Recommended Positions
Supervisory Asset Manager	0	1
Senior Scheduler	0	1
Scheduler	0	1
Budget Analyst	0	1
Cost Estimator	0	1
Office Aide	0	0.5
TOTAL	0	5.5

Table 50 - Recommended Staffing for Optimized Organization, Enterprise Planning

6.5 Systems Recommendations

A review of staffing, organization, and processes is incomplete without a review of the systems in place to support the people and processes. Therefore, as part of this study, a high level systems review was performed to identify opportunities for greater efficiencies in business processes. A complete summary of this review is included in Appendix 7. Many recommendations presented therein are incorporated into GCPO-wide and functional group recommendations described in Sections 6.1 and 0, respectively. Following are an additional set of system-specific recommendations that are part of the optimized organization.



SYS-01-R: Define O&M key performance indicators. Key performance indicators (KPIs) should be identified, documented, and tracked for O&M activities. Data points required to measure those KPIs must then be determined. Following is a list of example, generic KPIs; the GCPO should develop its own set of mission-focused indicators.

- % of Corrective vs. Proactive Work Orders
- % of Time / Money Spent on Corrective vs. Planned Work Orders
- % of Work Completed On-Time
- Cost Per KWh / Unit
- Cost Per KWh / Powerhouse
- Safety Index
- Environmental Index
- Security Index
- Outages Due to Unscheduled Maintenance / Month
- Critical Spare Levels
- Compliance with Predictive Maintenance Program
- Equipment “Bad Actor” Trend
- Overtime Hours
- Total Lost Hours
- Work Order Backlog in Man-Hours
- % of Work Orders Closed within Two Days of Completed Work



SYS-02-R: Establish CARMA system ownership, user group, and training. System ownership, healthy user groups, and sufficient training are all important aspects of a successful system deployment, and should be implemented with respect to the CARMA system. CARMA requires a defined system owner to help assure the system is meeting the needs of the business and to be the GCPO individual responsible for troubleshooting and lobbying for fixes, new reports, changes, and enhancements. The owner would be the local “go to” person for CARMA at GCPO, likely a Maintenance Management Technician.

Additionally, the establishment of a formal CARMA user group would provide an internal community to support one another. A formal user group would allow the system owner and super users to share insight into system use and easily distribute knowledge amongst the body of GCPO users. Insight and expertise presented in the user group would be retained and accessible for future reference, potentially increasing the consistency and accuracy of the application while at the same time keeping training costs down.

Finally, as there is little formal training at this time on the CARMA system, training for both general users and advanced users (those who use the report writing functionality within CARMA) would help to assure the system is delivering as much value as possible. Note that general / tool-focused / Reclamation-wide training will not be as effective as a GCPO-specific

curriculum. This would provide standardization on how GCPO will use the Reclamation-provided CARMA system.



SYS-03-R: Implement enterprise version of Primavera P6. In an organization the size of GCPO, the standardized use of an enterprise project controls system is mission-critical, essential to the efficient and effective operation of the facility and the delivery of capital projects. The industry standard for project controls systems is Primavera P6 Enterprise Project Portfolio Management (EPPM). EPPM can run on a server located at GCPO, in the Regional Office, or at the TSC, but given that power-users of the application tend to prefer using the thick client rather than the web client, it is recommended that GCPO install the application locally. Primavera P6 Client, which could be installed on individual computers, is not recommended. The centrally located EPPM will provide the ability to create GCPO-wide schedules and effectively resource-level across the organization (and educate future staffing reviews). If the use of EPPM is not possible, an alternative would be Microsoft Project Enterprise.



SYS-04-R: Implement Primavera ERD. Primavera P6 is a robust tool but lacks sufficient reporting capabilities, particularly with respect to historical project schedule and cost data. Primavera Enterprise Reporting Database (ERD) is a datamart add-on that provides both a data store and more powerful reporting that can be leveraged to show trends and the kinds of historical reports that the Project Delivery group is beginning to attempt to assemble.



SYS-05-R: Integrate Primavera P6 and CARMA. CARMA, while an excellent work and maintenance management application, is not well suited to the management of complex, projectized activities that take place over a long period of time. Proper controls systems like Primavera P6 are required to manage that type of work in an organization, and at GCPO, with so much overlap and sharing of resources, integration between the two systems would provide significant value. With such an integration in place, work can be planned/described in CARMA, then exported to P6, resource-leveled and scheduled, and then sent back into CARMA.

The TSC has stated that no integrations will be possible with CARMA, but GCPO can make the case that integration between the two systems is mission-critical based on the outage schedule and how it affects both routine and non-routine work and external stakeholders.



SYS-06-R: Integrate SharePoint and P6/ERD. While Primavera P6 is a key tool in the organization, it is typical to limit the number of users to a small, highly-specialized project controls team (part of Project Delivery). This project controls team is responsible for interfacing with project managers to gather key project data, keeping project schedules up to date in the system, reporting project progress, putting together earned value reports, estimates to complete and other best project controls practice. Due to the limited number of users with access to the system (licenses are not cheap) and the large number of employees needing to see the project schedules, integrating P6/ERD with Microsoft SharePoint would allow a central location (SharePoint) for users to retrieve project schedule information and reports. At a minimum, project schedules can be converted to PDF format on a regular basis and simply posted to SharePoint; a more robust solution would automate the transfer of information from P6 to SharePoint, making milestone dates, resource availability, and progress much more visible to the management team and broader organization.



SYS-07-R: Develop a Document Management Plan. GCPO, like many organizations, suffers from not having a coherent strategy around managing documents. There are numerous systems, thousands of documents, version control problems with drawings, dozens of document “hidey-holes,” project files sitting on local drives, out of date hardcopies – in general, staff do a decent

job tracking the documents that they touch on a day to day basis, but there are significant issues and potential risk to the facility when documents change hands – e.g., during the commissioning process or during the delivery of submittals or RFIs.

“Document management” means many different things to different people. The first step towards managing that risk is to describe what types of documents and processes are unmanaged, and to then put a plan in place that outlines the policies, processes, systems and quality management of each overall area (e.g., technical archive, regulatory compliance, project files, email, drawings, SOPs, construction submittals). Following the plan, GCPO can tactically target the high reward/low effort areas, along with the high risk items that need to be dealt with immediately.



SYS-08-R: Initiate scanning/archiving process. GCPO currently stores documents in multiple formats and multiple locations with limited oversight to assure that key documentation is present and accounted for. A significant area for improvement is the digitization of paper documents such as equipment O&M manuals, SOPs, and other documents found in the technical data center of the Grand Coulee administration building and throughout the three powerhouses. Not an insignificant effort, this activity can be completed over time, using contracted help, interns or staff downtime, and/or can be “projectized” to ensure it receives proper attention. Considering the ramp up in capital work and growing risk of lost institutional knowledge in the form of retirements, the urgency for this activity has never been greater.



SYS-09-R: Streamline/improve drawing management. The GCPO is currently struggling with version control on as-built and facility drawings. Drawings are routinely “checked out” from Meridian for extended periods of time, and as a result, others needing to update those same drawings create “offline” versions, which then become challenging to merge back into the master set, if done at all. More often, there then exist divergent versions of the drawing in two or more places. GCPO should make improvements to and enforce the policies, procedures, systems and quality management in this area. Assigning and empowering an owner of the drawing system will help, if one has not already been named. It is also recommended that a short project be set up to perform “clean up” on the current set of drawings.



SYS-10-R: Standardize project and construction management document control. To better support project and construction management, and to reduce risk and increase efficiency, the GCPO should standardize the handling of traditional construction documents, including the use of an electronic tracking system for contractor submittals, RFIs, field orders, change orders and the like. The cost of an enterprise document control system is fractional when compared with the volume of vital information that flows through it, from legal and contractual documents to critical technical designs and regulatory compliance documentation. Having everything from a project in one system will assist with the commissioning process, reducing claims, providing full asset details to equipment in CARMA, and more. It is a mission-critical system for GCPO. Steps needed to move this standardization forward include:

- Name a champion to own the document controls role within the organization
- Implement/identify a GCPO system for document management
- Establish standardized system use guidelines (not just vendor training materials, but GCPO-specific materials)
- Adjust contract language to enforce contractors to use the system for submittals (e.g., “if a USBR electronic document management exists, you must...”)



SYS-11-R: Create a SharePoint implementation and governance plan. MS SharePoint can be deceptively difficult to implement. Once installed, it can be easy to get started building – in some cases too easy. In contrast to the months and years-long requirements gathering involved in traditional waterfall enterprise application implementation, where it's common for systems with long gestation periods to fail to meet or keep up with changing business requirements, SharePoint offers a blank slate and rich palette of tools that allows developers and configuration specialists to get started with no planning at all. The results often speak for themselves, lacking cohesion, user-friendliness, and any kind of impact on the business – a tragedy, considering the time and monetary investment most businesses make in the technology.

To avoid this scenario, the GCPO should conduct some "big picture" SharePoint vision and planning sessions. As a result, a detailed implementation plan that calls out tasks, priorities, timelines, milestones and levels of effort can be established. A governance board should be put in place to act as a steering committee for the initial and ongoing build-out of the SharePoint sites, to meet monthly or quarterly, as required. Without such a steering committee, SharePoint's "organic" growth can be hard to control and detrimental to the adoption and usefulness of the application.



SYS-12-R: Create a centralized repository of identified needs/projects. Rather than using a variety of spreadsheets to track identified projects or needs by funding source, a centralized, database-driven repository should be created for storing such identified facility needs/projects. This repository would act as a central location, owned by the Asset Manager in the recommended Enterprise Planning functional group, where approved users would log in and record identified needs and projects, which would feed into a regular project prioritization process (ref. SYS-13-R).



SYS-13-R: Support the project prioritization methodology with more robust technology. While Excel spreadsheets can be used for calculations and light prioritizations, the use of a robust methodology and prioritization engine will offer significant benefit by offering an improved interface, enhanced workshop and collaboration capabilities, the ability to weight or calculate priorities systematically, the ability to factor in constraints, and the ability to show projects prioritized by sub-groupings such as fund or department, as well as a rolled-up enterprise view of the prioritized projects. Documenting the project prioritization methodology, naming an owner, and implementing a simple, yet more robust supporting technology would help to formalize this process. Ideally, a single application will support both SYS-12 and SYS-13.



SYS-14-R: Upgrade the GCPO network. Concerns are routinely raised regarding network performance / congestion at GCPO. This issue negatively impacts the use of all Reclamation systems functioning from the TSC. A detailed analysis should be undertaken to understand whether improvements (e.g. installing new hardware) at either end of the network will offer increased performance. Of particular interest would be "low-hanging fruit" improvements that require modest investments of time and / or money. Note that as more systems and staff come online at GCPO, network traffic and congestion will also increase.



SYS-15-R: Separate Hungry Horse network from GCPO. The Hungry Horse facility routes all of its network traffic through GCPO. As a potential means to reduce congestion within the GCPO network, it is recommended that Hungry Horse be wired on a separate, dedicated network line.

7.0 Implementation Planning

Implementing many of the recommendations contained in Chapter 6 will require significant organizational change. These changes are difficult in any organization, but are particularly challenging in larger, mature organizations like GCPO. The barriers to change include organizational inertia, formal or informal policies and requirements, personal resistance to change, along with limited resources. In order to identify some of those barriers, develop a more detailed approach to implementing each recommendation, and kick-start the change process, MWH facilitated a series of implementation planning workshops with GCPO as a component of this study.

These workshops were designed to encourage GCPO participants to think about each recommendation in greater depth, identifying more discrete implementation steps, relative levels of effort, relative impacts of implementation, logical sequencing, and ownership. The workshop approach is described in greater detail in Appendix 9. The output from the workshops includes:

1. a detailed implementation planning table; and
2. an initial master implementation schedule covering the next four years.

The schedule is intended to serve as a starting point for tracking progress, and GCPO should consider assigning a project manager to track progress going forward. Both documents are included in Appendix 9 – Implementation Planning Workshop Summary.

8.0 Conclusion

The purpose of this study was to assess the current staffing levels, organizational structure, and business processes of the GCPO, and propose an optimized organization, structured and staffed appropriately for the long-term to meet O&M and capital needs of the plants within its control in an efficient manner. The methodology employed combined qualitative research with quantitative analysis to assess the current organization and recommend modifications for long-term success. The analysis included a deep dive into the GCPO itself, as well as an implicit comparison to peer organizations to inform the recommended optimized organization.

Considering the current routine O&M performance of the facility, the increasing non-routine workload, and risk-reduction benefits associated with strategic staffing increases, MWH recommends implementing the optimized organization described in Chapter 6. Doing so will prepare the GCPO and its many stakeholders for long-term success in terms of unit availability, facility reliability, cost control, knowledge capture and sharing, and overall sustainability.

This page intentionally left blank.



Grand Coulee Power Office – Review of Staffing and Processes

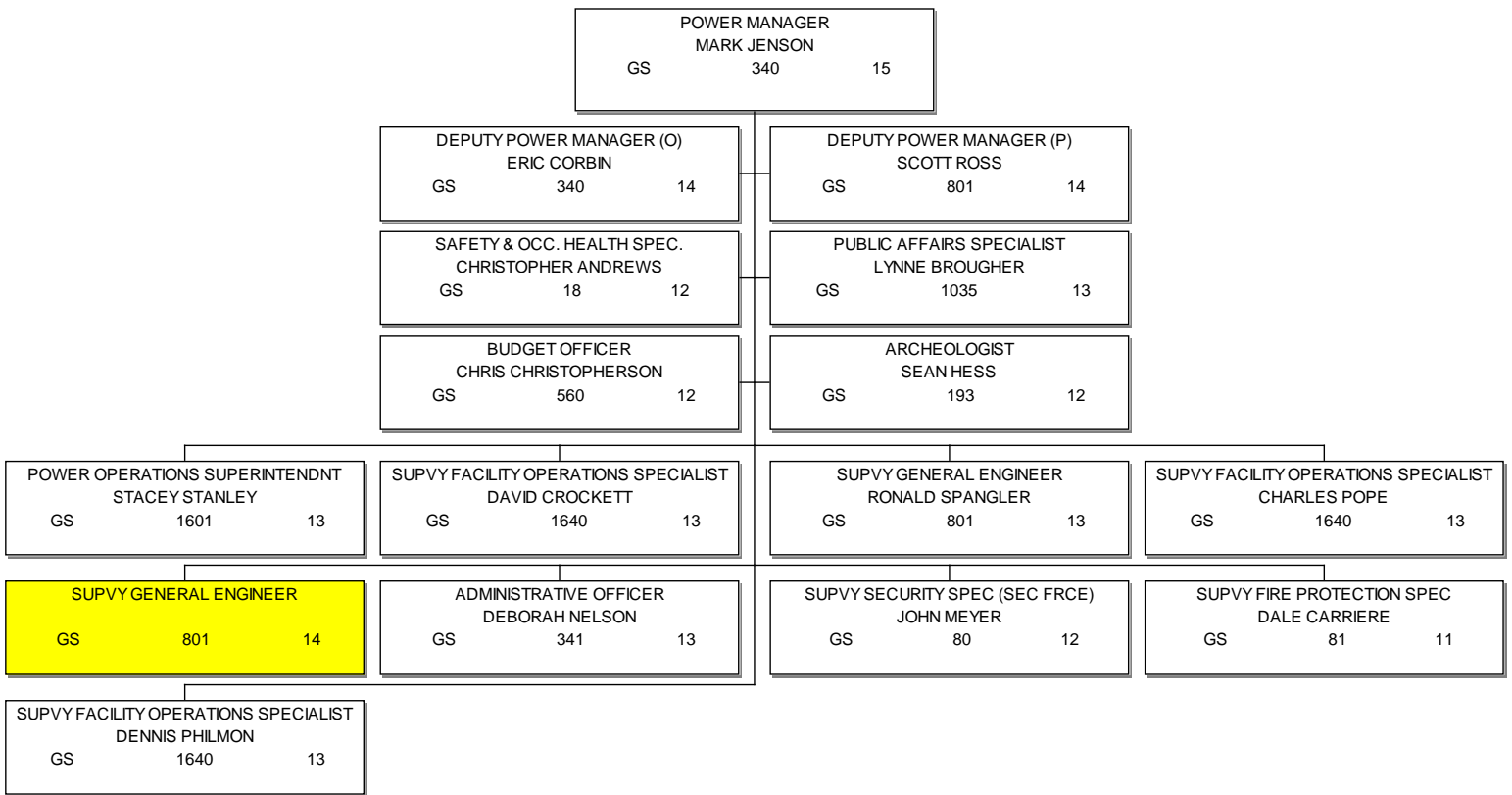
Exhibit 1

Organizational Chart for Existing Organization (as of July 17, 2011)

Grand Coulee Power Office
Hungry Horse Field Office
Organization Charts
07/17/2011

Contents

Grand Coulee Power Office Hungry Horse Field Office Organization	1
Contents.....	2
Primary Staff.....	3
Deputy Operations.....	4
Deputy Planning.....	5
Safety.....	6
Public Affaris.....	7
Budget.....	8
Operations.....	9
LPH/PGP.....	10
RPH/TPP.....	11
IA/SWYDS.....	12
Engineering & Resources.....	13
Administration.....	14
Security.....	15
Fire.....	16
Hungry Horse.....	17
Index.....	18



DEPUTY POWER MANAGER (O)
ERIC CORBIN
GS 340 14

ELECT ENGR (NERC/WECC)
RICHARD SHIFLETT
GS 850 13

IT SPECIALIST (SECURITY)
GORDON BENANE
GS 2210 11
NERC/WECC
EE TECH NERC/WECC
ROGER ROCKSTAD
GS 802 07
EE TECH (NERC/WECC)
GS 802 07

DEPUTY POWER MANAGER (P)
SCOTT ROSS
GS 801 14

PROJECT MANAGER
DANIEL BOOKER
GS 801 13

PROJECT MANAGER
BRIAN CLARK
GS 810 12

PROJECT MANAGER
SELENA MOORE
GS 801 13

PROJECT MANAGER
CHRISTOPHER VICK
GS 810 13

SAFETY & OCC. HEALTH SPEC.
CHRISTOPHER ANDREWS
GS 18 12

SAFETY & OCC. HEALTH SPEC.
TODD CHAMBERLAIN
GS 18 07

SAFETY ASSISTANT
ALICIA WICKERHAM
GS 303 05

SAFETY & OCC. HEALTH SPEC.
GS 18 11

OFFICE AIDE
GS 303 01
TEMP

PUBLIC AFFAIRS SPECIALIST
LYNNE BROUGHER
GS 1035 13

SUPVY RECLAMATION GUIDE
IVAN SNAVELY
GS 90 07

SUPVY RECLAMATION GUIDE
GARY BROWN
GS 90 07

RECLAMATION GUIDE
CHRISTOPHER COSTELLO
GS 90 05

RECLAMATION GUIDE
ROBERT KELTON
GS 90 06

RECLAMATION GUIDE
SHERYL SNOW
GS 90 06

RECLAMATION GUIDE
BRANDON HEINTZ
GS 90 04

RECLAMATION GUIDE
GS 90 06

RECLAMATION GUIDE
KATRINA BAKER
GS 90
TEMP

RECLAMATION GUIDE
ASHLEE DAVIS
GS 90
TEMP

RECLAMATION GUIDE
PHILLIP FREDERICK
GS 90 04
TEMP

RECLAMATION GUIDE
BRIANNA KNIGHTEN
GS 90
TEMP

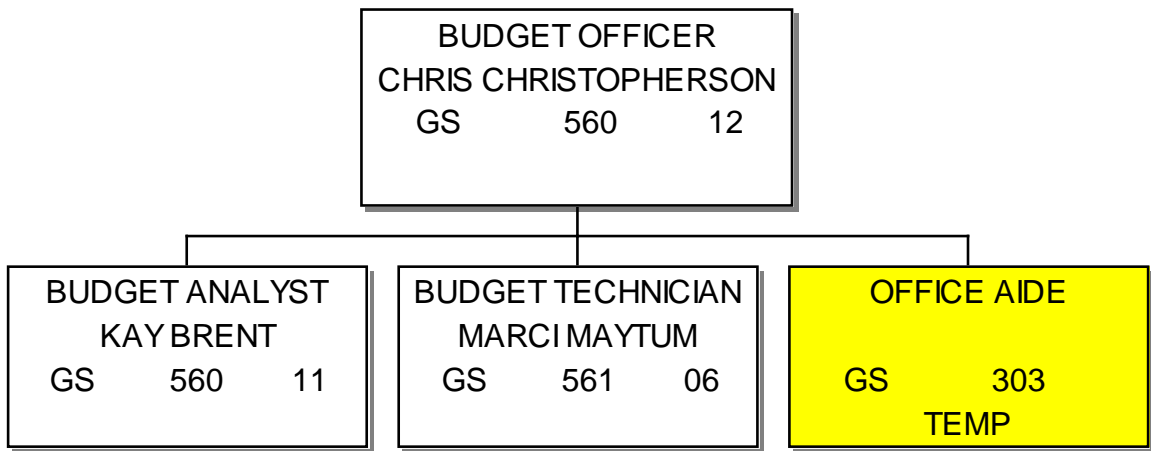
RECLAMATION GUIDE
KAYLA NEWLAND
GS 90
TEMP

RECLAMATION GUIDE
CODY PROCTOR
GS 90
TEMP

RECLAMATION GUIDE
NATALIE ROCKSTAD
GS 90
TEMP

RECLAMATION GUIDE
JORDAN SLIGER
GS 90
TEMP

RECLAMATION GUIDE
CURTIS VISKER
GS 90
TEMP



POWER OPERATIONS SUPERINTENDENT
 STACEY STANLEY
 GS 1601 13

SUPV II, HYDROMAINTENANCE (O)
 ROGER MORALES
 XE 5407 00

SUPV II, HYDROMAINT OPS
 XE 5407 00

SUPVY IT SPECIALIST (SYSANALYST)
 STANLEY HAYES
 GS 2210 13

SUPERVISORY POWER OPS SPECIALIST
 JAMES HICKS
 GS 1601 12

PROGRAM SUPPORT ASST (OPERATIONS)
 JOANN COFFLAND
 GS 303 08

POWERPLANT DISPATCHER
 ROBERT BABLER
 BB 5407 00

POWERPLANT DISPATCHER
 JOHN DOWLEN
 BB 5407 00

POWERPLANT DISPATCHER
 MIGUEL RODRIGUEZ
 BB 5407 00

POWERPLANT DISPATCHER
 RON STAGGS
 BB 5407 00

POWERPLANT DISPATCHER ASSISTAN
 CHRISTOPHER ABEL
 BB 5407 00

POWERPLANT DISPATCHER ASSISTAN
 JAMES JORDAN
 BB 5407 00

POWERPLANT OPERATOR, SR
 JACK CISSNER
 BB 5407 00

POWERPLANT OPERATOR, SR (3PH)
 LAD FLOWERS
 BB 5407 00

POWERPLANT OPERATOR, SR (3PH)
 RAYMOND FROST
 BB 5407 00

POWERPLANT OPERATOR, SR (3PH)
 JERRY PILLING
 BB 5407 00

POWERPLANT OPERATOR, SR (3PH)
 DAVID WELCH
 BB 5407 00

POWERPLANT OPERATOR
 DENNIS ALLEGREZZA
 BB 5407 00

POWERPLANT OPERATOR
 WILLARD CARGO
 BB 5407 00

POWERPLANT OPERATOR
 WALTER GRAHAM
 BB 5407 00

POWERPLANT OPERATOR
 STUART KECK
 BB 5407 00

POWERPLANT OPERATOR
 MATHIEU SANSINENA
 BB 5407 00

POWERPLANT OPERATOR
 CLFFORD SERVAS
 BB 5407 00

POWERPLANT OPERATOR
 TODD SIMSER
 BB 5407 00

POWERPLANT OPERATOR
 EDWARD WILSON
 BB 5407 00

OUTAGE DISPATCHER
 STEVEN BROWN
 BB 5407 00

POWERPLANT DISPATCHER
 ROBERT THOMPSON
 BB 5407 00

POWERPLANT DISPATCHER ASSISTAN
 TODD COFFEY
 BB 5407 00

POWERPLANT DISPATCHER ASSISTAN
 RICHARD EDICK
 BB 5407 00

POWERPLANT DISPATCHER ASSISTAN
 GEORGE LAPLACE
 BB 5407 00

POWERPLANT OPERATOR
 JOHN BROPHIL
 BB 5407 00

POWERPLANT OPERATOR
 ERIC CORRIGAN
 BB 5407 00

POWERPLANT OPERATOR
 DAVID FRIESEN
 BB 5407 00

POWERPLANT OPERATOR
 CHRISTOPHER GALBREATH
 BB 5407 00

POWERPLANT OPERATOR
 DONALD HERMETZ
 BB 5407 00

POWERPLANT OPERATOR
 DANNY KAUFMAN
 BB 5407 00

POWERPLANT OPERATOR
 DANIEL MCCULLOCH
 BB 5407 00

POWERPLANT OPERATOR
 ANTHONY PARILLO
 BB 5407 00

POWERPLANT OPERATOR
 JASON SCHIMEK
 BB 5407 00

POWERPLANT OPERATOR
 ROBERT VOLACK
 BB 5407 00

POWERPLANT OPERATOR
 AARON WODTKA
 BB 5407 00

POWERPLANT OPERATOR, SR
 BB 5407 00

PSCC FOMN 1
 KEVIN WINN
 BB 2601 00

POWER SYS CONTROL CRAFTSMN (M)
 A BERRY
 BB 2601 00

POWER SYS CONTROL CRAFTSMN (M)
 JOSEPH CRAVEY
 BB 2601 00

POWER SYS CONTROL CRAFTSMN (M)
 GARY ESMOND
 BB 2601 00

POWER SYS CONTROL CRAFTSMN (M)
 DAVID FINCH
 BB 2601 00

POWER SYS CONTROL CRAFTSMN (M)
 GREGORY LAFRENIERE
 BB 2601 00

POWER SYS CONTROL CRAFTSMN (M)
 NATHAN STOUT
 BB 2601 00

POWER SYS CONTROL CRAFTSMN (M)
 PAUL DOUGLAS
 BB 2601 00
 TERM GDACS

POWER SYS CONTROL CRAFTSMN (M)
 KORT FUDURICH
 BB 2601 00
 TERM GDACS

IT SPECIALIST (SYSANALYSIS)
 ERIC SPOTTS
 GS 2210 12

IT SPECIALIST (APPLICATIONS/SOFTWARE)
 MATTHEW ELDER
 GS 2210 12

IT SPECIALIST (APPLICATIONS/SOFTWARE)
 GARY WEST
 GS 2210 11

IT SPECIALIST (SECURITY/APP SOFTWARE)
 LARRY BLOTTA
 GS 2210 12

POWER OPERATIONS SPECIALIST
 MISTY DUDLEY
 GS 1601 11

POWER OPERATIONS SPECIALIST
 JACK JENSEN
 GS 1601 11

EDITORIAL ASSISTANT (OA)
 DOROTHY STIEGELMEYER
 GS 1087 06

PLANNER/ESTIMATOR (M)
 BB 3501 00

SUPVY FACILITY OPERATIONS SPECIALIST
DAVID CROCKETT
GS 1640 13

SUPV II, HYDROMAINTENANCE (M)
CHARLES GIESE
XE 5352 00

SUPV II, HYDROMAINTENANCE (E)
DANNY HICKS
XE 2810 00

SUPV II, HYDROMAINTENANCE (E)
WADE ALLING
XE 2810 00
TEMP

MAINTENANCE MGMT TECHNICIAN
JESSIE HEMMER
GS 303 06

MAINTENANCE MGMT TECHNICIAN
ALICIA MILLER
GS 303 06

MAINTENANCE MGMT TECHNICIAN
SHARON STIVERS
GS 303 08

PLANNER/ESTIMATOR (M)
CINDY GIESE
BB 3501 00

PLANNER/ESTIMATOR (M)
CYNTHIA MILLER
BB 3501 00

WAREHOUSE II, (3RD 6 MOS)
MICHAEL GARCIA
BB 6907 00

FOREMAN I, HYDROMECHANIC
STEVEN FERRIS
BB 5352 00

FOREMAN I, HYDROMECHANIC
DANIEL KOSLOSKI
BB 5352 00

FOREMAN I, HYDROMECHANIC
JACOB LAGRANGE
BB 5352 00

HYDROMECHANIC
MARC ANDERSON
BB 5352 00

HYDROMECHANIC
JAMES BARRY
BB 5352 00

HYDROMECHANIC
DOUGLAS DUBOIS
BB 5352 00

HYDROMECHANIC
TODD FANCHER
BB 5352 00

HYDROMECHANIC
EUGENE FIELDS
BB 5352 00

HYDROMECHANIC
DOROTHY HARRIS
BB 5352 00
LEFT

HYDROMECHANIC
GREYLING LEBRET
BB 5352 00

HYDROMECHANIC
KENNETH LYGAR
BB 5352 00

HYDROMECHANIC
EDUARDO MATA
BB 5352 00

HYDROMECHANIC
JOHN PYNIA
BB 5352 00

HYDROMECHANIC
CARL RAMICH
BB 5352 00

HYDROMECHANIC
ROBERT RAMSDELL
BB 5352 00

HYDROMECHANIC
TROY RITTER
BB 5352 00

HYDROMECHANIC
SCOTT ROBBINS
BB 5352 00

HYDROMECHANIC
KEVIN STOLHAMMER
BB 5352 00

HYDROMECHANIC
WILLIAM VANCIK
BB 5352 00

HYDROMECHANIC
GRANT ZILLA
BB 5352 00

FOREMAN I, HYDROMECHANIC
KURTIS STEINKE
BB 5352 00

HYDROMECHANIC (RING SEAL GATES)
BENJAMIN PALMA
BB 5352 00
TERM

HYDROMECHANIC (RING SEAL GATES)
RONNIE WILLIAMS
BB 5352 00
TERM

HYDOROMECH APPREN
KEITH FAUL
BB 5352 00
APPREN

HYDOROMECH APPREN
JARED FORAN
BB 5352 00
APPREN

HYDOROMECH APPREN
JUSTIN KERSTETTER
BB 5352 00
APPREN

HYDOROMECH APPREN
KENNETH MITCHELL
BB 5352 00
APPREN

HYDOROMECH APPREN
JEFFREY SEMANKO
BB 5352 00
APPREN

FOMN I ELECTRICIAN (POWER SYS)
STEVEN HORTER
BB 2810 00

FOMN I ELECTRICIAN (POWER SYS)
DOUGLAS PICKEL
BB 2810 00

FOMN I ELECTRICIAN (PS) (M)
THOMAS ROBERTS
BB 2810 00

FOMN I ELECTRICIAN (POWER SYS)
TIMOTHY SLOUGHTER
BB 2810 00

ELECTRICIAN (PS) (M)
DALE CHURCH
BB 2810 00

ELECTRICIAN (PS) (M)
LEON DESAUTEL
BB 2810 00

ELECTRICIAN (PS) (M)
RODNEY EGBERT
BB 2810 00

ELECTRICIAN (POWER SYS)
DELBERT HANKINS
BB 2810 00

ELECTRICIAN (PS) (M)
CHESTER HOPKINS
BB 2810 00

ELECTRICIAN (PS) (M)
LARRY HOUSTON
BB 2810 00

ELECTRICIAN (PS) (M)
GREGOREY KING
BB 2810 00

ELECTRICIAN (PS) (M)
STEVEN MCDANIEL
BB 2810 00

ELECTRICIAN (PS) (M)
DANIEL MUNSON
BB 2810 00

ELECTRICIAN (PS) (M)
MICHAEL OBERG
BB 2810 00

ELECTRICIAN (PS) (M)
GUY PAYNE
BB 2810 00

ELECTRICIAN (PS) (M)
DAVID RUZSA
BB 2810 00

ELECTRICIAN (PS) (M)
KARSON WYNNE
BB 2810 00

POWER SYS CONTROL CRAFTSMN (M)
MICHAEL CHAMBERLIN
BB 2601 00

POWER SYS CONTROL CRAFTSMN (M)
ROBERT LOCH
BB 2601 00

POWER SYS CONTROL CRAFTSMN (M)
HENRY NGUYEN
BB 2601 00

POWER SYS CONTROL CRAFTSMN (M)
KEITH ST JEOR
BB 2601 00

ELECTRICIAN (PS) (M)
PAUL BOYER
BB 2810 00
TERM ROB REP

ELECTRICIAN (PS) (M)
JOHN OSTALOSA
BB 2810 00
TERM WADE REP

FOMN I ELECTRICIAN (POWER SYS)
ROBERT FIELDS
BB 2810 00
TEMP

FOMN I ELECTRICIAN (POWER SYS)
RONALD PULSPHER
BB 2810 00
TEMP

ELECTRICIAN (PS) (M)
TED BUTTON
BB 2810 00
GDACS

ELECTRICIAN (PS) (M)
THOMAS LEITNER
BB 2810 00
GDACS

ELECTRICIAN (PS) (M)
TIETON TIPPS
BB 2810 00
GDACS

ELECTRICIAN (PS) (M)
ANTONIO ANG
BB 2810 00
TERM GDACS

ELECTRICIAN (PS) (M)
DANIEL BOYER
BB 2810 00
TERM GDACS

ELECTRICIAN (PS) (M)
DONNA DEWINKLER
BB 2810 00
TERM GDACS

ELECTRICIAN (PS) (M)
BRUCE GELBACH
BB 2810 00
TERM GDACS

ELECTRICIAN (PS) (M)
SCOTT KUCH
BB 2810 00
TERM GDACS

ELECTRICIAN (PS) (M)
CHAD SHAVER
BB 2810 00
TERM GDACS

SUPVY GENERAL ENGINEER
RONALD SPANGLER
GS 801 13

SUPV II, HYDROMAINTENANCE (E)
LEONARD SANDERS
XE 2810 00

SUPV II, HYDROMAINTENANCE (M)
JAMES MAHER
XE 5352 00

SUPV II, HYDROMAINTENANCE (M)
BRADFORD DUDLEY
XE 4701 00
TERM TPP OVERHALL

MAINTENANCE MGMT TECHNICIAN
SARAH BABLER
GS 3501 07

MAINTENANCE MGMT TECHNICIAN
LINDA MILLER
GS 3501 08

MAINTENANCE MGMT TECHNICIAN
BRANDI HANSEN
GS 3501 06

PLANNER/ESTIMATOR (M)
GLEN BENNEHOFF
BB 3501 00

PLANNER/ESTIMATOR (M)
ROBERT FARMER
BB 3501 00

PLANNER/ESTIMATOR (M)
RICHARD PARIS
BB 3501 00

FOMN I ELECTRICIAN (POWER SYS)
MARY COX
XE 2810 00

FOMN I ELECTRICIAN (POWER SYS)
JAMES STAR
BB 2810 00

FOMN I, PSCC
ROCHELLE VILLARRUEL
BB 2601 00

ELECTRICIAN (PS) (M)
ROBERT CARLSON
BB 2810 00

ELECTRICIAN (PS) (M)
YATES COLBY
BB 2810 00

ELECTRICIAN (PS) (M)
JEFFREY FARRAR
BB 2810 00

ELECTRICIAN (PS) (M)
STEVEN HANSEN
BB 2810 00

ELECTRICIAN (PS) (M)
RONALD MOON
BB 2810 00

ELECTRICIAN (PS) (M)
CLAYTON OBRIEN
BB 2810 00

ELECTRICIAN (PS) (M)
JAMES ROBERTS
BB 2810 00

ELECTRICIAN (PS) (M)
WALTER WILLIAMS
BB 2810 00

POWER SYS CONTROL CRAFTSMN (M)
MARK AMARILLA
BB 2601 00

POWER SYS CONTROL CRAFTSMN (M)
KENNETH CARROLL
BB 2601 00

PSCC TRAINEE (3RD 6 MOS)
LUCY SAUER
BB 2601 00

ELECTRICIAN (PS) (M)
BB 2810 00
(DUDLEY)

ELECTRICIAN (PS) (M)
BB 2810 00
(HANSEN)

ELECTRICIAN (PS) (M)
BB 2810 00
(MELICK)

ELECTRICIAN (PS) (M)
BB 2810 00
(PULSIPHER)

ELECTRICIAN (PS) (M)
BB 2810 00

ELECTRICIAN (PS) (M)
CHARLIE ATKINS
BB 2810 00
TERM RPH BACKLOG

ELECTRICIAN (PS) (M)
GABRIEL BOE
BB 2810 00
TERM RPH BACKLOG

ELECTRICIAN (PS) (M)
BRADLEY FOX
BB 2810 00
TERM TPP BACKLOG

ELECTRICIAN (PS) (M)
DANIEL PARSONS
BB 2810 00
TERM GDACS

ELECTRICIAN (PS) (M)
TIMOTHY ZUVER
BB 2810 00
TERM

ELECTRICIAN (PS) (M)
BB 2810 00
TERM

ELECTRICIAN (PS) (M)
BB 2810 00
TERM (O'CONNOR)

FOREMAN I, HYDROMECHANIC
WILLIAM DESAUTEL
BB 5352 00

FOREMAN I, HYDROMECHANIC
DENNIS FINNEY
BB 5352 00

HYDROMECHANIC
DEAN ANDERSEN
BB 5352 00

HYDROMECHANIC
JEFFREY ANDERSON
BB 5352 00

HYDROMECHANIC
BRUCE BERRY
BB 5352 00

HYDROMECHANIC
ROBERT BOND
BB 5352 00

HYDROMECHANIC
MICHAEL DALTON
BB 5352 00

HYDROMECHANIC
NATHAN DESAUTEL
BB 5352 00

HYDROMECHANIC
DAVID FURMAN
BB 5352 00

HYDROMECHANIC
STEVEN GIESE
BB 5352 00

HYDROMECHANIC
GEORGE HITZLER
BB 5352 00

HYDROMECHANIC
JAMES HOLLAND
BB 5352 00

HYDROMECHANIC
DAVID JACKSON
BB 5352 00

HYDROMECHANIC
BRYAN PETERSON
BB 5352 00

HYDROMECHANIC
JOHN REYES
BB 5352 00

HYDROMECHANIC
ROBERT SMITH
BB 5352 00

HYDROMECHANIC
JOHN THOMAS
BB 5352 00

HYDROMECHANIC
SCOTT WILTON
BB 5352 00

HYDROMECHANIC
MAJOR SMITH
BB 5352 00

HYDROMECHANIC
BB 5352 00
(CAMP)

HYDROMECHANIC
BB 5352 00
(ROCKWELL)

HYDROMECHANIC
MARTIN BLUM
WB 5352 00
TERM

HYDROMECHANIC
MICHAEL BOYER
BB 5352 00
TERM

HYDROMECHANIC
DANIEL CONANT
BB 5352 00
TERM

HYDROMECHANIC
GORDON DEPPMAN
WB 5352 00
TERM

HYDROMECHANIC
BRETT LEADINGHAM
WB 5352 00
TERM

HYDROMECHANIC
SAMUEL THOMAS
WB 5352 00
TERM

ELECTRICIAN (PS) (M)
DAVID HANSEN
BB 2810 00
TERM

ELECTRICIAN (PS) (M)
TYLER MELICK
BB 2810 00
TERM

HYDROMECHANIC
DANIEL CAMP
BB 5352 00
TERM

HYDROMECHANIC
BRENT CRAIG
BB 5352 00
TERM

HYDROMECHANIC
ROBERT ROCKWELL
BB 4701 00
TERM

ELECTRICIAN (PS) (M)
BB 2810 00
TERM

ELECTRICIAN (PS) (M)
BB 2810 00
TERM

HYDROMECHANIC
BB 5352 00
TERM

SUPVY FACILITY OPERATIONS SPECIALIST
CHARLES POPE
GS 1640 13

SUPV II, HYDROMAINTENANCE (G)
MICHAEL DAVIS
XE 4701 00

SUPV II, HYDROMAINTENANCE (E)
ROBERT OBERG
XE 2810 00

SUPV II, HYDROMAINTENANCE (M)
DANIEL CAMP
XE 5352 00

MAINTENANCE MGMT TECHNICIAN
KRISTINA BEAUCHAMP
GS 303 08

MAINTENANCE MGMT TECHNICIAN
SHELLY CHANEY
GS 303 08

PLANNER/ESTIMATOR (M)
GLEN GRAEVELL
BB 3501 00

PLANNER/ESTIMATOR (M)
BILLY WICKERHAM
BB 3501 00

FOREMAN I, HYDROMECHANIC
LEE BUTTON
BB 5352 00

FOREMAN I, HYDROMECHANIC
MONTY JURY
BB 5352 00

FOREMAN I, HYDROMECHANIC
BILL MILEY
BB 5352 00

HYDROMECHANIC
DANIEL COFFLAND
BB 5352 00

HYDROMECHANIC
VERNON CRIM
BB 5352 00

HYDROMECHANIC
DAVID FINCH
BB 5352 00

HYDROMECHANIC
SHAWN GARVIN
BB 5352 00

HYDROMECHANIC
JOHN GORMAN
BB 5352 00

HYDROMECHANIC
ROSS GRAY
BB 5352 00

HYDROMECHANIC
MICHAEL GROSS
BB 5352 00

HYDROMECHANIC
WAYLAND HUFFINES
BB 5352 00

HYDROMECHANIC
VICTOR KENTNER
BB 5352 00

HYDROMECHANIC
CRAIG NELSON
BB 5352 00

HYDROMECHANIC
WALLACE PLEASANTS
BB 5352 00

HYDROMECHANIC
AARON ROSENBERG
BB 5352 00

HYDROMECHANIC
MICHAEL SCHILLING
BB 5352 00

HYDROMAINTENANCEMAN I
CYRIL ANTOINE
BB 4701 00

HYDROMAINTENANCEMAN I
SUSAN GRIESSE
BB 4701 00

HYDROMAINTENANCEMAN I
NATHANIEL LYNN
BB 4701 00

HYDROMAINTENANCEMAN I
JEWEL MCGUIRE
BB 4701 00

HYDROMAINTENANCEMAN II
CHARLES LOGAN
BB 4701 00

FOMN I ELECTRICIAN (POWER SYS)
JAMES VAN GEYSTEL
BB 2810 00

FOMN I LINEMAN (MAINT)
THOMAS STUMPF
BB 2801 00

ELECTRICIAN (PS) (M)
DAVID CARTWRIGHT
BB 2810 00

ELECTRICIAN (PS) (M)
DOUGLAS PUGH
BB 2810 00

ELECTRICIAN (PS) (M)
MICHAEL ROHDE
BB 2810 00

ELECTRICIAN (PS) (M)
STEVEN RUSS
BB 2810 00

ELECTRICIAN (PS) (M)
TIMOTHY SCHEIB
BB 2810 00

ELECTRICIAN (PS) (M)
JEFFREY SCHWEITZER
BB 2810 00

HYDROMECHANIC
JUSTIN MILLER
BB 5352 00

LINEMAN (MAINT)
JUSTIN NEDDO
BB 2801 00

LINEMAN (MAINT)
CHARLES ELLIOTT
BB 2801 00

POWER SYS CONTROL CRAFTSMN (M)
MARJORIE ARSENAULT
BB 2601 00

POWER SYS CONTROL CRAFTSMN (M)
MARK EDWARDS
BB 2601 00

PSCC TRAINEE
PAUL JILES
BB 2601 00

FOREMAN I MECHANIC (HEAVY DUTY)
TIMMY MILLER
BB 5803 00

HYDROMECHANIC
JOHN BERLAND
BB 5352 00

HYDROMECHANIC
LADD BLANKENSHIP
BB 5352 00

HYDROMECHANIC
LARRY BOWMAN
BB 5352 00

HYDROMECHANIC
MICHAEL DENNIS
BB 5352 00

HYDROMECHANIC
RANDY FISCHER
BB 5352 00

HYDROMECHANIC
BRIAN HOGAN
BB 5352 00

HYDROMECHANIC
CRAIG MAYTUM
BB 5352 00

HYDROMECHANIC
JOHN NORDINE
BB 5352 00

HYDROMECHANIC
GARY ROSCO
BB 5352 00

HYDROMECHANIC
DONALD WEYER
BB 5352 00

MECHANIC (HEAVY DUTY) (MAINT)
CLYDE HEARNE
BB 5803 00

MECHANIC (HEAVY DUTY) (MAINT)
BB 5803 00

MECHANIC (CRITICAL HIRE; 30-60 DAYS)
BB 5803 00
TEMP

SUPVY GENERAL ENGINEER
GS 801 14

ACTIVITY MANAGER
CATHERINE CATLOW
GS 301 11

SUPV MECHANICAL ENGINEER
DOUGLAS ANDERSON
GS 830 13

SUPV ELECTRICAL ENGINEER
JAY BOGCESS
GS 850 13

IT SPECIALIST (AS/CUST SPRT)
MARK GRAVES
GS 2210 09

ENVIRONMENTAL PROTECTION SPECIALIST
JEFFERY DEWINKLER
GS 28 11

ENVIRONMENTAL PROTECTION SPECIALIST
MARSHALL TAPLEY
GS 28 11

GEOLOGIST
MICHAEL BJORKLUND
GS 1350 12

HYDROLOGIC TECHNICIAN
CRAIG BROUGHNER
GS 1316 07

NATURAL RESOURCE SPECIALIST
LON OTTOSEN
GS 401 12

CIVIL ENGINEER
JAN SCHRADER
GS 810 12

CIVIL ENGR TECH
SHAD MOORE
GS 802 06

ENGINEER TECH (TPP-OH)
ANDREW ROBBINS
GS 802 07

MECHANICAL ENGINEER
SCOTT BAYUS
GS 830 12

MECHANICAL ENGINEER (LPP)
MARK BORDEN
GS 830 12

MECHANICAL ENGINEER (TPP-OH)
GEOFFREY FOOT
GS 830 12

MECHANICAL ENGINEER
BRADFORD OKAMOTO
GS 830 12

MECHANICAL ENGINEER
JAMES STEVENS
GS 830 12

MECHANICAL ENGINEER (R/TPP)
G. STROMBACH
GS 830 12

ELECTRICAL ENGINEER
ZACHARY BEHRENS
GS 850 05

ELECTRICAL ENGINEER
JERRY BIALEK
GS 850 09

ELECTRICAL ENGINEER (GDACS)
LOU CASEY BLANCO
GS 850

ELECTRICAL ENGINEER
JAMES BUSSELL
GS 850 12

ELECTRICAL ENGINEER (TEST)
DANIEL DURAN
GS 850 12

ELECTRICAL ENGINEER (GDACS)
MARLIS PEBLES
GS 850 12

ELECTRICAL ENGINEER (GDACS)
CHARLENE REYES
GS 850

ELECTRICAL ENGINEER (R/TPP)
EDWARD REYNOLDS
GS 850 12

ELECTRICAL ENGINEER
CHRISTOPHER ROMERO
GS 850 12

ELECTRICAL ENGINEER (GDACS)
LUCAS SHORT
GS 850

ELECTRICAL ENGINEER
STEPHEN TOMASZEWICZ
GS 850 12

ELECTRICAL ENGINEER (IA)
ANDREW TRADER
GS 850 12

ELECTRICAL ENGINEER (LPP)
THANH LONG TRAN
GS 850 07

ELECTRICAL ENGINEER (R/TPP)
GS 850 12

ENGINEERING TECH (DRAFTER)
JAMES BETHEA
GS 802 06

ENGINEERING TECH (DRAFTER)
GEORGE CROSBY
GS 802 06

ENGINEERING TECH (DRAFTER)
MICHAEL DOYLE
GS 802 06

ENGINEERING TECH (DRAFTER)
BONNIE FEMLING
GS 802 06

ENGINEERING TECH (DRAFTER)
DENEEN HARRIS
GS 802 06

ENGINEERING TECH (DRAFTER)
RICHARD KROHN
GS 802 07

STUDENT TRAINEE (ENGR DRAFTSMAN)
GS 899

ADMINISTRATIVE OFFICER
DEBORAH NELSON
GS 341 13

SUPPORT SERVICES SUPERVISOR
DIANE BABLER
GS 303 08

OFFICE AUTOMATION CLERK
GS 303 06

SUPVY IT SPECIALIST (DATAMGT)
MATTHEW TILLMAN
GS 2210 12

SUPVY CONTRACT SPECIALIST
CAROLINE WALSH
GS 1102 09

SUPVY SUPPLY MANAGEMENT SPECIA
RICHARD COFFLAND
GS 2003 11

MAIL AND FILE CLERK
KAREL CAMPBELL
GS 305 05

IT SPECIALIST (CUSTSPT)
RICHARD BAKO
GS 2210 11

PURCHASING AGENT
STEPHEN CLEMENTS
GS 1105 06

SUPPLY TECHNICIAN
LINDA AYOTTE
GS 2005 07

SUPV I, WAREHOUSE
LAURA KOVAL-SLOUGHTER
XE 6907 00

PHOTOGRAPHIC TECHNICIAN
JOHN FLOWERS
GS 303 05

IT SPECIALIST (CUSTSPT)
KAREN ELLSWORTH-BILOTTA
GS 2210 07

PURCHASING AGENT
PETER ERIE
GS 1105 08

SUPPLY TECHNICIAN (OA)
BARBARA HENRIKSEN
GS 2005 05

WAREHOUSE I
HOLLY ANDERSEN
BB 6907 00

FACILITY SERVICES SPECIALIST
COLLEEN GREEN
GS 1601 07

IT SPECIALIST (CUSTSPT)
RICHARD HURST
GS 2210 11

PURCHASING AGENT
PAMALA MARRS
GS 1105 08

SUPPLY TECHNICIAN
DALE HENRIKSEN
GS 2005 06

WAREHOUSE I
JON ANDERSON
BB 6907 00

FISCAL ASSISTANT
TERESA DENNIS
GS 503 5

IT SPECIALIST (CUSTSPT)
CARLOS LIRA
GS 2210 04
SCEP

PURCHASING AGENT
MALENA SANDERLIN
GS 1105 05

SUPPLY TECHNICIAN
LAURIN PETERSON
GS 2005 07

WAREHOUSE I, (1ST 6 MOS - GDACS)
JAMES JAGEMANN
BB 6907 00

IT SPECIALIST (CUSTSPT)
GS 2210 11

PURCHASING AGENT
GS 1105 05

SUPPLY TECHNICIAN
MARK SCHULMAN
GS 2005 06

WAREHOUSE III, (3RD 6 MOS)
CHRISTINA JARVIS
BB 6907 00

OFFICE AUTOMATION CLERK
GS 326 04
TEMP

SUPPLY TECHNICIAN
GS 2005 06

WAREHOUSE III, (3RD 6 MOS)
TERRI JURY
BB 6907 00

OFFICE AIDE
GS 303 02
TEMP

WAREHOUSE III, (3RD 6 MOS)
CARROLL MCLEAN
BB 6907 00

WAREHOUSE III, (3RD 6 MOS)
BRADLEY PARRISH
BB 6907 00

WAREHOUSE III, (3RD 6 MOS)
VIVIAN WENGERT
BB 6907 00

OFFICE AIDE
GS 303 02
TEMP

SUPVY SECURITY SPEC (SEC FRCE)
JOHN MEYER
GS 80 12

SECURITY TRAINING OFFICER
PATRICK DELFELD
GS 85 09

SECURITY ASSISTANT (OA)
GS 86 05

SUPERVISORY SECURITY GUARD
ANDY STEINERT
GS 85 06

SUPERVISORY SECURITY GUARD
RICHARD HILL
GS 85 07

SUPERVISORY SECURITY GUARD
JOSEPH THOMASON
GS 85 08

SUPERVISORY SECURITY GUARD
MATHEW ROBERSON
GS 85 06

LEAD SECURITY GUARD
ELI DOWNS
GS 85 07

LEAD SECURITY GUARD
JOSHUA POLLOCK
GS 85 06

SECURITY CLERK
MONROE MERRIMAN
GS 86 05

SECURITY GUARD
MICHAEL CARROLL
GS 85 06

SECURITY GUARD
TRACY CUTRIGHT
GS 85 07

SECURITY GUARD
RYAN DAVISSON
GS 85 06

SECURITY GUARD
JOHN GOODWIN
GS 85 06

SECURITY GUARD (INSTRUCTOR)
ERIN NIELSEN
GS 85 07

SECURITY GUARD
RYAN RANDALL
GS 85 07

SECURITY GUARD
ANGELA ROGERS
GS 85 07

SECURITY GUARD
GS 85 06

SECURITY GUARD
GS 85 07

LEAD SECURITY GUARD
JOSEPH FELGENHAUER
GS 85 06

SECURITY ASSISTANT
RANDY SEMANKO
GS 86 05

SECURITY GUARD (INSTRUCTOR)
KEITH BERKEY
GS 85 07

SECURITY GUARD (INSTRUCTOR)
CODY BITTICK
GS 85 07

SECURITY GUARD
GRANT CAMPBELL
GS 85 06

SECURITY GUARD
KARSTON COLLINS
GS 85 07

SECURITY GUARD
JAMES GWIN
GS 85 06

SECURITY GUARD
ADAM LILENFELD
GS 85 06
T2

SECURITY GUARD
JEFFREY NIEDIEWSKI
GS 85 06
T2

SECURITY GUARD
ALEJANDRO SANCHEZ
GS 85 05

SECURITY GUARD
GS 85 07
T2

SECURITY GUARD
GS 85 07
T2

SECURITY ASSISTANT
KATHRYN QUILL
GS 86 05

SECURITY GUARD
MARILYN ARROYO
GS 85 07
T3

SECURITY GUARD
JASON BUDRAVAGE
GS 85 07

SECURITY GUARD
SHAWN DERRICK
GS 85 07
T3

SECURITY GUARD
MICAH ESMOND
GS 85 07
T3

SECURITY GUARD
HARRY FRANQUI
GS 85 06
T3

SECURITY GUARD
KEITH MIDDLEBROOKS
GS 85 07
T3

SECURITY GUARD
BRUCE TERRELL
GS 85 06

SECURITY GUARD
BEN TUGWELL
GS 85 07

SECURITY GUARD
GS 85 07

SECURITY GUARD
GS 85 06

SECURITY GUARD
GS 85 06

SECURITY ASSISTANT
STEVEN KEFFELER
GS 86 05

SECURITY GUARD
TRAVIS BUNKE
GS 85 06

SECURITY GUARD
CHRISTOPHER DAVISSON
GS 85 06

SECURITY GUARD
LUIS ESPARZA
GS 85 06
T4

SECURITY GUARD
TIMOTHY GOODRICH
GS 85 06
T4

SECURITY GUARD
MATTHEW HALL
GS 85 06

SECURITY GUARD
MATTHEW HEIDENTHAL
GS 85 07
T4

SECURITY GUARD
JACOB HUNT
GS 85 07
T4

SECURITY GUARD
SCOTT MATHISEN
GS 85 07

SECURITY GUARD
ERIC MCCULLY
GS 85 06
T4

SECURITY GUARD
DUSTEN SLATER
GS 85 06
T4

SECURITY GUARD
GS 85 07

SUPVY FIRE PROTECTION SPEC
DALE CARRIERE
GS 81 11

SECURITY ASSISTANT
LAURIANN MOUNTJOY
GS 86 06

SECURITY ASSISTANT
VERNON BIRD
GS 86 05

FIRE PROTECTION INSPECTOR (BLS)
SUZANNE ANGSTROM
GS 81 07

FIRE PROTECTION INSPECTOR
PATRICIA CONANT
GS 81 06

FIRE PROTECTION INSPECTOR
ROBERT DE CHENNE
GS 81

LEAD FIREFIGHTER
BRYCE MCCLEARY
GS 81 08

LEAD FIREFIGHTER
CASEY PARRISH
GS 81 08

FIREFIGHTER
JOHN FRETWELL
GS 81 06

FIREFIGHTER
GREGORY HUNTS
GS 81 06

FIREFIGHTER
JESSE UTZ
GS 81 06

FIREFIGHTER
PATRICK TAYLOR
GS 81 06
TEMP FIRE

OFFICE AUTOMATION CLERK
GS 326 04
TEMP

SUPVY FACILITY OPERATIONS SPECIALIST
DENNIS PHILMON
GS 1640 13

FRMN III, PWRPLT MAINT
LUIS SALDAMANDO
WB 5352 00

PURCHASING AGENT
PRUDENCE CRAMPTON
GS 1105 08

FACILITY MAINTENANCE SPECIALIST
THOMAS DUKE
GS 1601 12

ELECTRICAL ENGINEER
TIMOTHY KOCZUR
GS 850 12

ADMINISTRATIVE OPERATIONS ASST
LINDA TEETS
GS 303 07

ELECTRICAL ENGRG TECHNICIAN
JULIE WADDELL
GS 802 10

RECLAMATION GUIDE
ZACHARY BYRD
GS 90 04
TEMP

RECLAMATION GUIDE/STEP
WHITNEY KROSS
GS 90 04
TEMP

RECLAMATION GUIDE LEAD
LAUREEN LAPAN
GS 90 05
TEMP

RECLAMATION GUIDE/STEP
EMILY WORTMAN
GS 90 04
TEMP

UTILITYMAN
TERRY WINGO
WB 4749 00
TERM-INTERMITTENT

FRMN I, PWRPLNT MAINT
EARL LEGG
WB 5352 00

ELECTRICIAN SUB-OP
RANDALL HALL
WB 2810 00

ELECTRICIAN SUB-OP
DAVE TAYLOR
WB 2810 00

PLANT MECHANIC SUB-OP
MICHAEL EATON
WB 5352 00

PLANT MECHANIC SUB-OP
MARK HEMINGWAY
WB 5352 00

POWER SYSTEM CONTROL CRAFTSMAN
MICHAEL BATT
WB 2601 00

POWERPLANT OPERATOR
BRIAN BLAIR
WB 5407 00

POWERPLANT OPERATOR
JARED GARNER
WB 5407 00

UTILITYMAN
BRIAN METZGER
WB 4749 00

UTILITYMAN
THOMAS ROSCO
WB 4749 00

UTILITYMAN
JAMIE WELK
WB 4749 00

Index

ABEL.....	9	BOYER.....	11
ALLEGREZZA.....	9	BRENT.....	8
ALLING.....	10	BROPHIL.....	9
AMARILLA.....	11	BROUGHER.....	3, 7
ANDERSEN.....	11	BROUGHER.....	13
ANDERSEN.....	14	BROWN.....	9
ANDERSON.....	13	BROWN.....	7
ANDERSON.....	11	BUDRAVAGE.....	15
ANDERSON.....	14	BUNKE.....	15
ANDERSON.....	10	BUSSELL.....	13
ANDREWS.....	3, 6	BUTTON.....	10
ANG.....	10	BUTTON.....	12
ANGSTROM.....	16	BYRD.....	17
ANTOINE.....	12	CAMP.....	12
ARROYO.....	15	CAMP.....	11
ARSENAULT.....	12	CAMPBELL.....	14
ATKINS.....	11	CAMPBELL.....	15
AYOTTE.....	14	CARGO.....	9
BABLER.....	11	CARLSON.....	11
BABLER.....	9	CARRIERE.....	3, 16
BABLER.....	14	CARROLL.....	15
BAKER.....	7	CARROLL.....	11
BAKO.....	14	CARTWRIGHT.....	12
BARRY.....	10	CATLOW.....	13
BATT.....	17	CHAMBERLAIN.....	6
BAYUS.....	13	CHAMBERLIN.....	10
BEAUCHAMP.....	12	CHANEY.....	12
BEHRENS.....	13	CHRISTOPHERSON.....	3, 8
BENANE.....	4	CHURCH.....	10
BENNEHOFF.....	11	CISSNER.....	9
BERKEY.....	15	CLARK.....	5
BERLAND.....	12	CLEMENTS.....	14
BERRY.....	11	COFFEY.....	9
BERRY.....	9	COFFLAND.....	14
BETHEA.....	13	COFFLAND.....	12
BIALEK.....	13	COFFLAND.....	9
BILOTTA.....	9	COLBY.....	11
BIRD.....	16	COLLINS.....	15
BITTICK.....	15	CONANT.....	16
BJORKLUND.....	13	CONANT.....	11
BLAIR.....	17	CORBIN.....	3, 4
BLANCO.....	13	CORRIGAN.....	9
BLANKENSHIP.....	12	COSTELLO.....	7
BLUM.....	11	COX.....	11
BOE.....	11	CRAIG.....	11
BOGGESS.....	13	CRAMPTON.....	17
BOND.....	11	CRAVEY.....	9
BOOKER.....	5	CRIM.....	12
BORDEN.....	13	CROCKETT.....	3, 10
BOWMAN.....	12	CROSBY.....	13
BOYER.....	10	CUTRIGHT.....	15
BOYER.....	10	DALTON.....	11

Index continue...

DAVIS.....	7	FOX.....	11
DAVIS.....	12	FRANQUI.....	15
DAVISSON.....	15	FREDERICK.....	7
DAVISSON.....	15	FRETWELL.....	16
DE CHENNE.....	16	FRIESEN.....	9
DELFELD.....	15	FROST.....	9
DENNIS.....	14	FUDURICH.....	9
DENNIS.....	12	FURMAN.....	11
DEPPMAN.....	11	GALBREATH.....	9
DERRICK.....	15	GARCIA.....	10
DESAUTEL.....	11	GARNER.....	17
DESAUTEL.....	10	GARVIN.....	12
DESAUTEL.....	11	GELBACH.....	10
DEWINKLER.....	13	GIESE.....	10
DEWINKLER.....	10	GIESE.....	11
DOUGLAS.....	9	GIESE.....	10
DOWLEN.....	9	GOODRICH.....	15
DOWNS.....	15	GOODWIN.....	15
DOYLE.....	13	GORMAN.....	12
DUBOIS.....	10	GRAEVELL.....	12
DUDLEY.....	11	GRAHAM.....	9
DUDLEY.....	9	GRAVES.....	13
DUKE.....	17	GRAY.....	12
DURAN.....	13	GREEN.....	14
EATON.....	17	GRIESSE.....	12
EDICK.....	9	GROSS.....	12
EDWARDS.....	12	GWIN.....	15
EGBERT.....	10	HALL.....	17
ELDER.....	9	HALL.....	15
ELLIOTT.....	12	HANKINS.....	10
ELLSWORTH-BILOTTA.....	14	HANSEN.....	11
ERIE.....	14	HANSEN.....	11
ESMOND.....	9	HANSEN.....	11
ESMOND.....	15	HARRIS.....	13
ESPARZA.....	15	HARRIS.....	10
FANCHER.....	10	HAYES.....	9
FARMER.....	11	HEARNE.....	12
FARRAR.....	11	HEIDENTHAL.....	15
FAUL.....	10	HEINTZ.....	7
FELGENHAUER.....	15	HEMINGWAY.....	17
FEMLING.....	13	HEMMER.....	10
FERRIS.....	10	HENRIKSEN.....	14
FIELDS.....	10	HENRIKSEN.....	14
FIELDS.....	10	HERMETZ.....	9
FINCH.....	12	HESS.....	3
FINCH.....	9	HICKS.....	10
FINNEY.....	11	HICKS.....	9
FISCHER.....	12	HILL.....	15
FLOWERS.....	14	HITZLER.....	11
FLOWERS.....	9	HOGAN.....	12
FOOT.....	13	HOLLAND.....	11
FORAN.....	10	HOPKINS.....	10

Index continue...

HORTER.....	10	MCCULLY.....	15
HOUSTON.....	10	MCDANIEL.....	10
HUFFINES.....	12	MCGUIRE.....	12
HUNT.....	15	MCLEAN.....	14
HUNTS.....	16	MELICK.....	11
HURST.....	14	MERRIMAN.....	15
JACKSON.....	11	METZGER.....	17
JAGEMANN.....	14	MEYER.....	3, 15
JARVIS.....	14	MIDDLEBROOKS.....	15
JENSEN.....	9	MILEY.....	12
JENSON.....	3	MILLER.....	11
ST JEOR.....	10	MILLER.....	12
JILES.....	12	MILLER.....	10
JORDAN.....	9	MILLER.....	12
JURY.....	12	MILLER.....	10
JURY.....	14	MITCHELL.....	10
KAUFMAN.....	9	MOON.....	11
KECK.....	9	MOORE.....	5
KEFFELER.....	15	MOORE.....	13
KELTON.....	7	MORALES.....	9
KENTNER.....	12	MOUNTJOY.....	16
KERSTETTER.....	10	MUNSON.....	10
KING.....	10	NEDDO.....	12
KNIGHTEN.....	7	NELSON.....	12
KOCZUR.....	17	NELSON.....	3, 14
KOSLOSKI.....	10	NEWLAND.....	7
KOVAL-SLOUGHTER.....	14	NGUYEN.....	10
KROHN.....	13	NIEDIEWSKI.....	15
KROSS.....	17	NIELSEN.....	15
KUCH.....	10	NORDINE.....	12
LAFRENIERE.....	9	O'BRIEN.....	11
LAGRANGE.....	10	OBERG.....	12
LAPAN.....	17	OBERG.....	10
LAPLACE.....	9	OKAMOTO.....	13
LEADINGHAM.....	11	OSTALOSA.....	10
LEBRET.....	10	OTTOSEN.....	13
LEGG.....	17	PALMA.....	10
LEITNER.....	10	PARILLO.....	9
LILENFELD.....	15	PARIS.....	11
LIRA.....	14	PARRISH.....	14
LOCH.....	10	PARRISH.....	16
LOGAN.....	12	PARSONS.....	11
LYNGAR.....	10	PAYNE.....	10
LYNN.....	12	PEBLES.....	13
MAHER.....	11	PETERSON.....	11
MARRS.....	14	PETERSON.....	14
MATA.....	10	PHILMON.....	3, 17
MATHISEN.....	15	PICKEL.....	10
MAYTUM.....	8	PILLING.....	9
MAYTUM.....	12	PLEASANTS.....	12
MCCLEARY.....	16	POLLOCK.....	15
MCCULLOCH.....	9	POPE.....	3, 12

Index continue...

PROCTOR.....	7	SMITH.....	11
PUGH.....	12	SMITH.....	11
PULSIPHER.....	10	SNAVELY.....	7
PYNSIA.....	10	SNOW.....	7
QUILL.....	15	SPANGLER.....	3, 11
RAMICH.....	10	SPOTTS.....	9
RAMSDELL.....	10	STAGGS.....	9
RANDALL.....	15	STAIR.....	11
REYES.....	11	STANLEY.....	3, 9
REYES.....	13	STEINERT.....	15
REYNOLDS.....	13	STEINKE.....	10
RITTER.....	10	STEVENS.....	13
ROBBINS.....	13	STIEGELMEYER.....	9
ROBBINS.....	10	STIVERS.....	10
ROBERSON.....	15	STOLHAMMER.....	10
ROBERTS.....	11	STOUT.....	9
ROBERTS.....	10	STROMBACH.....	13
ROCKSTAD.....	7	STUMPF.....	12
ROCKSTAD.....	4	TAPLEY.....	13
ROCKWELL.....	11	TAYLOR.....	17
RODRIGUEZ.....	9	TAYLOR.....	16
ROGERS.....	15	TEETS.....	17
ROHDE.....	12	TERRELL.....	15
ROMERO.....	13	THOMAS.....	11
ROSCO.....	17	THOMAS.....	11
ROSCO.....	12	THOMASON.....	15
ROSENBERG.....	12	THOMPSON.....	9
ROSS.....	3, 5	TILLMAN.....	14
RUSS.....	12	TIPPS.....	10
RUZSA.....	10	TOMASZEWICZ.....	13
SALDAMANDO.....	17	TRADER.....	13
SANCHEZ.....	15	TRAN.....	13
SANDERLIN.....	14	TUGWELL.....	15
SANDERS.....	11	UTZ.....	16
SANSINENA.....	9	VAN GEYSTEL.....	12
SAUER.....	11	VANCIK.....	10
SCHEIB.....	12	VICK.....	5
SCHILLING.....	12	VILLARRUEL.....	11
SCHIMEK.....	9	VISKER.....	7
SCHRADER.....	13	VOLACK.....	9
SCHULMAN.....	14	WADDELL.....	17
SCHWEITZER.....	12	WALSH.....	14
SEMANKO.....	10	WELCH.....	9
SEMANKO.....	15	WELK.....	17
SERVIAS.....	9	WENGERT.....	14
SHAVER.....	10	WEST.....	9
SHIFLETT.....	4	WEYER.....	12
SHORT.....	13	WICKERHAM.....	6
SIMSER.....	9	WICKERHAM.....	12
SLATER.....	15	WILLIAMS.....	10
SLIGER.....	7	WILLIAMS.....	11
SLOUGHTER.....	10	WILSON.....	9

Index continue...

WILTON.....	11	WORTMAN.....	17
WINGO.....	17	WYNNE.....	10
WINN.....	9	ZILLA.....	10
WODTKA.....	9	ZUVER.....	11



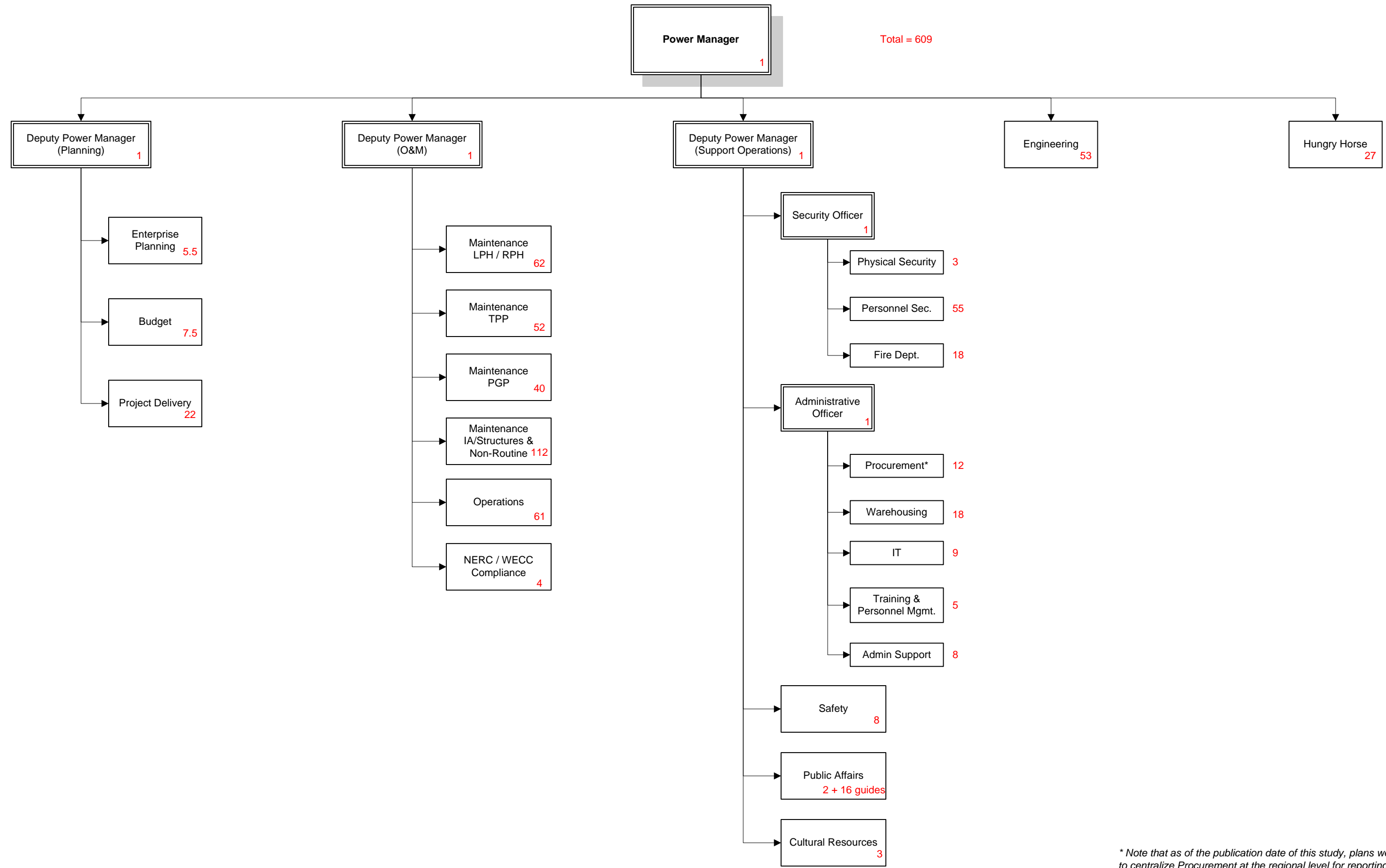
Grand Coulee Power Office – Review of Staffing and Processes

Exhibit 2

Recommended Organization Chart for Optimized Organization

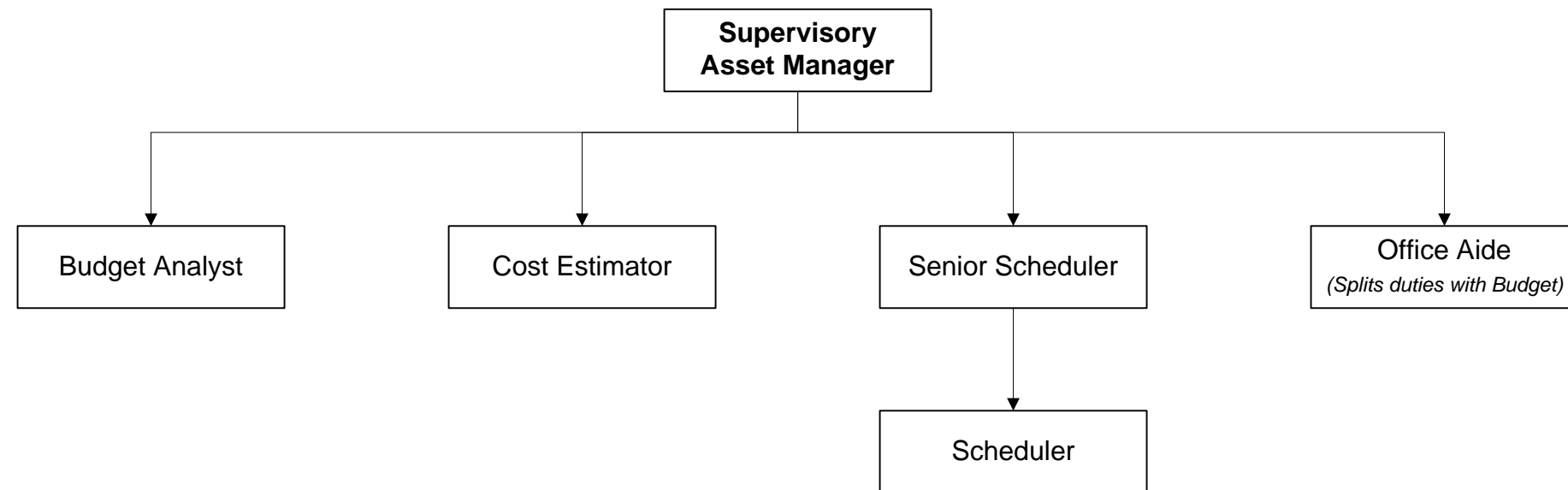
Organization Structure for Optimized Organization

Overall Organization



Total = 609

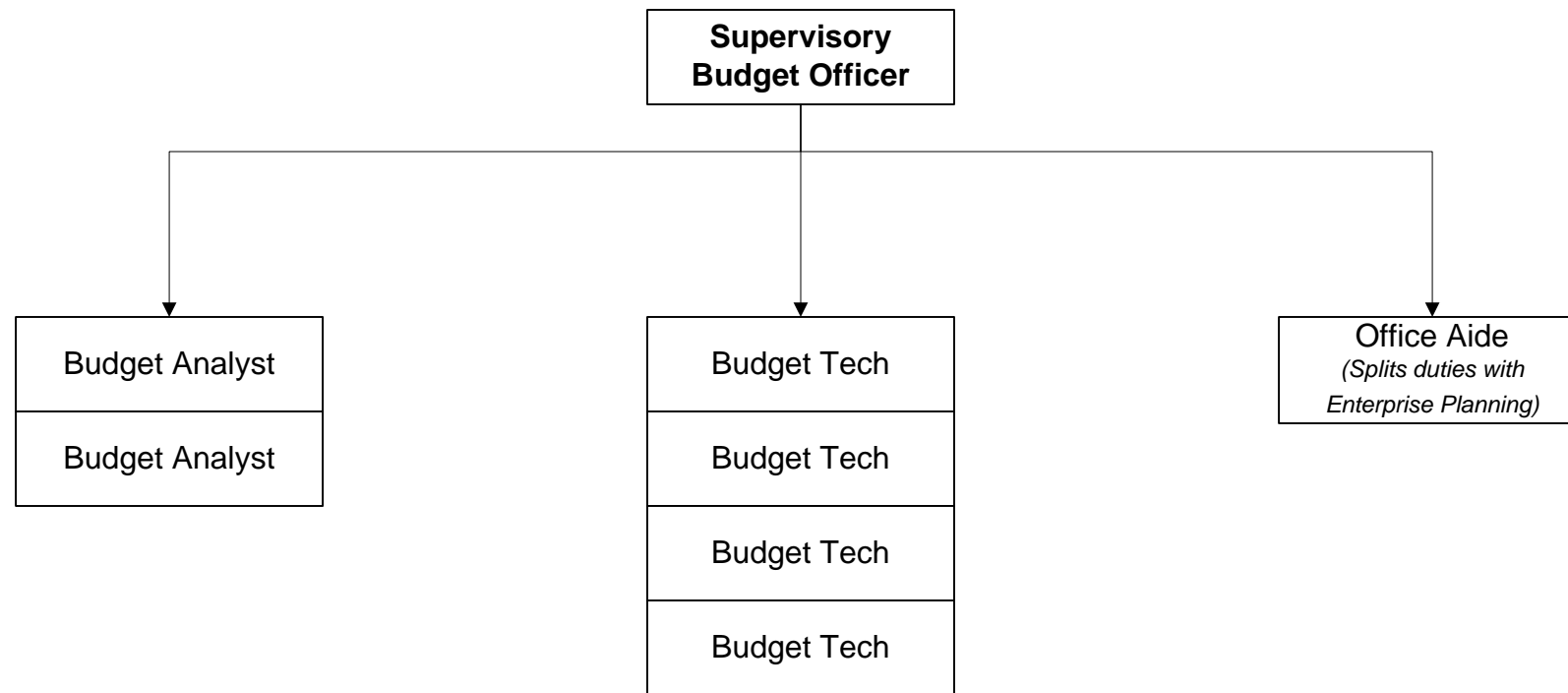
* Note that as of the publication date of this study, plans were in place to centralize Procurement at the regional level for reporting purposes although staff would remain located at Grand Coulee.



Organization Structure for Optimized Organization



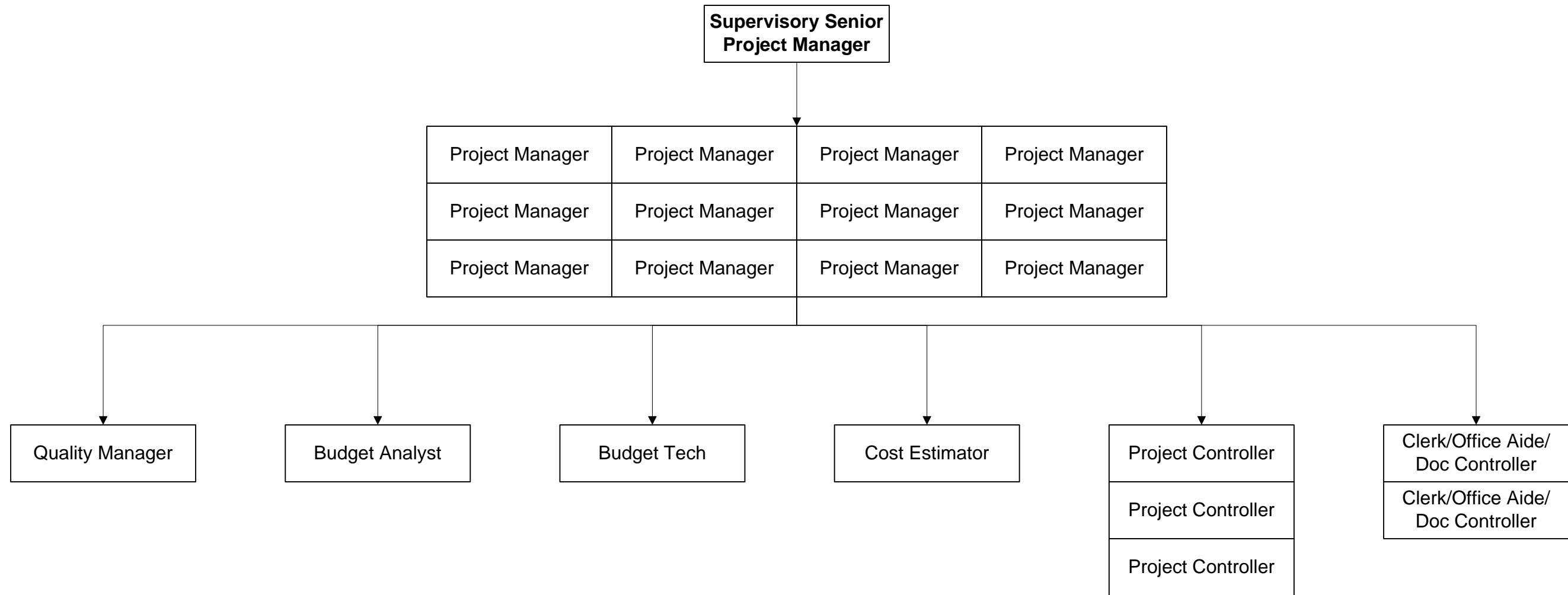
Budget



Organization Structure for Optimized Organization

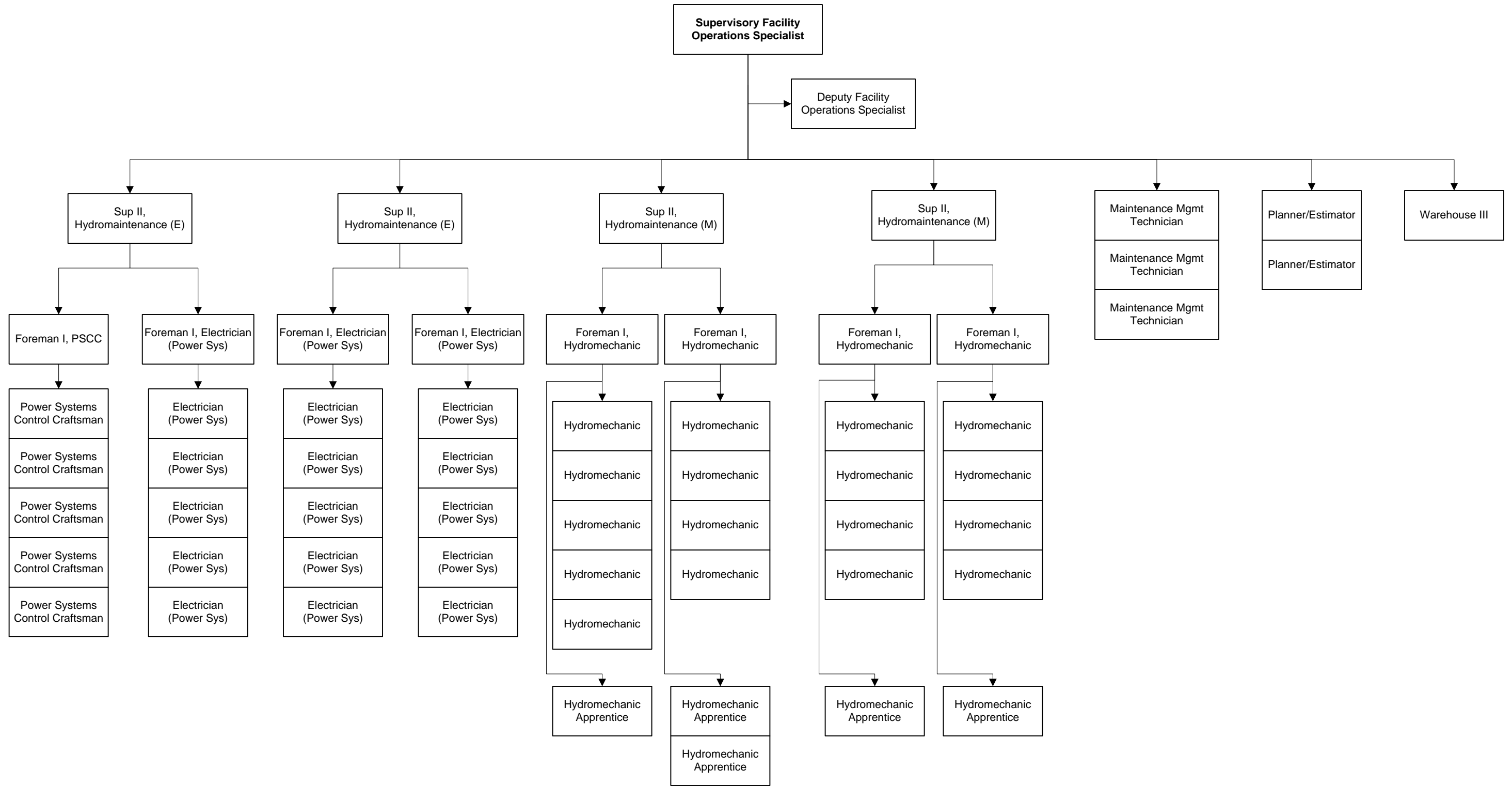


Project Delivery



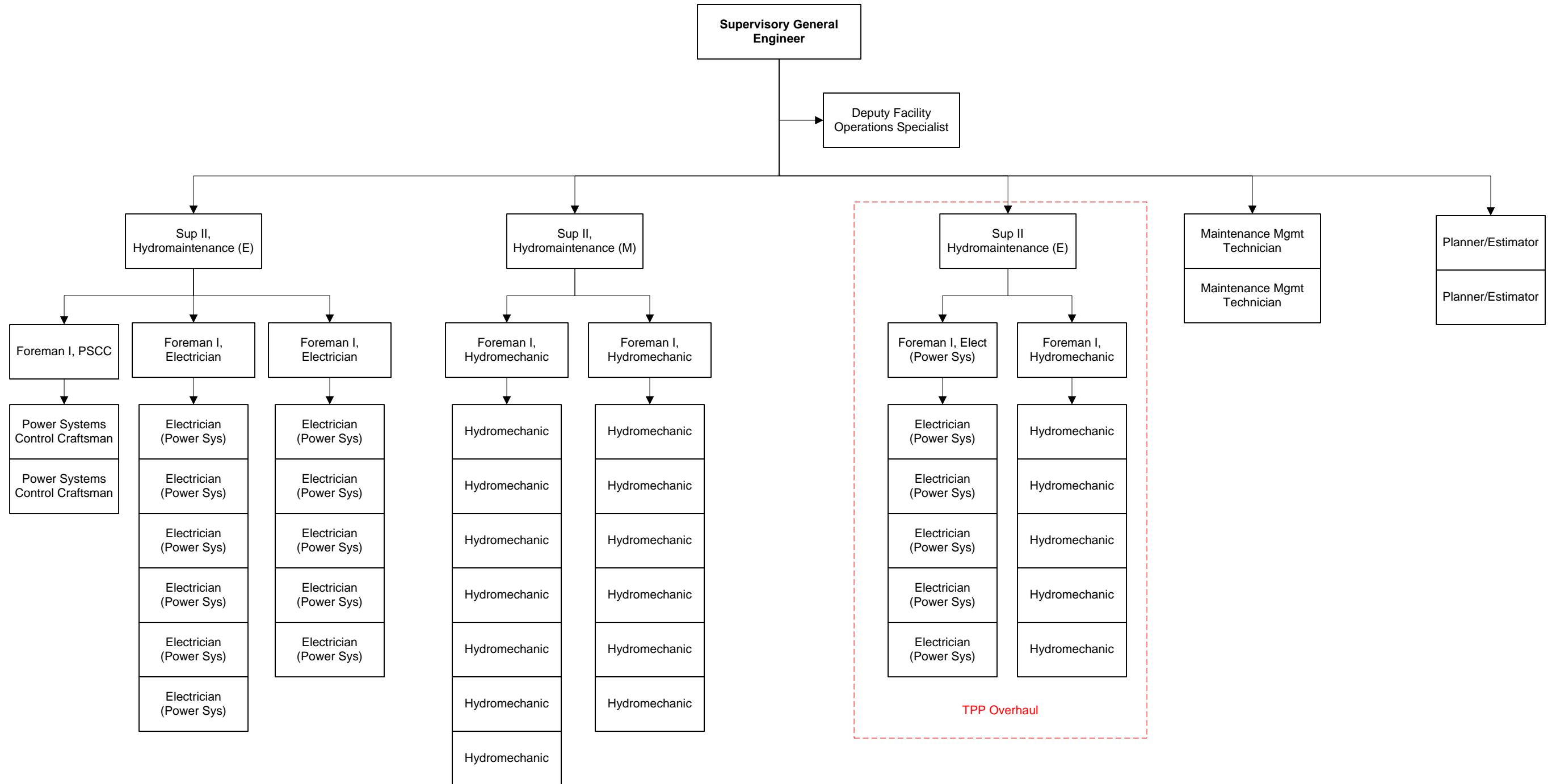
Organization Structure for Optimized Organization

Maintenance LPH / RPH



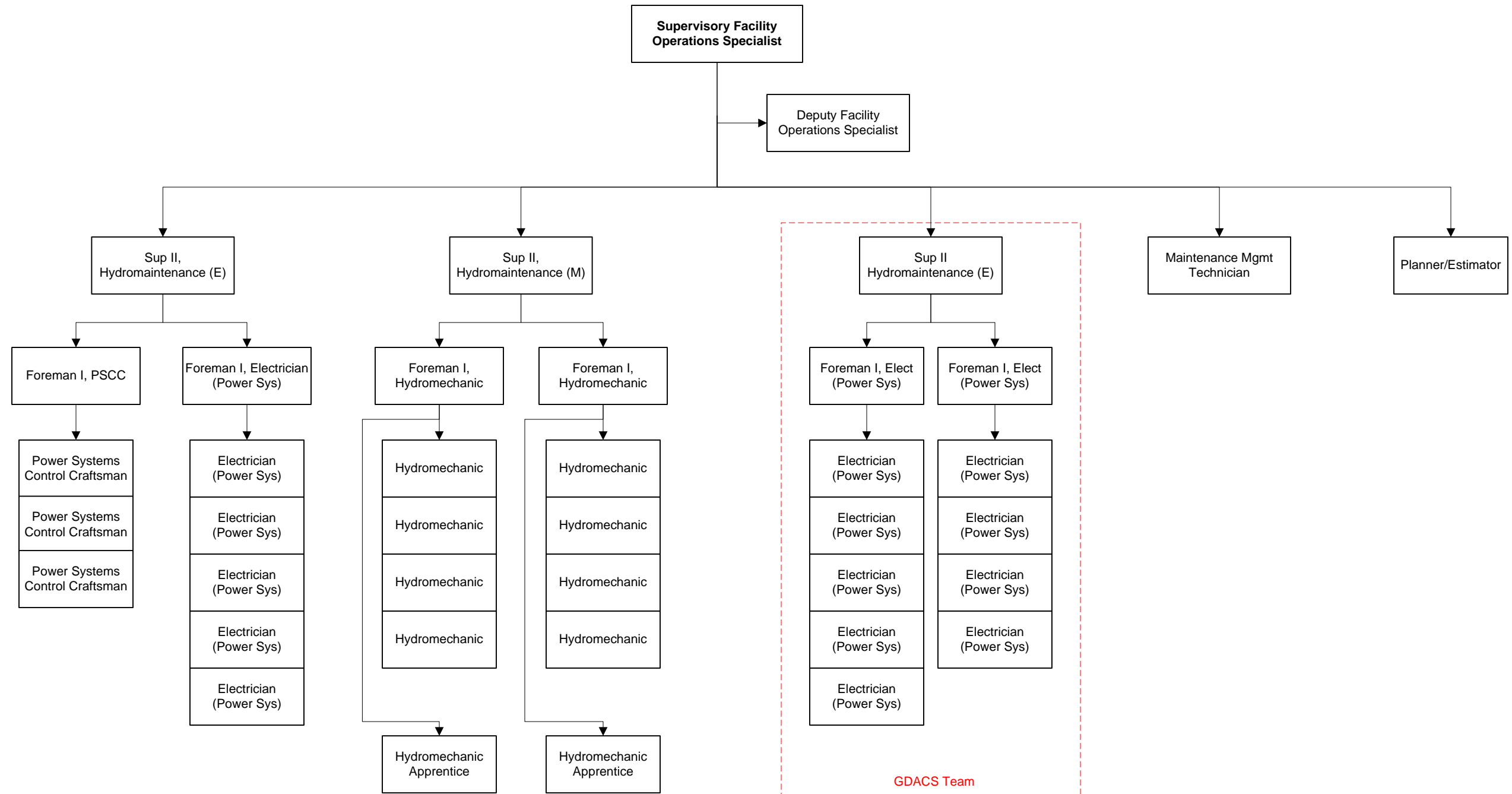
Organization Structure for Optimized Organization

Maintenance TPP



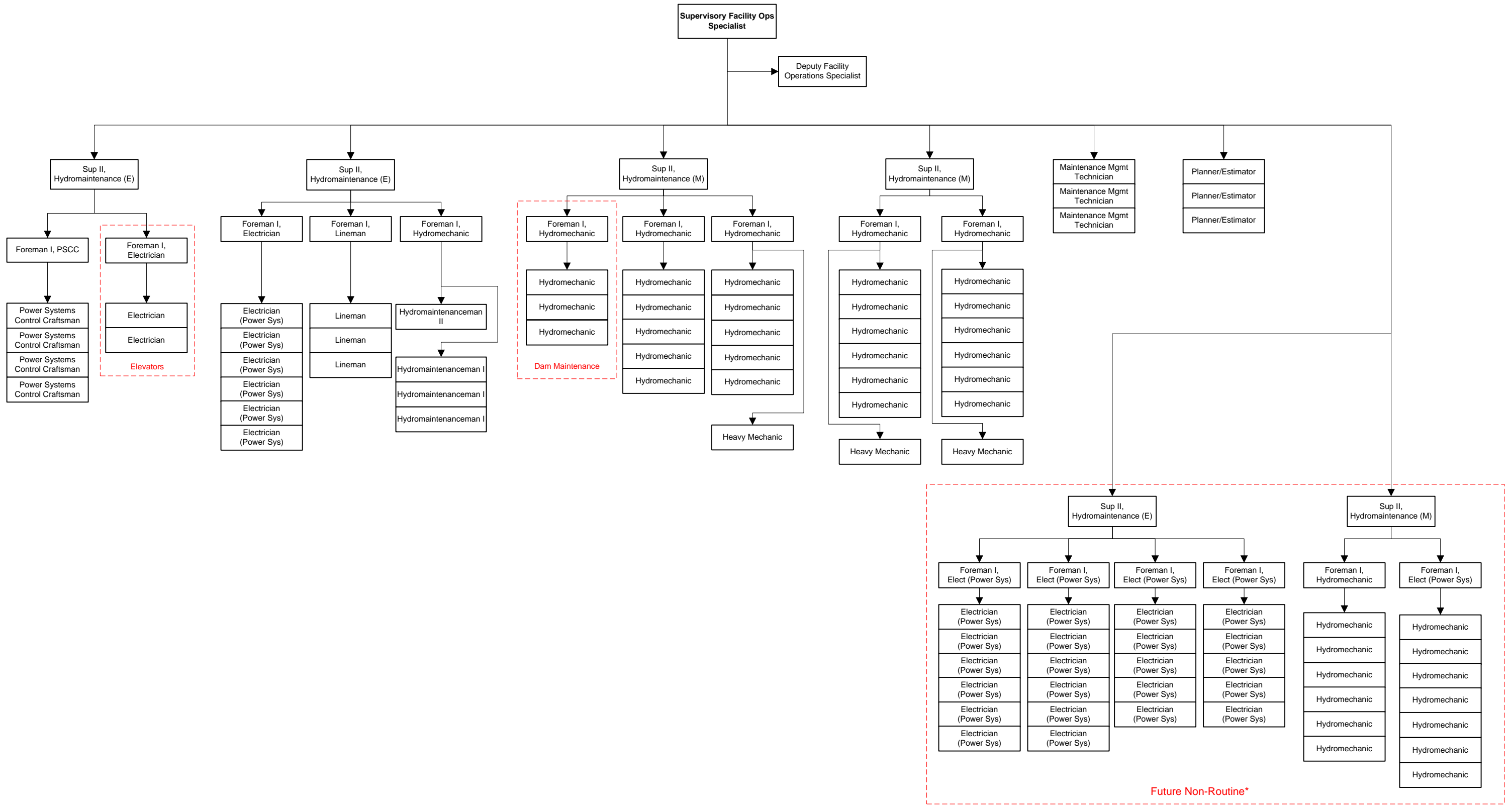
Organization Structure for Optimized Organization

Maintenance PGP



Organization Structure for Optimized Organization

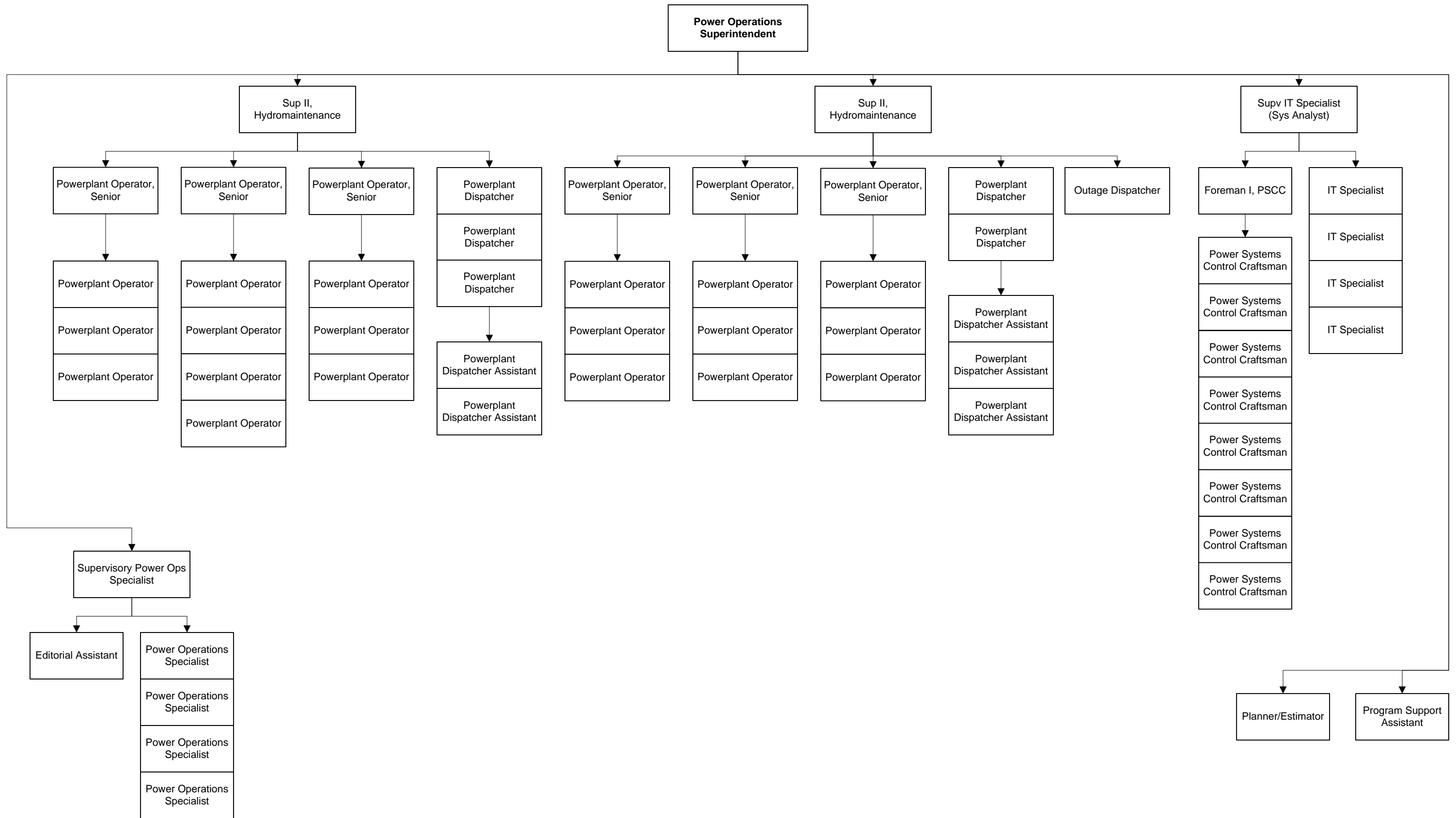
Maintenance IA / Structures & Non-Routine



* Although reporting through the IA/Structures group, these staff are seconded to the Project Manager for a particular non-routine project.

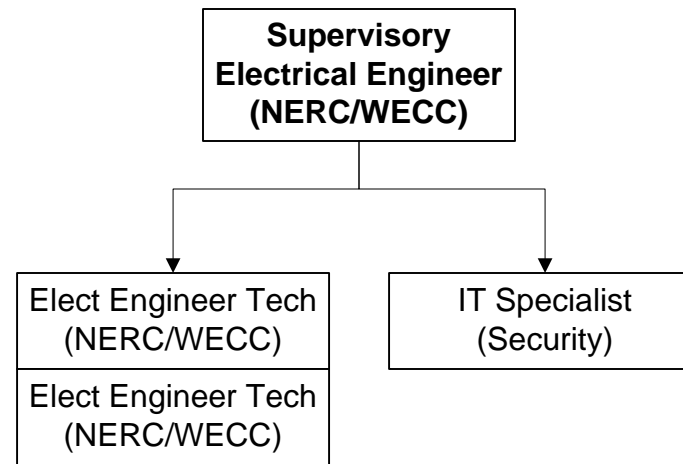
Organization Structure for Optimized Organization

Operations



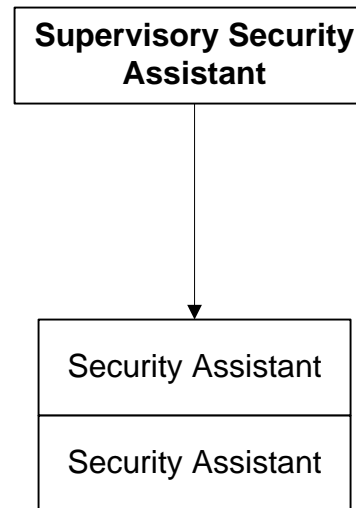


NERC / WECC Compliance

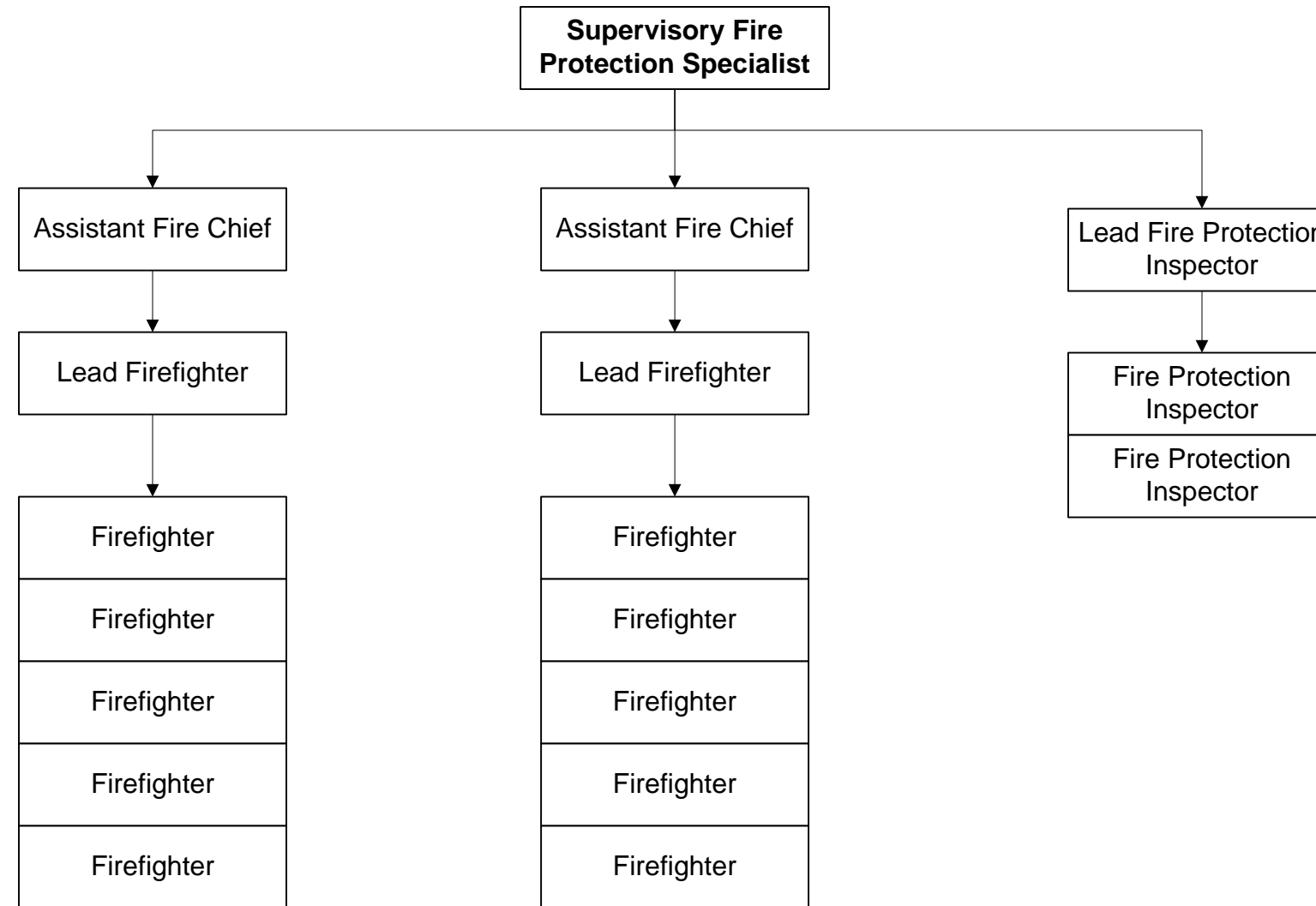




Physical Security



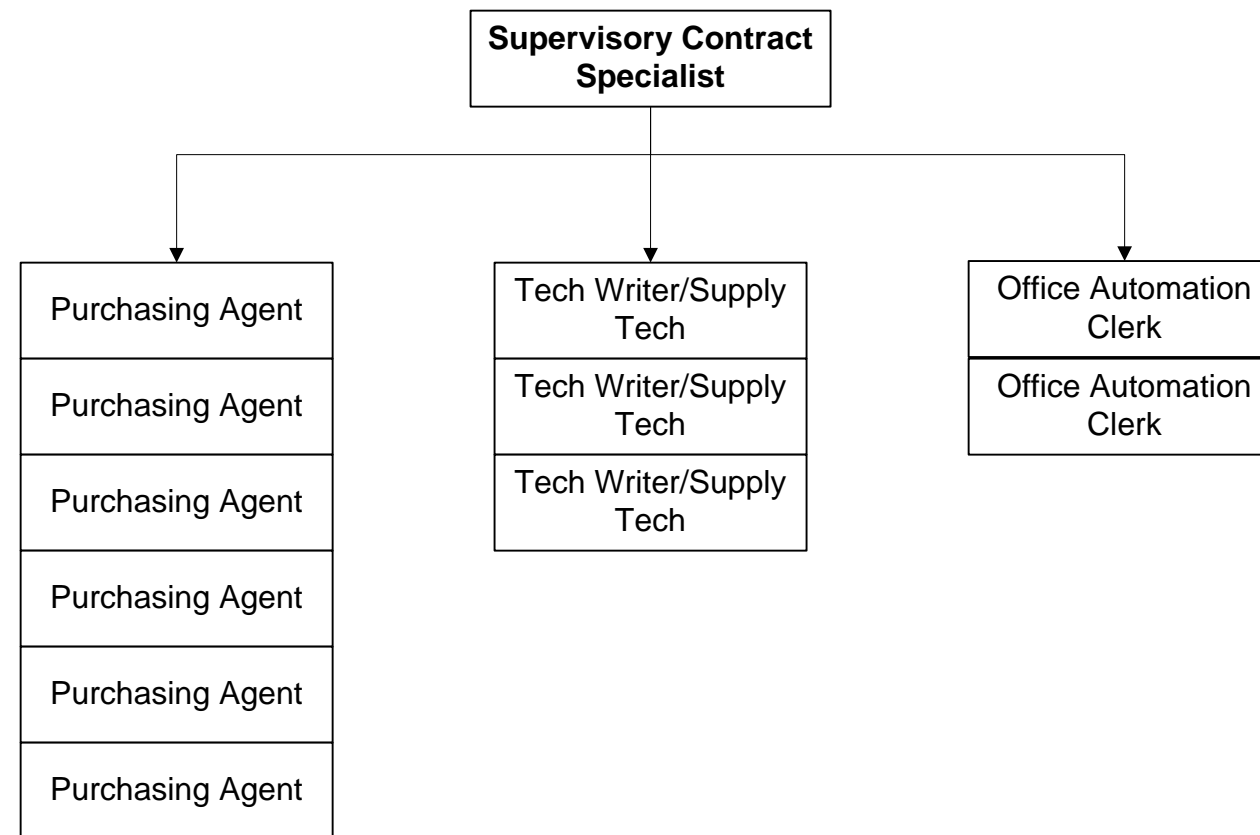
Fire



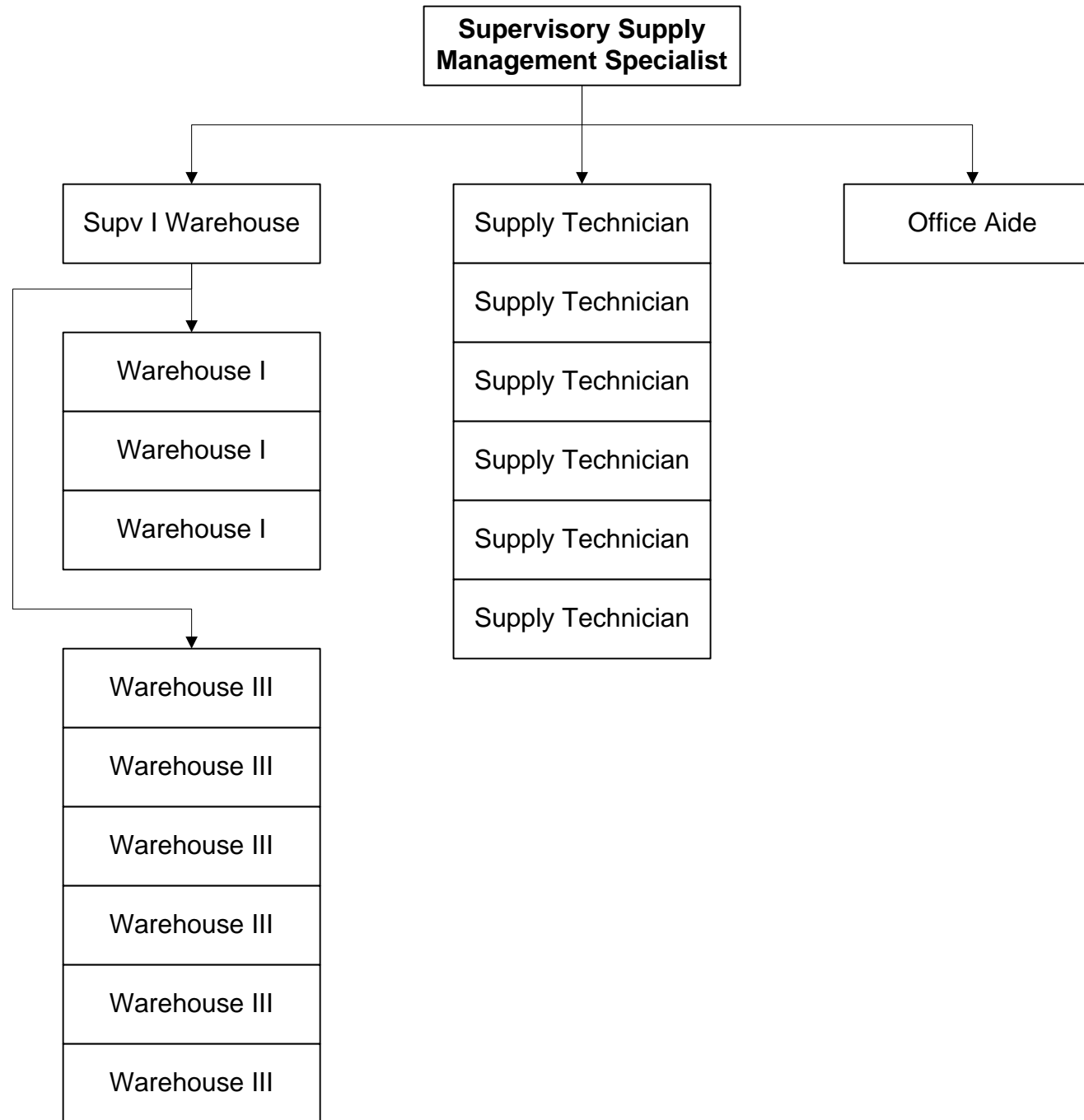
Organization Structure for Optimized Organization



Procurement



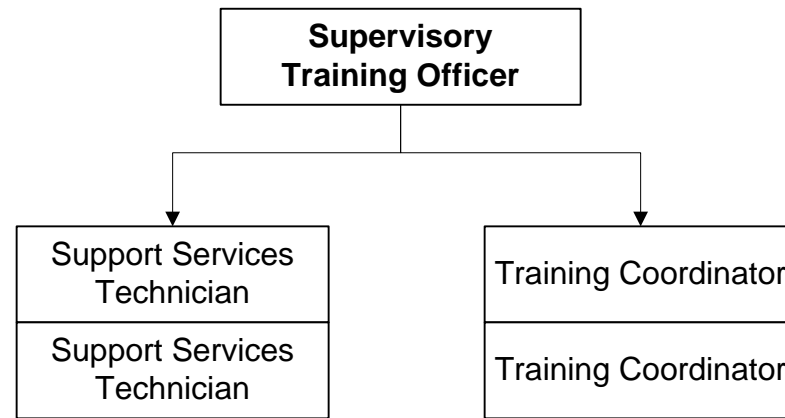
Warehousing





Information Technology (IT)

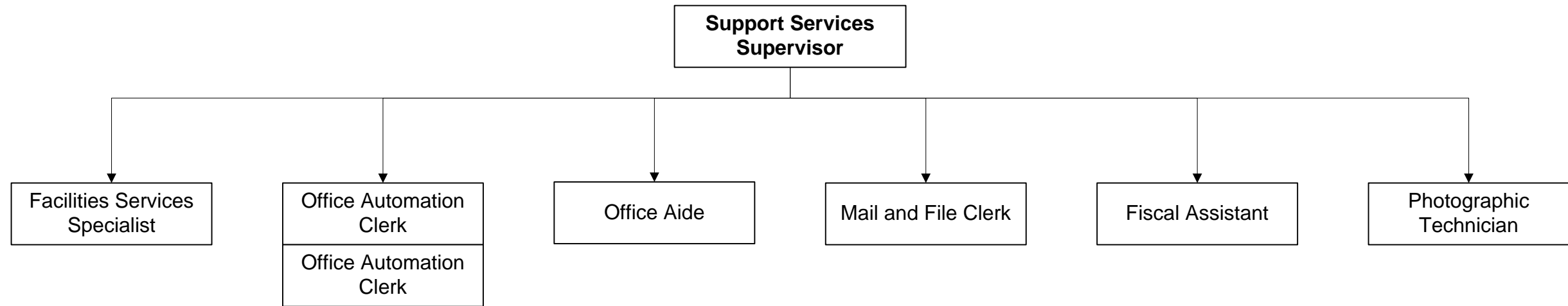




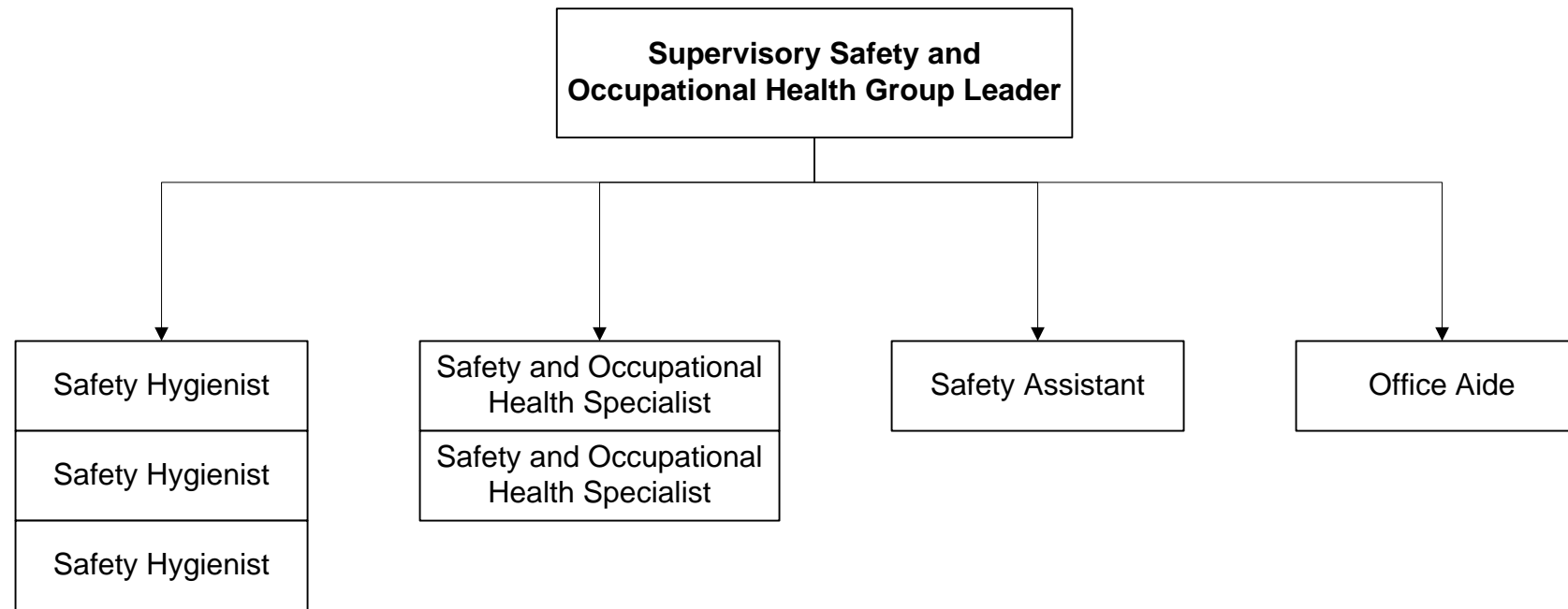
Organization Structure for Optimized Organization



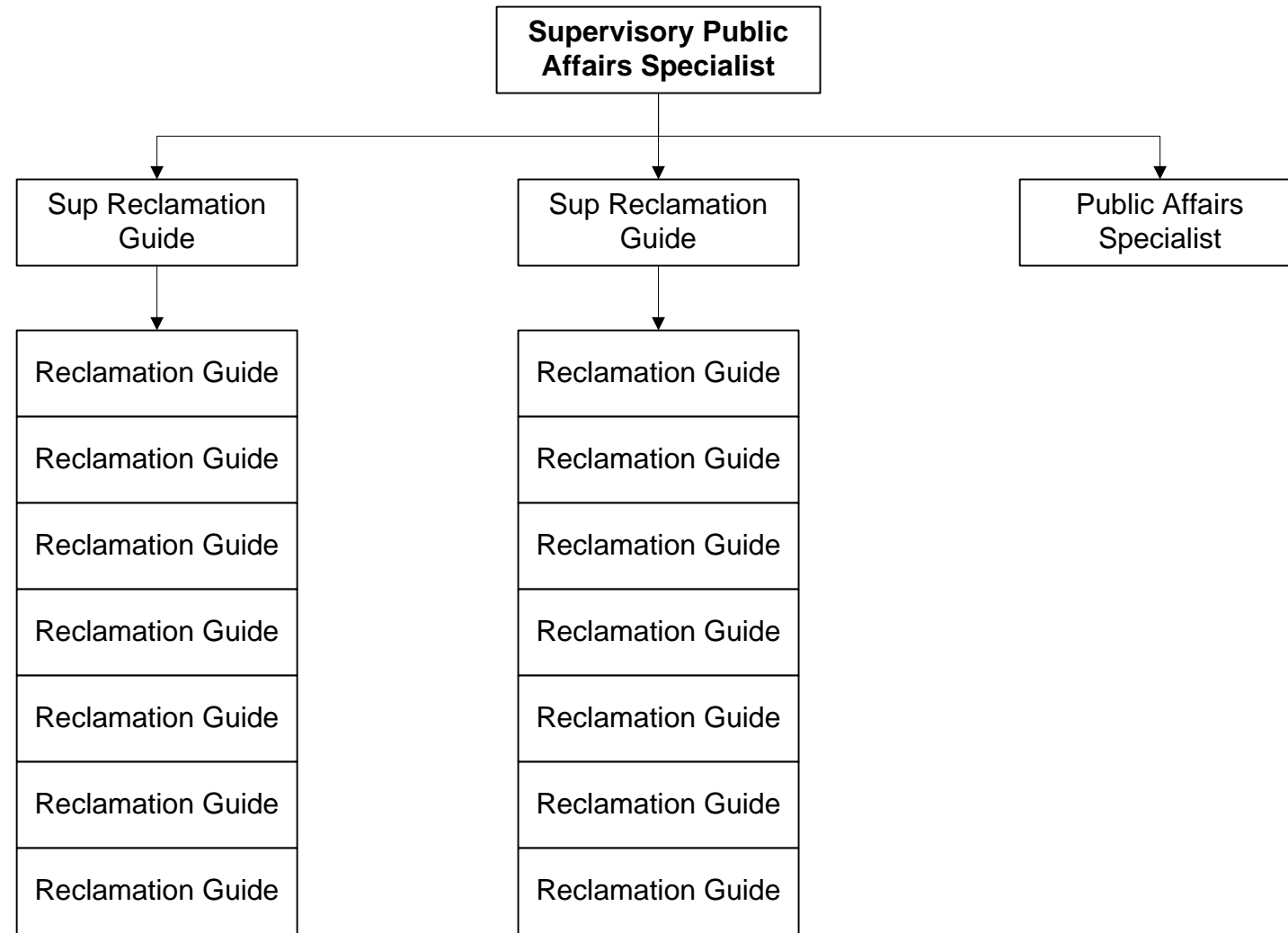
Admin Support



Safety

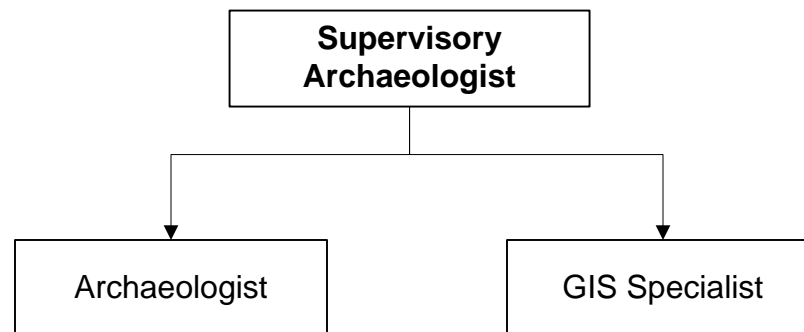


Public Affairs



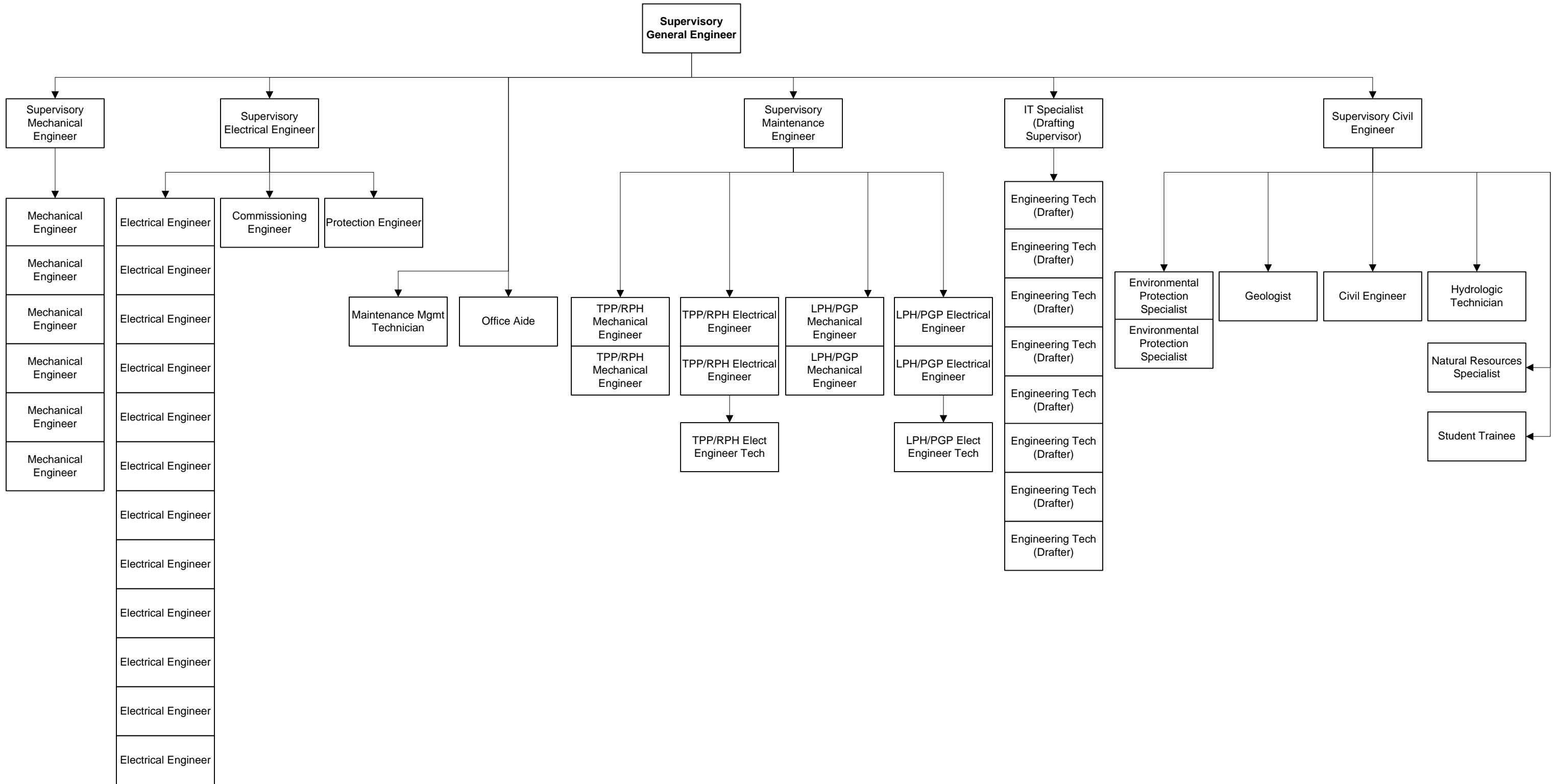


Cultural Resources



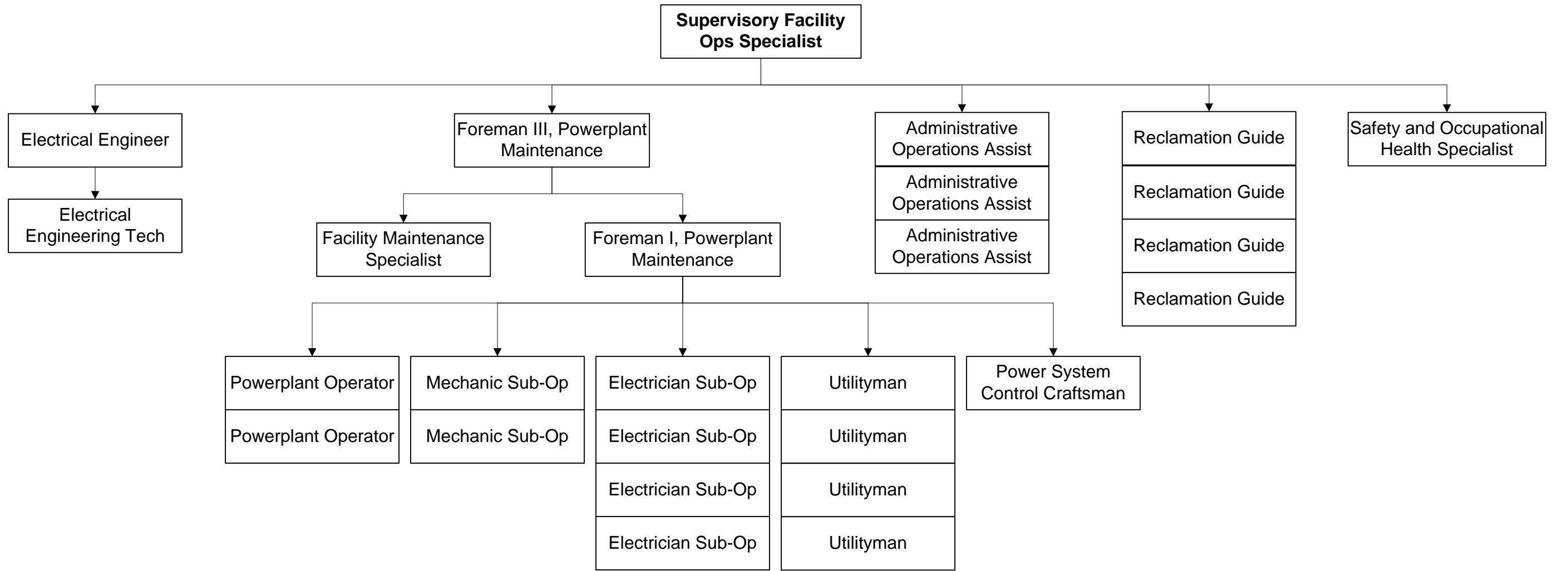
Organization Structure for Optimized Organization

Engineering



Organization Structure for Optimized Organization

Hungry Horse



Grand Coulee Power Office – Review of Staffing and Processes

Exhibit 3

Process Maps:

GCPO Contracting

Regional Office Contracting

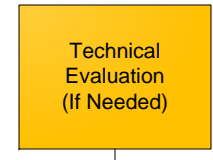
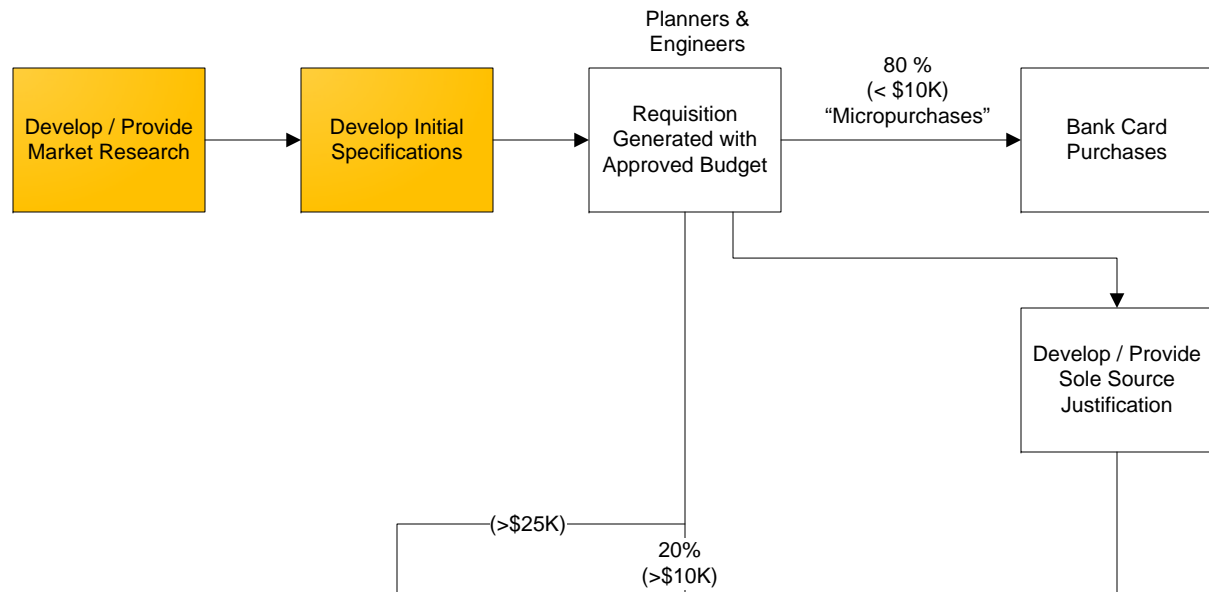
Recruitment

Budget

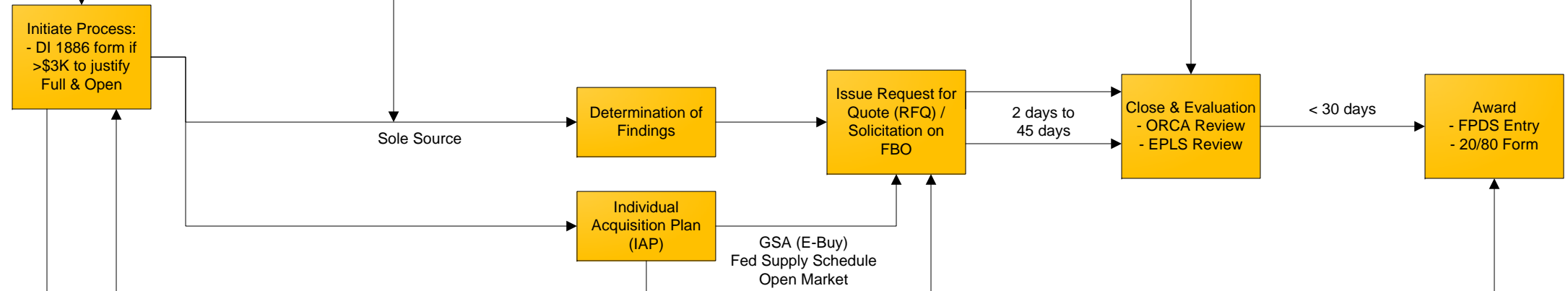
Maintenance Work Planning

Project Life Cycle

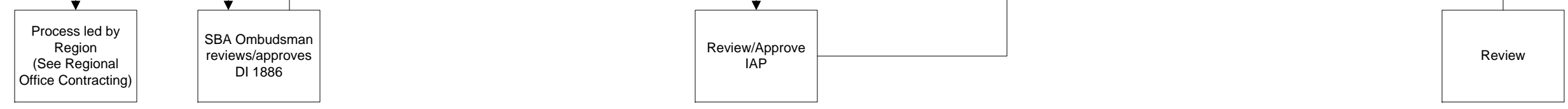
Operations / Maintenance

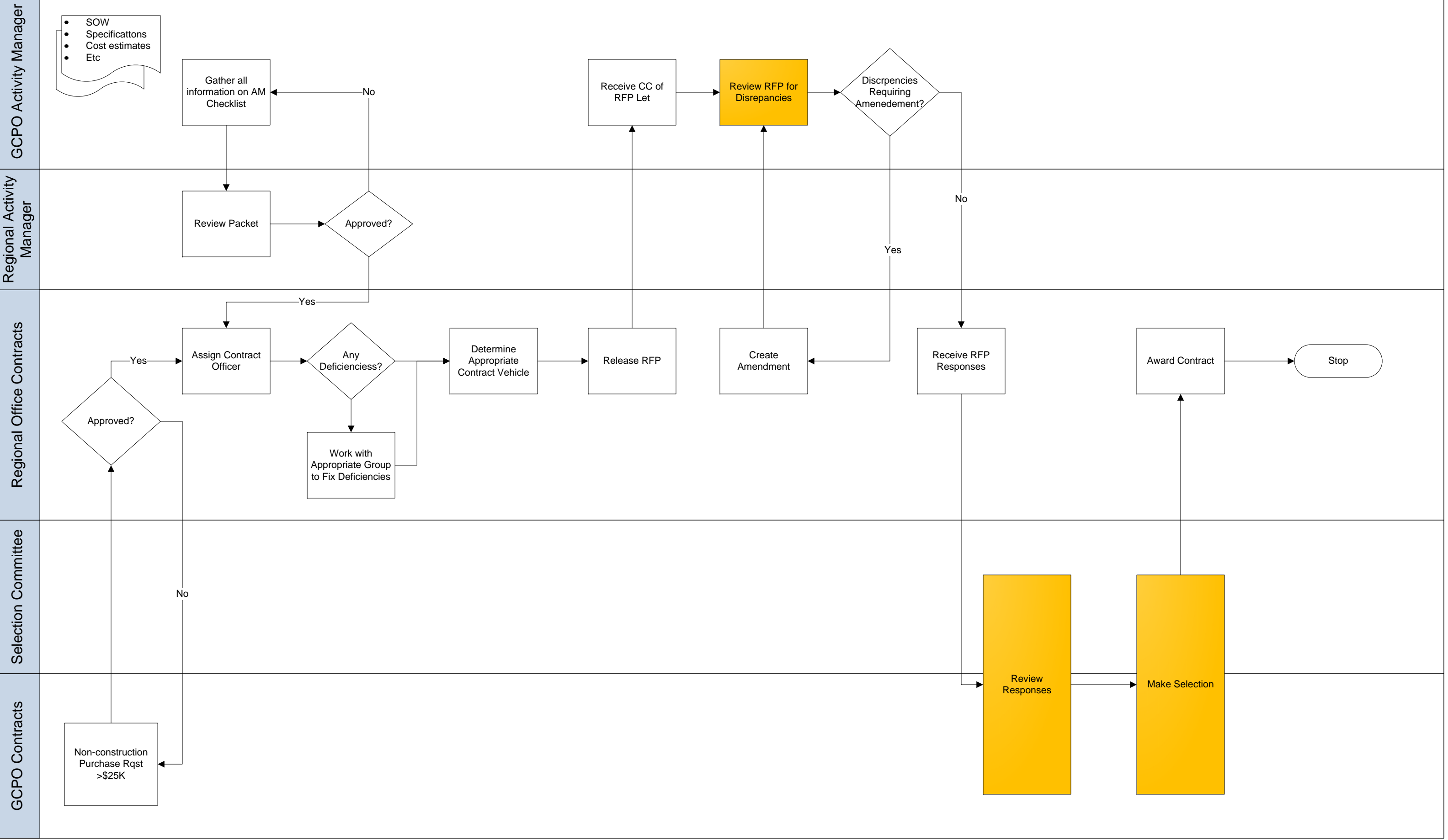


GCPO Contracts



Regional Office Contracts





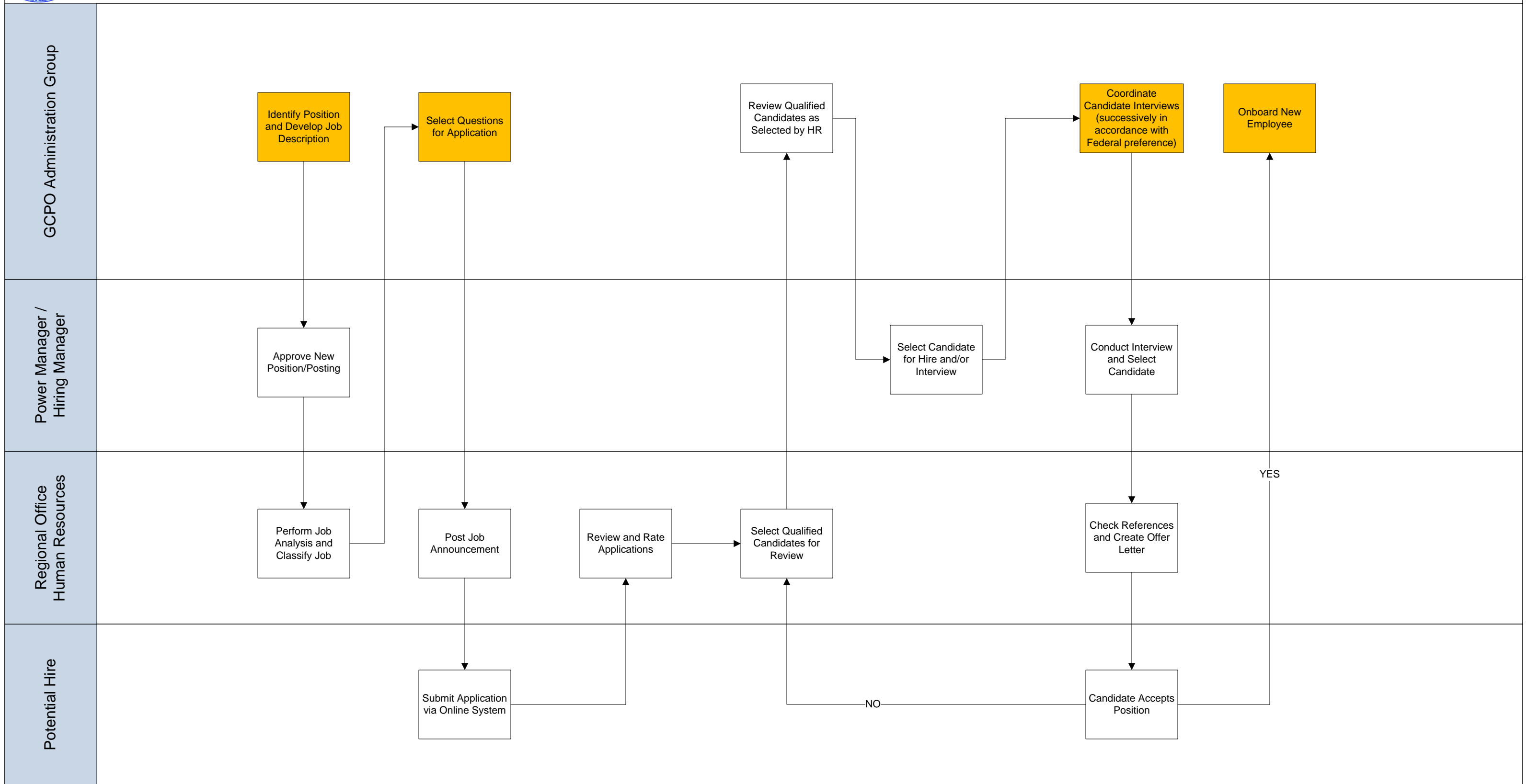
Recruitment Process

Existing Step

Resource Limited

Grand Coulee Power Office

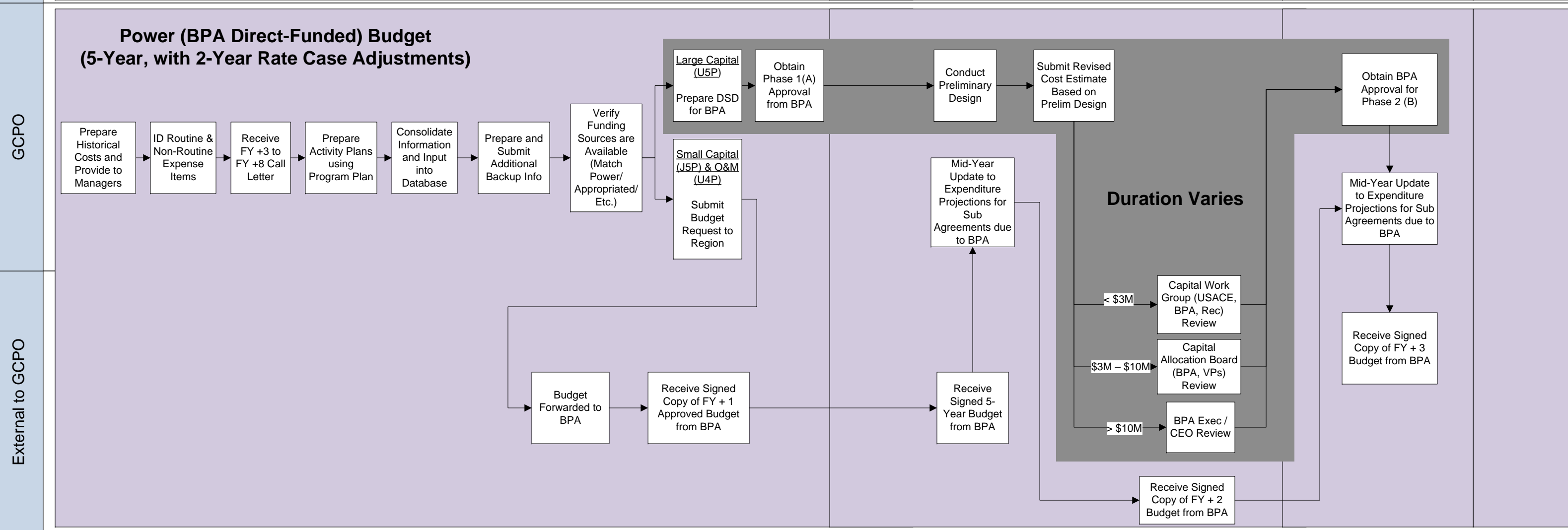
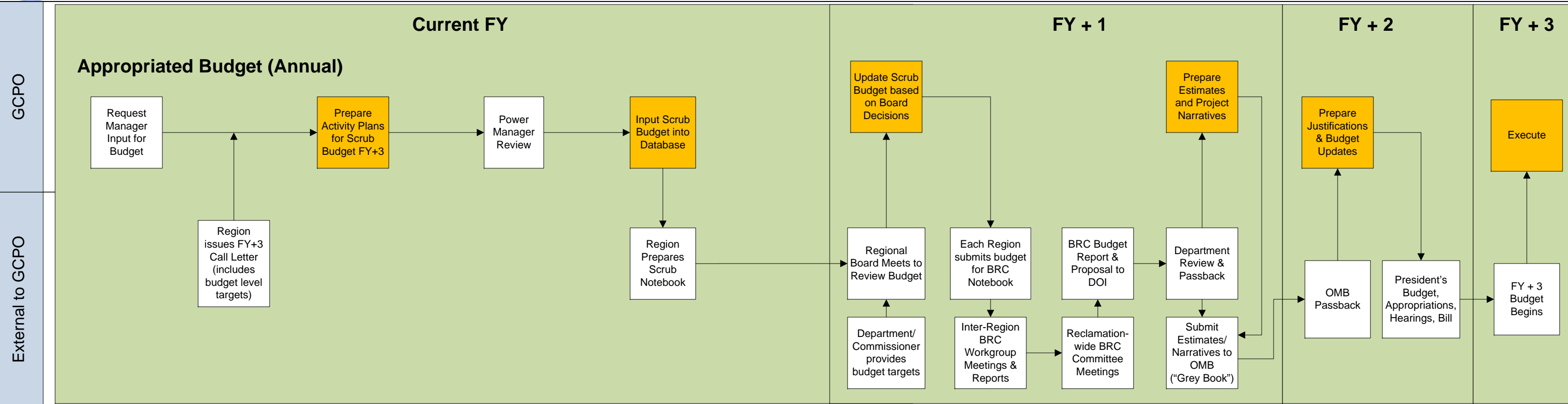
Review of Staffing and Processes at the Grand Coulee Power Office (2011-2012)



Budget Process

Existing Step

Resource Limited



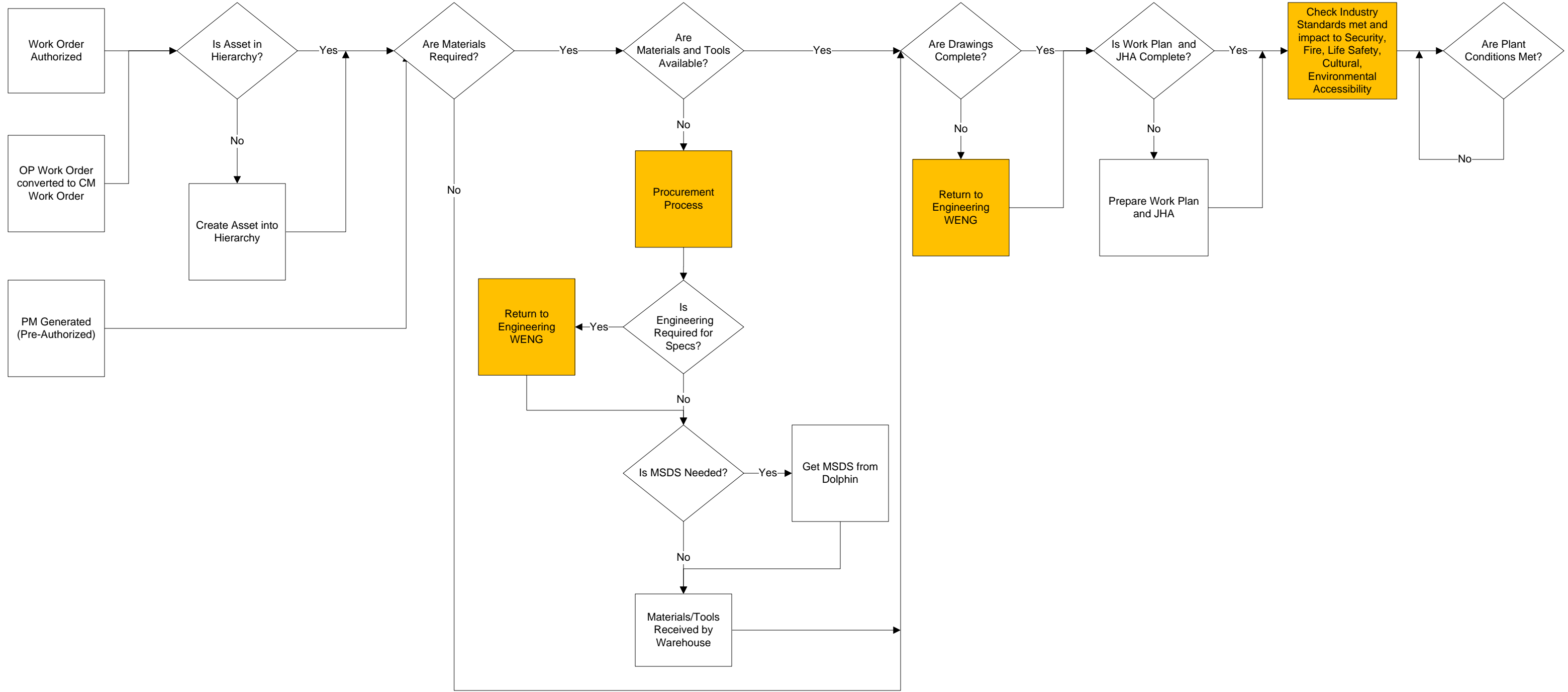
APPR

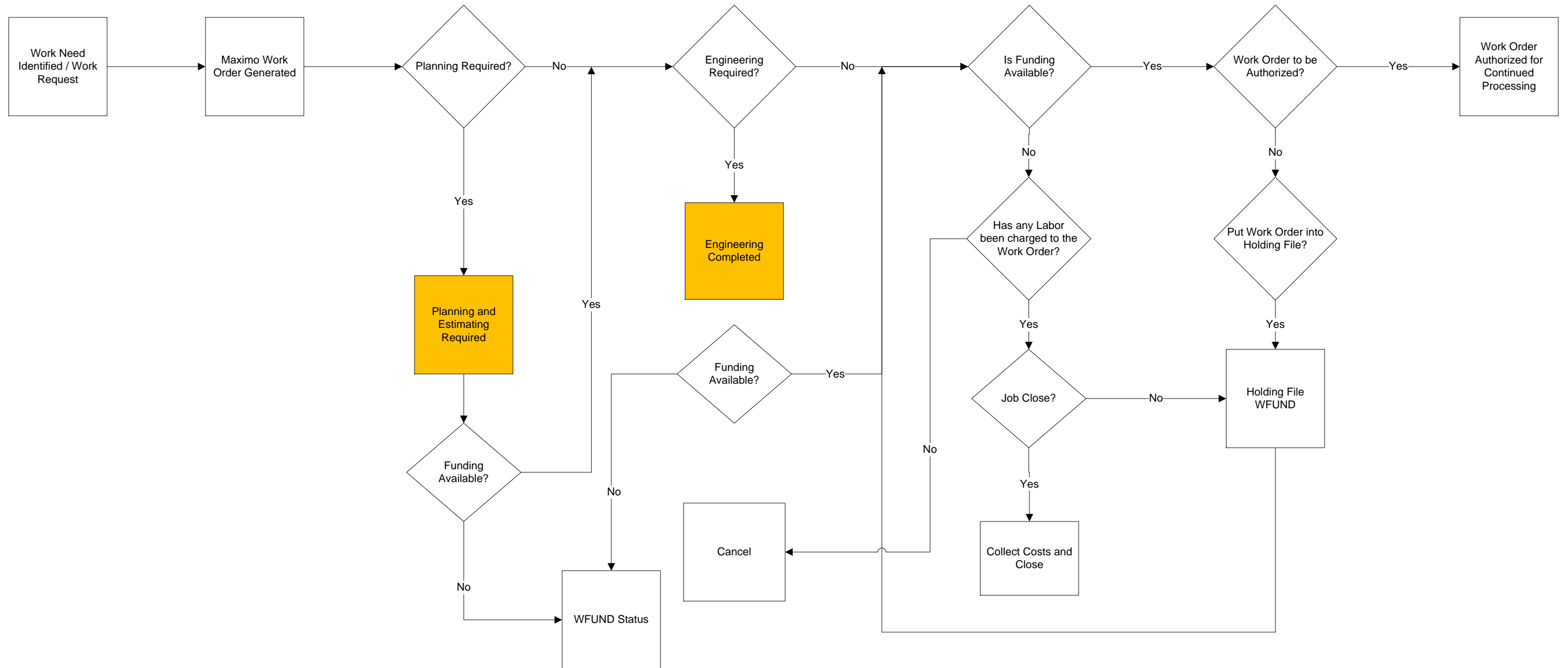
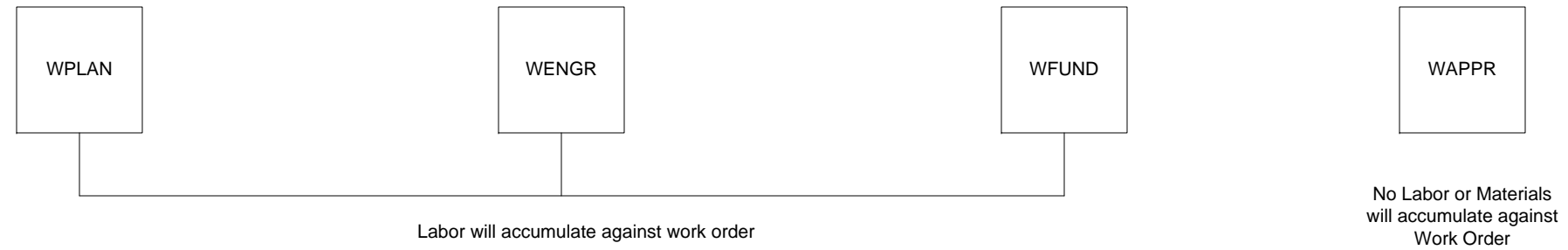
WMATL

WSCH

WCOND

Labor, Material and Tool Costs will accumulate against Work Order

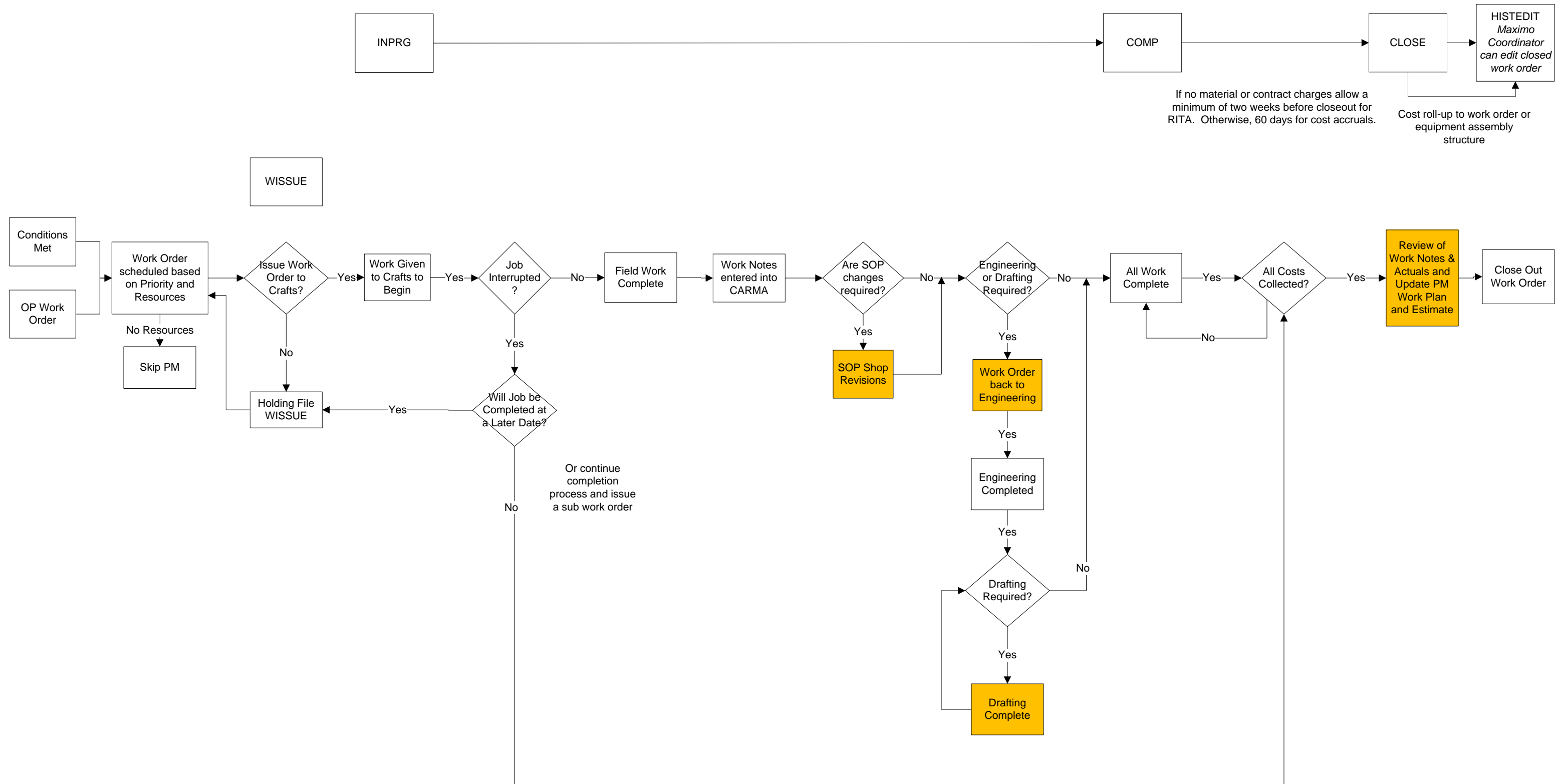


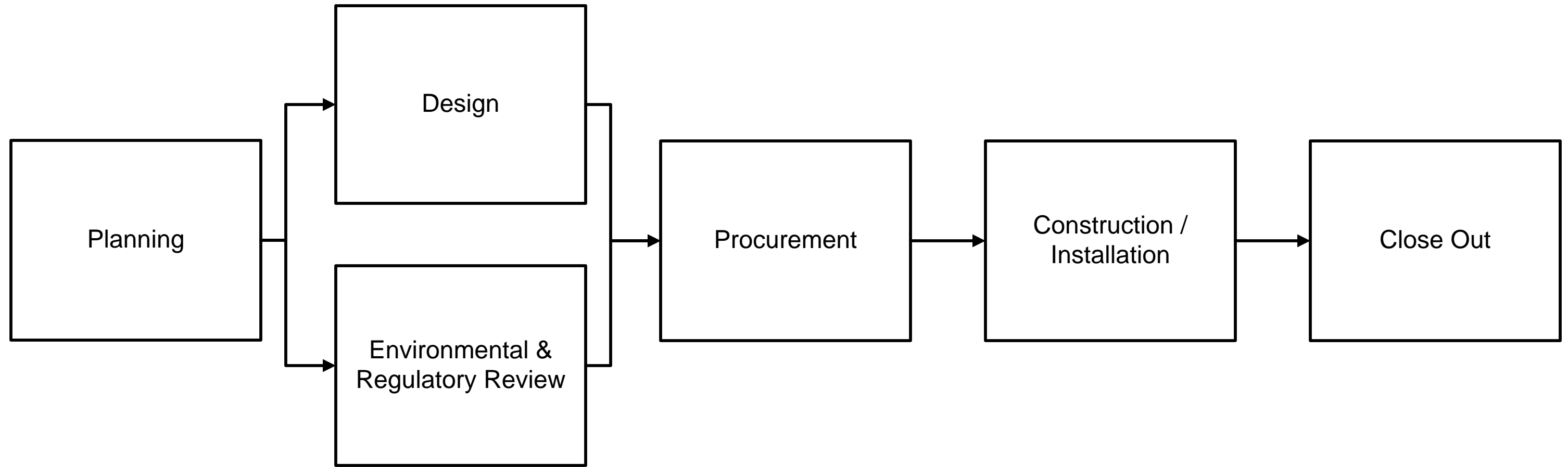


Maintenance: Work Close Out

Existing Step

Resource Limited







Grand Coulee Power Office – Review of Staffing and Processes

Appendix 1

Hiring Strategies and Onboarding Review

Hiring Strategies and Onboarding Review

Introduction

The purpose of the Recruitment and Selection and the On-boarding workshops was to identify challenges and issues with GCPO's current processes and programs, in addition to looking at future programs to implement. This was accomplished through three days of workshops with the members of GCPO's Administration Department, the HR representative from the Boise Regional office, four GCPO's superintendants, and members of the MWH team.

These workshops helped to identify the major challenges and opportunities in recruitment and selection and on-boarding. They also identified areas of concern in the current process, stages in the process that create bottlenecks and possible options to consider for overcoming these challenges. In addition, other items were identified to improve not only the process, but various elements to enhance both the recruitment and selection and on-boarding programs.

March 13, 2012 Final Preparation Meeting

On March 13, 2012, a final preparation meeting was held with Darlene Pryor, Diane Babler, and Sherri Durham-Holliday to confirm the processes for on-boarding and recruitment and selection at the GCPO. During this meeting participants also explored challenges for recruitment and selection and on-boarding at the GCPO. Participants identified areas of strengths and challenges to the current process. Areas were identified for further discussion for the workshops on March 14th and 15th for both recruitment and selection and on-boarding programs.

General Challenges to Recruitment and Selection

- The isolated location of the Grand Coulee Dam is perhaps the greatest hindrance for hiring and retaining employees at all levels.
- Many employees use a position at GCPO as a “foot in the door” for other federal government positions.
- Local law enforcement and other federal agencies such as Homeland Security’s Customs and Border Protection hire many of the GCPO trained security officers at a higher rate.
- Lack of sufficient staff resources currently in the GCPO's Administration has limited ability to do more than maintain the status quo.

Areas of Success in the Current Recruitment Process

- GCPO Administration staff members have good institutional knowledge and are very familiar with the processes, procedures and the people at the GCPO.
- There is a strong relationship and appropriate communication between the GCPO Administration and Boise HR.

- The GCPO Administration staff is going through cross-training to ensure efficiencies to the human resources administration processes.
- The processes in place are sufficient, but need adjustments to overcome the bottlenecks that have occurred in the recruitment and selection processes. These bottlenecks are appearing in the Hiring Manager, Power Manager and Human Resources departments. All departments recognize that there are bottlenecks, but it was stated and observed that is not intentional on any one's part.

Challenges to the Current Recruitment and Selection Process

- The position descriptions are not all current and complete. It was stated that there are numerous position descriptions and that at times managers are taking too much time to identify the correct position description and language to use for the primer and/or the position description. Presently, there are too many position descriptions which can be cumbersome and overwhelming to the manager seeking to identify the best description. In addition, they are not accurate to the requirements for some current individual positions and need to be examined and updated. Approval of primers by GCPO leadership is not promptly completed. Because the primers are for the most part, hard copies, these documents tend to sit on leaderships desks and holds up the process.
- Interview questions are not being prepared accurately enough to adequately screen for technical expertise. Although there is an extensive list of interview questions, they are not arranged in such a way so that managers can easily identify appropriate questions for each open position. Consequently, managers are overwhelmed and tend to reuse questions utilized for prior position postings. This practice does not ensure that the most pertinent questions are used with candidates.
- Budget restrictions inhibit bringing people in for on-site interviews. It was stated that due to the location issues identified for GCPO, on-site interviews would aide in ensuring that only candidates who find the isolated location an advantage would continue in the process.

Close examination of the recruitment and selection process produced a detailed flowchart symbolizing the steps identified in the current process. The flowchart was used to set the direction for the next phase of the meetings. This flowchart is attached.

March 14, 2012 Recruitment and Selection Workshop

There were two phases of the Recruitment and Selection workshop for the GCPO. All participants in the workshop were involved with one or more aspects of the recruitment and selection process and procedures currently being utilized. The discussions focused on the processes and procedures in addition to other aspects of recruitment and selection.

General Challenges to Recruitment and Selection Process and Program

- There is an inconsistency in practices. It was found that not all superintendents or Supervisor II levels are utilizing the same practices when following the procedures. Some superintendents are bringing people in for on-site interviews while others are extending offers without either an on-site or phone interview.
- Until recently, succession planning has not been a permissible practice at the GCPO. This situation has changed with the new Power Manager, but it has not yet been put into effect throughout the facility.
- There is a perception that the Veterans Preference and other similar rating processes prevent hiring managers from hiring successful candidates. However, there is not quantifiable data that is readily available that supports this perception.
- Retention is an issue at the GCPO and the reasons for the high attrition rate of the workforce seem to be varied. Unfortunately, exit interviews are not always conducted and the insight that could be gathered from the collection of this information is lost.
- The workload of all involved in the process is high. At this time there is not enough administrative support staff in the various groups to handle the work that comes up in connection with recruitment and selection. Often times resumes may sit on a manager's desk or primers may sit on a deputy's desk thereby slowing down the process and providing a stumbling block to the 80 day goal mandated by President Obama in 2010.
- There is not a strong marketing/awareness brand associated with the GCPO.
- Some apprenticeship programs have lapsed and are no longer used as a means of recruiting entry level positions.
- There are differing opinions on the issues of adjusting the screen out questions. A consensus is needed to ensure that the same practice is being followed throughout the organization.

Areas of Success in the Current Recruitment and Selection Process and Program

- HR Boise has a dedicated HR representative whose focus is on the GCPO. This ensures that the point of contact is known to everyone at the GCPO. The representative is responsive to the needs of the managers in a variety of areas.
- The Administration Officer serves as a liaison between Boise HR representative and the GCPO. This open relationship allows for a consistent message to be delivered.
- The responsibilities for the various levels of the recruitment and selection process are clearly identified. The flow of the responsibilities is also clearly defined.
- Many position descriptions and questions are available to managers online.
- HR Boise promptly transmits hiring and start date information to all involved departments.

Challenges to Current Recruitment and Selection Process and Program

- Although many, if not most, of the position descriptions are electronically stored providing easy access to the managers, many of them have not recently been reviewed for accuracy.

- When the topic of career development was discussed in the workshop, there were various reactions and responses as to whether it is clear to staff what their career development opportunities are within the GCPO. Individuals know that they can move up in grades and/or steps, but they may not connect career opportunities with the increase in grade and/or step.
- When the primer has been prepared by the manager, there are several people that must sign off for approval for the new position. Presently, this is a hard copy that must circulate for discussion and signatures. There are times when due to workload, these documents can be held up in one office or another.
- Classification of jobs is performed by the HR representative. For standard positions this procedure can work smoothly and be accomplished expeditiously. However, for newly created positions there can be a high volume of communication between the hiring manager and the HR representative thereby slowing the process.
- The main bottlenecks for the entire recruitment and selection process are in the first phases of the process, including creating position descriptions, primers and classifying positions.
- As with the position descriptions, the application questions are available through an on-line question bank. The grouping of the questions does not always lend itself for easy use of the system. Therefore, some managers may use questions selected for a recently identified position description. This increases the risk of a less than optimal hire if the most accurate questions are not utilized.
- When managers elect to rewrite the questions rather than utilizing those available in the question bank the question selection process is extended significantly.
- Once candidates have been ranked, there is no consistent procedure in place for interviewing and hiring. Some managers are hiring the candidate ranked number one without the benefit of a phone interview. Other managers are performing phone interviews on the top rated candidates while one manager brings the top candidates in for an on-site interview.
- Similar to interviewing there are inconsistent practices being applied to the reference checking process and procedure. Some managers are completing reference checks and ensuring that copies are being sent to HR. Others are conducting references and keeping them in their own files.

Opportunities for Future Recruitment and Selection Process and Program

- Increase the number of on-site interviews. A misunderstanding existed with the majority of the superintendents as to whom they could bring in for an on-site interview. Some were under the misconception that if you brought in one person for an on-site interview, you must bring in all candidates. Clarity was provided by the HR representative, and it is now apparent that on-site interviews can be utilized as a second level of screening after phone interviews have been conducted. This approach of utilizing on-site interviews for second round interviews may also have a positive impact on retention as to ensure new hires are comfortable with the geographical location issue.

- Increase and/or change of HR Boise staff. The HR representative provided information about personnel changes in Boise that will provide additional resources in meeting the HR needs for the GCPO.
- Implementation of WTTTS tracking system. A new electronic online tracking system is being implemented at Boise HR that should improve many aspects of HR service, information and interaction with the GCPO.
- Encourage the re-introducing of apprenticeship programs for select positions and job groupings. Based on the feedback in the workshop, historically these apprenticeship programs have been perceived as a positive way to recruit and retain staff at GCPO.

Recommendations and Conclusions

There are several areas of the recruitment and selection process and program that would benefit from updating and streamlining. However, the current HR and GCPO Administration staff involved appear to be stretched to capacity. A new member of the GCPO Administration Department dedicated to the needs of the hiring managers would be of great benefit in ensuring the streamlining of the process and having a liaison between the hiring managers and HR Boise to ensure consistency and building relationships across GCPO. Adding resources could ultimately decrease the amount of time it takes to recruit and bring new staff on-board.

In addition, the following issues and/or ideas are recommended for future enhancements to the current recruitment and selection process and programs.

- Update the position descriptions. A thorough review and audit should be conducted on all current position descriptions with the GCPO Administration and with the hiring managers. This audit will enhance and streamline the recruitment and selection process as managers will have more clarity on the position descriptions available to them. In addition, any newly anticipated positions that are identified through the MWH assessment should have position descriptions created.
- Create a Career Development Framework for all positions and job groupings throughout GCPO to increase awareness both with current and future staff. We found in the workshops that career development is perceived differently throughout the GCPO. Using the position descriptions for all positions could be a vehicle in outlining various career tracks and job families. Providing visuals in the form of a matrix, flowchart and/or career step ladder, could be a beneficial tool in the recruitment and selection process.
- Review and revamp all screening and interview questions. The question bank utilized by the managers for the interviewing process is cumbersome. After a thorough review and grouping of the position descriptions, an assessment needs to be completed on all interviewing questions.
- Train the Hiring Managers on utilizing the systems in place. As systems are updated and altered, hiring managers should receive training on how to effectively utilize the systems to make successful hires to their departments at GCPO. In addition, provide refresher training on Interviewing and Selection skills for hiring managers.

- Explore with Boise and/or Regional office to focus on a branding and/or image initiative focusing on the critical needs at the GCPO. Identify creative ways to recruit potential staff to the GCPO. For instance, there was lengthy discussion on the lifestyle at Grand Coulee and how this geographical location appeals to individuals who enjoy nature, boating and water activities (e.g., fishing). Emphasize the quality of life aspects of the GCPO that will appeal to a particular recruit.
- Enhance and/or create additional apprenticeship programs. The previous apprenticeship programs were a great success in the past, but were either stalled or halted as a result of limited resources, particularly in training, that prevented GCPO to continue in these areas. As the staffing needs increase, this is a great source to continuously bring on new and skilled candidates to GCPO.
- Identify additional sourcing for recruitment and selection. During the workshop, there was lengthy discussion on social media tools and experimentation of technological based programs (LinkedIn, facebook for GCPO, blogs, job boards, etc) for future recruitment activities.
- Create a workforce planning vehicle to assist managers in identifying hiring needs. Once the MWH Assessment report is reviewed and digested by the GCPO, next steps in the planning process needs to occur. For instance, it would be beneficial for HR Boise, Hiring Managers, and the GCPO Administration to facilitate and conduct workforce planning sessions for all appropriate GCPO management moving forward with their staffing needs.
- Assign codes to sourcing so that information can be tracked easily to identify the best sourcing solutions for positions.
- Identify other publications and/or job-boards for future positions. A list has been included separate from this report.

March 15, 2012 On-boarding Workshop

On Thursday, March 15, 2012, the MWH Team members, Barbara Irwin, Mary Lake, and Bryan Oldham met with the staff members of the Administration Group at the GCPO, including Darlene Pryor, Diane Babler, and Sheri Durham-Holliday. In the workshop, we discussed both the current process and a future ideal process for the on-boarding program for the GCPO. In addition to the process, we also discussed the content of the future program. Below is a summary of the discussion, including: General Challenges, Opportunities, a proposed outline for an on-boarding program, a list of action items that the team wanted to move forward with in the near future, and further recommendations to enhance and/or create a future on-boarding program.

General Challenges to On-boarding Program

- Representatives from Administration, Finance, Safety and I.T. all meet with new employees on day one, but focus mainly on the tactical and transactional information necessary and required to provide to new staff. At that time, the employees is not given any relevant information about Grand Coulee, the history of the plant or the significance of working for a nationally acclaimed hydroelectric power plant. When this orientation is completed, the employee is released to

his/her supervisor, but there is an inconsistency across departments on the on-boarding practices; some departments provide employees tours, while other departments or supervisors do not.

- The staff within the administration group supports each other in handling the on-boarding process, and at times, conducts the sessions together, but it is predominantly conducted by one individual within the department.
- There is no one individual and/or group within the GCPO coordinating on-boarding/orientation for all staff throughout the plants and facilities focusing on both the transactional and cultural aspects of on-boarding.
- It was mentioned that in 2011 a few employees at the GCPO participated in a pilot on-boarding Program at the Boise Regional Office. One of the employees met with our group during our workshop to provide us with her impressions, feedback and thoughts on the content and length of program, etc. The program was conducted on three consecutive days, which she believed to be too long and cumbersome and not necessarily bringing value to new employees. No known follow-up or implementation from the Boise Regional office occurred after this pilot program was completed.

Areas of Success in the Current On-boarding Program

- HR Boise notifies all appropriate GCPO staff when a candidate has accepted a position.
- There is a current process in place for new hires throughout the GCPO.
- A designated individual/individuals within the Administration Department works with new hires on the transactional pieces of on-boarding.
- New hires meet with Finance, Safety and Security for on-boarding processing.
- There is currently a two phase process in place to ensure staff understands their benefits, procedures, etc.

Opportunities for Future On-Boarding Program

- Implement a Buddy System to provide employees with a 'go-to contact' for information, questions, resources, etc.
- The Administration Group would desire to expand the on-boarding Program, including more information provided to new employees (transactional and cultural).
 - It would be important to have one resource in administration handle on-boarding and coordination with management and staff, etc.
 - Call new employee prior to first day.
- Provide a GCPO video during the on-boarding.
- Conduct a tour throughout all facilities, including the power plants, offices, etc.
- Identify resources from the region (what information can they provide to new employees) and incorporate it into the GCPO on-boarding Program.
- Bring deputies/managers into the process/program: Meet and greet, provide philosophy, mission of the GCPO, etc.

- Provide bigger picture and the importance and contributions the staff makes to the overall success of the Bureau, the Region, the GCPO and their individual departments.
- Create and provide takeaways and/or handouts for new employees that are easy to read and provide pertinent information.
- Encourage union representatives to participate in the process.
- Create a train the trainer program for individuals who will be presenting and providing talks to staff
- Stress a strong emphasis on teamwork for the Administration department and other departments involved in the process of providing new employee a positive and rewarding experience that may ultimately impact the retention of these new staff members at GCPO

Outline of a future On-boarding Program

The MWH Team and the Administration Group identified a draft framework for a future on-boarding Program. The Administrative Group is moving forward with further development of this program.

Proposed Onboarding Program	
First Session: Day One	Second Session: Approx. 1 Month after Hire
<ul style="list-style-type: none"> • Manager welcomes new employees • Identify a buddy for each new employee • Provide takeaways for new employee (resource/contact information document) • Project overview * 	<ul style="list-style-type: none"> • Project overview • Department talks and presentations • Video on GCPO • Benefits information – Part I • Tour of the facility • Lunch • Benefits information – Part II • Union talk/presentation
<p>*The Project Overview topic was discussed at length with the group. It was suggested that an “overview” be given to all new employees (e.g., short talk, video, etc.) to explain to employees who they are working for while emphasizing some of the key historical features of Grand Coulee, the magnitude of working for the largest hydro-electric power plant in the United States, etc. There was disagreement among the Administrative Group on the value this topic would bring to Day One of the on-boarding Program. The concerns focused on the employee’s being confused and overwhelmed on his or her first day of work.</p>	

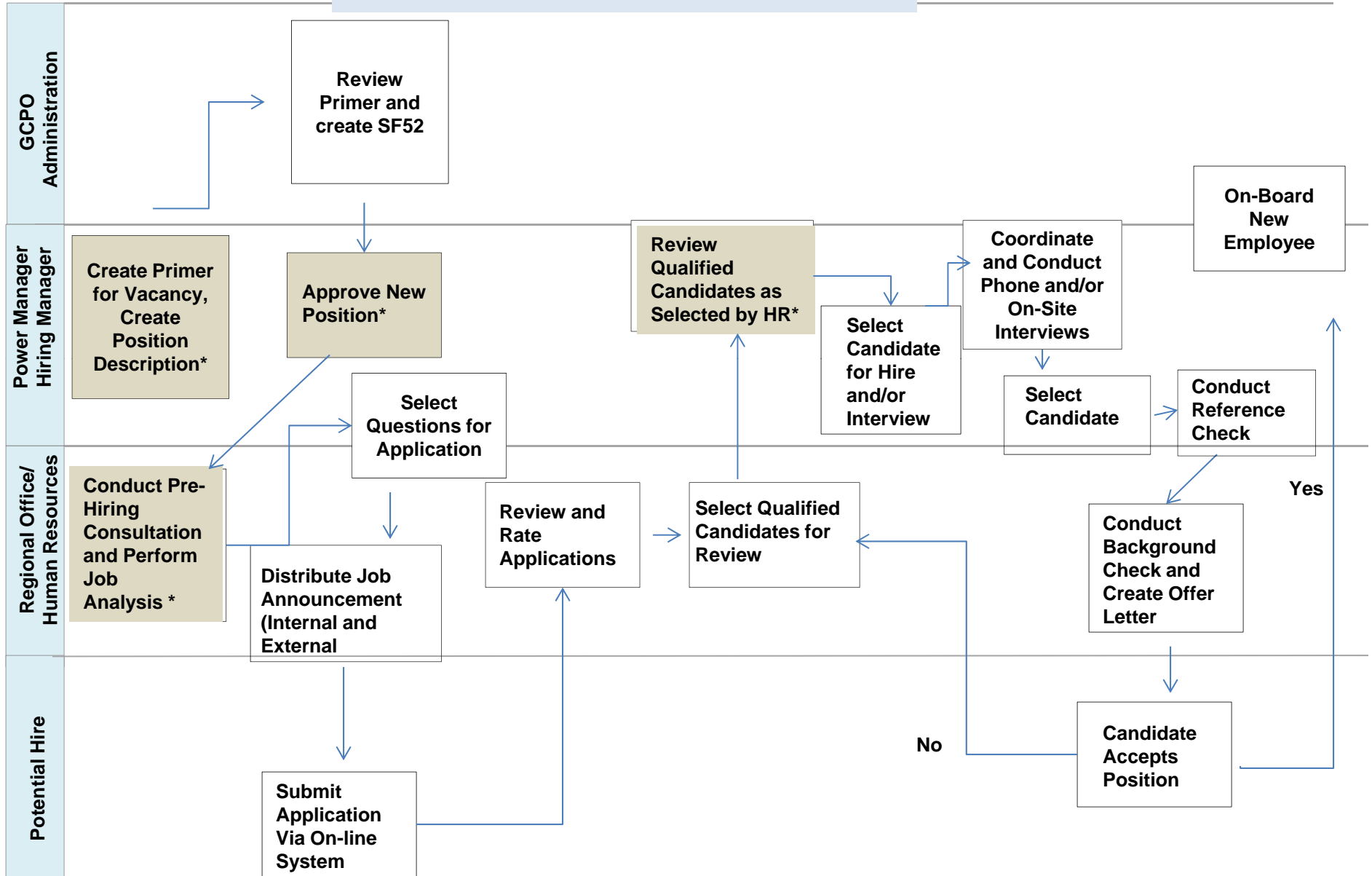
Action Plan to Develop/Implement Onboarding Program		
Action Item	Lead	Target Date
Meeting with managers (Deputy Directors) regarding desired Future on-boarding Program	Darlene	2 weeks
Meeting with Stacey regarding on-boarding program in his unit	Darlene	2 weeks
Meeting HR (Ginny Gragg) to discuss Region's on-boarding Program and tie-in to Grand Coulee's program	Diane	2 weeks
Meeting Lynn in Public Relations to discuss video for on-boarding	Diane	2 weeks
Coordinate with management on identifying representatives from each department for on-boarding talks and presentations	Darlene	3 weeks
Meet with Unit and/or Department Managers on developing a buddy system for new employees	Darlene and Sherri	4 weeks
Develop draft outline for a Future on-boarding Program	MWH Team will draft outline of program that was discussed in meeting on 3/15/12 and distribute to the Administration Group, who will revise and present it to leadership	1 week

Additional Recommendations and Conclusion

The Administration members of the GCPO have a strong desire to improve and enhance the current on-boarding Program, which consists of mainly transactional areas. As identified above, on a short-term basis, there are several action items that the GCPO Administration is going to undertake in order to improve the current program. The desire is to enhance the entire program while recognizing that additional resources and coordination will need to be involved to make it a successful on-boarding Program and positively impact retention at the GCPO. Additional recommendations are as follows:

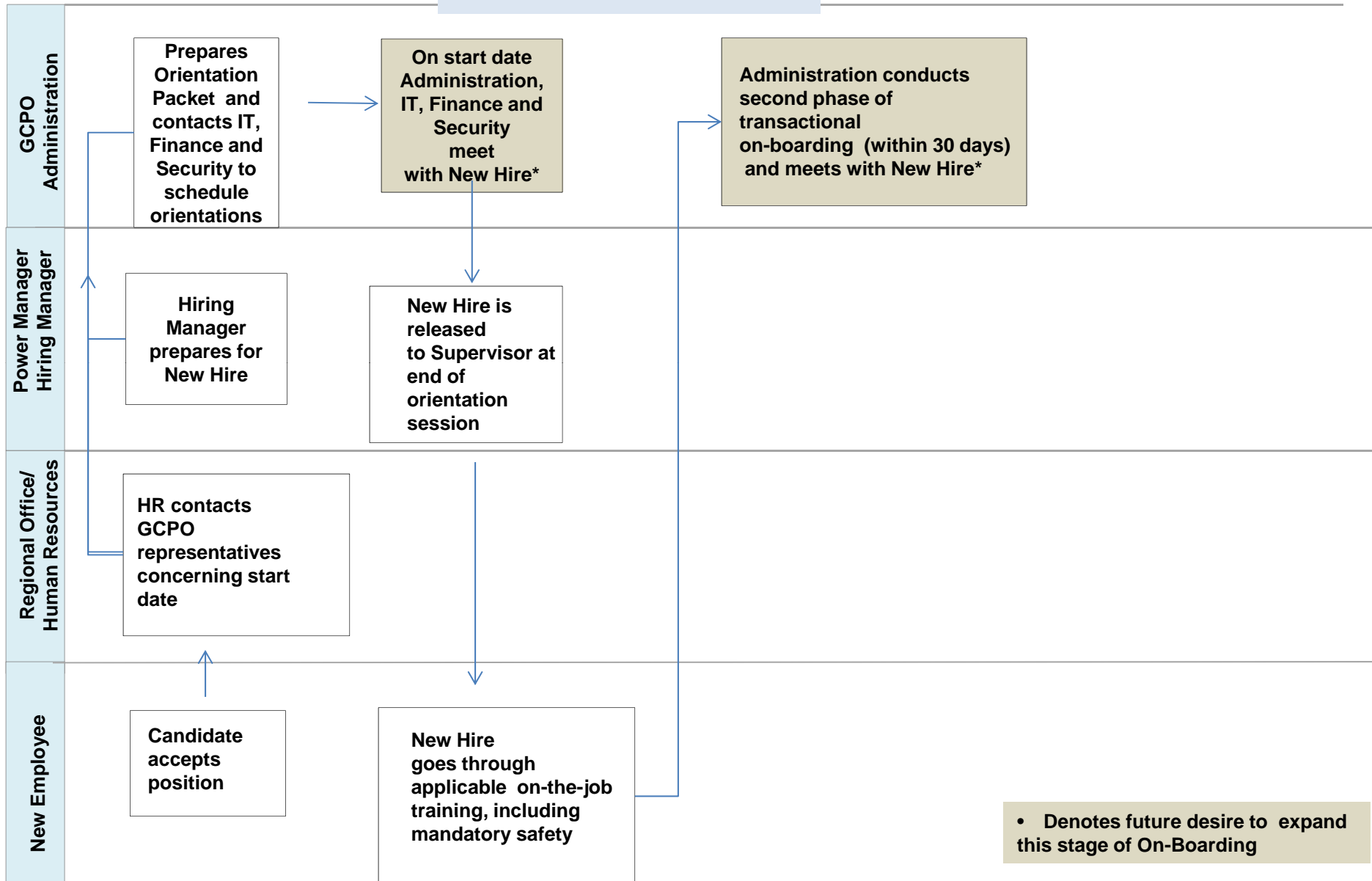
- Add a resource to the GCPO to handle all on-boarding tasks in coordinating with HR Boise, Hiring Managers and other GCPO representatives involved in the process.
- Expand the cultural aspects of the on-boarding program including: Welcome Message from the GCPO leadership and newly created visuals (videos, on-line media, etc.) to bring the on-boarding program up-to-date.
- Create a buddy system for new employees outlining responsibilities for the individuals involved.
- Facilitate a train the trainer program for the buddy system.

Recruitment and Selection Revised Process Grand Coulee Power Office



*Denotes bottlenecks

On-Boarding Process Grand Coulee Power Office



• Denotes future desire to expand this stage of On-Boarding



Grand Coulee Power Office – Review of Staffing and Processes

Appendix 2

Letter from D. Murillo to D. Carriere, 24-May-2006

MAY 24 2006

GCPO-1000
SAF-3.00

MEMORANDUM

To: Dale J. Carriere
Supervisory Fire Protection Specialist

From: David G. Murillo (SGD) David G. Murillo
Power Manager

Subject: Grand Coulee Power Office Fire Protection Response

The purpose of this memorandum is to officially notify you, the Firefighters and Fire Inspectors of the interim instructions for on and off Project emergency and fire protection responses. During May meetings with the International Association of Firefighters and recent meetings both here at the Grand Coulee Power Office (Office) and in the Regional Office an interim plan was discussed that would meet both the Project Mission and policy requirements.

Since these meetings, the Office has sent letters to the three local communities with which we currently have Mutual Aid Agreements (Agreements) concerning our interim decision regarding our ability to respond to outside emergencies (attached). Additionally, given the installation and modifications to the project's fire protection systems, I have initiated a request to the Office of the State Fire Marshal for their assistance in assessing the adequacy of our fire protection operations and the capabilities of the local communities in order to determine if our operations are sufficient to protect our facilities and employees from fire hazards.

Having read the Agreements that we have in place with the local communities, what is common within these agreements is language indicating that we will respond to each others request for support when an emergency identified within the agreement exists. The Agreements read that "upon receiving a request for assistance, each party to this order shall dispatch one fully equipped truck along with the minimum personnel required by City standards to operate the Fire Truck or specialized equipment to the scene requested". However, under the current organization of the Fire Protection Branch, the Office must now comply with the more stringent regulatory requirements of the National Fire Protection Association (NFPA) standard 1710. The manning requirements within the NFPA for an Engine Company within a professional Fire Department requires that we have four (4) firefighters on duty in order to operate the fire truck outside of our facilities. The Office in accordance with project mission requirements and these Agreements has staffed only to the level necessary to meet our own needs. Our current staffing

levels do not support the NFPA staffing requirement on a 24-hour a day seven (7) day a week basis.

Off-Project Responses

As a result of the above, we will only respond to off-project situations with the fire truck during those times in which we meet the four (4) person staffing requirement during any shift. Meeting this requirement most often occurs during the day shift which is normally from 7:30 a.m. to 4:00 p.m. Monday through Friday. During those times when our staffing levels fall below the four (4) person minimum requirement to operate the fire truck, this normally occurs during the swing shift, graveyard, and weekends, we will respond with the Brush Truck and Tender if we are requested, available, and said operation is within applicable guidelines, regulations, etc., to provide wild land, re-supply, RIT (rapid intervention team) and in other support roles as needed. Fulfilling the Office mission and operating safely is always our primary concern, therefore, when the fire protection staffing falls to one (1) firefighter or fire inspector on duty, the Office will not be able to respond to any request for assistance other than tender support or requests for the Jaws of Life which may require off project staffing assistance on scene.

On-Project Responses

It is my understanding that when we meet the four (4) person minimum staffing requirement we may respond to off-project and on-project situations as a "Fire Department." During those times when fewer than four (4) persons are on shift we will respond to on-project situations as a "Fire Brigade¹" and fire suppression activities will be limited to those which can be accomplished safely and in accordance with current law, rule, or regulation. Given the level of training provided to your staff, operations in regard to on-project situations should remain status quo, including the operation of the fire truck. Off-project responses will be governed by the previous stated guidelines. Again, during this interim period, supporting the Office mission in the safest manner possible is my primary concern.

Currently, I am unsure of the duration of this interim period. However, as soon as a final determination is made you and your staff shall be notified. If you or your staff has any questions or concerns regarding the operating criteria/guidance outlined in this letter please contact me immediately.

Attachment

cc: PN-1000, 7431

bc: Files @ GCPO-7913, 1050-RP, 1050-EC, 1900 (all fire employees), 7000 all w/o attach.

DMurillo:ablanchard:Wednesday, May 24, 2006

J:\WP51\FIRE DEPT\FIRE INTERIM GUIDANCE 05-06.doc

¹ Fire Brigade operations shall be in accordance with applicable law, rule, regulations, and policy.



Grand Coulee Power Office – Review of Staffing and Processes

Appendix 3

Detailed Task Lists

Maintenance and Operations

Task Status & Summary Staffing Assessment – Maintenance		
Tasks (<i>Italics indicate new tasks within last 3-5 years</i>)	Primary Responsibility	Reference
Preventative Maintenance	All	FIST 6-2: 9
Corrective Maintenance	All	FIST 6-2: 5.8
Modification Work Orders	All	FIST 6-2: 19
Operations Work Orders – Trouble Reports	All	FIST 6-2: 8.2
Major CM – Ring Seal Gates	Mechanics	
Major Mod - GDACS	Elect., PSCC	
Predictive Maintenance	All	FIST 6-2: 17
Commitment Tracking Work Orders	All	FIST 6-2: 21
Miscellaneous Standing Work Orders	All	
Specifications for procurement	Planners	FIST 6-2: 10.2
Work Planning	Planners	FIST 6-2: 10, FIST 6-1: 12.D
Work Scheduling	Supv II	FIST 6-2: 11 & 12
Maintenance Reports	Superintendents	FIST 6-2:14
Apprenticeship Training - Mechanics	Supv II Mechanics	
Specialized and orientation training	All	FIST 6-1: 8
Job Hazard Analysis	All	SAF 1-1: 3, RSHS
Dam infrastructure maintenance	Mechanics	
Capital Projects Support	All	FIST 6-2: 19.2
Work Order Work Notes	All	FIST 6-2: 8.3
Job closeout including as-builts	Elect., PSCC	FIST 6-2: 19.2
Communicate to Operations Correction made during WO	All	FIST 6-2: 8.3
PO&M Annual, CFR, and PFR reviews	All	FIST 6-2: 20
Condition Assessments - HydroAMP	All	FIST 6-3
Review of design criteria and submittals for capital projects	Supv II	FAC 03-03: 5.F
HECP/SWP clearance holder for contractors	Foreman	FIST 1-1
Testing and Commissioning	All	
PSCC Ops vulnerability assessments	PSCC OPs	NERC/CIP
Data gathering for designers	All	FIST 6-2: 19.2
Crane operations and inspections	Mechanics	FIST 4-1A: 6

Task Status & Summary Staffing Assessment – Operations		
Tasks (<i>Italics indicate new tasks within last 3-5 years</i>)	Primary Responsibility	Reference
Operator rounds and routine inspections	Operator	FIST 1-11: 7.3
Perform Switching Orders	Operator	FIST 1-1
Respond to alarms and initiate corrective measures	Operator	FIST 1-11: 7.3
Manually operate generating and auxiliary equipment	Operator	FIST 1-12
Keep operational logs, checksheets, reports, and documents	Operator	FIST 1-11: 7.3 & 15, FAC 02-01: 3
Conduct shift turnover using checklist	Operator	FIST 1-11 16
Weekly test of alarms	Operator	FIST 1-11: 7.3
Annual outlet gates and valve tests and recording in CARMA	Operator	FAC 02-01: 4.A
Communications with dispatchers	Operator	FIST 1-11: 9.3
Protective relay trip action response and documentation	Operator	FIST 1-11: 7.3
WECC reports on PSS and AVR	Operator	FIST 1-11: 5.3
Periodic review of rounds sheets and daily review of logbook	Operator Supervisor	FIST 1-11: 7.2 & 15.3.7
Operational reading assignments	Operator Supervisor	FIST 1-11: 17.3.2
Equipment trouble reports	Operator	FIST 1-11: 13.3.5
Annual Black start tests	Operator	FIST 1-11: 5.3
Apprenticeship training	Operator	FIST 1-11: 10.3
Coordinate with Mechanics and Electricians	Operator	FIST 6-2:12.3.E(3)
Planning of Outages, Clearances, and Testing	Operator	FIST 6-2: 12
Operator training, certification, and reviews	Operator	FAC 02-01: 2
Annual review of SOPs by Operations	Power Ops Specialist	FIST 1-11: 6.4, FIST 6-1: 10.3
Annual review of EAP	Operations Personnel	FIST 1-11: 6.5
Operations acceptanc and review of complete WO	Operator	FIST 6-2: 8.3
Routine operations utilizing SCADA to meet load, voltage, and flow demands	Dispatcher	FIST 1-11: 1
Electrical stability operations, dropping, voltage control, PSS	Dispatcher	FIST 1-11: 5.3
Respond to problems and Abnormal Operations	Dispatcher	FIST 1-12
Scheduling of generation, pumping, transmission and distribution outages	Dispatcher	FIST 6-2: 12
Clearance holder for transmission lines terminating at GC	Dispatcher	FIST 1-1: 22
Control of upstream downstream water levels	Dispatcher	
Communications with operators	Dispatcher	FIST 1-11: 9.3
Monthly testing of communications	Dispatcher	FIST 1-11: 9.3
PO&M 120FY Annual Report	Dispatcher	FIST 1-3
PO&M Annual unit Service Report	Dispatcher	FIST 1-3
Creating and scheduling HECP Clearances, hot line orders, and work permits	Dispatcher	FIST 1-1
Ensure compliance with FERC, NERC,WECC, NWPP, MCHC	Dispatcher	FIST 1-11: 5,
Review of SOPs and emergency procedures using CARMA	Dispatcher	FIST 1-11: 6.4 & 6.5
Coordinate with regional black start restoration plans	Dispatcher	FIST 1-11 5.3.3
Preparation of reports, PO&M 59, 59A, 59B, 59C, 124, 171	Dispatcher	FIST 1-3
Receipt and processing of outage requests	Dispatcher	FIST 6-2: 12
Participate in Job Hazard Analysis Meetings	Operator	SAF 1-1: 3, RSHS
Operational checks after Maintenance	Operator	
Coordinate with external agencies, BPA, Mid-C, ect.	Dispatcher	FIST 1-11: 1
Coordinate with USBR Regional Office	Power Ops Specialist	FIST 1-2
Prepare or revise SOPs,Manuals, Memos, Operator Aids, OD Draiwngs, Abnormal Procedures	Power Ops Specialist	FIST 1-11: 6.4
Identification and Nameplating	Power Ops Specialist	FIST 1-11: 20
Maintain Power and Control Board Directories	Power Ops Specialist	FIST 1-11: 20
Operator Training and Orientation	Power Ops Specialist	FAC 02-01:2.A

Apprentice Training	Supv. Power Ops Specialist	FIST 1-11: 10.3
Scheduling of Lockout Relay Testing	Dispatcher	FIST 1-11: 7.3.3
Performance of lockout trip testing and reporting	Operator	FIST 1-11:7.3.3
Reporting of Power Incidents	Supv II Ops	FAC 04-02 (FAC-TRMR-18)
Identifying Systemic Incidences	Supv II Ops	FAC 04-02 (FAC-TRMR-18)
Preparation of PO&M 171 Incident Report	Power Ops Superintendent	FAC 04-02 (FAC-TRMR-18)
Evaluation and Root Cause Analysis of Incident	Power Ops Superintendent	FAC 04-02 (FAC-TRMR-18)
Preparation of Incident Report and Recommendations	Power Ops Superintendent	FAC 04-02 (FAC-TRMR-18)
Reviewing Power Operations Specialist Work	Power Ops Superintendent	FIST 1-2
Coordinating Documentation for SOP Updates	Power Ops Specialist	FIST 1-11: 6
Sop Shop Staff Evaluations	Power Ops Specialist	FIST 1-2
Edit and Maintain Word source and Adobe pdf files of SOP, PBD, ANN., OO.	Editorial Assistant	FIST 1-2
Editorial Support for Continued Training for Operations Personnel	Editorial Assistant	FIST 1-2
Editorial Support for Operator Apprentice Program	Editorial Assistant	
Coordination with Contractors	Supv II Ops	FIST 6-2: 13
Contractor Outage Planning and Implementation	Supv II Ops	FIST 6-2: 12
Construction Safety Clearances - Special Work Permits	Dispatcher	FIST 1-1
Acceptance of turnover O&M documents from Contractors	Supv. Power Ops Specialist	FIST 6-2: 19.2
Integration of new SOPs for new systems	Supv. Power Ops Specialist	FAC 02-01: 1, FIST 6-2: 19.2
Input and review of new systems during development	Supv II Ops	FAC 03-03: 5.F
Testing and Commissioning of new systems or equipment	Operator	



Grand Coulee Power Office – Review of Staffing and Processes

Appendix 4

Grand Coulee Project Management Process, 26-Nov-2010

Grand Coulee Project Management Process

General

Project Management at Grand Coulee shall be based upon ANSI /PMI 99-001-2008, 4th edition, "A Guide to the Project Management Body of Knowledge" (hereafter referred to as the "PM standard").

The Grand Coulee Project Management organization is a balanced matrix. The Project Management organization shall be responsible for long and short term planning as well as overall execution of Grand Coulee projects. Planning shall be accomplished on a fiscal year basis through coordination of project priorities, budget, and execution capacity. Overall project execution shall be monitored through standardized tracking and frequent reporting of individual project status. The organization shall focus upon overall project success, with emphasis upon delivering quality projects that are on-time and within budget.

A Project shall be defined as a temporary endeavor undertaken to create a unique product, service, or result. Projects shall be identified through the Fiscal Year Work Planning Process, defined later.

The standard life cycle for a Grand Coulee project shall include five phases. Project budgets and schedules shall be organized by these phases. In sequential order, these phases are:

- (1) Planning
- (2) Design
- (3) Procurement
- (4) Construction/Installation
- (5) Closeout

Project Management shall be defined as the application of knowledge, skills, tools and techniques to project activities to meet the project requirements throughout the five project phases.

Project Managers shall be responsible for the successful execution of their assigned projects. This applies to the entire project lifecycle and includes:

- (1) Developing a project plan that addresses scope, quality, schedule, resource needs (funds, personnel, etc), project risks, change management, and communications. Additional features may be required depending upon the complexity of the project. The project plan will identify the extent to which the PM will be involved with service providers
- (2) Closely coordinate project activities, tracking schedule and budget, developing proposed corrective actions, reporting project status.
- (3) Proactive communication and coordination with stakeholders.
- (4) Developing service agreements with PNRO and the TSC.

Project Management Oversight and Review

Oversight of Project Management at Grand Coulee shall be provided by the Project Management Oversight Team (PMOT). The oversight team shall consist of the Power Manager and Deputy Power Managers. They shall identify the projects to be executed, establish project priorities, resolve problems that could not be resolved at lower levels, and establish the overarching Project Management policies and processes.

Grand Coulee projects shall be monitored as needed by the respective Project Manager, and reviewed through monthly Project review Board (PRB) meetings. At the PRB meetings, the general status of each recognized Grand Coulee project shall be presented, and detailed presentations shall be made by the PM's for their project(s) when requested by the PMOT. Conducting PRB's has numerous benefits, including:

1. Requires gathering and presentation of data that provides visibility of project data that may reveal potential execution problems.
2. Provides opportunity for early resolution of project issues.
3. Prevents misinformation – participants see the same information and hear the same discussions.
4. Provides a forum for open communication and discussion of project issues.
5. Allows for more informed decisions that will be understood and supported by those in attendance, such as adjustments in priorities or additional work.
6. Provides opportunity for learning, teamwork, and synergy.

At the PRB, general status shall consist of budget and schedule charts, with simple notes regarding project status, issues, and proposed actions for recovery (if needed). See Figure 1. The PRB shall occur prior to the "Work Coordination Call".

The PMOT shall determine which projects shall be briefed in detail at the PRB meetings, giving consideration to project importance, history, risks, input from project stakeholders, etc. Project Managers shall be informed in advance of the PRB if a detailed briefing is needed for their project(s).

The Project Review Board shall consist of the following:

- Power Manager (Chair)
- Deputy for Project Management, Planning and Engineering (Facilitator)
- Deputy for Operations and Maintenance
- ERG Chief
- Industrial Area Superintendent
- Operations Superintendent
- Left/PGP Superintendent
- Right/TPP Superintendent
- Mechanical & Civil Engineering Section Chief

- Electrical Engineering Section Chief
- Administrative Officer
- Budget Officer
- GCPO Procurement
- RTS Power Coordinator
- PNRO leaders (as available and needed)
- BPA Advocate

Fiscal Year Work Planning Process

The Fiscal year Work Planning Process is used to align fiscal year budgets with priority work and our ability to execute the work. The general process for Fiscal Year Work Planning is outlined in the “Grand Coulee Long and Short Term Planning Model” attachment.

Development of the fiscal year work plan starts with the long-range planning. Grand Coulee utilizes a long range plan to show rough costs and schedules for proposed capital and O&M non-routine projects. The plan covers 10 years and identifies the fiscal year funding needs, work areas, type of project (capital or expense) and proponent. Early each calendar year the Deputy for Project Management, Planning and Engineering will solicit input and update the long range plan. With the long range plan updated, the focus will shift to the upcoming fiscal year, and input will be sought regarding the human resources required to implement the projects identified for the year, as well as the priority and risks associated with the projects.

Based upon the priority, budget and capacity information, and giving considering to non-technical parameters such as public perception and agency goals, The PMOT will determine which projects to execute and budget for in the upcoming fiscal year. Projects are subsequently assigned to Project Managers. The result is a common framework for the upcoming year, from which additional coordination with the PNRO, BPA, and the TSC will be made. This will be a dynamic process that considers other budget and planning requirements such as those for RAX, Irrigation, and Large Capital projects.

Individual Project Management Roles and Responsibilities

Power Manager. The key decision maker holding authority and overall responsibility for the Grand Coulee Project and Project Management. Chairman of the PRB and PMOT.

Deputy for Project Management, Planning and Engineering. The PM Deputy shall be responsible to implement Project Management through the PM organization, and shall supervise those within it. Facilitator for the PRB. PMOT member. Leads efforts to develop long and short term plans. Leads efforts to coordinate plans, priorities, budgets and capabilities as needed to develop Grand Coulee fiscal year work plans.

Deputy for Operations and Maintenance. PMOT member, PRB Member. Provides critical input regarding project priorities. Advises Project Managers as the technical expert for operations and maintenance.

Grand Coulee Superintendants. Customer and key stakeholder for projects that affect their facilities. PRB member. Promotes facility participation in scope development and review of projects. Works with PMs and PMOT to develop work needs, priorities, schedules and budgets. Responsible for creating work orders for proposed projects.

ERG Section Chiefs. Provide technical resources needed to execute projects. Perform supervision and technical review to achieve schedule, budget and quality expectations for projects. Technical expert. PRB Member. Provide critical input for developing long range and fiscal year plans.

Senior Project Managers. Provide Project Management and general engineering services for large, complicated projects and other projects as assigned. Assigned projects are typically multi-year, and programmatic in nature because they involve numerous inter-related contracts and sub-projects. Assigned projects typically require a broad level of coordination with the PNRO, BPA, Irrigators, TSC, AE's, Contractors, and other stakeholders. The Senior PM's will have cradle to grave involvement with the projects, performing regular coordination, tracking and status reporting and may serve as mentor to Journeyman level PM's and Activity Managers. Jobs assigned may require a higher level of reporting that includes EVM. Senior PM's are key PRB contributors.

Journeyman Project Managers. Provide Project Management and general engineering services for numerous, simultaneously active Grand Coulee projects as assigned. Journeyman PM's are typically assigned projects smaller in scope and magnitude than those for Senior PM's. The Journeyman level PM's will have cradle to grave involvement with their projects, performing regular coordination, tracking and status reporting. The Journeyman PM's are key PRB contributors.

Grand Coulee Activity Managers. Based upon technical guidance and oversight from Project Managers and Engineering Resource Group (ERG) leaders, provides general coordination and broad support for the execution of assigned activities or projects. Primary duties include preparation and upkeep of work plans and schedules, and tracking and reporting status (NOTE: Activity Managers in the region may have duties beyond this description).

Project Engineer. As a technical expert, provides a broad range of engineering services for assigned projects. Performs trouble-shooting, technical coordination, testing and data acquisition, technical evaluation and engineering analysis needed to resolve or scope technical problems. Leads efforts to prepare and review procurement packages, including drawings and technical specifications. Serves as a Contracting Officer's Representative (COR) and on technical teams such as Value Engineering (VE) and Technical Proposal Evaluation Committees (TPEC).

Project Technicians. Provides a broad range of technical assistance to Project Managers, Activity Managers and Project Engineers for assigned projects. Performs technical coordination, testing and data acquisition, and technical evaluation for assigned tasks. Prepares procurement packages, including

drawings and technical specifications. Serves as a Contracting Officer's Representative (COR) and on technical teams such as Value Engineering (VE) and Technical Proposal Evaluation Committees (TPEC). Provides on-site support for PNRO, TSC, AE and Contractor personnel on assigned GCPO projects.

Budget Analyst. With a high level of knowledge of BOR budget processes, systems and methods, evaluates and determines program and project budget needs in coordination with Program and Project Managers. Develops and provides means for tracking and reporting budget execution, trends, and forecasts as needed for the various projects. Identifies and resolves budget abnormalities.

Budget Technician. Gathers, prepares and provides budget related information in support of the Project Managers and Budget Analyst. Maintains and organizes data to show budget execution, history, needs, trends, and to document changes.

Cost Estimator. Develops cost estimates for engineering services, purchases, installation, and construction work related to Capital, Non-Routine, and large routine projects, as needed to support Grand Coulee staff with evaluating alternatives, preparing budgets, and completing procurement efforts. Develops and maintains a local cost database to assist with future cost estimating efforts. Coordinates with Scheduler, Budget Analysts, and Project Managers to align estimates with work breakdown structures and budgets as needed for tracking and reporting purposes.

Scheduler. In coordination with Project Managers, develops work break down structures and prepares and maintains project schedules for assigned projects. Coordinates with Cost Estimator, Budget Analysts, and Project Managers to align work breakdown structures with budget and estimates as needed for tracking and reporting purposes.

General Project Team Members. Provides the mutually agreed upon services for the respective project, within scope, on-time and within budget. Responsible to promptly communicate with the Project Manager should they see changes to scope, quality, schedule or cost occur or become likely.

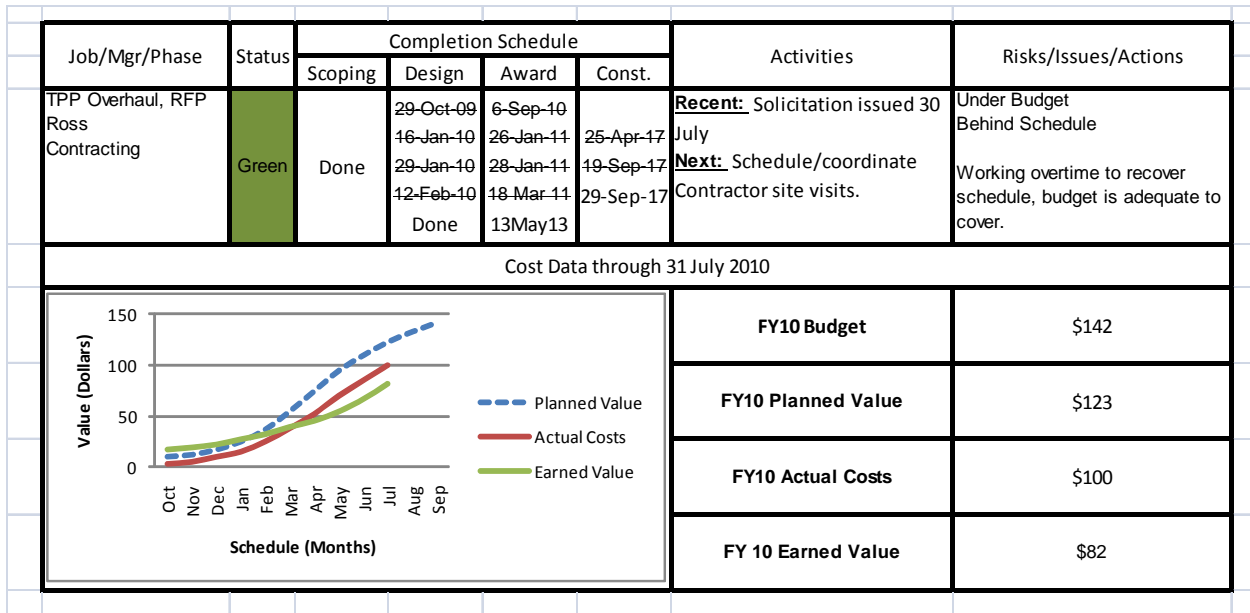


Figure 1: Example of a PRB Slide



Grand Coulee Power Office – Review of Staffing and Processes

Appendix 5

Summary of Data Analysis Methodology

Summary of Data Analysis Methodology

As part of the review of staffing and processes at the GCPO, MWH engaged in detailed data analysis to estimate the staffing levels required, under current organization structure and business processes, to meet the needs of the GCPO in the coming 10 to 20 years. The analysis included an estimate of the volume of work associated with overtime, new tasks added in the past 3-5 years, incomplete best practices, work order backlog, and capital support. MWH translated the identified volume of incremental work into staffing adjustments across the various GCPO functional groups to arrive at recommended staffing levels per group under the current organizational structure and business processes. All data analysis was performed in Microsoft Excel 2007.

Figure 1 outlines the analysis MWH performed. Yellow boxes represent data analysis steps; each yellow box is associated with a data analysis workbook (Excel file). Blue boxes represent data sources that serve as inputs to the analysis. The arrows indicate the application of those data sources toward various analysis workbooks, and which workbooks serve as inputs to others. All data collection and analysis activities feed into the Future Year Hours Forecast, which projects full-time equivalents (FTEs) from FY2013 to FY2033.

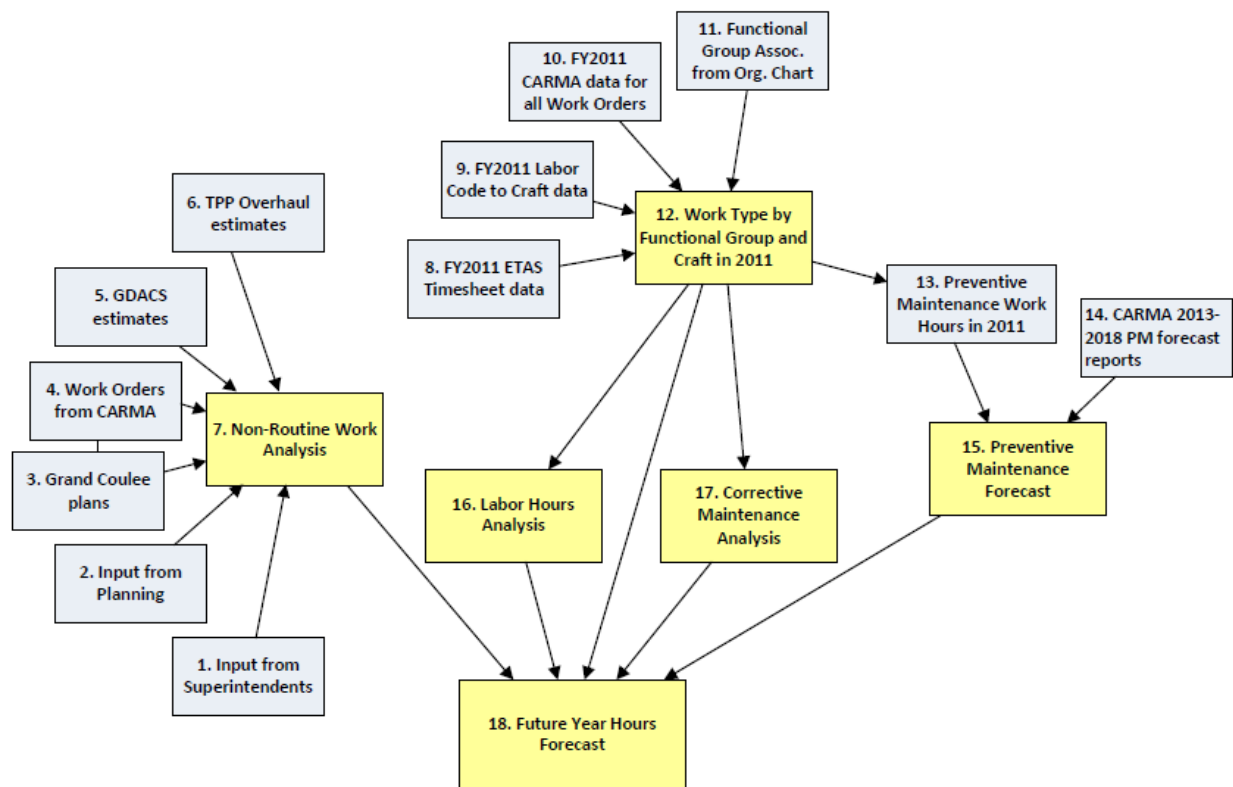


Figure 1 - Data sources with corresponding workbooks in yellow

The spreadsheets used, assumptions made, and analyses conducted are explained in the sections below. The sections are organized to correspond to the labels in Figure 1. Data collection steps are described before associated data analysis steps. Similarly, data analysis steps that serve as an input to subsequent data analysis are discussed first. Data analysis steps are underlined and the name of the associated workbook is in italics.

1. Input from Superintendents

MWH conducted meetings with the superintendents from the three maintenance areas and the operations group to assess the workload for non-routine work in future years. Based on the superintendents' input, MWH entered labor estimates for each employee title/role/position into the *Non-Routine Analysis* workbook. Rather than developing workload estimates for each year, MWH estimated only labor hours for the peak year for each future project. The *Non-Routine Work Analysis* workbook distributes these hours to other years as discussed in Section 7 below.

2. Input from Planning

GCPO Planners generated estimates of resource requirements to support the non-routine work in future years. Estimates were provided for peak resource requirements for each future project, for each engineering discipline, and for project management support. MWH and GCPO Planners reviewed the schedule for each project and used it to distribute the workload across the lifecycle of each project. The distributed resource requirements and workload estimates were entered into the *Non-Routine Work Analysis* workbook as discussed in Section 7 below.

3. Grand Coulee Plans

The current GCPO 10-year plan, 20-year plan, and "Hopper List" were provided to MWH and set the schedules for work resource requirements in the *Non-Routine Work Analysis* workbook as discussed in Section 7 below.

4. Work Orders from CARMA

Using work order data extractions from CARMA, MWH sorted the Modification (MOD) work orders and entered those into the *Non-Routine Work Analysis* workbook. Projects were grouped under the major projects in the 20-year plan or grouped according to the type of work.

5. GDACS estimates

The latest schedules and work resource estimates were provided by the GDACS Project Management team and were input into the *Non-Routine Work Analysis* workbook.

6. TPP Overhaul Estimates

The latest schedules and work resource estimates were provided by the Third Powerplant Overhaul Project Manager and were input into the *Non-Routine Work Analysis* workbook.

7. Non-Routine Work Analysis (*Non-Routine.xlsx*)

This analysis workbook estimates the number of FTEs required for "non-routine" tasks, including MOD work for the three Maintenance areas, procurement hours for Administration, Cultural Resources (Archaeology), Engineering, and Project Management.

GCPO supervisors and MWH compiled all planned non-routine work orders into the database as described in Section 4 above. The schedules and resource requirements were input as described in Sections 2, 3, 5, and 6 above. The analysis includes planned funding for each task for each year from FY2012 through FY2033. GCPO supervisors provided estimates of the number of hours each task would require in its maximum (peak) year for each craft as described in Section 1 above.

The analysis then estimates the number of hours required for each task every year from FY2012 to FY2033 based on the ratio of each year's budget to the peak year's budget. The time value of money is not taken into consideration (i.e. all funding estimates are in year 2011 dollars).

For example, if a task is estimated to take 1000 Mechanic hours in peak year 2020, the budget for 2020 is \$1,000,000, and the budget for year 2015 is \$500,000, then the number of Mechanic hours required for year 2015 is calculated as:

$$\text{Max year hours} \times (\text{Target Year Budget} / \text{Max Year Budget})$$
$$1000 \text{ hours} \times (\$500,000 / \$1,000,000) = 500 \text{ hours}$$

For tasks where the budget did not reflect the work resource requirement, a percent distribution was assigned to future years to scale the maximum year work resource requirement.

The *Non-Routine Work Analysis* spreadsheet compiles the total estimated hours each year for each craft. Craft estimated hours are also subtotaled for each functional group or Maintenance area during the entire project timeframe. Craft hours are divided by an estimated average of 1,750 hours per employee per year to determine the number of FTEs required for non-routine work in each craft and each functional group throughout the study period.

The functional groups and areas included in the *Non-Routine Work Analysis* are listed below; crafts with non-routine work associated with each group are in parenthesis.

- Operations (Operators/Dispatchers, PSCC)
- Project Management (Project Managers)
- Engineering (Electrical Engineers, Mechanical Engineers, Civil Engineers, Environmental Specialists)
- Maintenance
 - IA/Switchyards Area (Electricians, Mechanics, PSCC)
 - TPP/RPH Area (Electricians, Mechanics, PSCC)
 - LPH/PGP Area (Electricians, Mechanics, PSCC)
- Cultural Resources (Archaeologist)
- Administration (Procurement)

Note that MOD hours for the LPH/PGP Maintenance area include GDACS work.

8. FY2011 ETAS Timesheet data

The ETAS data sets for work order time charges for each labor code were obtained from the Technical Services Center (TSC).

9. FY2011 Labor Code to Craft data

The database to relate the craft code for each labor code was obtained from the TSC and input into the *Work Type by Functional Group and Craft in 2011* analysis described in Section 12.

10. FY2011 CARMA data for all Work Orders

Data for each work order against which time was charged in FY2011 was downloaded from CARMA and input into the *Work Type by Functional Group and Craft in 2011* analysis and matched with all labor codes that charged to each work order.

11. Functional Group Associations from Org Chart

The GCPO functional group against which each labor code is associated was obtained from the July 2011 GCPO organization chart and entered into the *Work Type by Functional Group and Craft in 2011* analysis described in Section 12.

12. Work Type by Functional Group and Craft in 2011 (FY2011.xlsx)

This analysis workbook displays the ratio of hours worked in 2011 by work order type. This data is used to develop pie charts for the following groups, depicting the breakdown of FY2011 hours charged across the CARMA work order types:

- The entire GCPO facility;
- Each functional group;
- The three Maintenance areas (LPH, RPH, and IA); and
- The PSCC, Mechanic, and Electrician crafts.

The pie charts are divided by the following work order types: administration (ADMIN), corrective maintenance (CM), engineering (ENG), modifications (MOD), operations (OP), predictive maintenance (PDM), and preventive maintenance (PM).

GCPO provided MWH with ETAS time reporting data which was matched to CARMA work orders using the inputs described in Section 8, 9, and 10 above. MWH filtered work hours by craft, work order type, functional group, and Maintenance area to prepare the pie charts. Functional group associations were obtained as described in Section 11 above. MWH used an estimated 1,750 hours per FTE to estimate the number of employees in each functional group, area, and craft, then compared these estimates to the July 2011 organization chart as verification. In general, the CARMA work hours and org chart data were in accordance; however, for some functional groups, notably Administration, MWH reclassified some craft classifications to match the org chart.

Personnel Security and temporary reclamation employees were not included in the analysis. Some craft-specific pie charts include foremen but do not include apprentices.

13. Preventive Maintenance Work Hours in 2011

This input extracts the actual hours of PM work performed from ETAS data for each craft in each crew in the LPH/PGP, RPH/TPP, and IA Maintenance areas as well as for the Operations functional group. Only jobs that were started and finished in FY2011 were included to ensure that the full lifecycle of projects was considered, rather than portions of projects.

14. CARMA 2013-2018 PM Forecast Reports

The PM Forecast Report tool in CARMA was run to obtain the PM workload for each of the six years from FY2013-2018. The six year span was selected to match the standard rotation of PM work; PM hours are expected to follow the same pattern for FY2019-2024 and subsequent six-year cycles.

15. Preventive Maintenance Forecast (PM Forecast.xlsx)

This analysis compiles projected PM work hours for a six-year PM cycle for input into the *Future Year Hours Forecast* analysis. Additionally, it compiles a ratio of actual-to-estimated PM hours for jobs started and finished in FY2011. Actual FY2011 PM hours tended to be lower than estimated hours, indicating that PM work order hours may be overestimated. The *Future Year Hours Forecast* analysis described in Section 0 below uses the actual-to-estimated ratios and input from area supervisors to adjust projections for future PM hours.

The *Preventive Maintenance Forecast* analysis runs CARMA forecast reports to estimate the PM work orders and hours for FY2013-2018 as described in Section 14 above. The analysis aggregates estimated hours for each crew in each area or functional group. The provided CARMA forecast data estimates future PM work by crew but does not break estimates down by craft. Therefore, the analysis assumes that future work will follow the same ratios by crew as in FY2011.

The *Preventive Maintenance Forecast* analysis then compiles FY2011 actual PM hours as described in Section 13 above. Concurrently, it compiles estimated FY2011 work hours for the same work orders by crew for the three maintenance areas, for the operations functional group, and for the firefighters and project management groups. The workbook divides the actual hours by estimated hours by crew in each area or functional group to form an actual/estimated ratio. For example, the actual/estimated ratio for electricians in LPH/PGP is 46%, meaning electricians in that area only worked 46% as many hours on PM jobs as was estimated in work orders in FY2011.

Because the actual/estimated ratios are below 100%, future PM hour estimates in CARMA may be overestimated. Adjustments for this are accounted for in the Future Year Hours Forecast analysis described in Section 0 below.

16. Labor Hours Analysis (*Labor Histograms.xlsx*)

This analysis displays how many hours employees in each functional group and Maintenance area worked in FY2011 to confirm that 1,750 hours is a reasonable estimate of work time for a full-time equivalent (FTE).

GCPO provided MWH with ETAS timesheet data for all employee types in FY2011. This analysis selects employee types from each functional group and area and compiles the number of hours worked in FY2011. It tallies the number of employees by type who worked in each 50-hour increment (e.g. 1,700-1,749 hours, 1,750-1,799 hours, etc.) and plots histograms of employee working hours for each functional group or area as well as for all of GCPO. The height of each bar indicates how many employees billed a number of hours within range of that bar; for example, 65 employees billed between 1,700-1,749 hours in FY2011.

The histograms show that 1,750 hours is a good estimate for the number of hours worked by a full-time employee, serving as a validation for the hours-to-FTEs conversions incorporated into much of this analysis.

17. Corrective Maintenance Analysis (*CM.xlsx*)

GCPO maintenance supervisors informed MWH that hours are charged to CM for a variety of different work and that practices for charging to CM differ by Maintenance area. MWH created this analysis to determine what type of work was actually performed by employees charging to CM and to display the work charged as CM hours as a percentage of all work performed in the area.

MWH categorized the work order descriptions for all work billed to CM for each Maintenance area and classified the actual work performed according to the work description. Work billed as CM was reclassified as either:

- Snow removal classified as CM
- RSG classified as CM
- Gates classified as CM
- Drains classified as CM
- Infrastructure classified as CM
- Safety classified as CM
- Administration classified as CM
- MOD classified as CM
- True CM (as defined by FIST for maintenance that restores an asset to a preserved operating condition)

This analysis then compiles stacked bar charts of all work billed to CM for each Maintenance area. The CM spreadsheet divides work billed to each CM type by the total number of hours billed to the area to normalize the results for comparison purposes across the areas.

18. Future Year Hours Forecast (*Forecast.xlsx*)

This analysis, the culmination of the inputs and analysis described above, projects expected hours and FTEs for each functional group, the three maintenance areas, and the electrician, mechanic, and PSCC crafts from FY2013 through FY2033. The forecast data for each functional group, area, or craft is based on the results of the other data analysis conducted in Task 2 of this staffing study.

This workbook generates charts of FTEs for each year from FY2013 through FY2033. The analysis was conducted during FY2012; therefore the forecasts begin in FY2013. Table 1 below shows the functional groups, maintenance areas, and maintenance crafts where FTEs are projected for all work types, those where FTEs are projected by craft, and those where only a total count of FTEs is projected. Projections of FTEs by work type or craft were created for all functional groups, maintenance areas, and maintenance crafts where enough data was available. When this data was not available, only the total number of FTEs was projected.

Future Hours and FTEs Forecast Charts Produced			
	Forecasting Chart Produced		
	Work Order Type	Craft	Total Only
Total for GCPO	X		
Functional Group			
Administration			X
Budget			X
Cultural Resources	X		
Engineering	X		
Fire & Physical Security			X
Hungry Horse			
Maintenance	X	X	
NERC/WECC Compliance			X
Operations	X		
Project Management			X
Public Affairs			X
Safety			X
Maintenance Area			
LPH/PGP	X	X	
RPH/TPP	X	X	
IA	X	X	
Maintenance Craft			
PSCC	X		
Mechanics	X		
Electricians	X		

Table 1 – Future hours and FTEs forecast charts produced by functional group, craft, and area

CM work type hours for the maintenance areas are taken from the *Corrective Maintenance Analysis* which reflects CM work in FY2011. Based on conversations with GCPO maintenance supervisors, MWH estimated that CM work would remain constant from FY2011-2016, decrease by 5% each year beginning in FY2017 until FY2026, and level off at 50% of the FY2011 value from FY2026 onward for all maintenance areas. Maintenance hours in all other functional groups were assumed constant. The

reduction of CM hours in the future is estimated to be a result of increased PM and replacement of aging equipment during facility rehabilitation.

Engineering work order hours for FY2011 are taken from the *Work Type by Functional Group and Craft in 2011* analysis which reflects 2011 CARMA data. Engineering work order type hours for the crafts for future years are included in MOD hours in the maintenance areas for future years.

MOD work order type hours are taken from the *Non Routine Work Analysis*.

OP and PDM work type hours for FY2011 are taken from the *Work Type by Functional Group and Craft in 2011* analysis and are assumed constant throughout the study period.

PM hours are based on the results of the *Preventive Maintenance Forecast* analysis. GCPO maintenance area supervisors informed MWH that planned PM hours have historically been higher than actual PM hours for FY2011. As discussed in Section 15, MWH determined the ratio of actual-to-estimated PM hours from FY2011 data. MWH then discussed these results with Maintenance area supervisors to revise projections for future PM work. Historic and supervisor-revised actual-to-estimated PM ratios are shown in Table 2 below. MWH multiplied projected PM hours by these revised actual-to-estimated PM hours ratios to determine future year PM hours. PM hour estimates repeat on a six-year cycle to reflect the six-year maintenance cycle.

Maintenance Area Actual/Estimated PM Hours Ratios		
Area	FY2011 Actual/Estimated Ratio	Area Supervisor Revised Ratio
LPH/PGP	49%	80%
RPH/TPP	71%	90%
IA	72%	100%

Table 2 - Maintenance FY2011 Area Actual/Estimated PM Hours Ratio and Supervisors' Revised Ratios

ADMIN hours for FY2011 are based on actual hours charged to ADMIN work orders from the *Work Type by Functional Group and Craft in 2011* analysis. For the Maintenance functional group, the future year ADMIN hours are scaled proportionately from FY2011 based on the percent change for hours for all other work types.

As shown in Table 1, available data only allowed calculating hours by work type for the Cultural Resources, Engineering, Maintenance, and Operation functional groups. MWH totaled the hours per year for these groups and computed a ratio of work hours to FY2011. For most remaining groups, MWH multiplied FY2011 hours by the respective yearly ratio to estimate total group hours for the year. The Administration group is an exception – MWH estimated procurement hours from the *Non-Routine Work Analysis* and estimated all other administration hours as a proportion of FY2011 hours, then summed them together.



Grand Coulee Power Office – Review of Staffing and Processes

Appendix 6

Notes from Benchmarking Conversations

Grand Coulee Power Office – Review of Staffing and Processes

MEETING MINUTES / NOTES

Meeting Title:	Benchmarking Conversation – BC Hydro & Grand Coulee Power Office		
Date:	November 16, 2011	Location:	Vancouver / Grand Coulee
Start Time:	8:30am PT	Duration:	3 hours
Facilitator(s):	Matt Crane		

Meeting Participants	
GCPO	
Name	Title / Role
Mark Jenson	Power Manager
Eric Corbin	Deputy Power Manager
Scott Ross	Deputy Power Manager
BC Hydro	
Name	Title / Role
Chris O’Riley	Executive Vice President, Generation
Roy Grout	Vice President and Chief Engineer
Mark Poweska	Director of Generation Operations
MWH	
Name	Title / Role
Ed Carter	Senior Vice President
Matt Crane	Senior Consultant and Project Manager
Sam Nott	Senior Electrical Engineer and Technical Lead

Meeting Minutes / Notes

BC Hydro Overview

- Vertically integrated including generation, transmission, and distribution
- 31 hydro plants generate 11,000 MW, 3 thermal (1,000 MW), and some small diesels; 7 plants produce 80% of the output
- There are different asset strategies for the 7 large plants; “strategic” plants; and available energy plants
- Capital improvement program is driven by dam safety and aging infrastructure; many are transmission projects
- Capital projects are requiring funding through rate case increases
- Primary goal is delivering power to customers but there are increasing environmental and safety constraints
- Original life estimates for the larger units has not been as good as expected

Engineering

- 80% of their time/staff is for capital projects
- View their engineering as a service to the project delivery organization, and as a service to the maintenance organization

Grand Coulee Power Office – Review of Staffing and Processes

MEETING MINUTES / NOTES

- Engineers are expected to be billable to the Project Delivery or Maintenance organizations
- Capital design group (centralized in Vancouver) + Maintenance support group (centralized in Vancouver) + 12 engineers in the field (distributed across sites)
- The plant engineers in the field are generalists, handle routine O&M support matters; if more expertise is required it is done by central engineering
- There are also Capital Engineers assigned to the plants that are the interface to the central engineering group. They also handle the smaller (<\$500K) capital jobs at the plants. These were added so plant engineers don't get pulled away from maintenance duties.
- In the 1980s there was a downsizing of over 1000 employees.
- Over the past few years, corresponding to the ramp up in capital work, they have gone from 160 to 300 engineers (includes engineering support functions, like drafting, procurement, etc.)
- BC Hydro outsources more than 50% of its engineering; helps avoid the ramp up and ramp down of own staff
 - Need to consider the tradeoff of doing things in-house versus going to market
 - Started to go to market with large packages to reduce procurement costs and increase flexibility of outsourced support

Project Management

- Responsible and accountable for execution of projects from start to finish
- Believe in getting PMs involved as early as possible
- Mark Poweska, as head of O&M, referred to himself as the “customer” of the Project Manager (PM and supporting team are providing a service to the O&M staff who will own and operate the project once implemented)
- It was emphasized the need for good communications between the PM, CM, Contractor, and Plant

Operations & Dispatch

- Centralized for the entire provincial system
- Operated as an integrated system
- Have water license constraints to follow, but otherwise govern the system-wide flows and power generation
- All plants, except for GMS, are remotely operated from dispatch
 - Controls upgrade underway now for GMS
 - Do have some limited operators at Mica (12 hours/day) and Revelstoke (24 hours), only to follow up on alarms and do not start/stop the units.

Maintenance

- Each plant has a plant manager, operations manager, and a maintenance manager; in the past they only had a plant manager
- For example, their 3000 MW plant has 69 staff on site
- Planning manager and scheduler for each region who takes a region-wide look at maintenance planning; conducted annually, monthly, and weekly
- BC Hydro is looking to better integrate maintenance resource planning and capital planning across the region and the entire system

Grand Coulee Power Office – Review of Staffing and Processes

MEETING MINUTES / NOTES

- Staffed up trades to support increase in capital work, recognizing that they were struggling with switching/closing out equipment to support the capital efforts
- Also needed staff to support commissioning as they rely on the maintenance guys to do the testing and commissioning; suggest planning upfront for that commissioning component and recognizing that testing and commissioning is the key point of knowledge transfer from the capital delivery team to the long-term O&M staff
- BC is implementing a “Back to Basics” program of O&M management
- BC has a traveling centralized maintenance support pool, most are temp workers.

Other

- At each plant are staff responsible for safety, environmental, public affairs, etc., but they do not report to the Plant Manager; they report to the central office
- With respect to safety, they focus on ensuring that contractors understand the elevated safety expectations of BC Hydro; communicate such prior to bidding so that contractors can plan early and account for such in their bid and approach
- HR can get a position posted internally in 2-3 days; a little longer for external job postings
- Time from posting to getting new employee on board varies widely based on position sought and market conditions
- BC Hydro pays a 15% bonus to employees working at their most remote site
- Engineers are paid overtime and this is an incentive to go to remote sites; some are charging large amounts

History of Project Management at BC Hydro

- Saw ramp up of capital projects about 5 years ago; prior to that their structure was O&M focused
- Knew they were not doing great at project management, particularly around schedule control
- Wanted to bring in more staff, more PMs
- InfoPM system wasn't working very well
- MWH showed them some program management systems, BC Hydro decided it was time to (1) update their technology, and (2) update their PM skills and processes
- Tremendous change management component; implementing a PM culture affects everyone in the organization, not just PMs; requires a fundamental change to the way work is accomplished, with a focus on planning the work well upfront
- On the IT side, they selected SAP, primarily because SAP was already in process of being implemented in the Finance Group for financial tracking
- For scheduling and resource management, they elected Primavera P6
- Currently working to integrate the two systems; down the road, they want to integrate with their maintenance management system to have finance + scheduling + resourcing + work planning all integrated
- Lots of process behind that; documented the practices and procedures that they must follow
- “If they can't do PM well on the back of an envelope, then the system doesn't matter” (Roy)
- Spent \$25M on these PM systems and processes to support their \$2B capital program
- A portfolio and PM Group was set up to implement the PPM program, but it will be disbanded when implementation is complete

Grand Coulee Power Office – Review of Staffing and Processes

MEETING MINUTES / NOTES

- The existing maintenance management system is Passport, but will be converted to SAP in the next 5 years
- A PPM Practices Guide was developed and BC offered PM training and focused on hiring people that believe or have practiced PM
- Project management approach is tied to the financial approval points; the fundamental backbone of their approach is the project life cycle and governance structure
- Interjected an accountability structure
 - All focus is on the Project Manager
 - Conduct a monthly Project Accountability Meeting
 - To support the change management component, it is critical to get the most senior person possible, outside of the plant itself, to chair these meetings as often as is practical
 - Recommendation from BCH to GC: Need to get your projects in front of the Regional Director a couple times a year; she should really care, considering the millions of dollars per year going into capital projects at GC

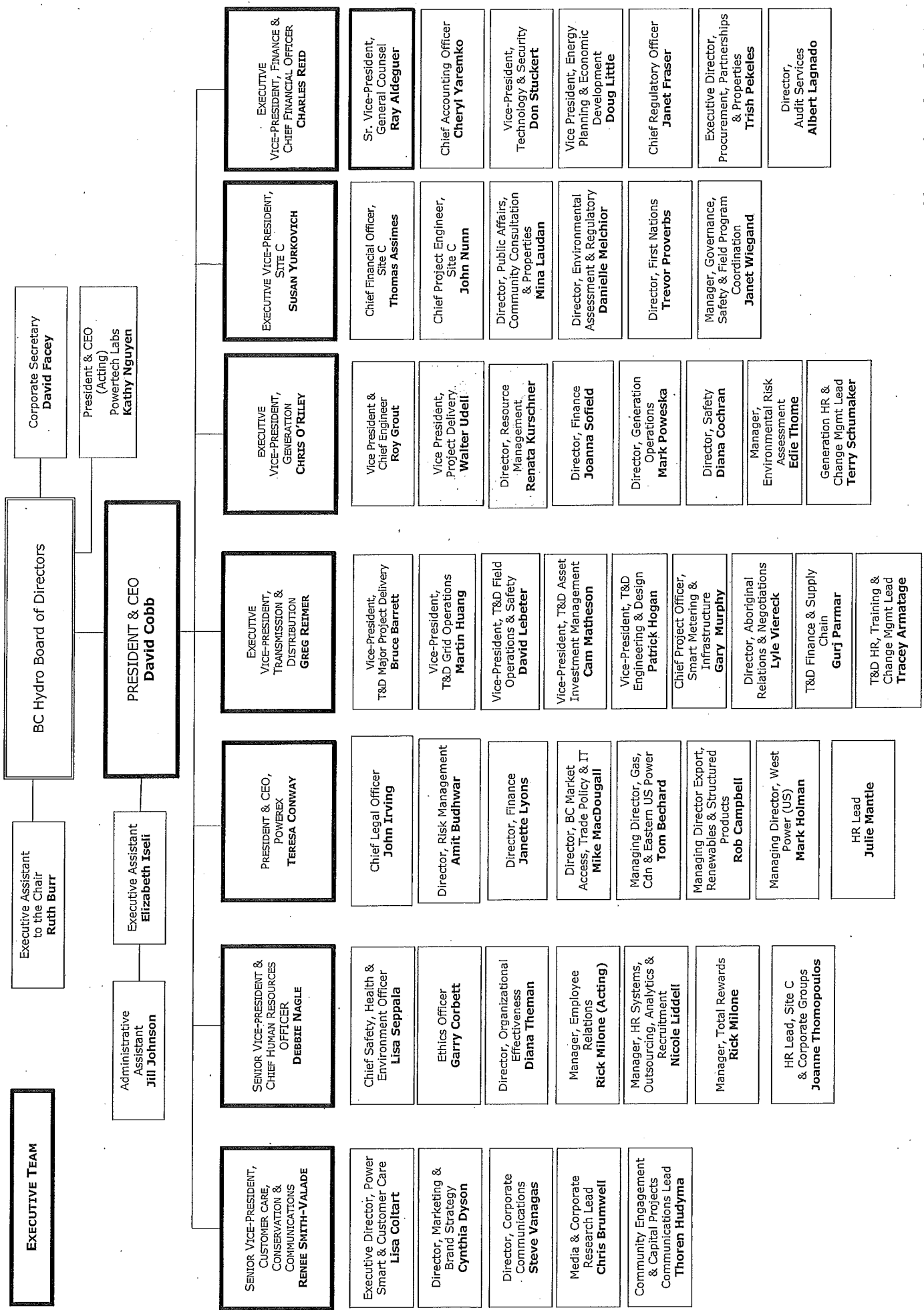
Work Package Management

- Each project is divided into its end-feature components to form the next level down in the work breakdown structure
- A work package manager is assigned to be responsible for delivering that package in support of the project manager
- Treat the work packages like mini-projects with a plan, scope, schedule, and budget
- Part of imposing the project management approach on everyone, not just the project managers
- Day to day, the work package managers report to the PMs, not functional managers; the functional managers are responsible for quality control and resourcing (matrixed structure)

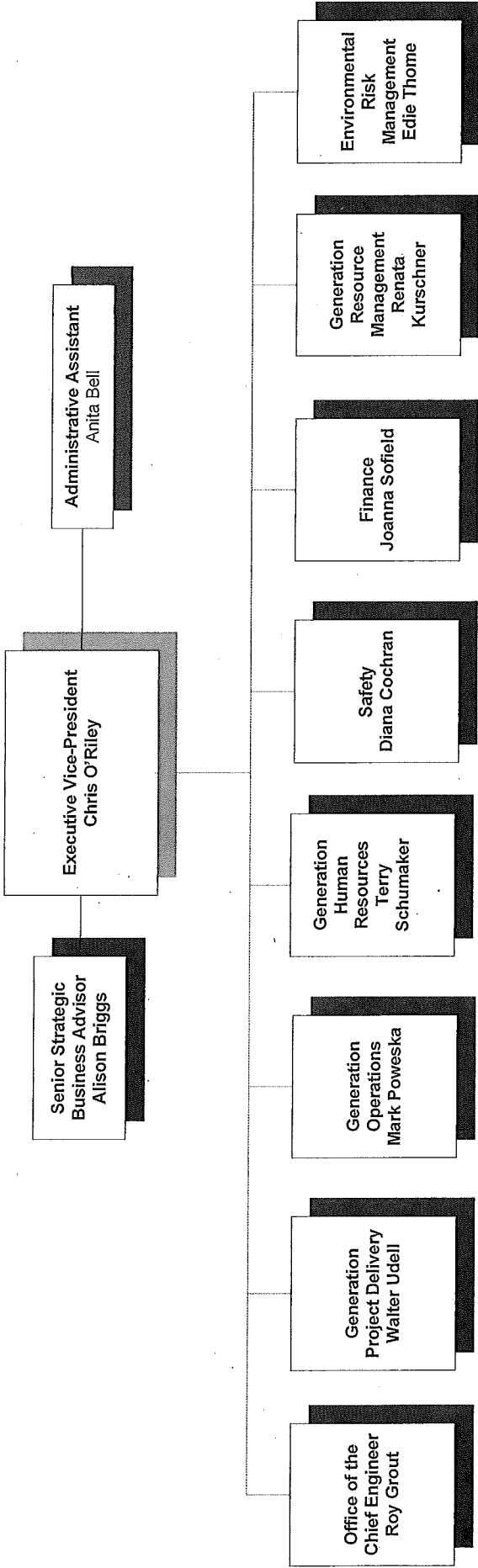
Retiring Workforce, Knowledge Transfer

- Overstaffed some areas to prepare for retirements, putting extra people on certain activities
- Have implemented targeted training program to address certain areas where they are currently or about to be lacking in expertise
 - Old approach was just OTJ training
 - Have developed training programs for each management-level roles, such as plant managers, to address the retirements of senior staff
- BC has a large apprentice pool.
- Big benefit to involving people that really know your plants in your capital projects; may be an opportunity for senior staff to review projects, specifications, etc.
- The primary time for knowledge transfer for new equipment is during commissioning; it is important that the plant crafts are part of the commissioning team.

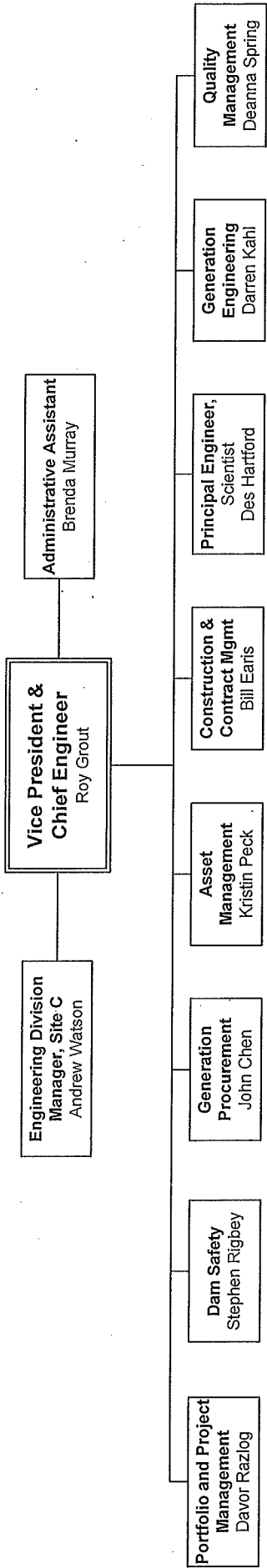
EXECUTIVE TEAM



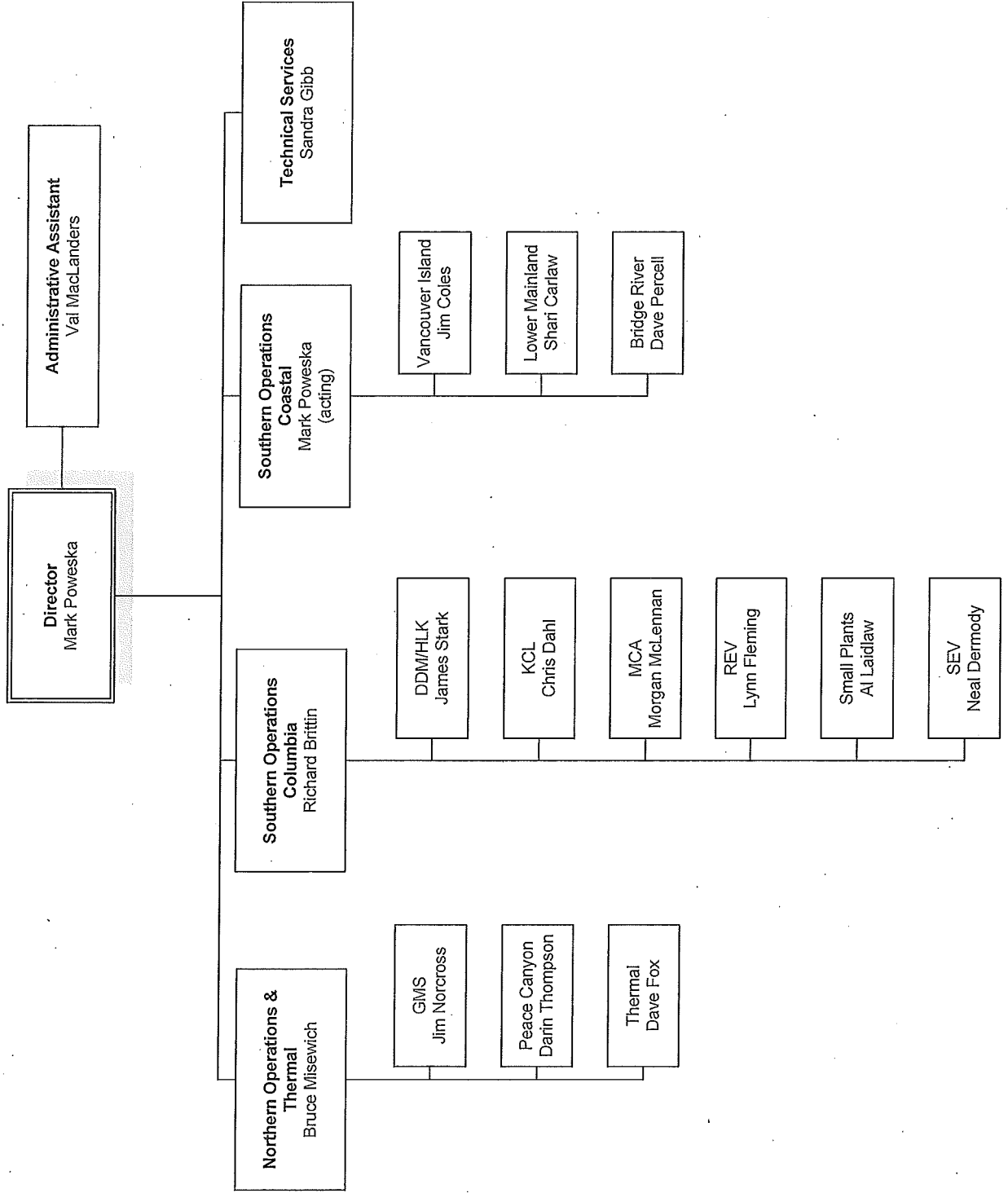
Generation



Generation Office of Chief Engineer



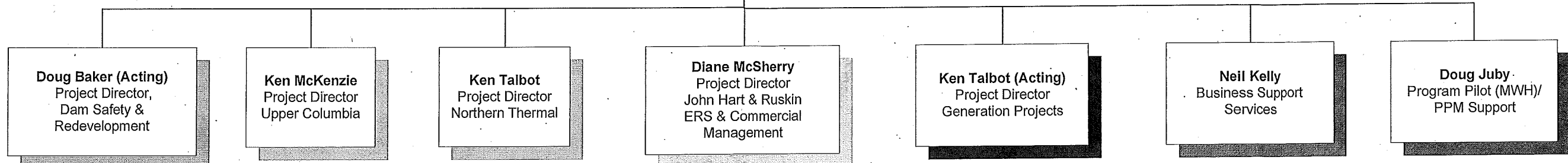
Generation Generation Operations



GMT Project Delivery

**Vice President
Project Delivery
Walter Udell**

**Administrative Assistant
Leslee Crawford (acting)**



Doug Baker (Acting)
Project Director,
Dam Safety &
Redevelopment

Ken McKenzie
Project Director
Upper Columbia

Ken Talbot
Project Director
Northern Thermal

Diane McSherry
Project Director
John Hart & Ruskin
ERS & Commercial
Management

Ken Talbot (Acting)
Project Director
Generation Projects

Neil Kelly
Business Support
Services

Doug Juby
Program Pilot (MWH)/
PPM Support

Administration
Joan Bonar (acting)

Redevelopment
Zeljko Cecic
Edward Chue
Kunwarjit Khandpur
Paul Kläwer
Masahiro Nishimoto ©
Jason Scott ©
Alex Selnes
Chris Waite

Records & Information
Management
Ronald Sat
Julie Tkachyk*

Dam Safety
Doug Baker
Joan Bonar@
WH Chung
Radmila Krzman
David McEachern
Alastair Grogan@
Bruce Musgrave©

Project Management
Advisor
Dave Epp

Safety & PM Community of
Practice
Al Geissler
Linda Remillard
Monica Manuel @

Administration
Kathie Carlson

Revelstoke 5
Brian Wong
Maria Buljevic @

Mica 5/6/Mica GIS
Owen Williams
Gandhi Mukkavilli
Rebecca Walker – MWH
Reena Plawn @

Records & Information
Management
Roza Camara
Ryenne Mesina

Administration
Dawneen Sumal^

Northern/Thermal
Satwant Gadhok
Hans Hamberger
Darren Solmundson
Mike Murray©
Yangbo Zhou©
Charles Casgain©
Ralph Kallberg ©

Records & Information
Management
Candace Honetschlager

Administration
Lesley Miller*

John Hart
Randy Richardson - MWH
Brian Knoke
Christina Feng*
Ernesto Toxqui - MWH
James Low – MWH

Ruskin
Boyd Mason
David McEachern
Feng Guo – MWH
Vanessa McDermott – MWH

Programs System
Coordinator
Silas Boren - MWH

Commercial Management
Alan Le Couteur
Alan Tan
Dean Cardno ©
Clement Li
Irene Middtun
Laurelle Perfanick
John Wou

ERS Management
Bonny Campbell
Charlotte Bemister
Jag Bilkhu
Deb Bisson
Sue Foster

Administration
Annie Laco
Lauren Atkinson

Generation Projects
Alan Le Couteur (Acting)
Mark Nichol
Lindsay Thompson

Generation Projects
Mark McGough
Mahta Boozari
Kaveh Taheri ©

Generation Projects
Conny-Maud Groenevelt
Fred Jongeneel ©
Jim Shepherd
Treva Blunt ©
Danny Mathiasen
Hugh Macdonald *

Generation Projects
Andrew Davis (Acting)
John Fitzgibbon
Keith Trent

Generation Projects
Mark Leng
Dan Balutescu
Janet Bremner

Administration
Amanda Stadey

Portfolio Management
Tony Valente
Paul Lam **

SWAT Team
Manveen Bharaj
R. Jay Blair ©
Nick Burton ©
Miguel De Asis
Feri Demehri ©

Resource Management
Trish Shtokalko

Project Services Manager
Carmen Hillan

Project Management
Systems
Miguel De Asis

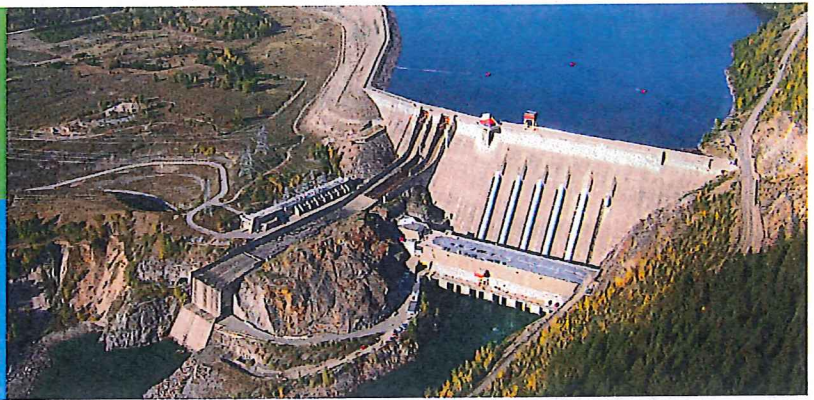
Technical Support Manager
Don Mumford
Jack Boersma W/L
Iraj Akbari Soltanieh^
Liliana Andrade
Merv Cronin
Noni Holowaty
Armand Landas
Soleng Lee
Violeta Mihai
Judy Palmer^
Celia Pereira
Cindy Ross
Sholeh Shahbazi@
Tanya Simbalist
Anita Taylor-Lane
Darlene Woodbury

Technical Support Manager
Marilyn Renaud
Stew Leslie W/L
Carlos Campos
Paul Hamaguchi
Harold Holland
Tracey Jacobs
Greg Koochin
Rysa Kronebusch
Becky Leung
Candy Ling
David Loyie
Mary Ma
Tyler Neilson
Victoria Parkhouse
Simon Phang
Rupinder Pooni
Vincent Qu
Lori Robb-Szabo@
Seigo Tani

Laura Gair* @
Terry McColl

*Tempworks
**Co-op Student
@On Rotation
#EIT
*GTT
@Admins
©Consultant
^ On Leave
+MPID (Mgr & Prof Dev)
o Sabbatical

QUICK FACTS



FOR THE YEAR ENDED MARCH 31, 2011

Corporate Purpose

BC Hydro's corporate purpose is to provide reliable power, at low cost, for generations.

Our Business

BC Hydro is a commercial Crown corporation owned by the Province of British Columbia. BC Hydro is one of North America's leading providers of clean, renewable energy, and the largest electric utility in British Columbia, serving approximately 95 per cent of the province's population and approximately 1.8 million customers.

We are responsible for reliably generating between 42,000 and 52,000 gigawatt hours (GWh) of electricity per year. Electricity is delivered to our customers through a network of over 18,500 kilometres of transmission lines and 57,000 kilometres of distribution lines.

2011 Facts

- Net income was \$589 million, compared with \$447 million the year before, resulting in a return on equity of 14.13 per cent.
- Hydro generation levels for the year ended March 31, 2011 were 6 per cent lower than in the prior year, primarily due to lower water inflows. System water inflows during the year were at 86 per cent of average. This follows a similar low water year in fiscal 2010 which was 87 per cent of average.
- Power Smart conservation programs continued to deliver cost-effective energy, producing cumulative annual energy savings of 2,348 GWh in fiscal 2011.
- Property, plant and equipment expenditures of \$1,519 million decreased by \$887 million from the previous year, mainly due to the acquisition in the prior year of a one-third interest in the Waneta dam and generating facility. Exclusive of this one-time significant acquisition, BC Hydro's expenditures on the expansion of its facilities to meet future load growth requirements and on maintaining its aging infrastructure were comparable to the prior year.
- As a result of lower than average water inflows (86 per cent of average), BC Hydro's net consolidated electricity purchases for domestic use were 4,463 GWh, an increase of 1,059 GWh from the previous year.

Energy Facts

Definitions

power = how much electricity is consumed by customers (or produced by power generators) at any instant in time

energy = how much is consumed (or produced) over a period of time

capacity = the maximum sustainable amount of energy that can be produced or carried at any instant. Example: a car engine's horsepower rating is its energy capacity

Units of power

- 1 kilowatt (kW) = 1,000 watts
- 1 megawatt (MW) = 1,000 kilowatts (or 1 million watts)
- 1 gigawatt (GW) = 1,000 megawatts (or 1 billion watts)

Units of energy

- 1 kilowatt hour (kWh) = 1,000 watts for 1 hour (1,000 watt hours)
- 1 megawatt hour (MWh) = 1,000 kWh
- 1 gigawatt hour (GWh) = 1,000 MWh

(Note that the abbreviations for prefixes follow metric convention, so kilo is k, while mega and giga are capitalized. The abbreviation for watt is W.)

Power to Energy ratios – rule of thumb

- Power to energy – for thermal electric: MW x 8 = GWh per year
- Power to energy – for large hydro: MW x 5 = GWh per year

Comparison statistics

- The average household in BC Hydro's service area uses about 11,000 kWh per year.
- A large industrial customer, such as a pulp mill, might use 400 GWh in a year, equal to the consumption of 40,000 households.
- A typical large office building of 20–25 storeys might consume 5 GWh in a year, equal to the consumption of 500 households.
- A large "big box" retail outlet might consume 3.5 GWh per year, or roughly the equivalent of 350 households.
- A 1 MW micro hydro plant produces about 5 GWh per year of green energy.

Financial Information (in millions)

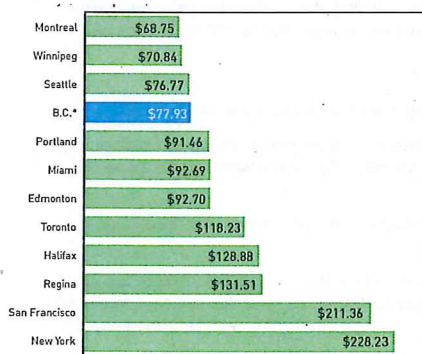
For the years ended as at March 31

	2011	2010
Revenues	\$ 4,016	\$ 4,028
Net income	\$ 589	\$ 447
Property, plant and equipment and intangible assets	\$ 15,546	\$ 13,995
Property, plant and equipment and intangible additions	\$ 1,519	\$ 2,406
Net long-term debt ¹	\$ 11,520	\$ 10,696

¹Consists of long-term debt, including the current portion, net of sinking funds and cash and cash equivalents.

Residential Rates

Monthly \$ Bills per 1,000 KWh



Source: "2010 Comparison of Electricity Prices in Major North American Cities—Rates in Effect on April 1, 2010"—Hydro Quebec.

Note: All bills and average rates are in Canadian currency and exclude taxes. "B.C." refers to BC Hydro service territory.

BC Hydro

333 Dunsmuir Street, Vancouver
British Columbia, Canada V6B 5R3

A downloadable version of this information is available at:

bchydro.com/quickfacts

Operating Statistics

For the years ended as at March 31

	2011	2010
Customers		
Residential	1,654,079	1,633,558
Light industrial and commercial	195,402	193,522
Large industrial	166	163
Other	3,490	3,455
Trade	269	287
Total	1,853,406	1,830,985
Electricity sold (gigawatt hours)		
Residential	17,797	17,593
Light industrial and commercial	18,052	17,811
Large industrial	13,164	13,020
Other energy sales	1,594	1,809
Total domestic	50,607	50,233
Trade (electricity and gas)	49,615	48,842
Total	100,222	99,075
Domestic Change Over Previous Year (%)	0.7	[4.3]
Revenues (in millions)		
Residential	\$ 1,366	\$ 1,272
Light industrial and commercial	1,243	1,192
Large industrial	590	590
Other energy sales	239	235
Total domestic	3,438	3,289
Trade	578	739
Total	\$ 4,016	\$ 4,028

Average revenue (per kilowatt-hour)

Residential	7.7 ¢	7.2 ¢
Light industrial and commercial	6.9	6.7
Large industrial	4.5	4.5
Other	15.0	13.0
Trade ¹	4.0	4.4

Average annual kilowatt hour

use per residential customer	10,818	10,857
------------------------------	--------	--------

Peak one-hour demand

integrated system (megawatts)	9,790	9,847
-------------------------------	-------	-------

Lines in service

Distribution (kilometres)	57,648	57,278
---------------------------	--------	--------

Transmission

(circuit kilometres)	18,764	18,603
----------------------	--------	--------

Full-Time Equivalent (FTE) ²	5,805	5,687
---	-------	-------

¹The method used to calculate trade revenue per kWh is based on gross trade revenues.

²Regular FTEs (the productive hours of work for one employee) for BC Hydro, excluding subsidiaries.

Generating Capacity in kW

Hydroelectric*	Kilowatts (kW)
Aberfeldie.....	25,000
Alouette.....	9,000
Ash River.....	28,000
Bridge River.....	478,000
Cheakamus.....	158,000
† Clayton Falls.....	2,000
Clowhom.....	33,000
Elk River.....	12,000
Falls River.....	7,000
V GM Shrum.....	2,730,000
John Hart.....	126,000
Jordan.....	170,000
Kootenay Canal.....	583,000
Ladore.....	47,000
La Joie.....	25,000
R Lake Bunzton.....	72,800
Mica.....	1,805,000
V Peace Canyon.....	694,000
R Puntledge.....	24,000
V Revelstoke.....	2,480,000
Ruskin.....	105,000
R Seton.....	48,000
Seven Mile.....	805,000
R Shuswap.....	6,000
Spillimacheen.....	4,000
V R Stave Falls.....	91,000
R Strathcona.....	64,000
R Wahleach.....	65,000
Waneta.....	164,420
Walter Hardman.....	8,000
Whatshan.....	54,000
	10,923,220

* Maximum sustained generating capacity

R Has recreational area

V Has visitor centre

† Non-integrated area

Thermal

Burrard.....	950,000
Fort Nelson.....	47,000
Prince Rupert.....	46,000
	1,043,000

Diesel Generation

† Ah-Sin-Heek.....	7,300
† Anahim Lake.....	3,050
† Atlin.....	2,680
† Bella Bella.....	4,900
† Dease Lake.....	3,450
† Eddontenajon.....	2,550
† Masset.....	13,545
† Sandspit.....	9,150
† Telegraph Creek.....	1,800
† Toad River.....	710
	49,135

Total Capacity..... **12,015,355**

Generation capacity figures may vary slightly from those stated in BC Hydro's Annual Report due to recent plant upgrades/updates.



BC HYDRO SYSTEM MAP

This map shows a quick snapshot of the BC Hydro System, including many of our generation and bulk transmission assets.

For more information on the regional transmission system please see the BC Hydro Transmission System map.

REGIONAL OFFICES

- Castlegar
- Cranbrook
- Nanaimo
- Prince George
- Revelstoke
- Vancouver
- Vernon

HYDRO DAMS AND GENERATING STATIONS

- Aberfeldie
- Alouette
- Ash River
- Bridge River 1&2
- Buntzen
- Cheakamus
- Clowhom
- Elko
- Falls River
- G.M. Shrum
- John Hart
- Jordan River
- Kootenay Canal
- La Joie
- Ladore
- Mica
- Peace Canyon
- Puntledge
- Revelstoke
- Ruskin
- Seton
- Seven Mile
- Shuswap
- Spillimacheen
- Stave Falls
- Strathcona
- Wahleach
- Walter Hardman
- Whatshan
- ABN
- ALU
- ASH
- BR 1&2
- LB 1&2
- CMS
- COM
- ELK
- FLS
- GMS
- JHT
- JOR
- KCL
- LAJ
- LDR
- MCA
- PCN
- PUN
- REV
- RUS
- SON
- SEV
- SHU
- SPN
- SCA
- WAH
- WHN
- WGS

HYDRO DAMS - NO GENERATING STATIONS

- Clayton Falls
- Duncan
- Herber
- Hugh Keenleyside
- Quinsam & Quinsam
- Salmon River
- CLA
- DDM
- HEB
- HLK
- QUD & QUI
- SAR

THERMAL GENERATING STATIONS

- Burrard
- Fort Nelson
- Prince Rupert
- BGS
- FNG
- RPG

DIESEL GENERATING STATIONS

- Ah-Sin-Heek
- Anahim Lake
- Atlin
- Bella Bella
- Dease Lake
- Eddontenajon
- Kwatacha
- Masset
- McBride
- Sandspit
- Telegraph Creek
- Toad River
- Tsay Key Dene
- ASK
- AHM
- ATL
- BEL
- DLK
- EDD
- KWA
- MAS
- MCB
- SPT
- TCK
- TDR
- TKD

SERIES CAPACITOR STATIONS

- American Creek
- Chapmans
- Creekside
- Guichon
- Kennedy
- Mcleese
- AMC
- CHP
- CRK
- GUI
- KDY
- MLS

Legend

- Hydro Dam and Generating Station
- Hydro Dam - no Generating Station
- Thermal Generating Station
- Diesel Generating Station
- 230 kV Substation
- 287 kV Substation
- 500 kV Substation
- Regional Office
- Series Capacitor Station
- 500 kV Bulk System Transmission Line
- 287 kV Bulk System Transmission Line
- 230 kV Bulk System Transmission Line

230 KV SUBSTATIONS

- Arnot
- Nelway
- Pike Lake
- Vancouver Island
- ARN
- NLY
- PIK
- VIT

287 KV SUBSTATIONS

- Minette
- Rupert
- MIN
- RUP

500 KV SUBSTATIONS

- Ashton Creek
- Cheekye
- Clayburn
- Cranbrook
- Dunsmuir
- Glenannan
- Ingleadow
- Kelly Lake
- Kennedy
- Meridian
- Nicola
- Selkirk
- Skeena
- Telkwa
- Vaseux Lake
- Williston
- ACK
- CKY
- CBN
- CBK
- DMR
- GLN
- ING
- KLY
- KDS
- MDN
- NIC
- SEL
- SKA
- TKW
- VAS
- WSN

Grand Coulee Power Office – Review of Staffing and Processes

MEETING MINUTES / NOTES

Meeting Title:	Benchmarking Conversation Manitoba Hydro & Grand Coulee Power Office		
Date:	December 14, 2011	Location:	Winnipeg
Start Time:	8:00am CT	Duration:	4 hours
Facilitator(s):	Matt Crane		

Meeting Participants	
GCPO	
Name	Title / Role
Mark Jenson	Power Manager
Scott Ross	Deputy Power Manager
Manitoba Hydro	
Name	Title / Role
Ken Adams	Senior Vice President, Power Supply
John Clouston	Division Manager, Generation South
Randy Raban	Division Manager, Engineering Services
MWH	
Name	Title / Role
Ed Carter	Senior Vice President
Matt Crane	Senior Consultant and Project Manager
Sam Nott	Senior Electrical Engineer and Technical Lead

Meeting Minutes / Notes

NOTE: REFERENCE SLIDES PROVIDED BY MANITOBA HYDRO

Manitoba Hydro Overview

- Vertically integrated including generation, transmission, and distribution
- Approx. 6,200 employees (1200 associated with generation)
- \$12B in assets
- Lowest energy prices, highest reliability; however, at 3.5 cents/kWh, energy prices are lower than replacement cost
- Approx. 30% of electrical generation is exported, mostly through an operating agreement with MISO
- HVDC transmission line belongs to generation (not transmission); brings power from north to load in south
- New hydro development:
 - 200 MW commissioned
 - 700 MW started
 - 1500 MW in planning
- Annual revenue is approx. \$2B

Grand Coulee Power Office – Review of Staffing and Processes

MEETING MINUTES / NOTES

- Customer base is over 537,000
- General structure
 - Power Supply
 - Transmission
 - Customer Care/Marketing
 - Customer Service and Distribution
 - Finance, Admin, Corporate Relations, Corporate Overhead, Procurement, Safety, etc. (all centralized)
- Extremely low attrition rate
 - Hire about 300 per year across all of Manitoba Hydro
 - Most recruitment is at the entry level

Power Supply Organization

- Split by functions, not organizational groups
 - Define common goal for business unit...we all work to produce and sell power
- Experiencing 1-1.5% load growth/year, which equates to about 1000MW in 10 years
 - Driver for new Greenfield projects
 - Opportunity to build early and export to the US until demand is needed locally
- Energy supply is about 300 people; existing facilities account for 1100-1200 staff; new facilities account for 200 people..."we don't build, we hire consultants"

Maintenance

- O&M provided by Generation South; responsible for preventive maintenance, predictive maintenance, condition monitoring, etc.
- Engineering jobs are initiated by Maintenance; depending on dollar value, they go to Maintenance Engineering Support (also within Generation South) if O&M focused, or to Engineering Services (group outside of/peer to Generation South within Power Supply) if capital-focused
- Maintenance crews are grouped by / shared within a geographic region with similar plants
 - South has been rehabbing and repairing for past 30 years
 - North has newer plants and starting rehab
- Move staff between plants as needed
- Some Northern plants are fly in fly out schedules – 8 days on , 6 days off
- Skilled labor developed with aggressive training program
- Training program targeted First Nations and this has work very well as they want to live in the North.
- Consistency in approach comes from main office in Winnipeg
 - Standardized work orders
 - Standards for preventive maintenance, predictive maintenance, etc.
 - Did a reliability-centered maintenance approach study

Engineering Services

- Approx. 400 people
- Internal group that provides service to operations

Grand Coulee Power Office – Review of Staffing and Processes

MEETING MINUTES / NOTES

- Engineering Design
- Project Management
- Condition Assessments
- Acceptance Tests
- Includes civil, electrical, and mechanical design staff; high-voltage staff; and “Power Projects,” which is about 70 people doing primarily project management for 20-30 projects at a time with values from a couple million to \$400M
- Responsible for big Greenfield projects, too
- Probably the biggest engineering company in Manitoba
- Probably more project management than engineering in practice
- Had to build engineering skills in house, but do leverage some local consultants
- Engineering need “operational acumen”, mud on their boots.
- Engineering in the field
 - One third of high-voltage guys are always out in field
 - Civil: about 25 of 70 are out roaming the field, mainly at Greenfield or T-line sites
 - Electrical: not much out in field, except for commissioning and testing
 - Mechanical: not much out in field, except for commission and testing; do have 1 ME on site for rehab projects
 - Power projects: half are out on sites 3 week on 1 week off and live in camps built by MH
 - Winnipeg is home for most, so they travel out to sites for 3 weeks, home for 1 week
- Lots of turnover in the engineering division
 - Pool from which other talent is drawn internally
 - Job development is key
 - EIT program: 15-25 new engineers per year, rotate every 6 mos., bid out of program

Maintenance Engineering Support

- Represents about 40-50 people in Generation South
- Respond to day-to-day problems
- Out in field half of the time, based out of Winnipeg
- Stations do not have local, prominent plant engineer; rather such engineering support is centralized and addressed/provided as needed
- To avoid/stop reliance on 1 expert, a front-line supervisor is responsible to make sure there is rotation through the team
- Maintenance focused on condition monitoring

Project Management Approach

- Project management is run through the Engineering Services group; PM + ENG are the same group
- Close tie between O&M staff and Engineering
- Project managers are technically based (engineering foundation)
- The PM owns the job from initiation through construction, without a handover to a construction manager
- Much of the PM work is done on the front end to develop detailed plans to keep projects on schedule.

Grand Coulee Power Office – Review of Staffing and Processes

MEETING MINUTES / NOTES

- PMs are supported by contract management
- PMs are in the field almost all the time.
- PMs use Primavera resource-loaded schedules
 - All are integrated across enterprise, including staff, cash flow, outage schedule, etc.
- Formalization of project management played a big role in breaking down silos
 - Manitoba Hydro developed its own PM training courses, targeted to various audiences in the organization, recognizing that PM is a cultural shift and everyone in the organization is affected to some degree
 - Send 400 people through 2-day intro course as part of cultural shift
 - Send 100 people through 2-week, more specialized applied course to make sure all understood the interfaces implied/required by project management
 - Documentation of commitments
 - Taught by PMPs

Procurement Approach

- Best value, not low tender
- Promote “diversity of supply”: bonus points for bidder who’s never done for work for Manitoba Hydro before
- MH went out to visit manufacturers to get them to bid.

Rehab Approach

- Rehab and replacements is a continuous process
- Approx. 108 units at about 2-4 per year
- Attempt to levelize the work for financial benefits
- Fund rehab out of internally generated funds for capital improvements (approx. \$150M/yr)
- Slide projects around to manage cash flow, resources, risk
 - Have visibility to do so based on enterprise level planning and scheduling, including cash flow and resource loading
- Rehabilitations have improved safety and provided environmental improvements.
- Biggest cost of rehab is outage time, so they manage extremely closely to ensure that they get units back up when they say they’re going to get them back up
- Work is mostly done by contractors
- Involve own O&M staff at commissioning and testing, and of course provide clearances support to rehab contractors

Staffing, Retention, and Knowledge Management Approach

- Considering extremely remote nature of many of its facilities, Manitoba Hydro placed an intentional focus on attracting and training First Nations, which has proven very successful for staffing remote facilities
- Developed a standardized procedures tool called BPMS
 - Orientation for a supervisor: go into system and find something that needs to be fixed
 - Valuable for people passing through or new to group
- In response to challenge of getting exposure/experience to new staff, management moved some senior “experts” to a temporary field job or out-of-town project to allow next generation to advance




Grand Coulee Power Office – Review of Staffing and Processes
MEETING MINUTES / NOTES

- Skilled crafts are aging...very aggressive training program to replace pending retirees




Grand Coulee Power Office




Best Practices in Hydropower Operations
December 14, 2011



Agenda

- Introductions
- Meeting Objectives and Purpose
- Overview of Manitoba Hydro Organization
- GCPO Current Situation
- Open Discussion

Introductions

Organization	Name	Title
	Ken Adams	Senior Vice President, Power Supply
	John Clouston	Division Manager, Generation South
	Randy Raban	Division Manager, Engineering Services
	Mark Jenson	Power Manager
	Scott Ross	Deputy Power Manager
	Ed Carter	Senior Vice President
	Matt Crane	Senior Consultant, Project Manager
	Sam Nott	Senior Electrical Engineer

Meeting Objectives and Purpose

Context: Review of Staffing and Processes for the GCPO

- Recommend appropriate staffing levels and resource mix
- Recommend improvements to business and technical processes

Task 1	Task 2	Task 3
Assessment of Current Organization <ul style="list-style-type: none"> • Review the current GCPO organization and business processes • Understand current and future workload • Collect quantitative data to support future-task analysis • Identify preliminary hypothesized recommendations for future-task verification 	Staffing Analysis under Current Organization <ul style="list-style-type: none"> • Analyze quantitative data from Task 1 • Recommend staffing to meet current and future workload under current organization and processes • Analyze risks of no action 	Analysis of Optimized Organization <ul style="list-style-type: none"> • Facilitate management-level discussions with peer projects to benchmark organization, performance, and practices • Analyze quantitative data from Task 1 • Recommend optimized organization (structure, staffing, processes)
6 months	3 months	3 months

Meeting Objectives and Purpose

- Understand how Manitoba Hydro has historically addressed the challenges that the GCPO encounters today
- Share best practices among peer organizations
- Compare and contrast the organization structures, staffing levels, and resourcing approaches of the two organizations

Overview of Manitoba Hydro



About Manitoba Hydro

- Generation, transmission and distribution of electricity in Manitoba
- Sole distributor of natural gas in Manitoba
- Approximately 6,200 employees
- \$12 billion in assets
- ~30% of annual electricity generation exported



8

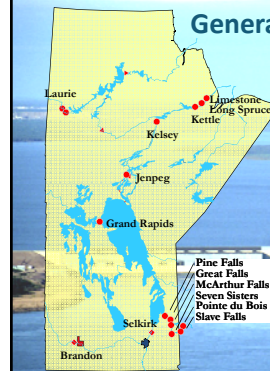


Corporate Profile

- Annual Revenues of \$2.0 Billion
- 5th Largest Electrical Utility in Canada
- 537 000 Electricity Customers
- 265 000 Natural Gas Customers
- MH's wholesale electricity exports are made to numerous US and Canadian customers through market and bilateral transactions
- Lowest Electricity Rates in North America



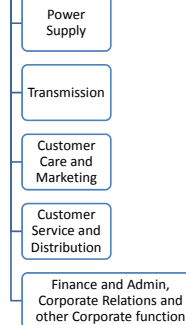
Manitoba Hydro Generating System



Installed Capacity:	
•Hydro (winter peak)	4900 MW
•Thermal	535 MW
Purchases Capacity	
•Imports (Diversity)	500 MW
•Wind (0 MW Firm Capacity)	242 MW
Total	6135 MW

Total Annual Production:
~98% renewable

Manitoba Hydro



Power Supply



Power Supply "Existing Facilities" Divisions

- Generation South
 - 8 Hydraulic generating stations
 - 2 thermal generating stations
- Generation North
 - 6 generating stations
- HVDC
 - 3 HVDC Converter Stations

- Engineering Services
 - Internal Engineering group that provides engineering and construction services to:
 - Operating divisions
 - New construction divisions
 - Other Corporate business units

Our System

GCPO Current Situation

United States Bureau of Reclamation

- Established in 1902 to develop water projects to reclaim land within the 17 western states to promote homesteading and economic development
- Constructed over 600 dams and reservoirs

- Largest wholesaler of water in the U.S.
 - 31 million people
 - Irrigation to 10 million acres
- Second largest hydroelectric producer in the U.S.
 - 58 powerplants
 - Approx. 15,000 MW
 - 40 billion kWh annually

Grand Coulee Power Office

- Manages and operates the Grand Coulee Dam in Washington and the Hungry Horse Dam in Montana

Dam Name	Year	Capacity (MW)	Height (ft)	Length (ft)	Concrete (cu yd)
Grand Coulee Dam	1938	6,809	550	5,233	11,975,500
Hungry Horse Dam	1957	3,125	243	151	5,000,000

Grand Coulee Dam

Dam Characteristics

- Located on the Columbia River
- Provides flood control, irrigation, hydropower, recreation, stream flows, fish & wildlife benefits
- 5,233 ft (1,595 m) long, 550 ft (168 m) high dam
- 11,975,500 cubic yards (9,156,000 m³) of concrete
 - Largest concrete structure in North America
- Impounds Franklin D. Roosevelt Lake
 - 151 miles (243 km) long
 - 5,000,000 ac-ft of active storage

Powerplant Characteristics

- Right & Left Powerhouses
 - Original construction: 1933-1942
 - 18 total units; 325 MW each
 - Capacity per powerhouse: 3,125 MW
- Third Powerplant
 - Added 1967-1975
 - 6 total units (3 x 600 MW, 3 x 805 MW)
 - Capacity for powerhouse: 4,485 MW
- Also includes 12-unit pump-generating plant
- Total Capacity: 6,809 MW
 - Largest in North America; 6th largest in the world
- Average flow: 110,000 cfs (3,115 cms)
- Average annual energy: 21,000 GWh


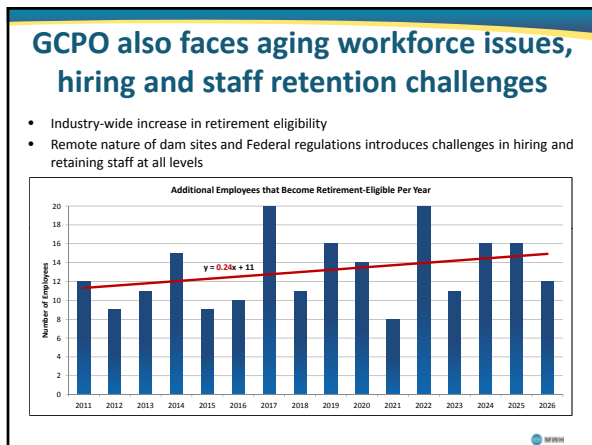
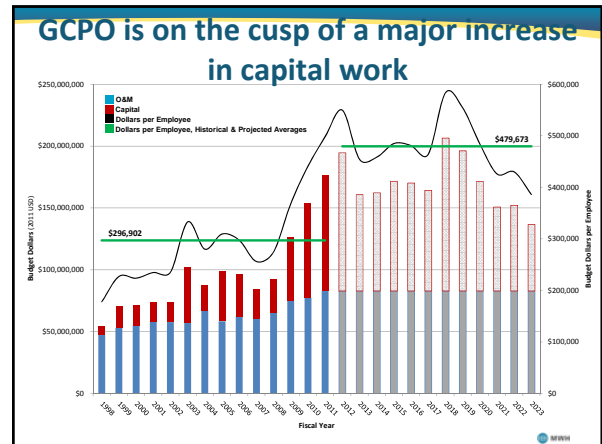
Hungry Horse Dam

Dam Characteristics

- Located on the South Fork Flathead River
- Provides flood control, irrigation, hydropower, recreation, and stream flow benefits
- 2,115 ft (645 m) long, 564 ft (172 m) high dam
- 3,086,200 cubic yards (2,359,600 m³) of concrete
- 3,468,000 ac-ft of storage

Powerplant Characteristics

- Original construction: 1948 – 1953
- 4 units, 107 MW each
- Total Capacity: 428 MW
- Max flow: 12,600 cfs (357 cms)
- Average annual energy: 900 GWh

- ## Summary of Study Findings
- 1. Large backlog of work**
 - Routine O&M (PMs)
 - Non-routine (Mods, CMs, Small Cap, RAX)
 - Large capital support
 - 2. Organizational alignment**
 - Self-inflicted silos ("fiefdoms")
 - Competing objectives
 - Individual priorities rule over facility needs
 - Limited transparency
 - 3. Attracting and retaining staff**
 - Limited by location, compensation structure, perceived obstacles in the hiring process
 - No incentive for term employees to stay

- ## Summary of Study Findings
- 4. Organization-level planning**
 - Missing enterprise-wide work and outage planning and scheduling function
 - Existing schedules do not account for contingencies
 - Limited coordination between plant and construction activities
 - 5. Ownership of projects from start to finish**
 - Projects of all sizes and varieties generally lack a single leader to shepherd project through entire process
 - Potential for rework, schedule delays, budget overruns, quality issues, etc.
 - 6. Use of maintenance management system**
 - Varying degree of work order granularity across groups
 - Incomplete definition of work orders and job plans
 - Work orders not updated based on actual labor

- ## Summary of Study Findings
- 7. Transition planning and knowledge transfer**
 - Large turnover and retirements
 - Little overlap between departing and arriving employees
 - Limited capture of plant-specific knowledge
 - 8. Training**
 - "One size fits all, check the box" approach
 - Not always aligned with organizational priorities, professional development goals
 - Limited coordination across enterprise
 - Varying views of apprenticeship program
 - Limited orientation for new employees
 - 9. Coordination with external partners**
 - Unclear definition of expectations
 - Limited performance tracking capabilities
 - Limited understanding of others' procedures and requirements

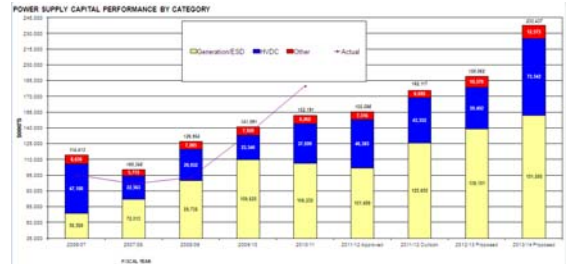
Open Discussion

Suggested Discussion Questions



Discussion Questions

1. How has Manitoba Hydro navigated the “pendulum swing” from O&M to capital improvements at its facilities?

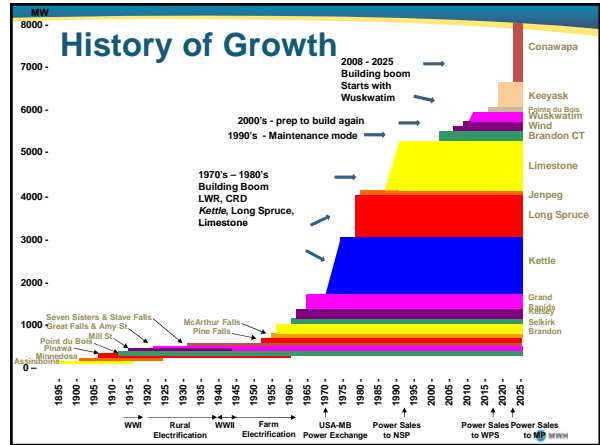


Discussion Questions

2. Has Manitoba Hydro historically had to ramp up staffing levels for “waves” of capital work? If so, what happens to those employees as the capital work ramps down?



History of Growth

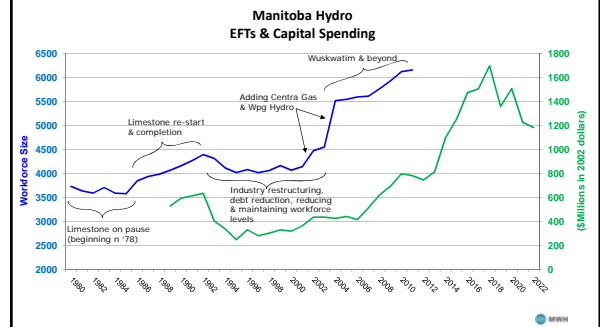


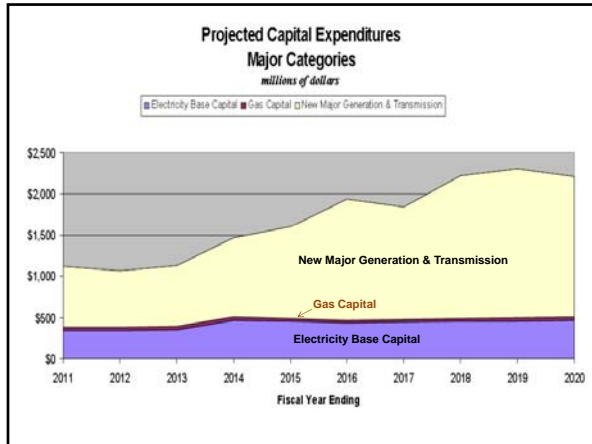
Manitoba Hydro’s workforce

1. A long service, low turnover workforce
2. A boom & bust recruitment history
3. Staffing well correlated with
 1. capital program
 2. acquisitions




Workforce levels move with capital spending





- ### To staff up; what Manitoba Hydro does well
- Great employment conditions - Top 100 employer!
 - 5 / 4 work week
 - Challenges in remote areas - GREP
 - In-house training programs
 - Engineering
 - Commerce
 - Technical Trades
 - Success with diversity recruitment
 - Leverage experience into new labour market segments
 - Successful recruitment of First Nations employees
 - PS 39% in the north
 - PS 21% overall

- ### To staff up - ESD Special Initiatives
- Staff up (plan to resource new generation)
 - Plan ahead – terms, temps & consultants facilitate ramping down later
 - Large sections to vest knowledge
 - Develop department for major projects
 - Grow major projects dept into a division
 - Contracting In
 - Rotation of Managers
 - Project Management Model
 - Project Management Training
 - Build acceptance for use of consultants
 - Process Management System
 - Super First Line Supervisors
 - Build robust centers of expertise (vest knowledge)

- ### To staff up - ESD Special Initiatives
- Contracting in**
- get the old guard out of town
 - 16 jobs around the world
- Rotation of Managers**
- Power Projects – BCT project
 - Electrical – PPD
 - Mechanical – Major Projects transition
 - Civil – Mechanical
 - Three to Civil
- 

To staff up - ESD Special Initiatives

Project Management Model

Project Management Training

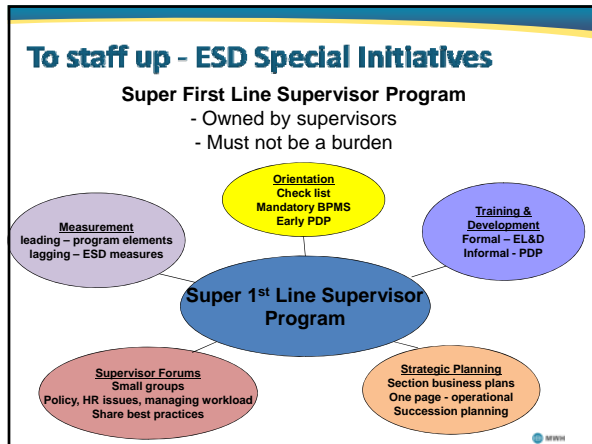
- Introduction – 400
- Applied – 100




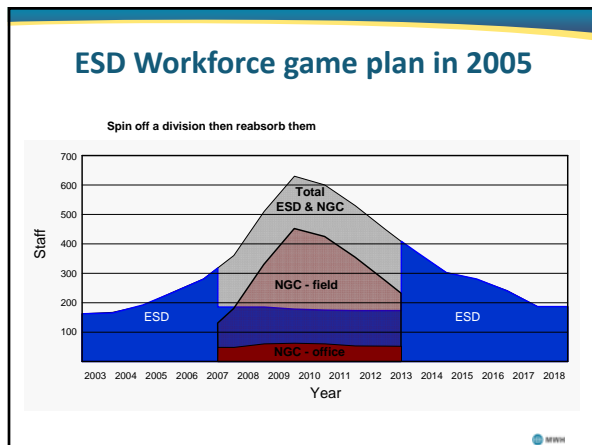
To staff up - ESD Special Initiatives

Business Process Management System (BPMS)

- Old guard retiring
- Lots of churn



- ## To staff up - ESD Special Initiatives
- Robust centers of expertise**
- PEng V
 - Larger sections
 - Prep for management
- 
- Acceptance of consultants**
- Strategies - what work, who supervises
 - Very little - Now 33%
 - Consultants facing same challenges



- ## How to ramp down?
- **Manitoba Hydro Staff**
 - Redeployment - other work or MHI
 - Term & temporary positions
 - Attrition
 - Retirement packages
 - Special initiatives - Filmon Fridays
 - **Consultants**
 - 1/3 Commodity work
 - Peak shaving
 - Can be cut back at any time

Discussion Questions

3. If leveraging different or temporary staff to support capital work, how has Manitoba Hydro managed the knowledge transfer from the capital delivery staff to the long-term O&M staff?

Managing Knowledge Transfer From Capital Project Staff to Operating Staff


PROJECT DESIGN STAGE

Maintenance Engineering staff and Site Management staff are included and sign off on the project scope.

As the Owner's representative, the Maintenance Engineering staff participate in design reviews.

Design documents are maintained by Engineering Services for future reference.

Drawings are entered into controlled system for future use.



Managing Knowledge Transfer From Capital Project Staff to Operating Staff

PROJECT EXECUTION STAGE

Project Management keeps Maintenance Engineering staff updated on significant design or installation issues.

A small number of Site staff are made available to the project during the construction phase, typically on a rotating basis.



Managing Knowledge Transfer From Capital Project Staff to Operating Staff

PROJECT COMPLETION STAGE

Maintenance Engineering and Site staff are very involved in the commissioning of the project equipment. Detailed commissioning procedures are created along with a final report.

Draft Operation and Maintenance Manuals are created and provided for comment and review prior to commissioning. These are then finalized after the equipment is in service.

The maintenance requirements for new/upgraded equipment is entered into the computerized maintenance program.



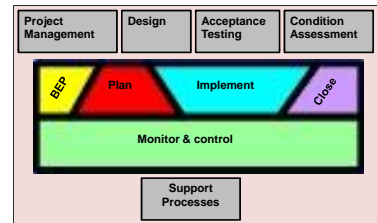
Discussion Questions

- How has Manitoba Hydro historically managed its capital improvement projects to stay on schedule and within budget?

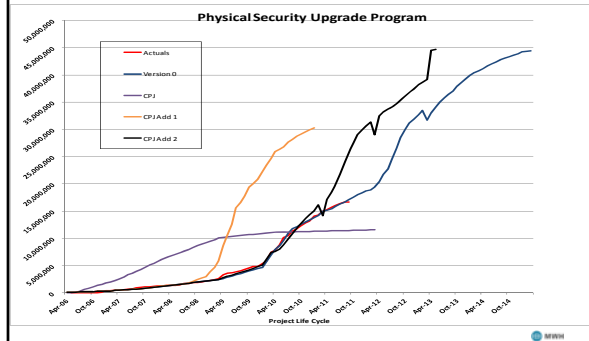


Projects - On Schedule & Budget

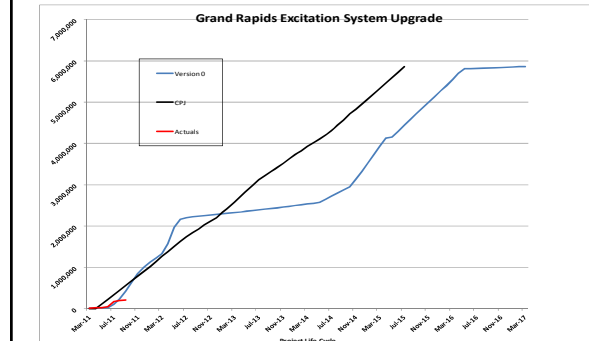
- Business Process Management System (BPMS)

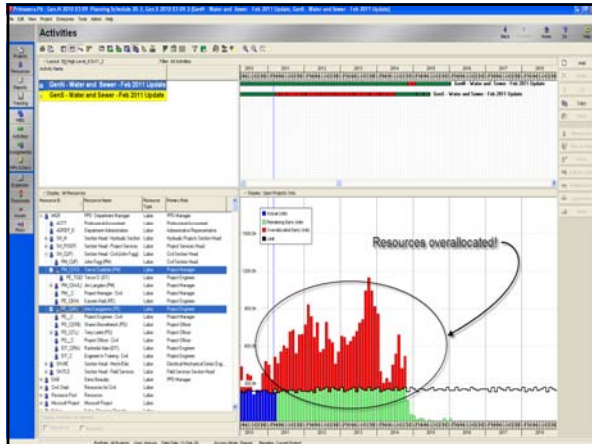


Project Tracking



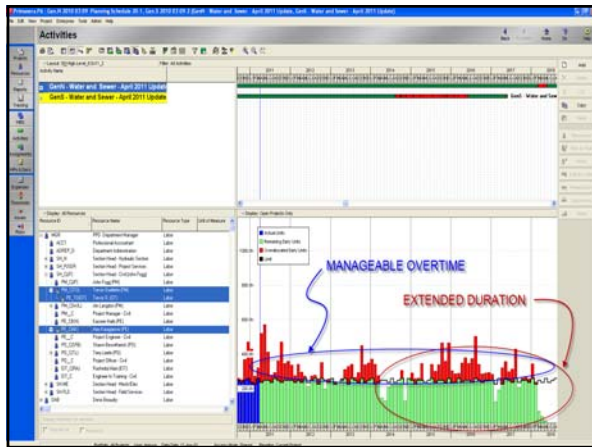
Project Tracking





Summary of Initial Findings

- Unable to meet goals/ISD's with current resources
- Employees overallocated (never get ahead)
- Unable to meet cash flow targets



Steps to get there?

- Create detailed list of all tasks/activities
- Identify level of effort, in terms of hours required for each activity, for each resource
- Create the schedule using the list of activities and logic
- Apply resources and level of effort to the schedule based on available resources and the effort required to complete the activities
- Adjust the schedule to balance workload based on allocated resources

Considerations

- Availability or lack of resources
- Overtime requirements/restrictions
- Critical dates or ISDs that cannot be deferred
- Extending schedule
- Seasonal/Outage construction constraints

Executive reports

HIGH VOLTAGE TEST FACILITY PROJECT
EXECUTIVE REPORT # 041
FOR THE MONTH OF SEPTEMBER 2011

PROJECT ACTIVITIES

- Completed the following activity:
 - Installation of exterior wall casting of Test Hall, workshops and elevator core
 - Installation/CAD welding of grounding mesh in Test Hall
- Continued work on:
 - Concrete pours for super flat surface in Test Hall
 - Installation of ground rails to pour super flat concrete topping in Test Hall
 - Installation of ducts and pipes in office, workshops and Mechanical Penthouse
 - Placement/compaction of sub-base material for access road and storage yard
 - Installation of mechanical, electrical components throughout
 - Installation of end-of-road containment tank (EE corner)
 - Installation of floor carpets in office area (1st floor)
 - Installation of duct and the hardware for access
 - Painting the ceilings & walls in office area and workshops
 - Installation of organic bins at 2nd floor restrooms

SCHEDULE

- Status quo, i.e. November 7, 2011 when owner can commence installation of testing equipment.



ISSUES / CONCERNS

- City of Winnipeg Code requirements remain a concern. Issues relating to fire code are being addressed; however, response from the City is slow. This may have a potential delay to the project completion date.

ENVIRONMENT/SAFETY

- Environment: Nothing to report.
- Safety: No incidents to report.
- Contractor continues to hold daily safety talks and communicating planned work with all sub-tracks.

PHOTOS OF THE MONTH

Discussion Questions

5. Considering the remote locations of Manitoba Hydro's facilities, how has Manitoba Hydro been able to attract and retain staff?

Attract & retain in northern locations

- Training programs
 - Aboriginal (%)
 - New Canadians to the north
 - Bring people temporarily to the north for capital projects – some like it and stay
 - GREP
 - EIT rotation
- Challenges – underfilled & hard to fill positions

Discussion Questions

6. What system does Manitoba Hydro use for its maintenance management? How robust is that across all facility operations, including O&M, engineering, administration, etc.?

Maintenance Management System(s)

- Manitoba Hydro presently uses several Maintenance Management systems:
 - An older text based system (TSW, later Indus) for generation/HVDC/Communications/Protection, moving to SAP over this year.
 - An internal system for transmission.
 - Customer Service/Distribution in SAP, with add-ons for dispatch.
 - A separate system for facilities/buildings
 - Remedy for IT
- The number and diversity of systems causes problems with efficiency, data integrity. This is one of the drivers to SAP.

Robust use?

- Speaking for generation/HVDC
 - The use is consistent at all operations, but limited by functionality ([WMS](#), [WMS measures](#))
 - Includes O&M, programs (SMS, EMS, Dam Safety, NERC) by all internal staff and service groups.
 - Predictive programs not integrated (EAM....)
 - Tasks assigned to supervisory staff and Engineering just starting (largely programs).
 - Capital work not tied.
 - Intent with EAM to include all work and materials on existing Power Supply assets performed by all groups (station staff, Engineering, service groups, contractors)
 - Still determining how to include work and materials during construction of new assets.

Discussion Questions

7. How does Manitoba Hydro manage water, power, and environmental stakeholder demands at the facility level, including generation dispatch and work planning? At the enterprise level?

Discussion Questions

8. What services are facility-based for Manitoba Hydro versus centralized across the Province? For example, during construction phases, does the facility “own” the Manitoba Hydro resources that monitor construction activities, or does the corporate office? Same with engineering services?



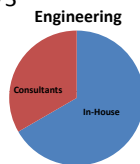
Maintenance & Ops – Major Capital interface

- Maintenance Engineering
 - Triage, Repair or replace if broken
 - Typically <\$2M
 - Initiate Major Capital Projects
- Engineering Services
 - Major Capital
 - Typically \$2M - \$400M
- New Generation Construction
 - Greenfield Major Capital Projects
 - Typically >\$400M



How do we get work done?

- Critical work – in house expertise 2/3
 - Heavy rotating machinery
 - Control systems
 - Dam safety management
 - Insulation systems
- Commodity work – consultants 1/3
 - Balance of plant
 - Buildings
 - One of a kind
 - Peak shaving



Our Service Groups are Corporately Centralized

- Purchasing
- Legal
- Human Resources
- Finance
- Fleet
- Safety & Health
- Information Technology (IT)



How do we initiate capital projects?

- Drivers
 - Condition assessment
 - Failure
 - Opportunity
- Maintenance Engineering
 - Triage
 - Process owner
- ESD
 - Concept design report



Project Delivery Systems

- Engineer, procure, construct (rare for MH)
 - the contractor will design the installation, procure the necessary materials and construct it
- Design, bid, build (Traditional)
 - MH contracts with separate entities for each the design and construction phases of a project
- Engineer, Procure, Construction Manage (Selkirk Fuel Switching)
 - MH involves an experienced contractor to manage the whole project on our behalf. There is a transparent flow through of costs and risk/reward incentives.



- The following slides on Capital planning process and issues might address Que 10

Problems with our Capital Process

- Capital Planning Horizon is short
 - Annual targets
 - Moving targets
 - Long delivery equipment
 - Multi year projects
- Internally generated funds
 - Forces spending when it costs the most
 - Misses opportunities for low cost outages.

How MH prioritizes capital plan

Items considered:

- Cash flow restriction
- Safety
- In-service failure risks
- Generation benefits
- Contract obligations
- Demobilization & mobilization
- Maintenance & monitoring costs
- Project management & engineering costs
- Camp infrastructure maintenance
- Manpower / resource optimization
- Potential impact on power sales

Project Plan Comparison

Project	CEF 11 Memo	Recommended	Recommended - CEF 11 Memo	
			Drivers	Incremental NPV Including Risk
PDB – Units Refurb	Defer 4 yrs	No change	\$\$\$	35.3
Kelsey U7 / U5,2	Defer 2 yrs	No change	\$	4.4
Great Falls U4	Defer 4 yrs	Defer 6 months	Safety	3.5
Pine Falls U1-4	Defer 4 yrs	Defer 2 yrs (spread over 5 yrs)	Reliability, Capacity & Dam Safety	(2.2)
Kettle U1-4	No change	Defer 2 years	Reliability	(3.8)
PDB – Safety	Minimum	Minimum	Safety	N/A
Other	No change	Defer Halon & Physical Security 2 yrs	Cash Flow	Small
TOTAL				37.2

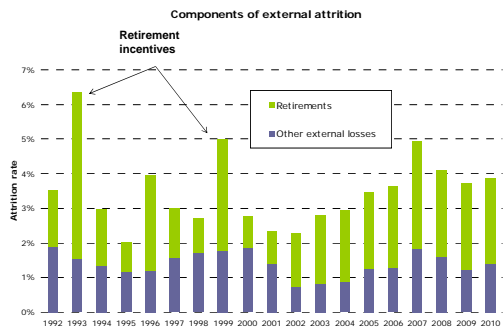
Discussion Questions

9. What is Manitoba Hydro doing to address the retiring workforce issue?

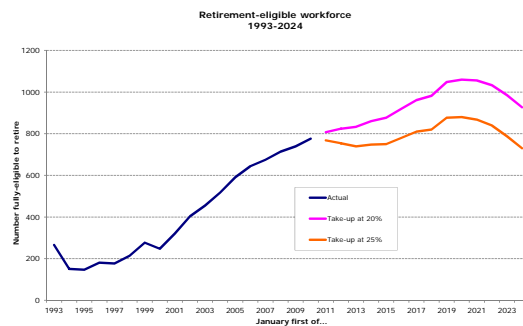
Demographics

1. The Baby Boom
 - More a micro phenomenon
 - Influence on workforce almost finished
2. Population aging
 - More a macro phenomenon
 - Influence on workforce just starting to kick in

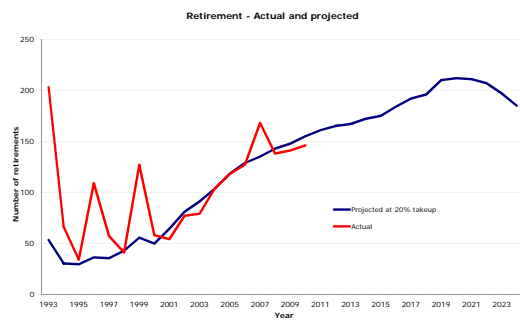
Outflow is low and predictable



Eligible to retire



Retirements



Strategies

- Annual Succession Planning
 - Identify key positions, ensure junior staff developed to back fill
- Knowledge transfer (Vesting knowledge into groups)
 - Rotational positions
 - Document processes & procedures
 - Mentoring positions
- Opportunity to rework positions & structure
- Plan for recruitments
 - The HR Division watches the trends & has recruitment plans in place

Recruitment

- The “right” recruitment number, averaged over a lot of factors, is around 300 per year
- About 10 years ago, we would look at 200 as a big year
- These are very manageable numbers

Discussion Questions

10. With a collection of varied capital projects across its enterprise, how has Manitoba Hydro prioritized its capital work and decided where to invest first?

Power Supply Project Prioritization Tier System Pilot

**POWER SUPPLY CAPITAL EXPENDITURES FORECAST
3-YEAR FORECAST PROJECTIONS
COMPARISON OF YEARLY CAPITAL BUDGET CHOICES TO**

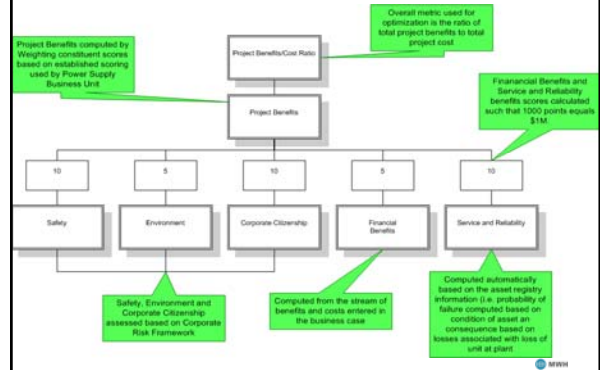
FINANCIAL

Tier 1 = \$ 1,200
Tier 2 = \$50-1,199
Tier 3 = \$50-849
Tier 4 = \$20-549
Tier 5 = \$200
Score II = No score required as no plan in current or following year
Score III = Ranking required
BIC or EXC = Item manually included (BIC) or excluded (EXC) based on business decision

Build on the description minus project

Project	Description	Timing Decision	Constraining Resource	Ranking	Tier	Readiness	Committed Resources	Total Project
PS-101	POWER SUPPLY MISC. CYBER SECURITY UPGRADE	01	A-Budget	01	A-Budget	FD	0	1,045,000
PS-102	POWER SUPPLY PUBLIC WATER SAFETY AROUND DAME	01	A-Bud	01	M-High	FE	0	2,000,000
PS-103	5 SUSTAINABLE WASTE SEWERWATER SERVICES	01	L-Other	01	M-High	CEP	0	1,900,000
PS-104	CHEMICAL LABORATORY RE-EQUIPMENT/RENEWAL	01	A-Inv	01	M-High	CEP	0	1,800,000
PS-105	UP-GRADE/REPAIR/REPLACE/REPLACE	01	A-Budget	01	A-Budget	CEP	0	1,800,000
PS-106	WATER RIVER BANK PROTECTION PROGRAM	01	L-Other	01	M-High	CEP	0	9,500,000
PS-107	WATER SUPPLY AND CONTROL INVESTIGATION	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-108	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-109	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-110	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-111	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-112	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-113	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-114	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-115	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-116	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-117	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-118	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-119	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-120	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-121	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-122	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-123	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-124	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-125	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-126	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-127	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-128	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-129	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000
PS-130	WATER SUPPLY CONTROL AND CONTROL	01	A-Budget	01	A-Budget	CEP	0	1,200,000

Proposed Project Ranking



In Conclusion

- Manitoba Hydro is in a very good position to handle the up coming work!
- We hope you have found this information helpful.

Grand Coulee Power Office – Review of Staffing and Processes MEETING MINUTES / NOTES

Meeting Title:	Benchmarking Conversation Chelan County Public Utility District & Grand Coulee Power Office		
Date:	January 12, 2012	Location:	Wenatchee
Start Time:	9:00am PT	Duration:	3 hours
Facilitator(s):	Sam Nott		

Meeting Participants	
GCPO	
Name	Title / Role
Eric Corbin	Deputy Power Manager
Scott Ross	Deputy Power Manager
CPUD	
Name	Title / Role
Brett Bickford	Rock Island Hydro Engineering Manger
Tom Treat	Director, Rock Island Hydro Division
Tony Nelson	Central Maintenance Mechanical Superintendent
MWH	
Name	Title / Role
Matt Crane	Senior Consultant and Project Manager
Sam Nott	Senior Electrical Engineer and Technical Lead

Meeting Minutes / Notes

NOTE: REFERENCE SLIDES AND ORG CHART PROVIDED BY CPUD

Maintenance & Operations

- Divided into Plant Maintenance (PM and PDM) and Central Maintenance (non-routine, capital, and RAX)
- Plant Maintenance is not designed to be big enough to handle forced outages
 - Provides 24-hour maintenance coverage and operations
 - 12-hour, 5-letter shifts
 - Provides avenue for new, junior employees to get into CPUD
- Central Maintenance
 - 46 mechanics doing non-routine maintenance
 - Add in capital and RAX...108 total staff
 - Staffing levels of this group have been consistent for about 15-20 years
 - Budget for 20-25% of their time as contingency (unplanned, unknown work)
 - Keep a list of backlog to get done in the meantime
- Plant and Central Maintenance leadership meet weekly to review resource needs, align priorities, and shift as needed

Grand Coulee Power Office – Review of Staffing and Processes

MEETING MINUTES / NOTES

- Ratio of supervisor to craft: about 20-to-1
- Ratio of foreman to journeymen: about 4 or 5 to 1
- Foremen do not rotate; journeymen rotate about every 6 months or so from plant to plant

Engineering

- Split between Engineering Services and Plant Engineers
- Plant Engineers
 - Physically located in plants
 - Generally more experienced engineers; staff move from Engineering Services into Plant Engineering
 - Work of these engineers is prioritized by the superintendents of each plant
- Engineering Services
 - Matrixed, projectized organization
 - Project engineer leads the effort and pulls from pool of engineers to support effort
 - During the project, they try to locate the engineer at the site of the work for experience and familiarity
- Have an independent QA/QC team within the Engineering group
- Engineering views the Plant and its Superintendent as its client or customer

Work Planning

- 2 centralized employees do all of the maintenance work planning, but it is plant focused
- On the project level, collaboration between the Plant Superintendent and the Project Manager is critical
- Use Maximo-P6 interface to do all of their resource planning across the organization
 - Includes costs, budgets, manpower planning
 - Allows all parties to look at the same thing: “one version of the truth”
 - Upward project management reporting is all done through P6, every 2 weeks
 - Do not do earned value; just CPI and SPI to track cost and schedule performance
- Planner assemble “work packets” for all foreman at the start of a particular task that includes drawings, SOPs, work orders, photos, operations manual sections, purchase orders, etc.

Knowledge Transfer and Retention

- Only once did they hire ahead of retirements
- Try to get own crafts staff assimilated with the contractors’ staff during the work
- Unit rehab work
 - Voith sent a supervisor plus 3 staff at T&M rates
 - CPUD provided 6-8 of its own staff out of the Central Maintenance group
 - Schedule followed is baked into and guided by the Chelan overall schedule
 - Allowed for great knowledge transfer from contractor to CPUD staff
 - As-builts are better since mark-ups were done by the staff that eventually would need to use the as-builts in the years to come
- On the capital projects, CPUD has staff to document procedures, SOPs, Operator Manuals, etc.
- Developed in-house graphic electronic O&M / Operator Manual system
- Project Management and Engineering practices are written down and populated in a system, all the way down to accessible templates

Grand Coulee Power Office – Review of Staffing and Processes



MEETING MINUTES / NOTES

QA / QC

- Have an independent QA/QC team within the Engineering group
- CPUD provides the QA on capital work; contractor provides the QC
- Require the contractors to provide Inspection Test Procedures
- Inspectors are all over the capital jobs during construction
- Both the engineer and inspector are involved during construction

Other / Miscellaneous


- CPUD has insurance for outages, based on risk
 - If a unit is out for a year, for example, CPUD gets coverage for the lost generation
- Generally run at about 10% overtime
- Produce a needs-based budget every year
- Document management and collaboration is through an in-house developed system similar to EA-Docs or Aconex
- Human Resources actively recruits employees
 - Colleges, trade shows, etc.
 - Encourage students to consider the hydropower industry
 - Provide plant tours to high school students




Grand Coulee Power Office

Best Practices in Hydropower Operations

January 12, 2012



Introductions

Organization	Name	Title
	Brett Bickford	Hydro Engineering Manager, Hydro Rehab Program Manager
	Tom Treat	Director Rock Island Hydro Operations
	John Yale	Hydro Engineering Plant Manager
	Dan Garrison	Director Rocky Reach Hydro Operations
	Tony Nelson	Mechanical Superintendent – Central Maintenance
	Mark Jensen	Power Manager
	Eric Corbin	Deputy Power Manager, O&M
	Scott Ross	Deputy Power Manager, Planning
	Matt Crane	Senior Consultant, Project Manager
	Sam Nott	Senior Electrical Engineer

Agenda

9:00 am to 11:00 pm

- Introductions
- Meeting Objectives and Purpose
- Overview of Chelan County PUD
- GCPO Current Situation
- Open Discussion

11:00 to 1:30 pm (Lunch Provided)

- Tour of Rock Island

2:30 to 4:00

- Travel to Rocky Reach and Tour

Meeting Objectives and Purpose

Context: Review of Staffing and Processes for the GCPO

- Recommend appropriate staffing levels and resource mix
- Recommend improvements to business and technical processes

Task 1	Task 2	Task 3
Assessment of Current Organization <ul style="list-style-type: none"> Review the current GCPO organization and business processes Understand current and future workload Collect quantitative data to support future-task analysis Identify preliminary hypothesized recommendations for future-task verification 	Staffing Analysis under Current Organization <ul style="list-style-type: none"> Analyze quantitative data from Task 1 Recommend staffing to meet current and future workload under current organization and processes Analyze risks of no action 	Analysis of Optimized Organization <ul style="list-style-type: none"> Facilitate management-level discussions with peer projects to benchmark organization, performance, and practices Analyze quantitative data from Task 1 Recommend optimized organization (structure, staffing, processes)
6 months	3 months	3 months

Meeting Objectives and Purpose

- Understand how Chelan PUD has historically addressed the challenges that the GCPO encounters today
- Share best practices among peer organizations
- Compare and contrast the organization structures, staffing levels, and resourcing approaches of the two organizations

Overview of Chelan PUD

- **Organization Chart**

 - [Chelan PUD Organizational Charts.pdf](#)

- **Rehabilitation Program History**

MWH 7

ROCKY REACH



MWH 8

ROCKY REACH

- 11 generators
- Generator nameplate capacity is 1,300 megawatts
- Dam contains 12 spillway gates
- Original construction started in 1956
- Commercial operation 1961 (seven generators)
- Four generators added in 1969 – 71

MWH 9

ROCKY REACH MODERNIZATION

- Plant modernization 1995 to 2007 - \$180 Million.
 - New transformers
 - 11 units with new runners (4 converted from fixed blade to adjustable)
 - 7 units new generators
 - 4 units new stators
 - New exciters and controls
- 3% efficiency improvement. No change in nameplate rating.

MWH 10

ROCK ISLAND



MWH 11

ROCK ISLAND

- 19 generators
- First powerhouse – 11 vertical shaft generators
- Second powerhouse - 8 horizontal shaft (bulb) generators
- Generator nameplate capacity is 624 megawatts
- Dam contains 31 spillway gates
- Original construction of PH1 completed in 1933 (4 units)
- Capacity expanded in 1952-1953 for Alcoa (6 Units)
- Second powerhouse was constructed in 1979
- First Powerhouse Modernization started 2003.

MWH 12

ROCK ISLAND REHABILITATION

- 2 units with new generators and turbines – 13% efficiency gain
- 3 units new stators, rotor repairs, turbine overhaul – 1% efficiency gain
- Exciter Replacements
- Governor Replacements
- Unit Control Replacements
- Station Service Upgrades
- Unit Breaker Replacements
- Unit Transformer Replacements
- Powerhouse Crane Replacement
- Draft Tube Stoplog and Crane Replacements
- New Draft Tube Dewatering System
- Balance of Plant Upgrades and Modifications
- \$120 Million spent to date

MWH 13


ROCK ISLAND MODERNIZATION – CAPITAL PROJECTS

PROJECT	2000-2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
RI to B10 Rehabilitation	Condition Assessment	MWH Feasibility	Award Part A, Model 1, 2	Order to Proceed Part B	Design & Manufact. B10 Turbine extrusion	Start Install B10 Jan. 07	Finish B10 Turbine extrusion	Finish B10 May 07	1 year trial operation (TOP) Order 2 re-starts (RI B1) - June	Manufacture 2nd Unit	Start Install of 2nd Unit	Complete 2nd Unit, 3 month trial operation, Warranty to 2014
RI to B4 Water and Cooler Replacement	ACREIS Feasibility	MWH Feasibility	RI E&E Report	RI E&E Report	CP&D Feasibility	CP&D Update/Reb. Assessment	Design	Manufacture	Install B10 stator and rotor coils for 4 Units	Complete B10 stator and rotor coils install	Complete B10 stator and rotor coils install	Install B10 stator-coils, Warranty to 2013
Crane Replacements New employ. Electrical Upgrade		Feasibility	RI E&E, Manufact.	Transfer and induce crane install	Install 2	Install 4	B10 Gen. Transformers	US, Battery Room, Install MCC's, UPS, plant power, Process CB's	RI, B4 Gen. tests	RI, B7 Gen. tests	RI, B8 Gen. tests	RI, B9 Gen. tests, Close-out
Balance of Plant Mechanical		Condition Assessment		Design	Design	Design	Design	Design	Design	Design	Design	Design
Fire Alarm Safety Improvements		Safety Initiative	Feasibility	Design	Design	Design	Design	Design	Design	Design	Design	Design
Maintenance Modernization	RI	Feasibility	Design	Design	Design	Design	Design	Design	Design	Design	Design	Design
Transformer Replacements	Feasibility	Design	Design	Design	Design	Design	Design	Design	Design	Design	Design	Design
Draft Tube Replacements	Feasibility	Design	Design	Design	Design	Design	Design	Design	Design	Design	Design	Design
Draft Tube Dewatering System	Feasibility	Design	Design	Design	Design	Design	Design	Design	Design	Design	Design	Design
Major Projects												

New Generator Breakers (8) New DC Converter New Station Service Breakers (4)

MWH 14

LAKE CHELAN



MWH 15

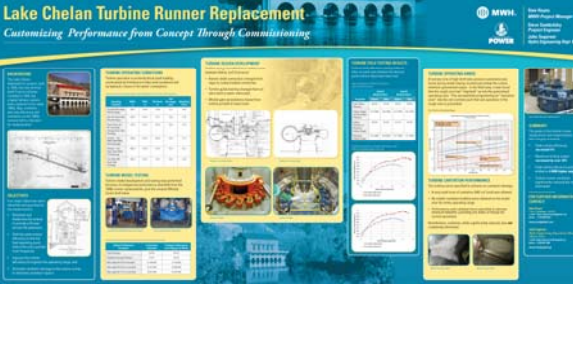
LAKE CHELAN

- 2 generators.
- Generator nameplate capacity is 59 megawatts.
- Original construction completed in 1927.
- Rehabilitation completed in 2010 including:
 - Turbine Replacements
 - Generator Replacements
 - Crane Rehabilitation
 - Control System and Unit Protection Replacement
 - Governor Replacements
 - Station Service AC and DC Upgrades
- Efficiency Increased by 4% and Peak Efficiency Zone moved to higher normal operating point.

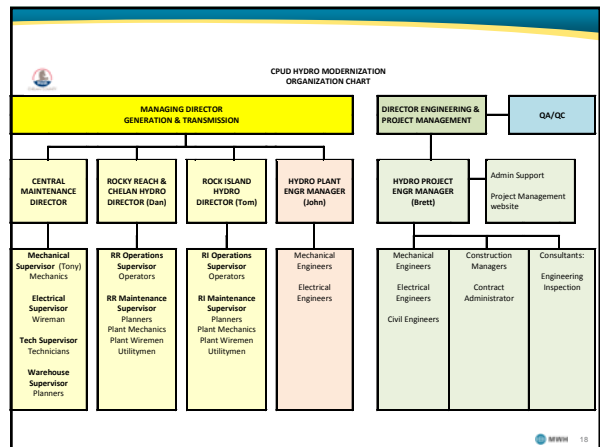
MWH 16

Lake Chelan Turbine Runner Replacement

Customizing Performance from Concepts Through Commissioning



MWH 17



GCPO Current Situation

MWH 19

United States Bureau of Reclamation

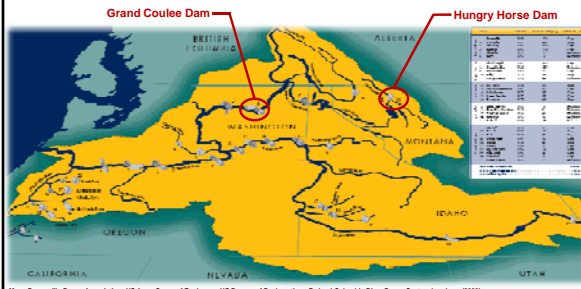
- Established in 1902 to develop water projects to reclaim land within the 17 western states to promote homesteading and economic development
- Constructed over 600 dams and reservoirs
- Largest wholesaler of water in the U.S.
 - 31 million people
 - Irrigation to 10 million acres
- Second largest hydroelectric producer in the U.S.
 - 58 powerplants
 - Approx. 15,000 MW
 - 40 billion kWh annually



MWH 20

Grand Coulee Power Office

- Manages and operates the Grand Coulee Dam in Washington and the Hungry Horse Dam in Montana



Map: Bonneville Power Association, US Army Corps of Engineers, US Bureau of Reclamation: Federal Columbia River Power System brochure (2003)

MWH 21

Grand Coulee Dam



Dam Characteristics

- Located on the Columbia River
- Provides flood control, irrigation, hydropower, recreation, stream flows, fish & wildlife benefits
- 5,233 ft (1,595 m) long, 550 ft (168 m) high dam
- 11,975,500 cubic yards (9,156,000 m³) of concrete
 - Largest concrete structure in North America
- Impounds Franklin D. Roosevelt Lake
 - 151 miles (243 km) long
 - 5,000,000 ac-ft of active storage

Powerplant Characteristics

- Right & Left Powerhouses
 - Original construction: 1933-1942
 - 18 total units, 125 MW each
 - Capacity per powerhouse: 1,125 MW
- Third Powerplant
 - Added 1967-1975
 - 6 total units (3 x 690 MW, 3 x 805 MW)
 - Capacity for powerhouse: 4,485 MW
- Also includes 12-unit pump-generating plant
- Total Capacity: 6,809 MW
 - Largest in North America & largest in the world
- Average flow: 110,000 cfs (3,115 cms)
- Average annual energy: 21,000 GWh

MWH 22

Hungry Horse Dam

Dam Characteristics

- Located on the South Fork Flathead River
- Provides flood control, irrigation, hydropower, recreation, and stream flow benefits
- 2,115 ft (645 m) long, 564 ft (172 m) high dam
- 3,086,200 cubic yards (2,359,600 m³) of concrete
- 3,468,000 ac-ft of storage

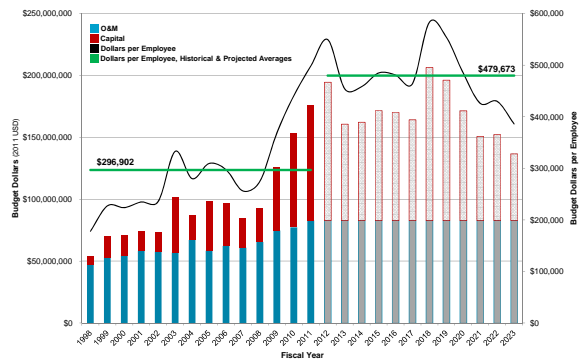
Powerplant Characteristics

- Original construction: 1948 – 1953
- 4 units, 107 MW each
- Total Capacity: 428 MW
- Max flow: 12,600 cfs (357 cms)
- Average annual energy: 900 GWh



MWH 23

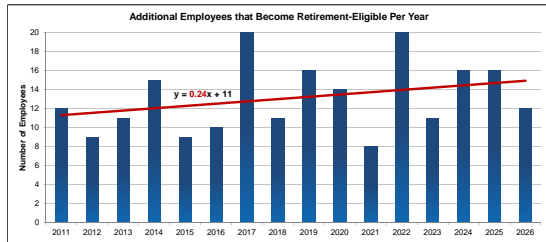
GCPO is on the cusp of a major increase in capital work



MWH 24

GCPO also faces aging workforce issues and hiring and staff retention challenges

- Industry-wide increase in retirement eligibility
- Remote nature of dam sites and Federal regulations introduces challenges in hiring and retaining staff at all levels



MWH 25

Summary of Study Findings

- 1. Large backlog of work**
 - Routine O&M (PMs)
 - Non-routine (Mods, CMs, Small Cap, RAX)
 - Large capital support
- 2. Organizational alignment**
 - Self-inflicted silos ("fiefdoms")
 - Competing objectives
 - Individual priorities rule over facility needs
 - Limited transparency
- 3. Attracting and retaining staff**
 - Limited by location, compensation structure, perceived obstacles in the hiring process
 - No incentive for term employees to stay

MWH 26

Summary of Study Findings

- 4. Organization-level planning**
 - Missing enterprise-wide work and outage planning and scheduling function
 - Existing schedules do not account for contingencies
 - Limited coordination between plant and construction activities
- 5. Ownership of projects from start to finish**
 - Projects of all sizes and varieties generally lack a single leader to shepherd project through entire process
 - Potential for rework, schedule delays, budget overruns, quality issues, etc.
- 6. Use of maintenance management system**
 - Varying degree of work order granularity across groups
 - Incomplete definition of work orders and job plans
 - Work orders not updated based on actual labor

MWH 27

Summary of Study Findings

- 7. Transition planning and knowledge transfer**
 - Large turnover and retirements
 - Little overlap between departing and arriving employees
 - Limited capture of plant-specific knowledge
- 8. Training**
 - "One size fits all, check the box" approach
 - Not always aligned with organizational priorities, professional development goals
 - Limited coordination across enterprise
 - Varying views of apprenticeship program
 - Limited orientation for new employees
- 9. Coordination with external partners**
 - Unclear definition of expectations
 - Limited performance tracking capabilities
 - Limited understanding of others' procedures and requirements

MWH 28

Open Discussion

Suggested Discussion Points

MWH 29

Discussion Points

1. Project Management system and implementation at Chelan PUD.
2. Staffing for rehabilitation: Project Management, Engineering, Crafts, QA/QC, Procurement, support.
3. Engineering workload scheduling and management.
4. O&M organization and maintenance management systems.
5. Employee hiring and retention.
6. Knowledge transfer. OMs.
7. Scheduling.
8. Rehab lessons learned.
9. Document management system.
10. QA/QC

MWH 30



CHELAN COUNTY

Organizational Chart
December 21, 2011

General Manager
John Janney

Executive Assistant/
Clerk of the Board
Sheila Salmon

Managing Director -
Fiber &
Telecommunications
(Chris Church - Interim)

Managing Director -
Human Resources /
Labor Relations
LaDawn Ostmann

Managing Director
Customer Utilities
John Stoll

General Counsel/
CCO
Carol Wardell

Managing Director -
District Services
Wayne Wright

Chief Finance/Risk
Officer - CFO-CRO
Kelly Boyd

Managing Director -
Generation &
Transmission
Kirk Hudson

Managing Director -
Energy Resources
Gregg Carrington

Fiber &
Telecommunications
System Manager
Von Tucker

Compensation
Program Manager
Allison Brodine

Utility Vegetation
Program Manager
William Sanborn

Staff Attorney
Karen Wiggum

Business Advisor
Felicity Saberhagen

Director - Accounting
Controller
Diane Cooper

Director-RI Hydro
Division
Tom Treat

Power Resource
Engineer/Analyst 2
Melissa Lyons

Fiber &
Telecommunications
Superintendent
Brian Lowe

Organizational
Development Program
Manager
Jennifer Taylor

Business Advisor
Jennifer Pickel

Compliance Program
Manager
Melinda Barnes

Director - Safety and
Health Division
Ron Franklin

Director - Treasury/
Treasurer
Debbie Litchfield

Business Advisor
David Nelson

Energy Planning &
Trading Manager
Janet Jaspers

Fiber Program
Assistant
Melissa Mayer

Recruiting Program
Manager
Ruth Erwert

Distribution
Engineering Manager
Chad Rissman

Staff Attorney
Erik Wahlquist

Director -
Communications
Division
Steve Lachowicz

Administrative
Assistant II
Lisa Everhart

Director -
Transmission &
Compliance
Chad Bowman

Senior Power
Resource Engineer/
Analyst
Gary Donabauer

Benefits Program
Manager
Beverly Freeman

Administrative
Assistant II
Catherine Melton

Administrative
Assistant
Karen Welton

Director - Shared
Services Division
Steven Currit

Director-Information
Technology
Greg Larsen

Director - Central
Maintenance Division
Steven Gurnard

Power Resource
Engineer/Analyst 2
Mike Bradshaw

Human Resources
Assistant
Erin Roberts

Customer Service
Manager
Andrew Wendell

Internal Audit
Manager
Stacey Jagla

Director - Security
Division
William Larson

Director - Strategic
Financial Planning
Division
Mark O'Bryan

Senior Program
Analyst
Janel Duffy

Power Marketing
Program Manager
Holli Krebs

HRIS & Payroll
Program Manager
Tracey Lazzarino

Water/Waste Water
Manager
Ron Slabaugh

Director -
Engineering Services
Division
Chris Church

Director - Enterprise
Risk Management
(Greg Larsen -
interim)

Director - Natural
Resources
Keith Truscott

Energy Development
and Conservation
Manager
Andrew Grassell

Distribution
Operations Manager
Bob Sparks

Director - External
Affairs Division
Jeff Smith

Finance Systems
Program Manager
Jon Borell

Director-RR/LC
Hydro Division
Dan Garrison

CIS Administrator
Kerri Wendell

Hydro Engineering
Plant Manager
John Yale

Transmission &
Distribution Stations
Superintendent
JC Blankenship

Distribution
Superintendent
Timothy Pettit

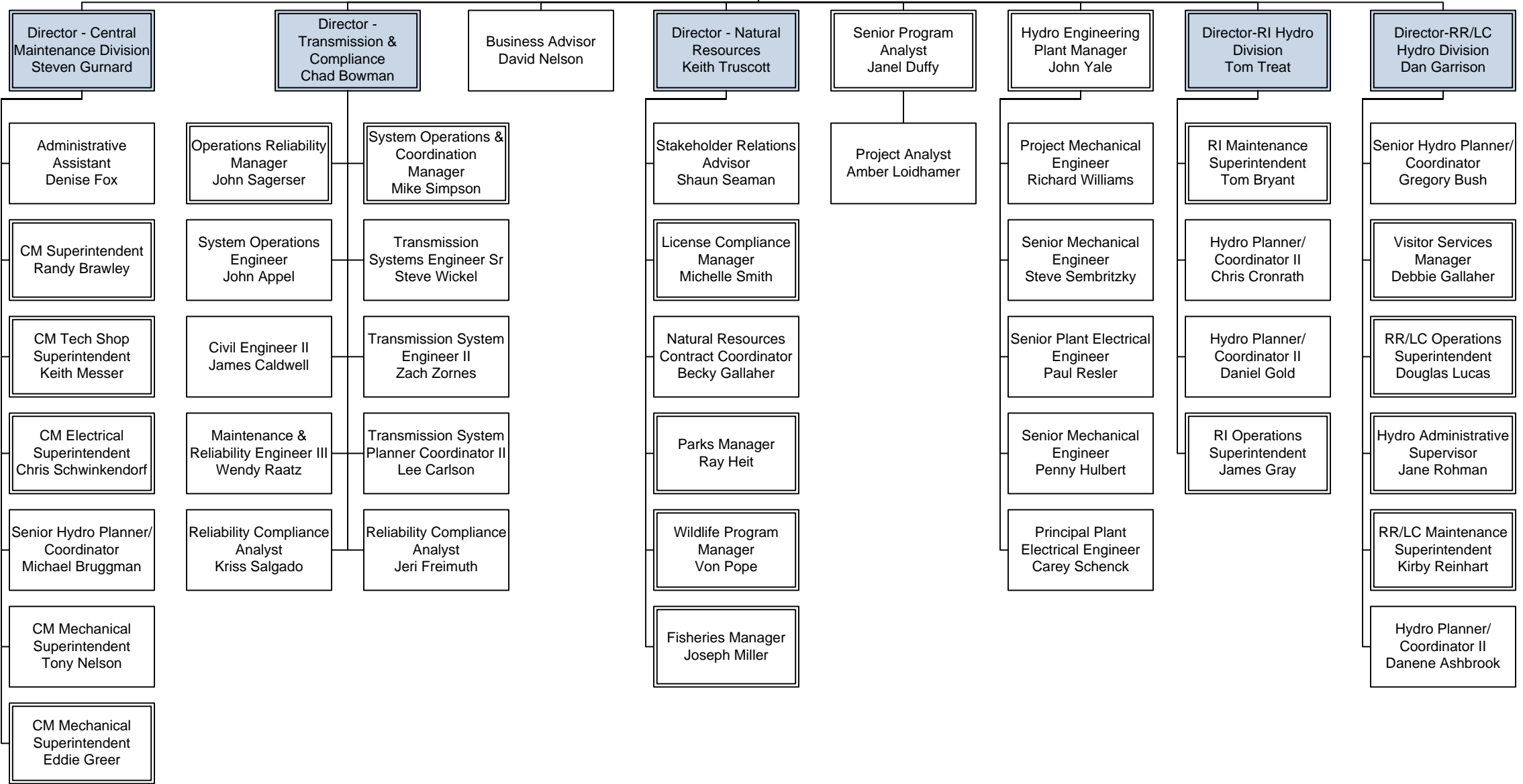
Click Blue Boxes
to see More Detail

Click Green Boxes to
go to Higher Level



Organizational Chart
December 21, 2011

Managing Director - Generation & Transmission
Kirk Hudson



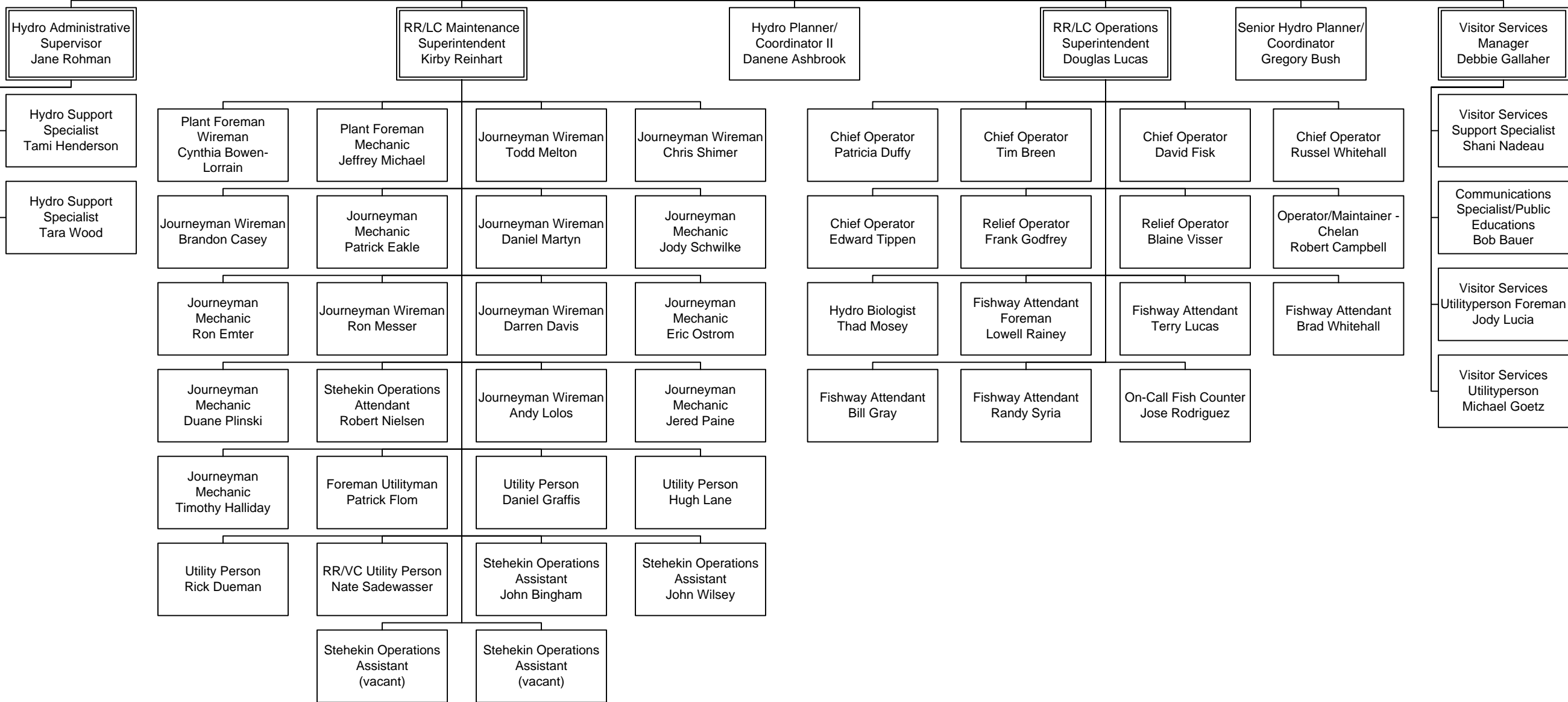
Click Blue Boxes
to see More Detail

Click Green Boxes to
go to Higher Level



Organizational Chart
December 21, 2011

Director-RR/LC Hydro Division
Dan Garrison



Click Blue Boxes
to see More Detail

Click Green Boxes to
go to Higher Level



CHELAN COUNTY

Organizational Chart
December 21, 2011

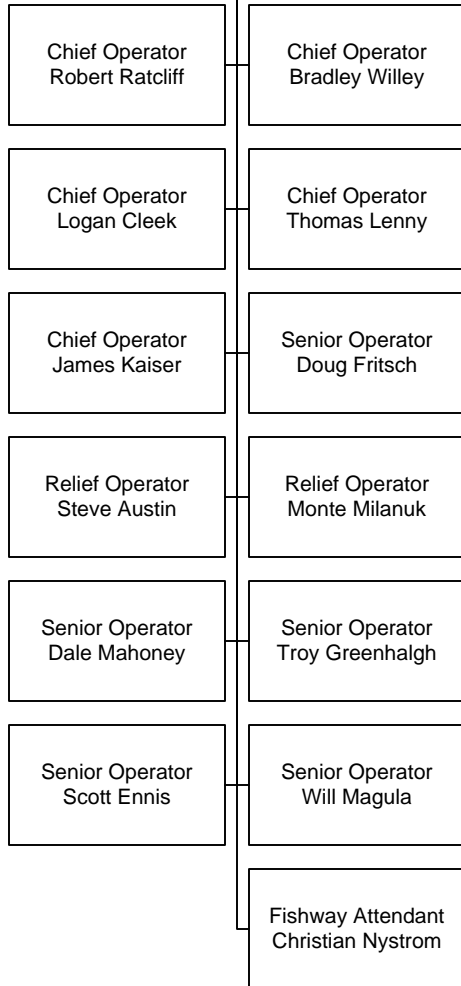
Director-RI Hydro Division
Tom Treat

RI Operations
Superintendent
James Gray

Hydro Planner/
Coordinator II
Daniel Gold

Hydro Planner/
Coordinator II
Chris Cronrath

RI Maintenance
Superintendent
Tom Bryant



Click Blue Boxes
to see More Detail

Click Green Boxes to
go to Higher Level



Director - Central Maintenance
Division
Steven Gurnard

Administrative
Assistant
Denise Fox

CM Mechanical
Superintendent
Eddie Greer

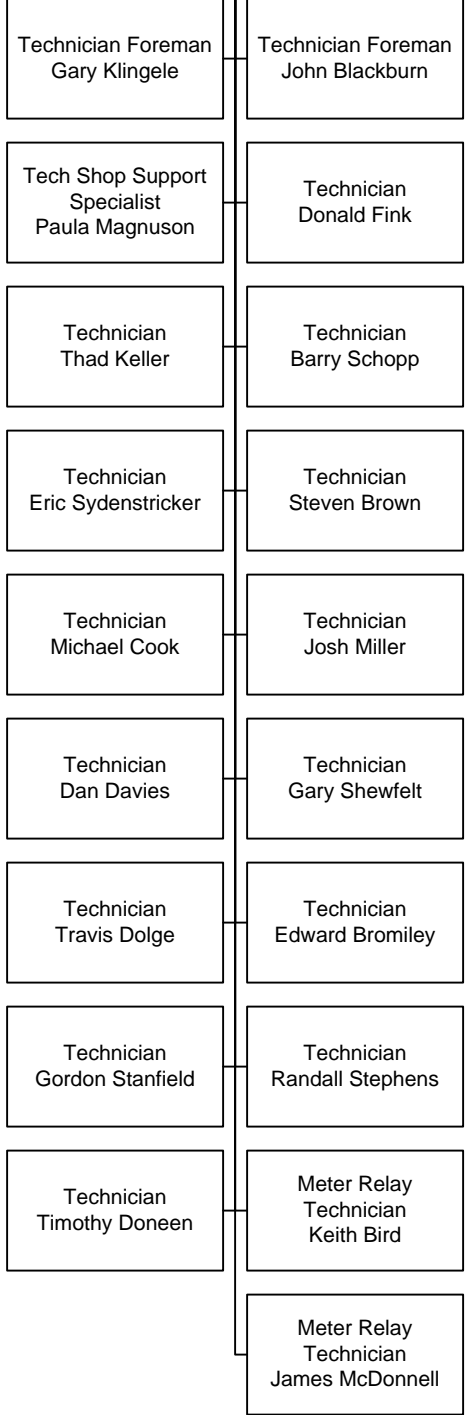
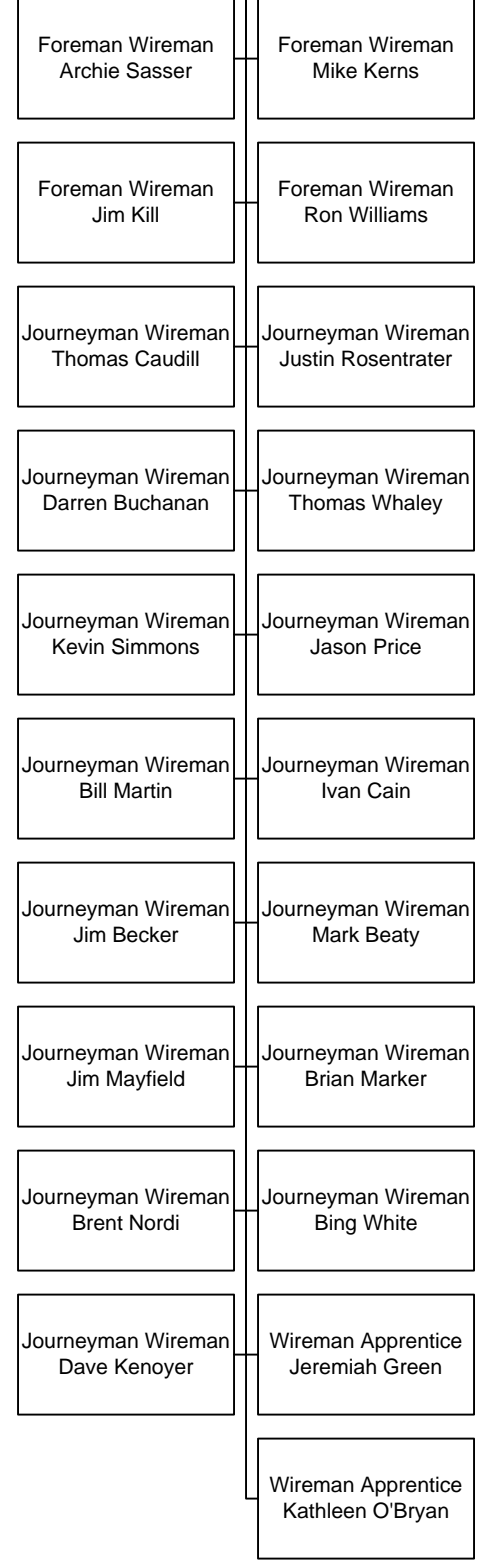
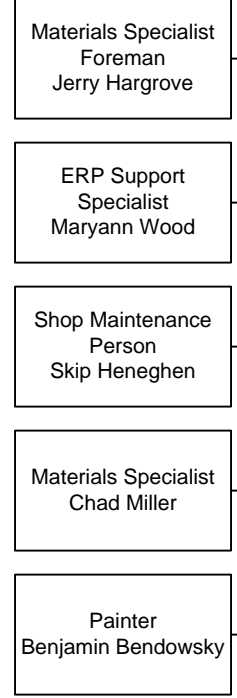
CM Mechanical
Superintendent
Tony Nelson

CM Superintendent
Randy Brawley

Senior Hydro Planner/
Coordinator
Michael Bruggman

CM Electrical
Superintendent
Chris Schwinkendorf

CM Tech Shop
Superintendent
Keith Messer

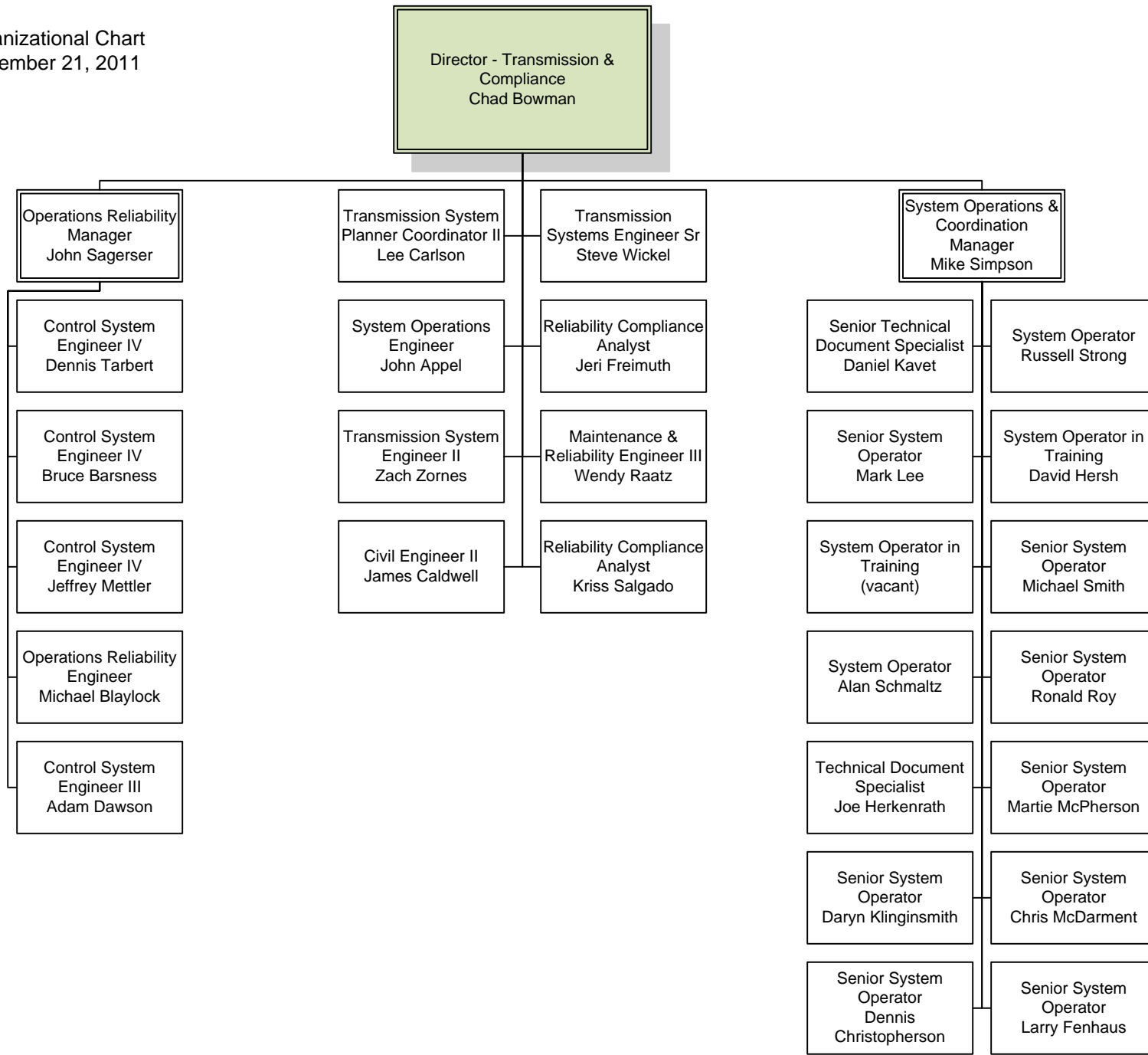


Click Blue Boxes
to see More Detail

Click Green Boxes to
go to Higher Level



Organizational Chart
December 21, 2011

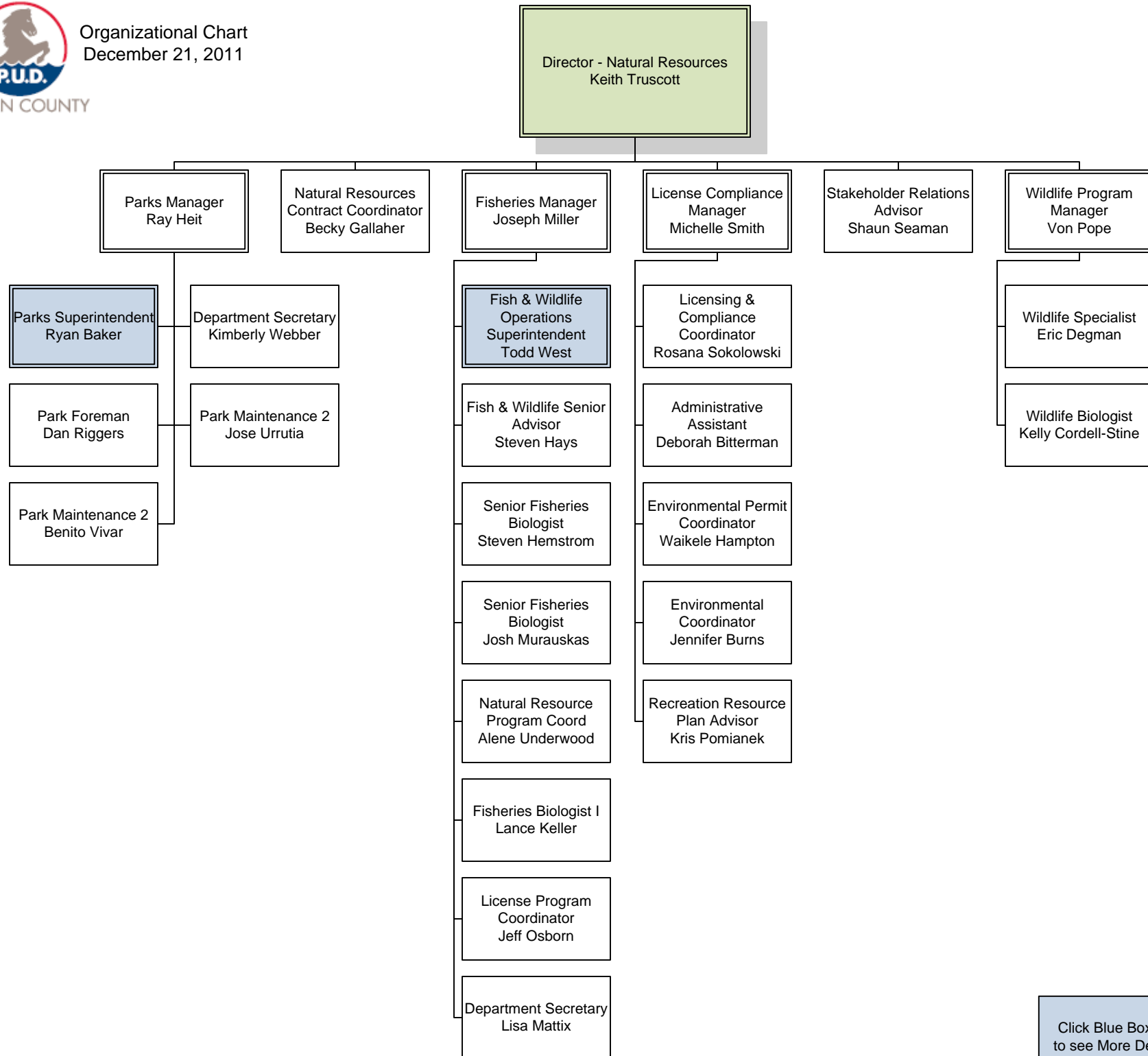


Click Blue Boxes to see More Detail

Click Green Boxes to go to Higher Level



Organizational Chart
December 21, 2011



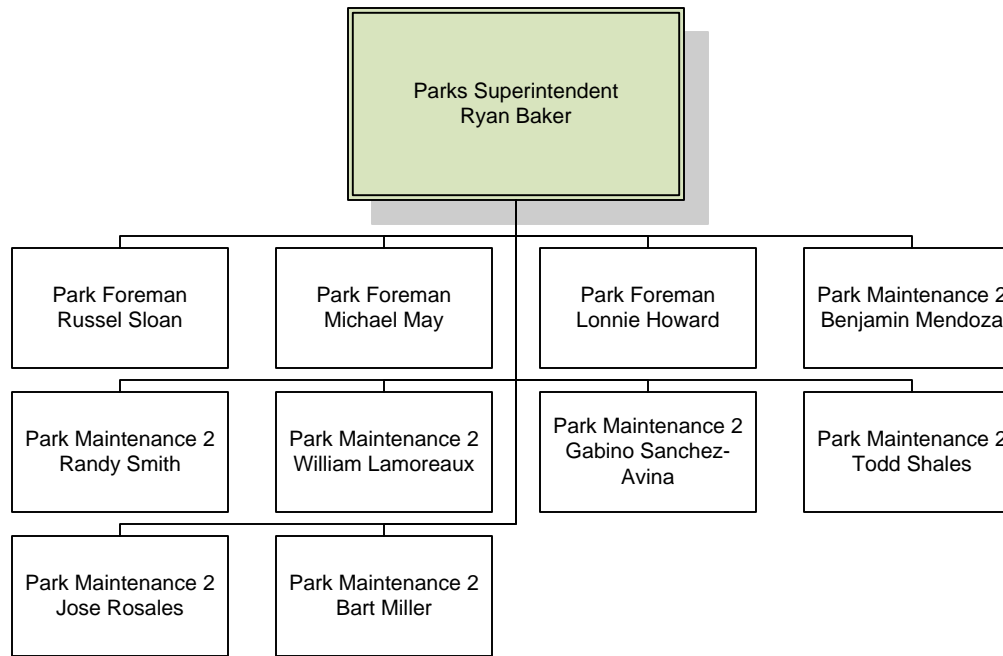
Click Blue Boxes
to see More Detail

Click Green Boxes to
go to Higher Level



Organizational Chart
December 21, 2011

CHELAN COUNTY

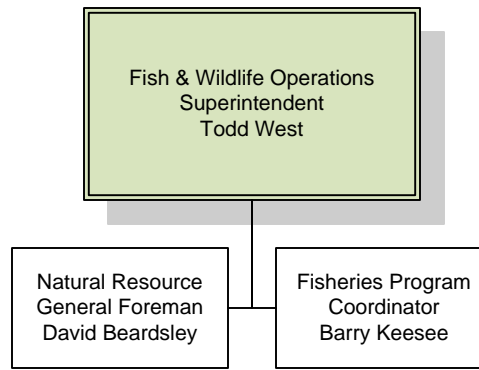


Click Blue Boxes
to see More Detail

Click Green Boxes to
go to Higher Level



Organizational Chart
December 21, 2011



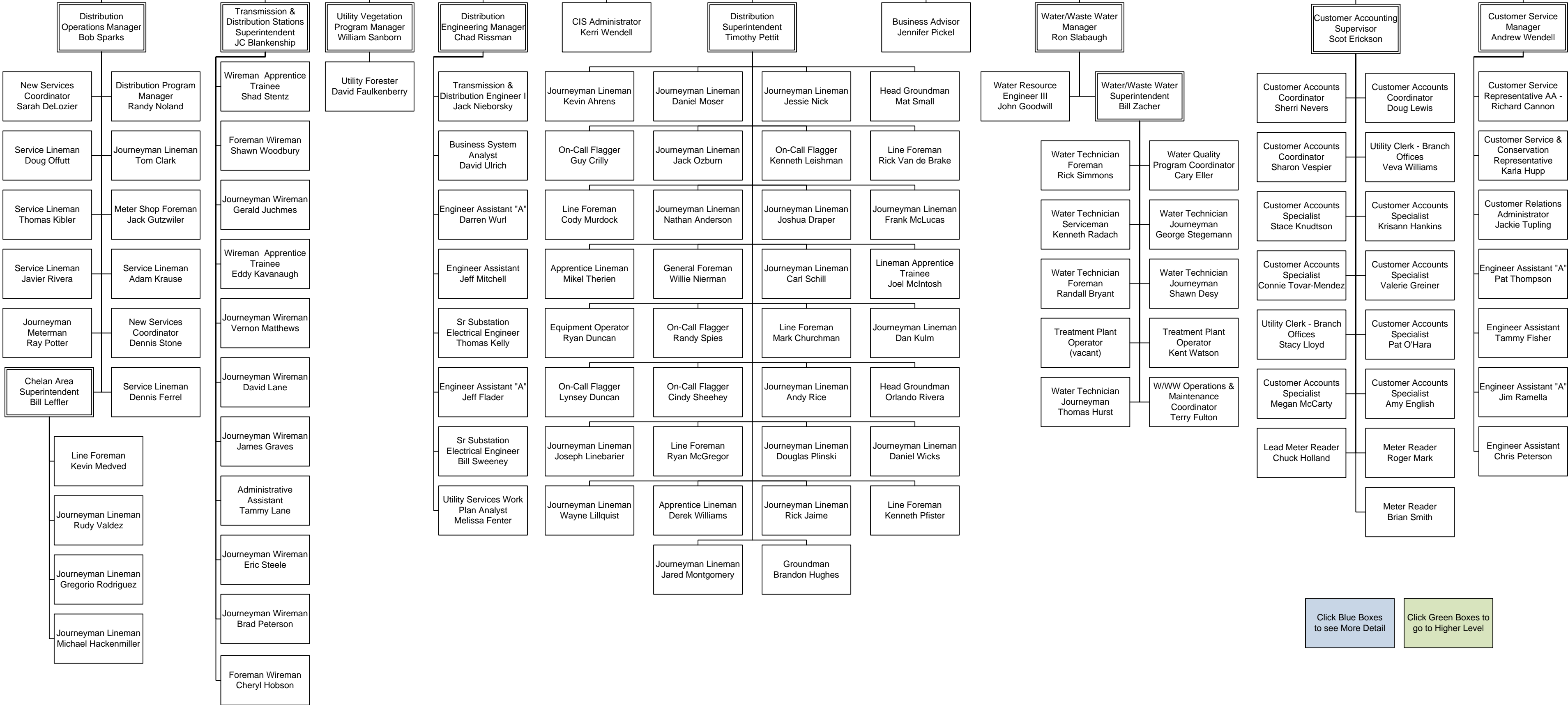
Click Blue Boxes
to see More Detail

Click Green Boxes to
go to Higher Level



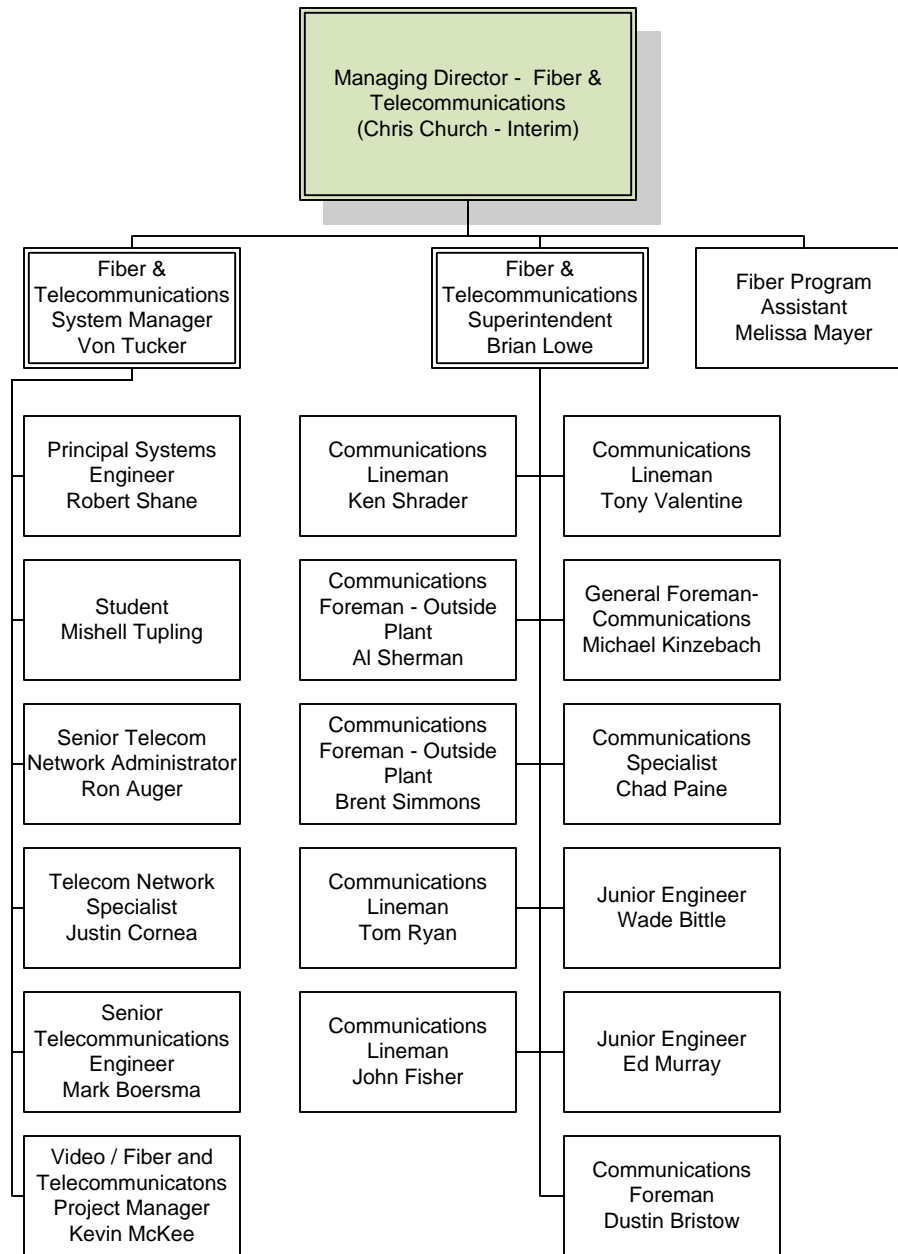
Managing Director Customer Utilities
John Stoll

Administrative Assistant II
Catherine Melton



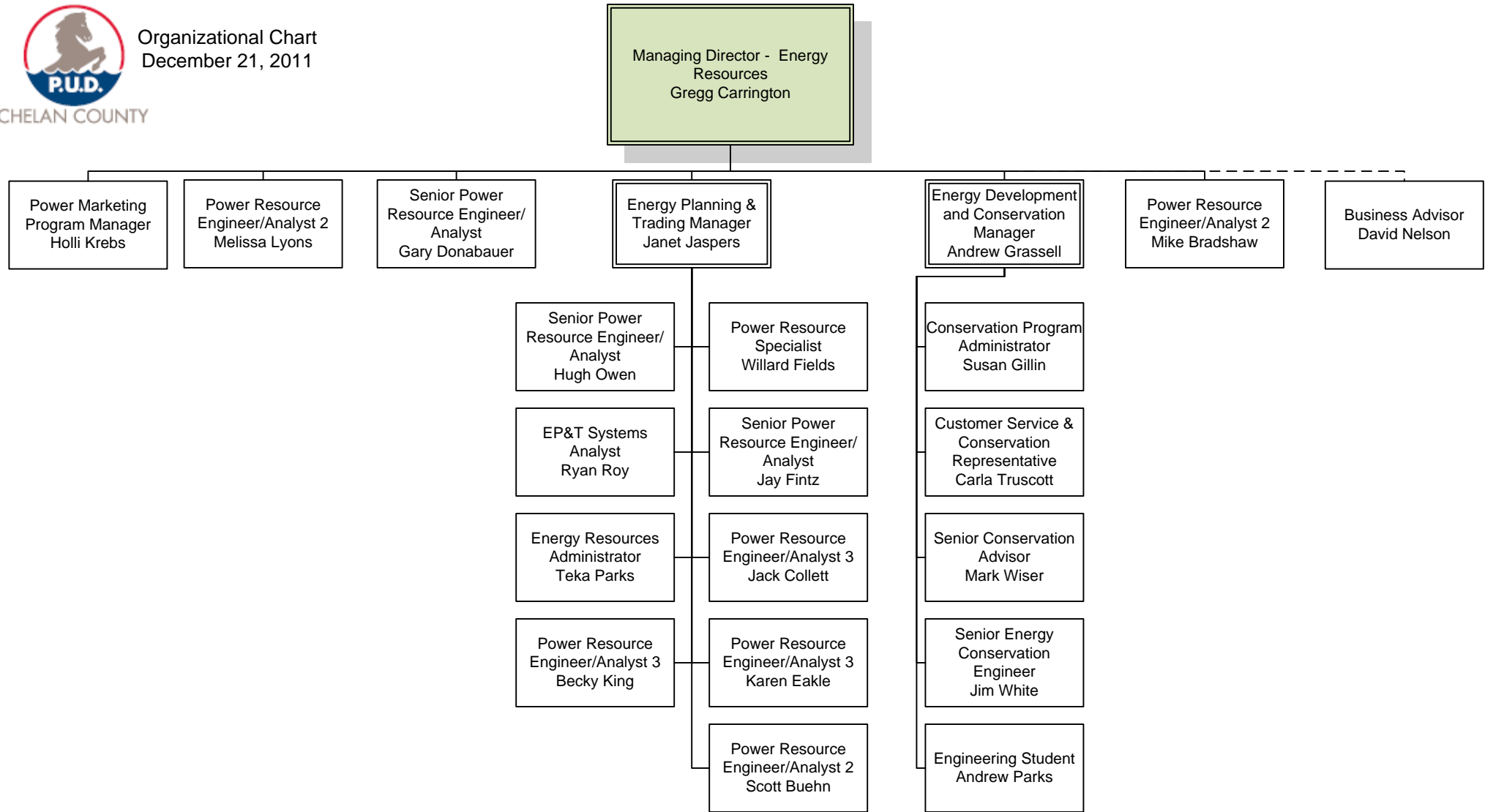
Click Blue Boxes to see More Detail

Click Green Boxes to go to Higher Level



Click Blue Boxes
to see More Detail

Click Green Boxes to
go to Higher Level



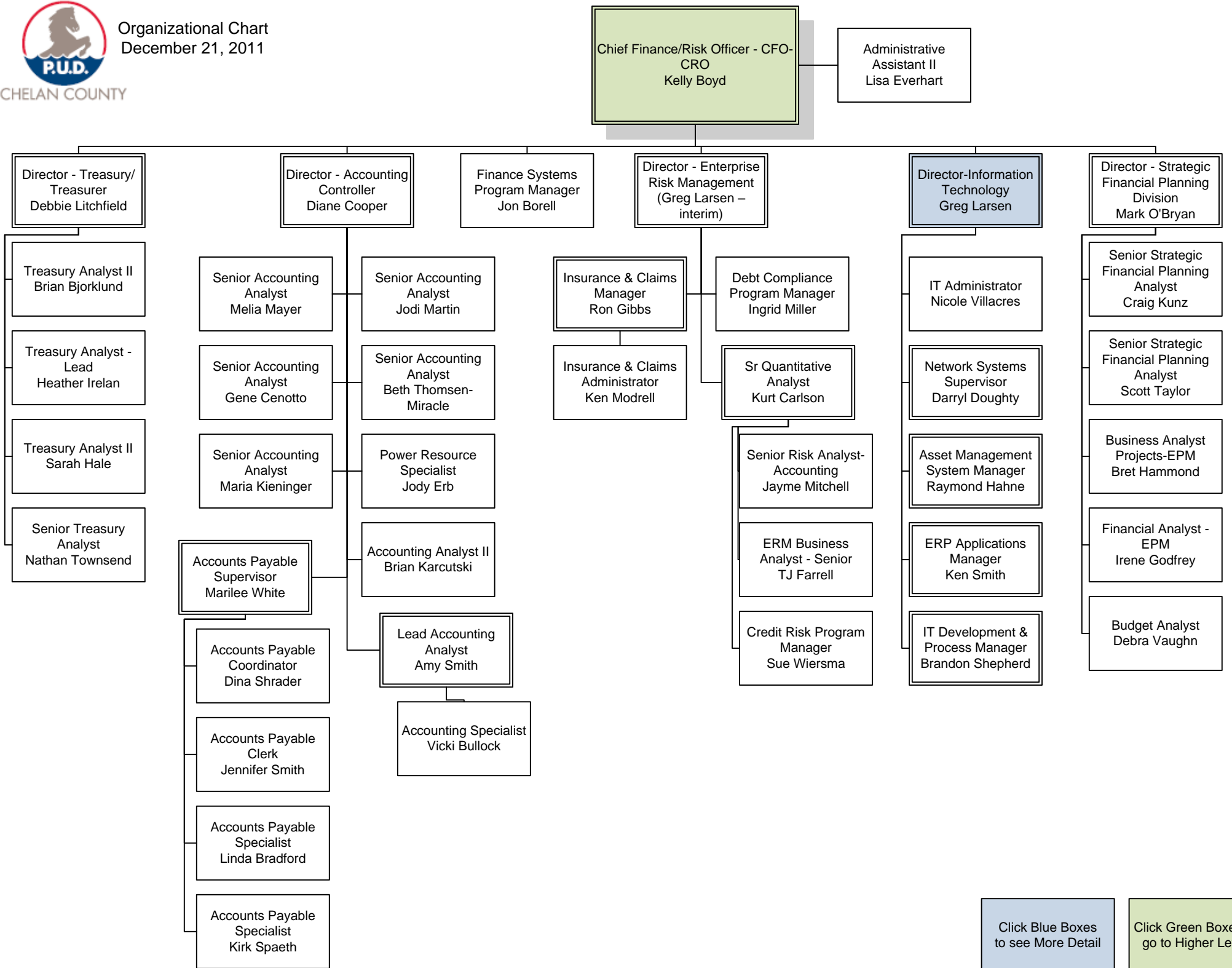
Click Blue Boxes
to see More Detail

Click Green Boxes to
go to Higher Level



Organizational Chart
December 21, 2011

CHELAN COUNTY



Click Blue Boxes
to see More Detail

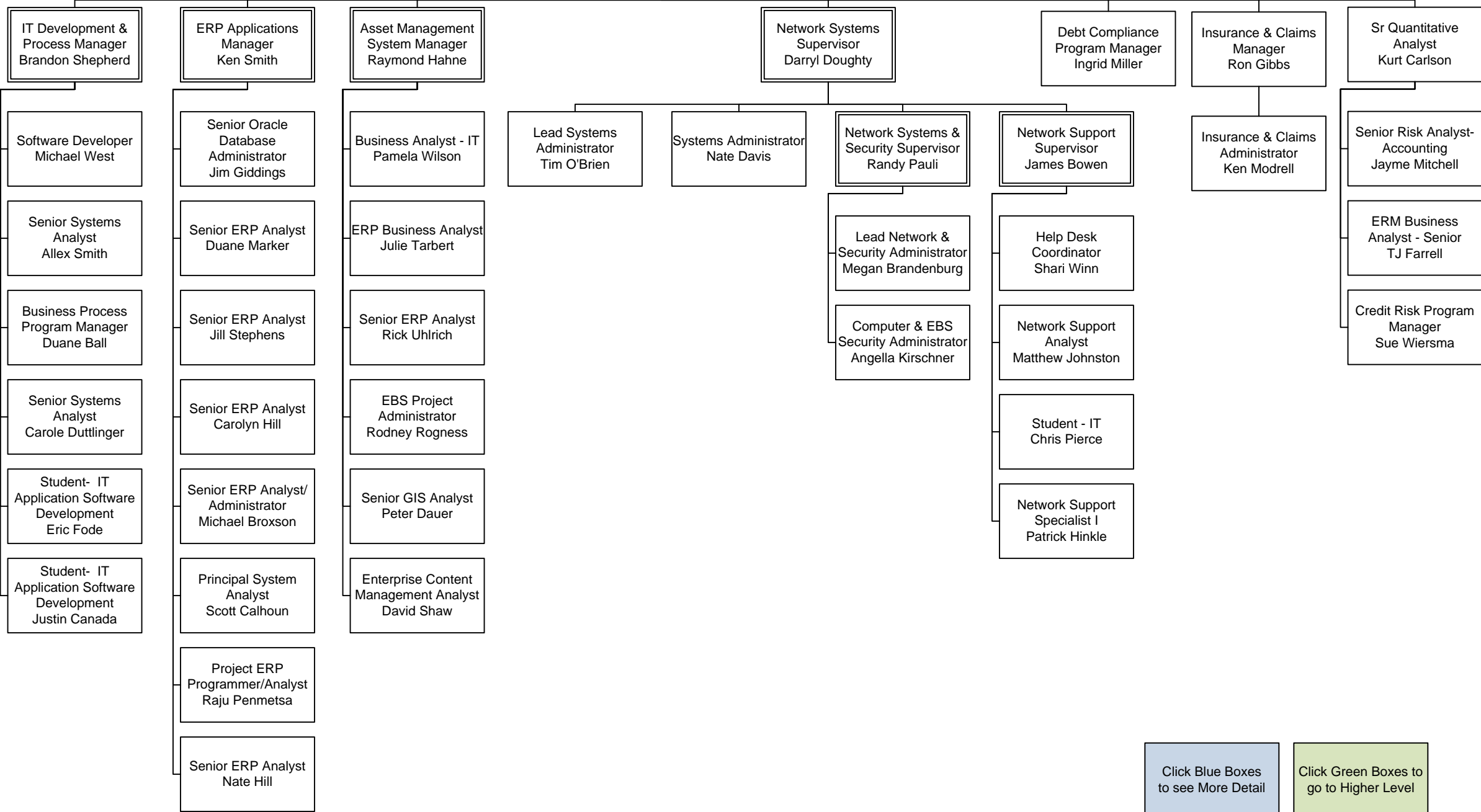
Click Green Boxes to
go to Higher Level



Organizational Chart
December 21, 2011

Director-Information Technology
Greg Larsen

IT Administrator
Nicole Villacres

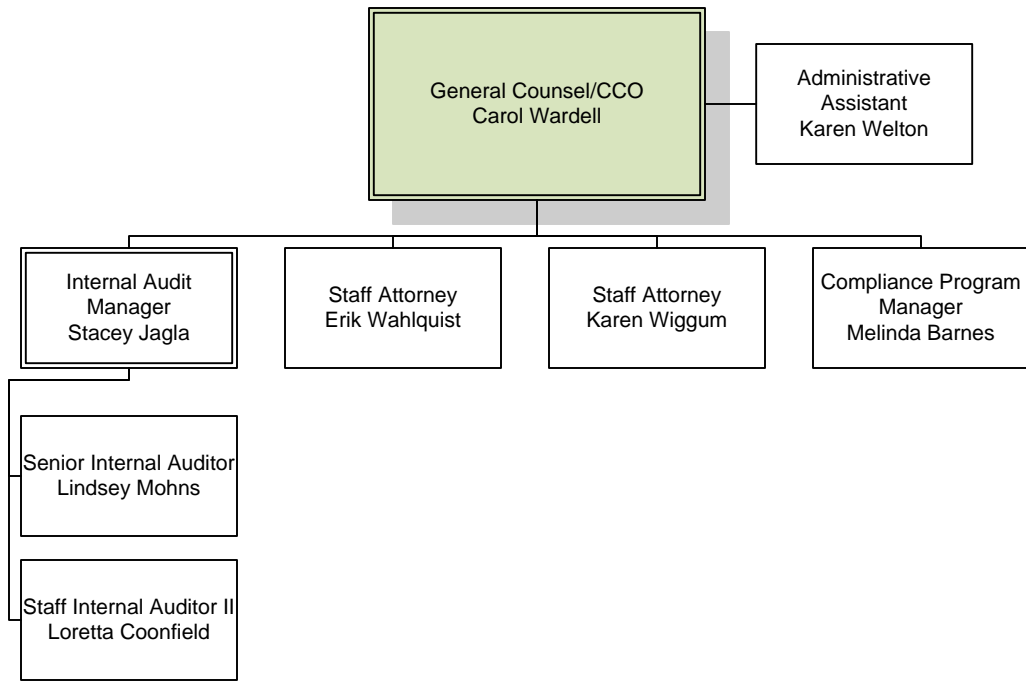


Click Blue Boxes
to see More Detail

Click Green Boxes to
go to Higher Level



Organizational Chart
December 21, 2011

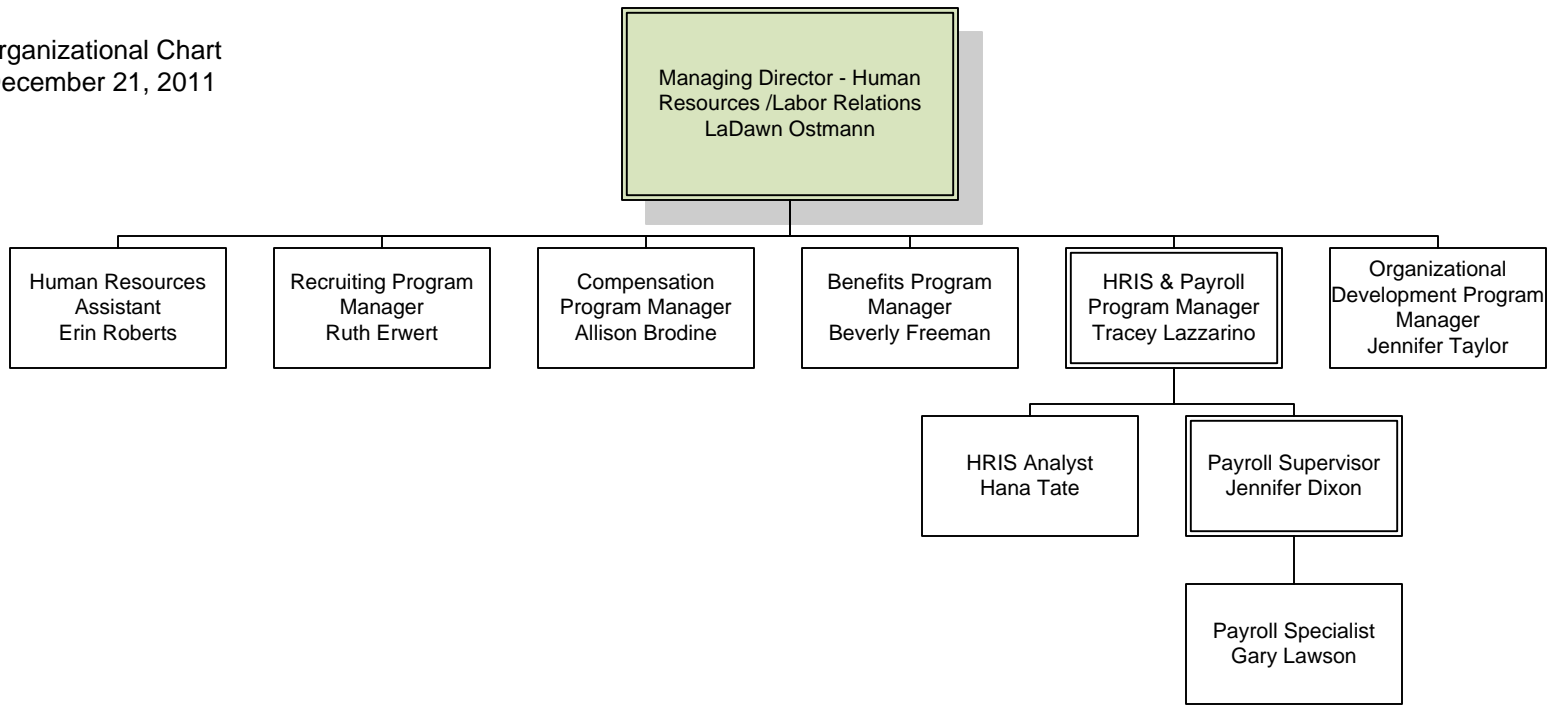


Click Blue Boxes
to see More Detail

Click Green Boxes to
go to Higher Level



Organizational Chart
December 21, 2011



Click Blue Boxes
to see More Detail

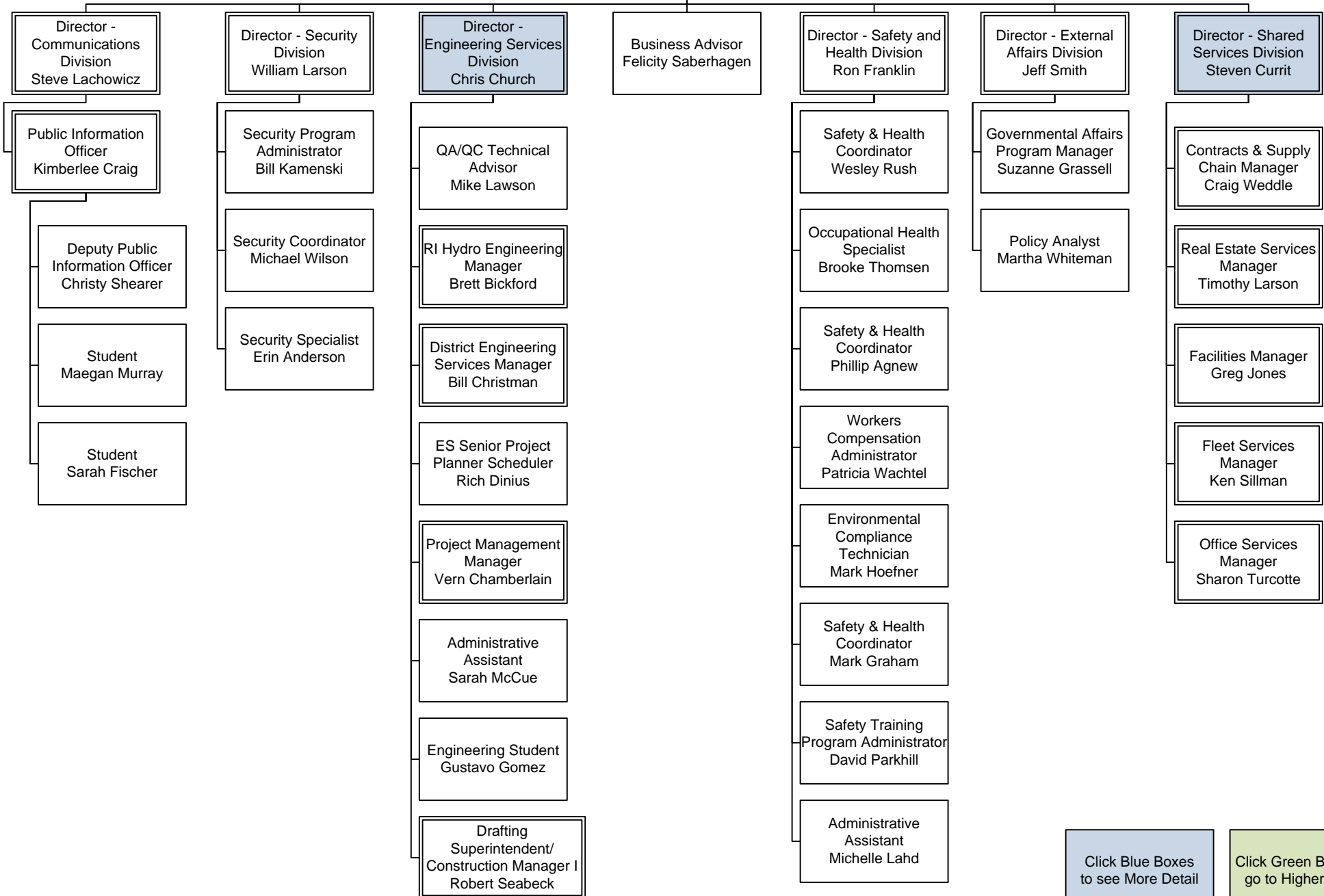
Click Green Boxes to
go to Higher Level



Organizational Chart
December 21, 2011

CHELAN COUNTY

Managing Director - District Services
Wayne Wright

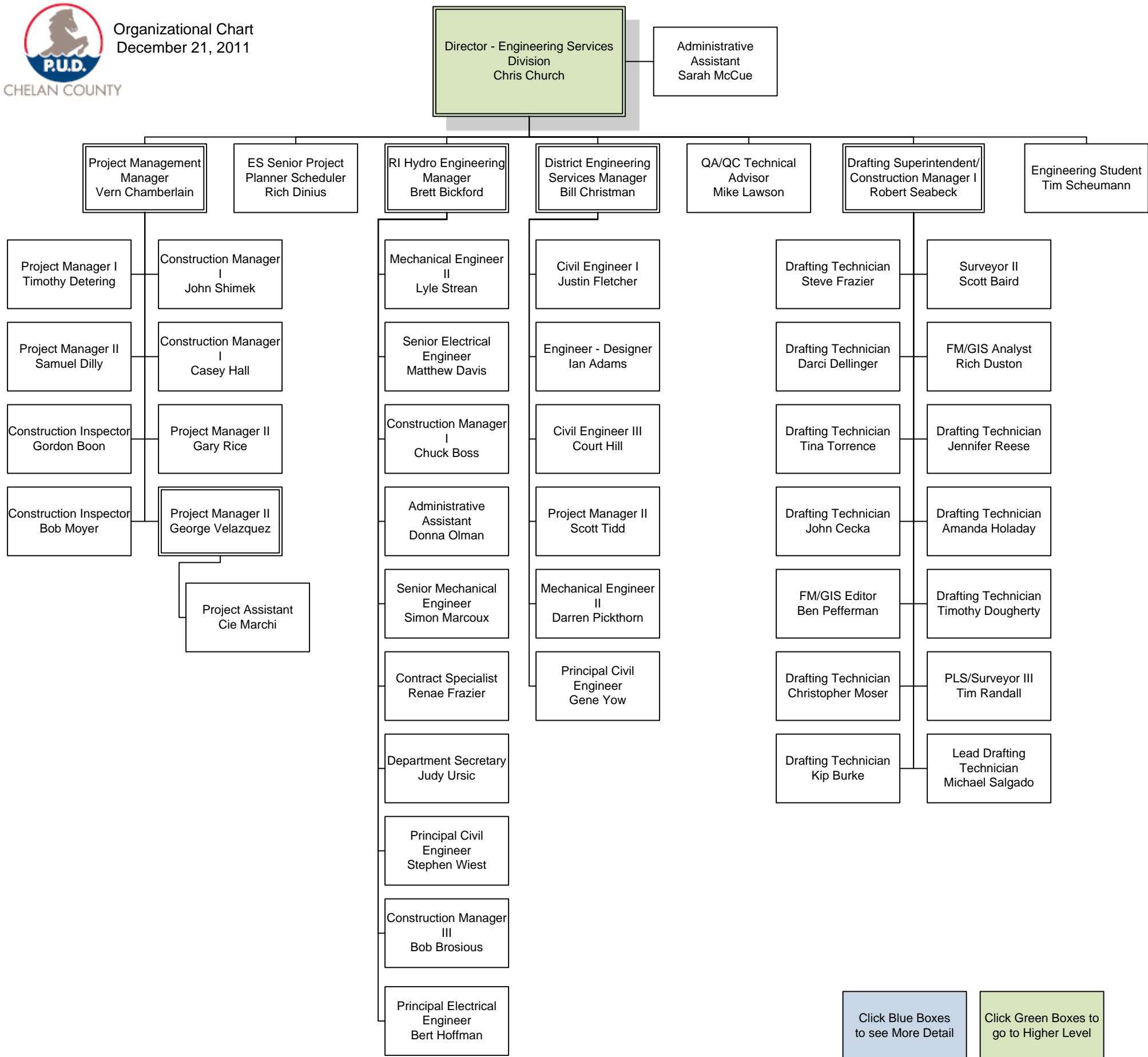


Click Blue Boxes
to see More Detail

Click Green Boxes to
go to Higher Level

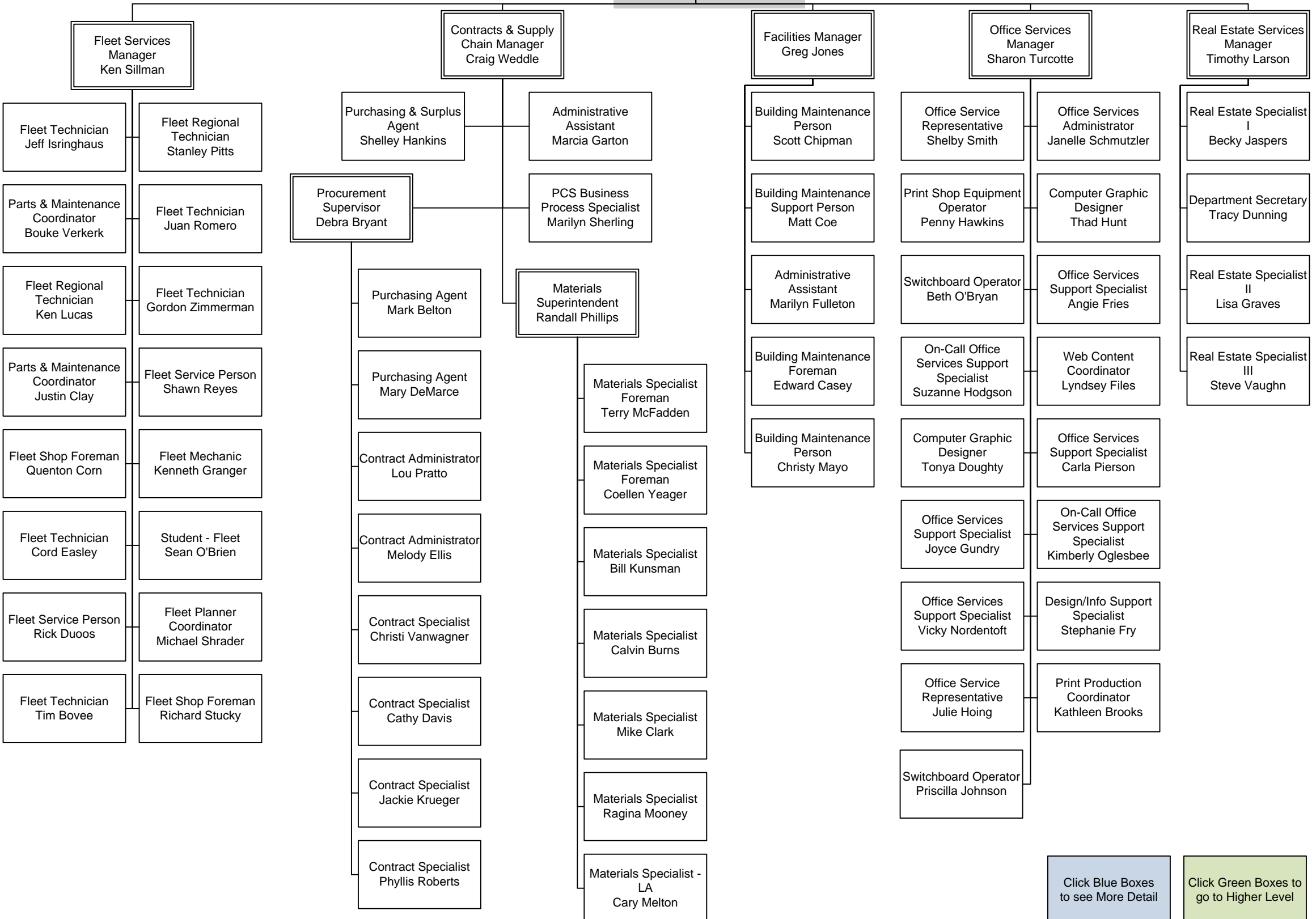


Organizational Chart
December 21, 2011





Director - Shared Services
Division
Steven Currit



Click Blue Boxes
to see More Detail

Click Green Boxes
to go to Higher Level

Grand Coulee Power Office – Review of Staffing and Processes

MEETING MINUTES / NOTES

Meeting Title:	Benchmarking Conversation Manitoba Hydro & Grand Coulee Power Office		
Date:	March 8, 2012	Location:	McNary Dam
Start Time:	10:00am PT	Duration:	2.5 hours
Facilitator(s):	Ed Carter		
Attachment:	Walla Walla org charts (McNary on page 9)		

Meeting Participants	
GCPO	
Name	Title / Role
Mark Jenson	Power Manager
Eric Corbin	Deputy Power Manager
McNary Dam, ACOE Walla Walla District	
Name	Title / Role
Dave Coleman	Operating Project Manager
Tim Roberts	Operations
Charles Mack	Engineering
Kathy Spillane	Project Manager (Walla Walla)
John (Borglan?)	Construction Technical Expert (Walla Walla)
Rick Werner	Chief of Operations (Walla Walla)
Glen Matlock	Construction – Administrative Contracting Officer
MWH	
Name	Title / Role
Ed Carter	Senior Vice President
Sam Nott	Senior Electrical Engineer and Technical Lead

Meeting Minutes / Notes

The meeting was a free flowing group discussion that addressed the topics as contained in the slide presentation. These meeting notes have been arranged according to topics covered.

Program Management

- A modernization study was previously conducted identify the rehab needs and justify and prioritize the work. This is referred to as “McMod” with a ten year plan
- Dave thinks this was a great effort with a great team leading it.
- AS part of McMod fish friendly turbines were to be developed and the goal was to pass the water through McNary as it is the bottleneck in the BPA system.
- The Judge ordered BiOps that required 50% of McNary water spilled derailed the “McMod” plan as the turbine mods were not longer economically feasible.

Grand Coulee Power Office – Review of Staffing and Processes

MEETING MINUTES / NOTES

- After “McMod” fell apart there have been Balance of Plant upgrades and now due to winding failures generator rewinds are being done. But there is no master plan.
- Dave would like to see a “McMod” 2 plan to prioritize the work and come up with a new master plan.
- There needs to be plan that balances the capital work with the O&M needs.
- Staffing needs for any plan need to be addressed and in place before projects are started.
- BPA has an asset planning tool similar to HMI/AIP they use based on HydroAmp conditions to prioritize work. Jim Plume runs this.

Project Management

- The project management group is based in the Walla Walla District and serves the projects.
- Project management is from cradle to grave. Although PM may be reassigned during the project.
- Construction used to only after contract award but evolved to cover all PM.
- Kathy is the PM for the rewind projects currently on-going at McNary.
- The plant thinks this system is very effective.
- The PM group has 3 Resident Engineers that rotate through the Walla Walla Projects.
- The COR is located at the project and is over QA and contract administration.
- ACOE has a computer based PM system that has a PMP Builder function so all projects are managed the same. This system give a dashboard for every to see the status of the projects.
- This system was built by ACOE (I think it runs on sharepoint).
- There are project review boards.

Engineering

- There are 5 engineering positions and currently only 3 are filled.
- McNary has a history of not being able to keep engineering positions filled due to positions topping out at GS-11.
- **The biggest point of the meeting for Dave was to emphasis that GS-11 engineering position limits should be raised to GS-12 like other plants.**
- Engineering support of the rehab projects is provided by ACOE HDC.
- The engineers are McNary work on both routine and non-routine work.
- The engineers don't have any time for predictive maintenance engineering.
- One engineer at the plant is assigned the Point of Contact for the Contractors and usually holds the safety clearance. He also keeps an archive of the work.
- An as-built process and procedures is being put in place and is being used to as-built at the initial stage of new projects, BPA is funding this.

Quality Management

- Quality management is important to the ACOE. They use the 3 phase QM system.
- Inspection and test procedures are required to be submitted by the contractor.
- John is the technical expert for the rewind contract and conducts QA of the contractor QC.

Grand Coulee Power Office – Review of Staffing and Processes

MEETING MINUTES / NOTES

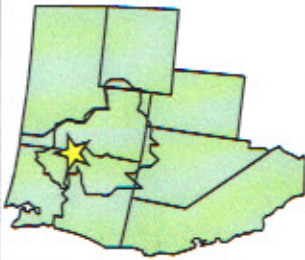
- All quality procedures are submitted as reviewed by both HDC engineering, John, the inspectors, and the plant if needed.
- The inspectors work under John and give full time coverage when the contractor is on site.
- Inspector's reports are detailed on the work activities and verify all test reports.
- Some inspectors are retirees that have expertise in the work.
- Commissioning plans are developed long before commissioning starts. These are based on input for Contractor, HDC, plant crafts and engineering. These are detailed step by step procedures.
- There are commissioning meeting held daily during commissioning.

Routine Maintenance

- They are keeping up with Preventative maintenance for the critical components. Not enough time for lower level maintenance.
- The forces outage rate has been steady.
- Availability if down due to planned outages with the rewinds.
- An ACOE version of Maximo is used.
- Job plans and readings input to Maximo could be improved.
- The PM work is good as McNary has a strong base of knowledgeable employees.

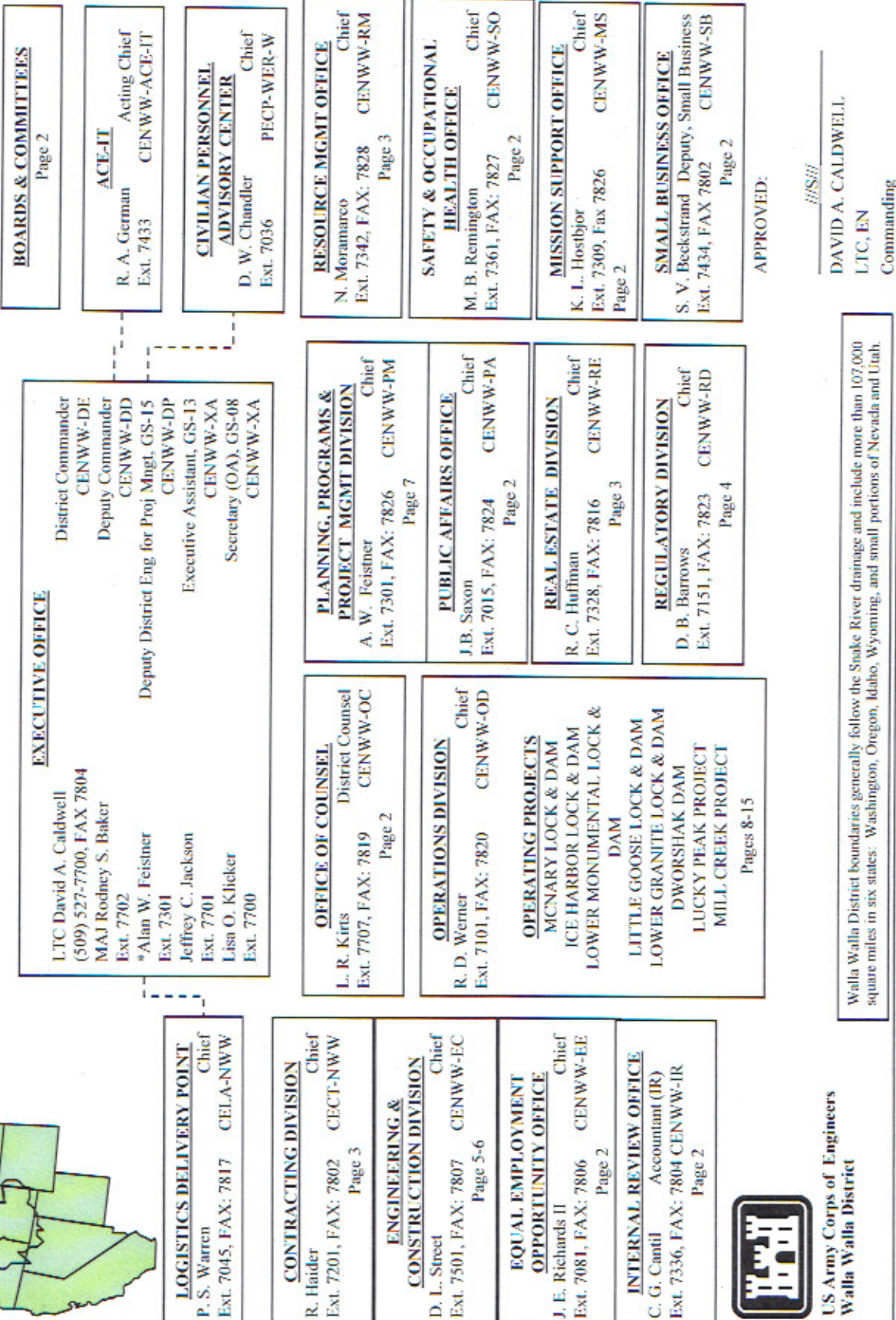
Work force

- 80% of McNary workforce lives in tri-cities 30 miles away.
- Has not been a problem to attract and retain crafts.
- McNary is the apprenticeship training facility for Walla Walla with 4-5 turned out each year, electrician, mechanicals, and operations.
- There is one full time apprenticeship trainer and an assistant.
- The apprenticeship has detail competency requirements.
- For knowledge transfer for journeymen there is nothing other than the work plans.
- There is an old project procedure manual but it has not been updated.



DIRECTORY CHART -- U. S. ARMY ENGINEER DISTRICT, WALLA WALLA

201 North 3rd Avenue, Walla Walla Washington 99362-1876
 Telephone: (509) 527-7700, FAX: (509) 527-7804 -- Home Page: <http://www.nwwe.usace.army.mil>



BOARDS & COMMITTEES
 Page 2

ACE-IT
 R. A. German Acting Chief
 Ext. 7433 CENWW-ACE-IT

CIVILIAN PERSONNEL ADVISORY CENTER
 Chief
 D. W. Chandler
 Ext. 7036 PECP-WER-W

RESOURCE MGMT OFFICE
 Chief
 N. Moramarco
 Ext. 7342, FAX: 7828 CENWW-RM
 Page 3

SAFETY & OCCUPATIONAL HEALTH OFFICE
 Chief
 M. B. Remington
 Ext. 7361, FAX: 7827 CENWW-SO
 Page 2

MISSION SUPPORT OFFICE
 Chief
 K. L. Hostbjoer
 Ext. 7309, Fax 7826 CENWW-MS
 Page 2

SMALL BUSINESS OFFICE
 Deputy, Small Business
 S. V. Beckstrand
 Ext. 7434, FAX 7802 CENWW-SB
 Page 2

EXECUTIVE OFFICE
 District Commander
 CENWW-DE
 Deputy Commander
 CENWW-DD
 Deputy District Eng for Proj Mngt, GS-15
 CENWW-DP
 Executive Assistant, GS-13
 CENWW-XA
 Secretary (OA), GS-08
 CENWW-XA

LTC David A. Caldwell
 (509) 527-7700, FAX 7804
 MAJ Rodney S. Baker
 Ext. 7702
 *Alan W. Feistner
 Ext. 7301
 Jeffrey C. Jackson
 Ext. 7701
 Lisa O. Klieker
 Ext. 7700

PLANNING, PROGRAMS & PROJECT MGMT DIVISION
 Chief
 A. W. Feistner
 Ext. 7301, FAX: 7826 CENWW-PM
 Page 7

PUBLIC AFFAIRS OFFICE
 Chief
 J.B. Saxon
 Ext. 7015, FAX: 7824 CENWW-PA
 Page 2

REAL ESTATE DIVISION
 Chief
 R. C. Huffman
 Ext. 7328, FAX: 7816 CENWW-RE
 Page 3

REGULATORY DIVISION
 Chief
 D. B. Barrows
 Ext. 7151, FAX: 7823 CENWW-RD
 Page 4

OFFICE OF COUNSEL
 District Counsel
 L. R. Kirts
 Ext. 7707, FAX: 7819 CENWW-OC
 Page 2

OPERATIONS DIVISION
 Chief
 R. D. Werner
 Ext. 7101, FAX: 7820 CENWW-OD

OPERATING PROJECTS
 MCNARY LOCK & DAM
 ICE HARBOR LOCK & DAM
 LOWER MONUMENTAL LOCK & DAM
 LITTLE GOOSE LOCK & DAM
 LOWER GRANITE LOCK & DAM
 DWORSHAK DAM
 LUCKY PEAK PROJECT
 MILL CREEK PROJECT
 Pages 8-15

LOGISTICS DELIVERY POINT
 Chief
 P. S. Warren
 Ext. 7045, FAX: 7817 CELA-NWW

CONTRACTING DIVISION
 Chief
 R. Haider
 Ext. 7201, FAX: 7802 CECT-NWW
 Page 3

ENGINEERING & CONSTRUCTION DIVISION
 Chief
 D. L. Street
 Ext. 7501, FAX: 7807 CENWW-EC
 Page 5-6

EQUAL EMPLOYMENT OPPORTUNITY OFFICE
 Chief
 J. E. Richards II
 Ext. 7081, FAX: 7806 CENWW-EE
 Page 2

INTERNAL REVIEW OFFICE
 Accountant (IR)
 C. G. Cantil
 Ext. 7336, FAX: 7804 CENWW-IR
 Page 2



**US Army Corps of Engineers
 Walla Walla District**

APPROVED:
 //S///
 DAVID A. CALDWELL
 LTC, EN
 Commanding

Walla Walla District boundaries generally follow the Snake River drainage and include more than 107,000 square miles in six states: Washington, Oregon, Idaho, Wyoming, and small portions of Nevada and Utah.

* Dual or Temporary Assignment, ** Primary Assignment, *** Supervisory

EXECUTIVE OFFICE --Page 1

BOARDS & COMMITTEES

- Management
- Corporate Board
- Program and Budget Advisory Committee (PBAC)
- Tactical Review Board (TRB)
- Tactical Acquisition Strategy Board (TASB)
- Workload Management Committee
- Information Management & Technology Steering Committee (IMTSC)
- Building Committee
- Human Resources
- Association of Corps Employees (ACE)
- Awards Committee
- Federal Employees Compensation Act (FECA) Working Grp
- Local Wage Survey Committee
- Safety and Occupational Health Committee
- Training Committee
- Environmental
- Environmental Compliance Steering Committee
- Environmental Sustainability Committee
- Engineering
- Architect-Engineering (A-E) Selection Board
- A-E Responsibility Management Review Board
- Dam Safety Committee
- Levee Safety Committee
- Enterprise Geospatial Data and Systems (eGD&S) Technical Committee
- Quality Management Board (QMB)
- Operations
- Hydroelectric Training Program Oversight Committee

OFFICE OF COUNSEL

- Linda R. Kirts ** District Counsel GS-15
- Supv Attorney GS-15
- Ext. 7707, FAX: 7819 CENWW-OC
- 1 General Attorney GS-14
- 3 Attorney-Advisor (General) (1-V) GS-13
- 1 Attorney-Advisor (Real Property) GS-13
- 1 Paralegal Specialist GS-11
- 1 Paralegal Specialist GS-09
- 1 Legal Administrative Assistant (OA) GS-07

PUBLIC AFFAIRS OFFICE

- Joseph B. Saxon** Chief GS-12
- Public Affairs Specialist GS-12
- Ext. 7015, FAX: 7824 CENWW-PA
- 3 Public Affairs Specialist GS-11
- 1 Public Affairs Specialist GS-09
- 1 Clerk (OA) (COOP) GS-04

SAFETY & OCCUPATIONAL HEALTH OFFICE

- Michael B. Remington ** Chief GS-12
- Safety & Occupational Health Manager GS-12
- Ext. 7361, FAX: 7827 CENWW-SO
- 1 Safety & Occupational Health Spec GS-11
- 1 Safety Technician GS-07

EQUAL EMPLOYMENT OPPORTUNITY OFFICE

- James E. Richards II ** Chief GS-12
- Equal Employment Specialist GS-12
- Ext. 7081, FAX: 7806 CENWW-EE
- 1 EEO Specialist GS-11

MISSION SUPPORT OFFICE

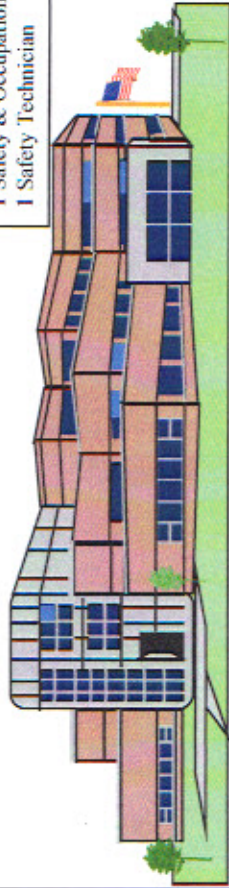
- Kevin L. Hostbjoer** Chief GS-12
- Mission Support Officer GS-12
- Ext. 7309, Fax 7826 CENWW-MS
- 1 Training & Organization Specialist GS-11
- 1 Mission Support Specialist (V) GS-09
- 1 Library Technician (PTP) GS-07
- 1 Office Support Assistant GS-05

SMALL BUSINESS OFFICE

- Scott V. Beckstrand Deputy, Small Business GS-12
- Procurement Analyst GS-12
- Ext. 7434, FAX 7802 CENWW-SB

INTERNAL REVIEW OFFICE

- Clem G. Cantil Chief GS-12
- Accountant (Internal Review) GS-12
- Ext. 7336, FAX: 7804 CENWW-JR



* Dual or Temporary Assignment; ** Primary Assignment; ** Supervisory

EXECUTIVE OFFICE -- Page 1

<u>CONTRACTING DIVISION</u>	
Ruthann Haider**	Chief GS-14 CECT-NWW
Supv Contract Analyst Ext. 7201, FAX: 7802	
1 Administrative Support Asst (OA)	GS-07
<u>Services & Supply</u>	
1 Supv Contract Specialist**	GS-13
1 Contract Specialist	GS-12
6 Contract Specialist	GS-11
4 Purchasing Agent (1-V)	GS-07
1 Contract Specialist (FCIP) (V)	GS-7/9/11
<u>A-E/Construction</u>	
1 Supv Contract Specialist (Depl)**	GS-13
4 Contract Specialist (1-Depl)	GS-12
5 Contract Specialist (1-V)	GS-11
<u>I/G Supply/Business Oversight</u>	
1 Supv Contract Specialist**	GS-13
1 Contract Specialist	GS-12
1 Contract Specialist	GS-11
1 Procurement Technician (V)	GS-06
1 Procurement Clerk	GS-04
1 Procurement Clerk (SCEP)	GS-04
1 Office Administrative Clerk (STEP)	GS-02

<u>RESOURCE MGMT OFFICE</u>	
Nicolo Moramarco **	Chief GS-14 CENWW-RM
Financial Manager Ext. 7342, FAX: 7828	
1 Admin Support Specialist	GS-07
1 Student Trainee (COOP)	GS-05
<u>Finance & Accounting</u>	
1 Supv Accountant**	GS-13
3 Accountant	GS-12
1 Systems Accountant	GS-12
4 Accountants (2-V)	GS-11
1 Civilian Pay Technician	GS-07
1 Budget Clerk (STEP) (V)	GS-03
<u>Budget</u>	
1 Budget Analyst	GS-12
1 Budget Analyst (V)	GS-11
<u>Management</u>	
1 Management Analysis Officer	GS-12
1 Management Analyst	GS-11

<u>REAL ESTATE DIVISION</u>	
Rodney C. Huffman**	Chief GS-13 CENWW-RE
Realty Officer Ext. 7328, FAX: 7816	
<u>Management and Disposal</u>	
1 Realty Specialist (V)	GS-12
3 Realty Specialist	GS-11
<u>Planning and Control</u>	
1 Realty Specialist	GS-11
1 Realty Assistant	GS-07

* Dual or Temporary Assignment, ** Primary Assignment, *** Supervisory

EXECUTIVE OFFICE -- Page 1

REGULATORY DIVISION

David B. Barrows ** Chief
Supervisor Environmental Resource Specialist GS-14
Ext. 7151, FAX: 7823 CENWW-RD

1 Environmental Resource Specialist (SME) (V) GS-13
2 Environmental Resource Specialist GS-12
1 Budget Technician GS-07
1 Regulatory Clerk (OA) GS-06
1 Office Automation Clerk (STEP) GS-03

Boise Field Office

Phone: (208) 345-2154, FAX: 2968

Gilbert L. Phillips** Assistant Chief
Supervisor Environmental Resource Specialist GS-13

4 Environmental Resource Specialist (1-V) GS-12
1 Environmental Protection Specialist GS-09
1 Environmental Resource Specialist (SCEP) GS-4/5/6/7

Coeur d'Alene Field Office

Phone: (208) 765-7237, FAX: 7449

2 Environmental Resource Specialist GS-12
1 Environmental Protection Specialist (SCEP) GS-3/4/5/6/7

Idaho Falls Field Office

Phone: (208) 522-1645, FAX: 2994

2 Environmental Resource Specialist GS-12
1 Environmental Resource Specialist (SCEP) (V) GS-5/6/7

ENGINEERING & CONSTRUCTION DIVISION

Donna L. Street**
 Chief
 GS-15
 CENWW-EC
 GS-12
 GS-09
 GS-09
 GS-07
 GS-07
 GS-3/4/5

CONSTRUCTION BRANCH

Clifford G. Steele **
 Chief
 GS-14
 CENWW-EC-C
 Ext. 7077
 FAX: 7801

1 Civil Engineer (QM) GS-13
 1 RTS Engineer GS-13
 1 Project Engineer GS-12
 2 Construction Rep (INT)(1-V) GS-11
 1 Clerk (OA) GS-05
 1 Clerk (OA) (STEP) GS-04

DESIGN BRANCH

Page 6

COST ENGINEERING BRANCH

Kim C. Callan**
 Chief
 GS-14
 CENWW-EC-X
 Ext. 7514
 FAX: 7808

1 NTS Cost Engineer (V) GS-14
 1 Supervisory Interdisc Engr** GS-13
 1 Admin Support Assistant (OA) GS-06
 2 Interdisciplinary Engineer GS-13
 3 Interdisc Engineer (DOE) (1-V) GS-13
 3 Civil Engineer (DOE) GS-13
 1 Cost Estimating Spec (DOE) (V) GS-13
 3 RTS (Interdisc Eng) (1-V) GS-13
 6 Interdisc Engineer (INT) (2-V) GS-12/13
 9 Interdisciplinary Engineer (2-V) GS-12
 2 Interdisciplinary Engineer (1-V) GS-11
 1 Technical Writer GS-09
 1 Clerk (OA) (STEP) (V) GS-03
 1 Student Trainee (ENG) (SCEP) GS-3/4/5

HYDROLOGY & HYDRAULICS BRANCH

Mark F. Lindgren **
 Chief
 GS-14
 CENWW-EC-H
 Ext. 7530
 FAX 7809

1 RTS Fish Passage GS-13
 1 RTS Turbines/Spillways GS-13
 1 Secretary (OA) GS-05
 1 Clerk (OA) (STEP) GS-3/4

HYDROLOGY SECTION

1 Supv Hydraulic Engineer** GS-13
 1 Flood Risk Technical Specialist GS-13
 1 Water Mngt Technical Specialist GS-13
 1 Sediment/Remote Sensor Spec GS-13
 6 Hydraulic Engineer GS-12
 4 Hydraulic Engineer GS-11
 2 Hydrologic Technician GS-09

HYDRAULIC DESIGN & WATER QUALITY SECTION

1 Supv Hydraulic Engineer** GS-13
 1 Water Quality RTS (V) GS-13
 1 Water Quality Specialist GS-12
 4 Hydraulic Engineer GS-12
 1 Hydraulic Engineer GS-11
 1 Hydraulic Engineer (PTP) (V) GS-11
 2 Water Quality Specialist GS-11
 1 Hydrologic Technician GS-4/5/6/7

McNary Resident Office

1 Resident Engineer (FTT)** GS-13

Upper Snake/Clearwater Resident Office

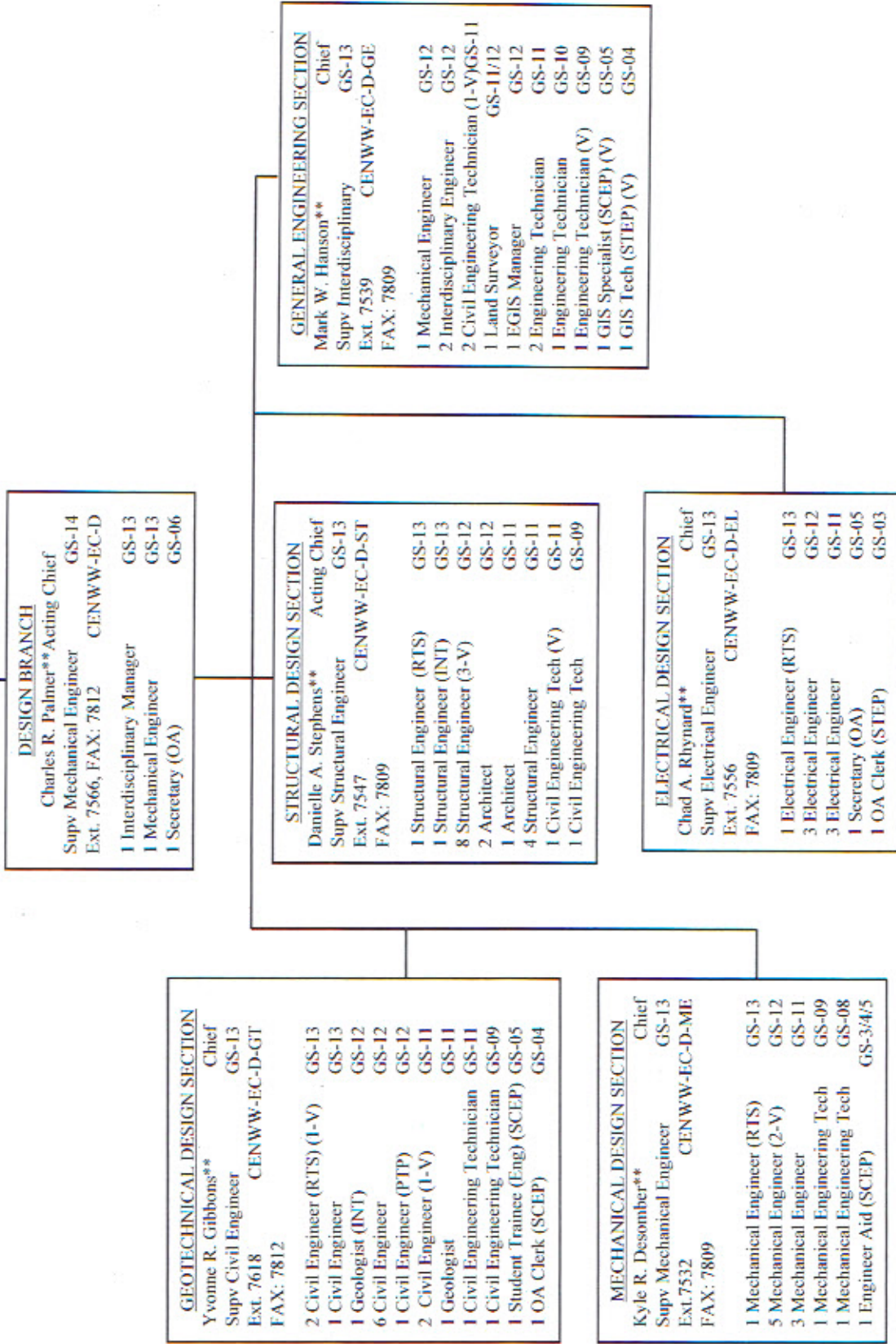
1 Supv Civil Engineer** GS-13
 3 Project Engineer GS-12
 1 Construction Representative GS-12
 1 Civil Engineer (INT) GS-12
 1 Project Engineer GS-11
 3 Construction Representative GS-11
 1 Project Support Specialist GS-09
 1 Clerk (OA) GS-05

Ice Harbor/ LOMO Resident Office

1 Supv Civil Engineer** GS-13
 5 Project Engineer GS-12
 1 Engineer/Scheduler GS-12
 1 Project Engineer GS-11
 5 Construction Rep (1-V) GS-11
 1 Construction Rep (FTT) GS-11
 1 Project Support Spec GS-09
 1 Clerk (OA) GS-05

* Dual or Temporary Assignment, ** Primary Assignment ** Supervisory

ENGINEERING & CONSTRUCTION DIVISION -- Page 5



* Dual or Temporary Assignment, ** Primary Assignment ** Supervisory

U.S. ARMY ENGINEER DISTRICT, WALLA WALLA -- 201 North 3rd Avenue, Walla Walla, Washington 99362-1876
 Telephone: (509) 527-7700, FAX: (509) 527-7804, Home Page: <http://www.nww.usace.army.mil>

EXECUTIVE OFFICE -- Page 1

PLANNING, PROGRAMS & PROJECT MANAGEMENT DIVISION

1#* Alan W. Feistner ** Chief GS-15
 Supervisory Program Manager CENWW-PM
 Ext. 7301, FAX: 7826
 1 Administrative Officer GS-09
 1 Secretary (OA) GS-07

PLANNING BRANCH

Rebecca L. Kalamasz ** Chief GS-14
 Supervisory Civil Engineer CENWW-PM-PD
 Ext. 7316, FAX: 7825

Boise Field Office

Phone: (208) 345-2064, FAX: 2263 GS-13
 2 Project Engineer
 1 Administrative Support Assistant GS-5/6/7

PROGRAMS & PROJECT MANAGEMENT BRANCH

Ezra E. Abraham** Chief GS-14
 Supervisory Program Manager CENWW-PM-PPM
 Ext. 7313, FAX: 7826 GS-07
 1 Project Assistant

Project Management

1 Supervisory Interdisciplinary** GS-13
 7 Project Engineer (1-V) GS-13
 1 Project Manager GS-13
 2 Project Manager (1-V) GS-12
 2 Project Engineer GS-12
 2 Project Managers (Dep) (2-V) GS-12
 1 Project Engineer (FTT) (V) GS-12

Program Management

1 Supervisory Program Manager** GS-13
 2 Program Manager GS-13
 1 O&M Program Manager GS-13
 1 Project Engineer GS-13
 1 Program Manager GS-12
 3 Program Analyst (1-V) GS-12
 7 Program & Management Analyst GS-11

ENVIRONMENTAL COMPLIANCE SECTION

Michael S. Francis** Chief GS-13
 Supv Env Resources Specialist CENWW-PM-PD-EC
 Ext. 7288

4 Environmental Resource Specialist (1-V) GS-12
 1 Fisheries Biologist GS-12
 1 Wildlife Biologist GS-12
 1 Wildlife Biologist (V) GS-11
 1 Environmental Resource Specialist GS-11
 1 Fishery Biologist GS-11
 1 Clerk (OA) GS-05

ENVIRONMENTAL ANALYSIS SECTION

Marvin Shutters ** Chief GS-13
 Supervisory Fishery Biologist CENWW-PM-PD-EA
 Ext. 7591

1 Secretary (OA) GS-05
 1 Fishery Biologist (AFEP) GS-13
 7 Fishery Biologist GS-12
 1 Contract Liaison GS-12
 1 Fishery Biologist GS-11
 1 Biological Technician GS-09
 1 Biological Technician (FTS) GS-07
 1 Clerk (OA) (STEP) GS-02

TRIBAL RELATIONS & CULTURE RESOURCES SECTION

Vacant** Chief GS-13
 Supv Archaeologist CENWW-PM-PD-EA

2 Archaeologist GS-12
 1 Tribal Liaison GS-12
 1 Archaeologist (V) GS-11
 1 Archaeologist (FTT) GS-11
 1 Archaeologist GS-09

PLAN FORMULATION SECTION

Cynthia A. Boen** Acting Chief GS-13
 Supervisory Biologist CENWW-PM-PD-PF
 Ext. 7277

2 Project Manager (1-V) GS-13
 1 Planner/PM (Dep) GS-13
 1 Plan Formulator GS-13
 1 Regional Economist GS-12
 1 Economist/Planner (V) GS-12
 3 Project Manager GS-12
 1 Archeologist/PM GS-12
 1 Landscape Architecture (V) GS-11
 1 Plan Study Specialist (V) GS-11

* Dual or Temporary Assignment; ** Primary Assignment; ** Supervisory

U.S. ARMY ENGINEER DISTRICT, WALLA WALLA -- 201 North 3rd Avenue, Walla Walla, Washington 99362-1876
 Telephone: (509) 527-7700, FAX: (509) 527-7804, Home Page: <http://www.nww.usace.army.mil>

OPERATIONS DIVISION

Richard D. Werner ** Chief
 Supv Electrical Engineer GS-15
 Ext. 7101, FAX: 7820 CENWW-OD
 Andra L. Valentine ** Assistant Chief
 Supervisory General Engineer GS-14
 2 Business Line Asset Manager (1-V) GS-13
 1 Civil Engineer (INT) GS-12
 1 Secretary (V) GS-07

TECHNICAL SUPPORT BRANCH

Dwayne M. Weston** Chief
 Supv Interdisciplinary Engineer GS-14
 Ext. 7111, FAX: 7820 CENWW-OD-I
 Maintenance Engineering Section
 1 Supv Electrical Engineer** GS-13
 1 Compliance Program Manager GS-13
 1 Mechanical Engineer GS-12
 1 Maintenance Management Technician GS-12
 2 Electrical Engineer GS-12
 2 Engineering Technician GS-09
 2 General Engineer (Intern) (2-V) GS-7/9/11

Power Plant Training Section

1 Supv Power Operations Specialist** GS-12
 1 Training Specialist GS-11
 20 Power Plant Trainee (12-V) TC-G

Management Support Section

1 Admin Officer** GS-12
 1 Program Analyst GS-11
 1 Budget Analyst GS-09
 1 Budget Technician GS-07
 1 Support Service Specialist (V) GS-09

Natural Resources Management Section

1 Supv Natural Resource Mgmt Spec** GS-13
 1 Lead Fishery Biologist GS-13
 2 Fishery Biologist GS-12
 1 Wildlife Biologist GS-12
 1 Environmental Resource Specialist GS-12
 1 Natural Resource Specialist GS-12
 1 Natural Resource Specialist GS-11
 1 Fishery Biologist GS-11
 1 Env Compliance Coord (Intern) (V) GS-7/9/11

READINESS BRANCH

Randy Gordon ** Chief
 Supv Security & Emergency Manager GS-13
 Ext. 7041, FAX: 7821 CENWW-EM
 2 Civil Engineer GS-12
 1 Security Specialist GS-11
 1 Emergency Management Specialist GS-09
 1 Security Specialist GS-5/7/9
 1 Family Support Specialist (PTP) GS-09
 1 Administrative Support Assistant (OA) GS-07

NATIONAL FEM TEAM

1 Supv Civil Engineer (FEM)** GS-14
 4 Maintenance Systems Analyst (Virtual) GS-11

PROJECT OFFICES

Page 9-15

* Dual or Temporary Assignment, ** Primary Assignment ** Supervisory

OPERATIONS DIVISION -- Page 8

MCNARY PROJECT
 Chief
 David R. Coleman ** GS-14
 Supervisory Mechanical Engineer
 Phone: (541) 922-2251 CENWW-OD-WM
 FAX: 2221

- Maintenance**
- 1 Supv Mechanical Engineer** GS-13
 - 1 Planner - Electrical TC-J
 - 1 Planner - Mechanical TC-J
 - 1 Maintenance Mgmt Technician GS-07
 - 1 Maintenance Mgmt Technician (FEM) GS-05
- Technical**
- 1 Supv Electrical Engineer** GS-13
 - 1 Reliability Compl Coord GS-12
 - 1 Mechanical Engineer (V) GS-12
 - 2 Electrical Engineer (1-V) GS-11
 - 1 Environ Protection Spec GS-11
 - 1 Environ Compliance Spec GS-11
 - 1 Safety Officer GS-11
 - 2 Engineering Tech (1-V) GS-09
 - 1 Contract Performance Specialist (V) GS-09
 - 1 OA Clerk (STEP) (V) GS-03
- Management Services**
- 1 Admin Officer** GS-11
 - 1 Budget Analyst GS-09
 - 1 Admin Support Asst GS-07
 - 2 Supply Technician GS-07
 - 4 Office Automation Asst GS-05
 - 2 Materials Handler TC-C

- MAINTENANCE SECTION**
- Electrical**
- 1 Power Plant Electrical Crew Supervisor** CF-I
 - 1 Power Plant Electrical WIC WF-I
 - 1 Electrical System Control Crtfswkr WIC WF-J
 - 2 Electrical System Control Crtfswkr TC-K
 - 2 Electrical Electronic Crtfswkr (1-V) TC-J
 - 1 EE Crtfswkr (WECC/NERC) TC-J
 - 7 PP Electrician TC-I
 - 1 Utility Worker TC-C
- Mechanical**
- 1 Power Plant Mechanic Crew Supervisor** CF-I
 - 2 Power Plant Mechanic WIC WF-I
 - 11 Power Plant Mechanic TC-I
 - 1 Welder TC-H
 - 3 Utility Worker TC-C
- General Maintenance**
- 1 O&M Crew Foreman** CF-H
 - 3 Crane Operator TC-H
 - 1 Rigger WIC WF-H
 - 5 Rigger TC-H
 - 1 Painter TC-G

- NATURAL RESOURCE MANAGEMENT SECTION**
- 1 Supv Natural Resource Manager** GS-12
 - 1 Park Ranger GS-09
 - 2 Natural Resource Spec (Ranger) GS-09
- Natural Resource Maintenance**
- 1 Maintenance Leader WL-10
 - 1 Heavy Mobile Equipment Mechanic WG-10
 - 1 Engineer Equip Operator WG-10
 - 2 Maintenance Mechanic WG-09

- BPA FUNDED POSITIONS**
- 1 Mechanical Engineer (Perm) GS-11
 - 1 Engineer Technician (Perm) GS-09
- Electrical**
- 1 Electrical Electronic Crtfswkr (Perm) TC-J
 - 3 Power Plant Electrician (FTT) (1-V) TC-I
- Mechanical**
- 2 Power Plant Mechanic (Perm) TC-I
 - 3 Power Plant Mechanic (FTT) (2-V) TC-I
- General Maintenance**
- 2 Rigger (Perm) TC-H

- OPERATIONS SECTION**
- 1 Supv Electrical Engineer** GS-12
- Power Plant Operators**
- 5 Chief Power Plant Operator TC-L
 - 9 Power Plant Operator (1-V) TC-I
- Fish**
- 1 Supv Fishery Biologist** GS-11
 - 1 Fishery Biologist GS-09
 - 1 Lead Bio Science Tech (FTS) GS-07
 - 4 Bio Science Tech (FTS) GS-06
 - 2 Maintenance Worker WG-08

* Dual or Temporary Assignment, ** Primary Assignment ** Supervisory

U.S. ARMY ENGINEER DISTRICT, WALLA WALLA -- 201 North 3rd Avenue, Walla Walla, Washington 99362-1876
 Telephone: (509) 527-7700, FAX: (509) 527-7804, Home Page: <http://www.nwaw.usace.army.mil>

OPERATIONS DIVISION -- Page 8

ICE HARBOR PROJECT
 Roger M. Golladay ** Chief
 Supv Facilities & Equipment Manager GS-14
 (509) 543-3256, FAX: 3201 CENWW-OD-WI

TECHNICAL SECTION
 GS-12
 1 Supv Electrical Engineer** GS-12
 1 Reliability Compl Coord GS-12
 1 Mechanical Engineer GS-12
 1 Electrical Engineer GS-12
 1 Environmental Protection Spec GS-11
 1 Safety Officer GS-11
 1 Engineering Technician GS-10
 1 Engineering Tech (FTT) (V) GS-07

ADMINISTRATIVE SECTION
 GS-11
 1 Administrative Officer** GS-11
 1 Budget Analyst GS-09
 1 Administrative Support Asst GS-07
 1 Supply Technician GS-07
 3 Office Automation Assistant GS-05
 1 Materials Handler TC-C

MAINTENANCE SECTION
 GS-13
 1 Chief of Maintenance GS-13
 1 Elect/Mech Planner TC-J
 1 Maintenance Mngt Tech GS-07
 1 Maintenance Mngt Tech (FEM) GS-05

Electrical Maintenance
 1 PP Electrician Crew Foreman ** CF-I
 2 Elec Sys Cntrl Crltswrkr (1-V) TC-K
 1 EE Crltswrkr (WERC/NERC) TC-J
 1 Elec Sys Cntrl Repairman (FTT) TC-J
 3 Power Plant Electrician (1-V) TC-I
 1 Utility Worker TC-C

Mechanical Maintenance
 1 PP Mechanic Crew Foreman** CF-I
 1 Power Plant Mechanic W/C WF-I
 5 Power Plant Mechanic TC-I
 1 Crane Operator TC-H
 1 Rigger TC-H
 1 Welder TC-H
 1 Painter TC-G
 1 Utility Worker TC-C

OPERATIONS SECTION
 GS-12
 1 Operations & Maint Mgr** GS-12
 5 Senior Power Plant Operator TC-K
 1 Power Plant Operator TC-I
 1 Lock Operator (FIS) TC-D
 1 Security Guard GS-06
 1 Security Guard GS-05
 1 Security Guard (PTP) GS-05

Fish
 1 Fishery Biologist GS-11
 1 Maintenance Worker WG-08
 1 Bio Science Tech (FIS) GS-06

NATURAL RESOURCES MANAGEMENT SECTION
 GS-12
 1 Supv Natural Resources Mgr** GS-12

Natural Resources
 2 Natural Resources Spec (1-V) GS-11
 1 Wildlife Biologist GS-11
 1 Contract Performance Specialist GS-09
 5 Natural Resource Specialist (2-V) GS-09
 4 Park Ranger (FTT) (4-V) GS-02

Natural Resources Maintenance
 1 Maintenance Foreman ** WS-10
 1 Engineering Equip Op Leader WL-10
 1 Engineering Equip Operator WG-10
 2 Heavy Mob Equip Mech WG-10
 1 Electrician WG-10
 1 Water Pump Repairer WG-09
 1 Carpenter WG-09
 1 Utility Systems Operator WG-09
 4 Maintenance Worker (1-V) WG-08
 3 Maintenance Worker (1-V) WG-07

BPA FUNDED POSITIONS

Electrical
 1 PP Electrician (Perm) TC-I
 2 PP Electrician (FTT) (2-V) TC-I

Mechanical
 2 PP Mechanic (FTT) (1-V) TC-I
 1 Welder (FTT) (V) TC-H
 1 Rigger (FTT) (V) TC-H
 1 Utility Worker (FTT) TC-C

* Dual or Temporary Assignment, ** Primary Assignment, ** Supervisory

OPERATIONS DIVISION -- Page 8

LOWER MONUMENTAL PROJECT
 Chief
 Robert W. Witham** GS-13
 Supv Facilities & Equipment Manager
 (509) 282-7251, FAX: 7201 CENWW-OD-WL

TECHNICAL SECTION
 GS-12
 1 Supv Electrical Engineer** GS-12
 1 Mechanical Engineer GS-12
 1 Electrical Engineer (V) GS-12
 1 Reliability Compl Coord (V) GS-11
 1 Environmental Protection Spec GS-11
 1 Safety Officer (V) GS-09
 1 Engineering Technician GS-09
 1 Contract Performance Specialist (V) GS-09
 1 Engineering Technician (FTT) (V) GS-07

ADMINISTRATIVE SECTION
 GS-11
 1 Administrative Officer** GS-11
 1 Administrative Assistant GS-07
 1 Supply Technician GS-07
 1 Clerk (OA) GS-05
 1 Materials Handler TC-C

OPERATIONS SECTION
 GS-12
 1 Operations Manager** GS-12
 1 Security Guard GS-05

Power Plant Operators
 TC-K
 5 Senior Power Plant Operator TC-K
 2 Power Plant Operator (1-V) TC-I

Fish
 GS-11
 1 Supv Fishery Biologist** GS-11
 1 Fishery Biologist GS-09
 5 Biological Science Tech (FTS) (3-V) GS-06
 2 Maintenance Worker WG-08

MAINTENANCE SECTION
 GS-12
 1 Chief of Maintenance** GS-12
 1 Maintenance Management Tech GS-07
 1 Maintenance Management Tech (V) GS-05
 1 Elect/Mech Planner (V) TC-J

Electrical
 CF-I
 1 PP Electrical Crew Supv** CF-I
 1 Electronic Sys Cntrl Craftsman TC-K
 1 EE Craftswkr (WERC/NERC) (V) TC-J
 1 Electronic Sys Control Repairman TC-J
 3 Power Plant Electrician (2-V) TC-I
 1 Utility Worker TC-C

Mechanical
 CF-I
 1 Power Plant Mechanic Crew Supv** CF-I
 1 Power Plant Mechanic W/C WF-I
 6 Power Plant Mechanic (2-V) TC-I
 1 Utility Worker TC-C
 1 Rigger TC-H
 1 Crane Operator TC-H
 1 Painter TC-G

BPA FUNDED POSITIONS
 TC-I
 2 Power Plant Electrician (FTT) (2-V) TC-I
 1 Power Plant Mechanic (FTT) (V) TC-I
 1 Welder (FTT) TC-H

Fish Screen Positions/Headgates
 TC-I
 2 Power Plant Mechanic (FTT) (1-V) TC-I
 1 Power Plant Electrician (FTT) (V) TC-I
 1 Utility Worker (FTT) (V) TC-H

* Dual or Temporary Assignment, ** Primary Assignment, ** Supervisory

U.S. ARMY ENGINEER DISTRICT, WALLA WALLA -- 201 North 3rd Avenue, Walla Walla, Washington 99362-1876
 Telephone: (509) 527-7700, FAX: (509) 527-7804, Home Page: <http://www.nwww.usace.army.mil>

OPERATIONS DIVISION -- Page 8

LITTLE GOOSE PROJECT
 Chief
 Kenneth J. Breiten ** GS-13
 Supv Interdisciplinary Engineer
 Phone: (509) 399-2233, ext. 253 CENWW-OD-EG
 FAX: 2009

TECHNICAL SECTION

1 Supv Electrical Engineer**	GS-12
1 Mechanical Engineer (V)	GS-12
1 Electrical Engineer	GS-12
1 Reliability Compl Coord (V)	GS-12
1 Environmental Protection Spec	GS-11
1 Safety Officer (V)	GS-11
1 Engineering Technician	GS-09
1 Maintenance Mgmt Technician	GS-07
1 Engineering Technician (FTT) (V)	GS-07
1 Maintenance Mngt Technician (V)	GS-05
1 Electrical/Mechanical Planner (V)	TC-J

ADMINISTRATIVE SECTION

1 Administrative Officer**	GS-11
1 Administrative Assistant	GS-07
1 Supply Technician	GS-07
1 Clerk (OA)	GS-05
1 Materials Handler	TC-C
1 Student Clerk (OA) (V)	GS-02

OPERATIONS SECTION

1 Operations Manager**	GS-12
1 Security Guard	GS-05
5 Senior Power Plant Operator	TC-K
1 Power Plant Operator	TC-I
1 Supv Fishery Biologist**	GS-11
1 Fishery Biologist	GS-09
1 Lead Bio Science Tech (FTS)	GS-07
4 Bio Science Tech (FTS)	GS-06
1 Maintenance Leader	WL-09
2 Maintenance Worker (1-V)	WG-08

BPA FUNDED POSITIONS

1 Utility Worker (FTT)	TC-C
1 Power Plant Mechanic (FTT) (V)	TC-I

MAINTENANCE SECTION

1 Chief of Maintenance	GS-12
1 Power Plant Electrical Crew Supv**	CF-I
1 Electrical Sys Cntrl Craftsworker	TC-K
1 EE Craftsworker (WERC/NERC) (V)	TC-J
1 Electronic Sys Control Repairman (V)	TC-J
4 Power Plant Electrician	TC-I
1 Painter	TC-G
1 Utility Worker	TC-C
1 Power Plant Mechanical Crew Supv**	CF-I
1 Power Plant Mechanic WTC	WF-I
5 Power Plant Mechanic	TC-I
1 Crane Operator (V)	TC-H
1 Rigger	TC-H
2 Utility Worker	TC-C

* Dual or Temporary Assignment, ** Primary Assignment, ** Supervisory

OPERATIONS DIVISION - - Page 8

LOWER GRANITE PROJECT
 Martin T. Mendola ** Chief
 Supv Mechanical Engineer GS-14
 Phone: (509) 843-1493, ext. 251 CENWW-OD-EL
 FAX: 1744

<u>TECHNICAL SECTION</u>	
1 Supv. Mechanical Engineer**	GS-12
1 Electrical Engineer	GS-12
1 Interdisciplinary Engineer	GS-12
1 Reliability Compl Coord (V)	GS-12
1 Electrical/Mechanical Planner	TC-J
1 Mechanical Eng (Intern) (V)	GS-7/9/11
1 Environmental Protect Specialist	GS-11
1 Safety Officer (V)	GS-11
1 Engineering Technician	GS-09
1 Engineering Technician (FTT)	GS-09
1 Contract Performance Specialist (V)	GS-09
1 Maintenance Mgmt Technician	GS-07
1 Maintenance Mgmt Technician (FEM) (V)	GS-05
1 Engineer COOP (V)	GS-05
<u>ADMINISTRATIVE SECTION</u>	
1 Administrative Officer**	GS-11
1 Budget Analyst	GS-09
1 Administrative Support Assistant	GS-07
1 Supply Technician	GS-07
4 Clerk (OA) (1-V)	GS-05
1 Materials Handler	TC-C

<u>BPA FUNDED POSITIONS</u>	
1 Engineering Technician (FTT) (V)	GS-06
<u>Electrical</u>	
2 Power Plant Electrician (FTT) (2-V)	TC-I
1 Utility Worker (Perm)	TC-C
<u>Mechanical</u>	
2 Power Plant Mechanic (Perm) (1-V)	TC-I
2 Utility Worker (FTT) (1-V)	TC-C
3 Power Plant Mechanic (FTT) (1-V)	TC-I

<u>MAINTENANCE SECTION</u>	
1 Chief of Maintenance**	GS-13
<u>Electrical</u>	
1 Power Plant Electrician Crew Supv**	CF-I
1 Electrical Electronic Control Craftsworker	TC-K
1 Electronic Systems Control Repairer	TC-J
1 EE Craftsworker (WERC/NERC)	TC-J
1 Power Plant Electrician	WF-I
4 Power Plant Electrician (1-V)	TC-I
<u>Mechanical</u>	
1 Power Plant Mechanic Crew Foreman **	CF-I
1 Power Plant Mechanic (WIC)	WF-I
4 Power Plant Mechanic	TC-I
1 Crane Operator	TC-H
1 Rigger	TC-H
1 Painter	TC-G
3 Utility Worker (1-V)	TC-C
1 Welder	TC-H

<u>COOP Program</u>	
1 Supv Interdisciplinary Eng (FTT)** (V)	GS-12
1 OA Assistant (V)	GS-05
10 Interdisc Eng (10-V)	GS-5/7

<u>OPERATIONS SECTION</u>	
1 Supv Mechanical Engineer**	GS-12
1 Security Guard	GS-06
3 Security Guard (2-V)	GS-05
1 Security Guard (PTP)	GS-05
<u>Power Plant Operators</u>	
5 Senior Power Plant Operator	TC-K
1 Power Plant Operator	TC-I
<u>Fish</u>	
1 Supv Fishery Biologist**	GS-11
1 Fishery Biologist	GS-09
1 Engineering Equip Operator Leader	WL-10
1 Heavy Mobile Equip Mechanic	WG-10
2 Maintenance Worker (2-V)	WG-08
1 Bio Science Tech/Lead	GS-07
7 Bio Science Tech (FTS) (3-V)	GS-06
1 Bio Science Tech (FTT) (V)	GS-06

<u>NATURAL RESOURCES MANAGEMENT</u>	
1 Supv Park Ranger**	GS-12
1 Natural Resource Specialist	GS-11
1 Contract Performance Spec	GS-11
1 Wildlife Biologist (V)	GS-11
1 Wildlife Biologist	GS-09
3 Natural Resource Specialist	GS-09
1 Park Ranger (V)	GS-09
1 Park Ranger (FTS)	GS-07
2 Park Ranger (FTT) (1-V)	GS-05
1 Park Ranger (FTT) (V)	GS-04
<u>Natural Resource Maintenance</u>	
1 Maintenance Supervisor**	WS-09
1 Irrigation System Repairer	WG-09
2 Maintenance Worker	WG-08
2 Maintenance Worker	WG-07
1 Maintenance Worker (FTS)	WG-05
1 Maintenance Worker (FTT) (V)	WG-05
2 Laborer (FTT) (2-V)	WG-03

* Deal or Temporary Assignment, ** Primary Assignment, *** Supervisory

U.S. ARMY ENGINEER DISTRICT, WALLA WALLA -- 201 North 3rd Avenue, Walla Walla, Washington 99362-1876
 Telephone: (509) 527-7700, FAX: (509) 527-7804, Home Page: <http://www.nww.usace.army.mil>

OPERATIONS DIVISION -- Page 8

DWORSHAK PROJECT

Gregory A. Parker ** Chief
 Supv Electrical Engineer GS-13
 Phone: (208) 476-1257 CENWW-OD-ED
 FAX: 1219

TECHNICAL SECTION

- 1 Supv Interdisciplinary Engineer** GS-12
 - 1 Reliability Engineer GS-12
 - 1 Electrical Engineer (V) GS-11/12
 - 1 Environmental Protection Specialist GS-11
 - 1 Environmental Protection Specialist (INT) GS-11
 - 1 Safety Officer (V) GS-11
 - 1 Engineering Technician GS-09
 - 1 Contract Performance Specialist GS-09
 - 1 Engineering Technician GS-07
 - 1 Maintenance Mngt Technician GS-6/7
 - 1 Maintenance Mngt Technician (FTT) (V) GS-05
- ADMINISTRATIVE SECTION
- 1 Administrative Officer** GS-11
 - 1 Budget Analyst GS-09
 - 1 Administrative Services Assistant GS-07
 - 1 Supply Technician GS-07
 - 1 Clerk (OA) (V) GS-05
 - 1 Materials Handler TC-C
 - 1 Student Clerk (OA) (V) GS-03

OPERATIONS AND MAINTENANCE SECTION

- 1 Operations & Maintenance Mgr** GS-12
 - 1 Security Guard GS-05
- Operations
- 5 Power Plant Shift Operator (1-V) TC-J
- Electrical
- 1 Power Plant Electrician Crew Supv** CF-1
 - 1 EE Control Craftworker TC-K
 - 1 EE Crflwkr WERC/NERC TC-J
 - 2 Power Plant Electrician TC-J
- Mechanical
- 1 Power Plant Mechanic Crew Supv** CF-1
 - 3 Power Plant Mechanic TC-J
 - 1 Power Plant Mechanic (FTT) (V) TC-I
 - 2 Utility Worker TC-C
 - 1 Painter TC-G

BPA FUNDED POSITIONS

- 1 Power Plant Electrician (FTT) (V) TC-I
- 2 Utility Worker (FTT) (2-V) TC-C

NATURAL RESOURCES MANAGEMENT SECTION

- 1 Natural Resource Manager** GS-12
 - 1 Natural Resource Specialist GS-11
 - 1 Forester GS-11
 - 1 Wildlife Biologist GS-11
 - 3 Natural Resource Spec (Ranger) GS-09
 - 1 Park Ranger (FTS) GS-05
 - 1 Biological Science Tech (FTT) (V) GS-05
- Maintenance
- 1 Maintenance Supervisor** WS-09
 - 1 Engineering Equip Mech Op WG-10
 - 1 Engineering Equip Mech Op (INT) WG-10
 - 1 Utility Systems Operator WG-10
 - 1 Utility Systems Operator WG-09
 - 1 Heavy Mobile Equip Op/Ldr WL-10
 - 2 Grounds & Equip Maint Wkr (2-V) WG-08
 - 2 Maintenance Worker (FTS) WG-07
 - 2 Maintenance Worker (FTS) (1-V) WG-05
 - 3 Maintenance Worker (FTT) (3-V) WG-02

* Dual or Temporary Assignment, ** Primary Assignment ** Supervisory

U.S. ARMY ENGINEER DISTRICT, WALLA WALLA -- 201 North 3rd Avenue, Walla Walla, Washington 99362-1876
 Telephone: (509) 527-7700, FAX: (509) 527-7804, Home Page: <http://www.nwv.usace.army.mil>

OPERATIONS DIVISION -- Page 8

LUCKY PEAK PROJECT

Joyce Dunning ** Operations Manager
 Supv Natural Resource Specialist GS-12
 (208) 343-0671 CENWW-OD-LP
 FAX: 9914

- 1 Natural Resource Specialist GS-11
- 1 Natural Resource Specialist (Ranger) GS-09
- 1 Administrative Support Assistant GS-07
- 2 Park Ranger (FTT/SCEP) GS-05
- 1 Park Ranger (Sec) (FTT/STEP) (V) GS-05
- 1 Park Technician (FTT/STEP) GS-04
- 2 Park Technician (FTT/STEP) (2-V) GS-03
- 1 Maintenance Worker WG-09
- 1 Maintenance Worker WG-07
- 2 Laborer/Maintenance Worker (FTS) (1-V) WG-05
- 1 Clerk (OA) (V) GS-04

MILL CREEK PROJECT

Richard Beauchesne** Operations Manager
 Supv, Natural Resource Specialist GS-11
 (509) 527-7161 CENWW-OD-MC
 FAX: 7822

- 2 Natural Resource Specialist (Ranger) GS-09
- 1 Maintenance Worker WG-08
- 1 Maintenance Worker (FTS) WG-07
- 1 Clerk (OA) GS-05
- 1 Laborer (V) WG-03

* Dual or Temporary Assignment, ** Primary Assignment, ** Supervisory

U.S. ARMY ENGINEER DISTRICT, WALLA WALLA -- 201 North 3rd Avenue, Walla Walla, Washington 99362-1876
Telephone: (509) 527-7700, FAX: (509) 527-7804, Home Page: <http://www.nww.usace.army.mil>

ACRONYMS:

ACCT - Accountant
BIO - Biological
CNTRL - Control
COOP - Cooperative Education Program
COORD - Coordinator
CREFSWRKR - Crafts worker
DEP - Deployable Position
EGIS - Enterprise Geographic Information Systems
ELEC - Electrical
ELECTN - Electronic
ENV - Environmental
EXT - Extension
EQUIP - Equipment
FCIP - Federal Career Intern Program
FTP - Full Time Permanent
FTS - Full Time Seasonal
FTT - Full Time Temp or Full Time Term
INT - Rehired Annuitant
MAINT - Maintenance
MECH - Mechanic or Mechanical
MGMT - Management
MGR - Manager
MOB - Mobile
NTS - National Technical Specialist
OA - Office Automation
O&M - Operations & Maintenance
OP - Operator
PERM - Permanent
PP - Power Plant
PTP - Part Time Permanent
QAR - Quality Assurance Representative
QM - Quality Manager
RTS - Regional Technical Specialist
SCEP - Student Career Experience Program
SME - Subject Matter Expert
SPEC - Specialist

STEP - Student Temporary Employment Program
Supv-Supervisor
SYS - Systems
Tech - Technician
V - Vacant
WECC/NERC - Western Electricity Coordinating Council/North
American Electrical Reliability Corporation
WIC - Worker-In-Charge

* Dual or Temporary Assignment, ** Primary Assignment, ** Supervisory



Grand Coulee Power Office – Review of Staffing and Processes

Appendix 7

Summary of High Level Systems Review

Summary of High Level Systems Review

As part of the Grand Coulee Power Office (GCPO) Staffing Study, MWH has performed a high level systems review of the five information technology systems focused on core GCPO operations. The areas of focus were: Work and Asset Management (CARMA), Project Delivery, Project Controls, Document Management and Project Prioritization. The high level systems review process included eight workshops beginning with GCPO senior leadership to establish drivers, goals and constraints followed by individual 2-4 hour workshops to review each system in detail. The final workshops were focused around the technical staff of GCPO as well as the TSC CARMA staff in Denver, CO. During these sessions, a number of key “themes” emerged and provided guidance and boundaries for the analysis. MWH then outlined specific, actionable recommendations in each system area, keeping the key themes and overall GCPO mission foremost in mind.

Workshop Themes

The key overarching theme that emerged during the work sessions is that due to the age of the GCPO facility, unplanned outages are increasing and levels of service are decreasing. GCPO has been forced into a reactive, non-sustainable mode of operation due to volume of work, staffing levels, existing processes and systems.

For the purpose of discussing system improvements, specific themes are divided into two categories:

1. Standardization of processes, and
2. System effectiveness, efficiency and ease of use

Standardization of Processes

Theme 1: Project Management, Controls and Reporting Practices are in Their Infancy

GCPO is currently moving forward with the development of a Project Management Organization, beginning to address the various issues caused by a lack of robust project planning, project controls, cost estimation, risk management and other PMI-approved methodologies. This lack has created issues with on-time and on-budget project delivery, as well as problems with transparency, leading to an inability to accurately forecast cash-flow and commissioning dates. As a result, creating defensible, needs-based budgets is difficult.

Additionally, resulting issues with job planning and resource management have led to scheduling issues around routine, non-routine and outage projects. Finally, these same project management, controls and reporting issues are resulting in known inventory and procurement issues.

Theme 2: Lack of Standardization in the Areas of Document Management and Drawing Management

Though efforts have been made, GCPO operations suffer from a lack of standardization in the areas of document and drawing management, particularly in the areas of scanning / archiving, collaboration, version control, contractual document control and project filing. This has led to:

- Documents stored in multiple locations across the facilities and administrative buildings leading to difficulty in locating needed documents and assuring complete plant equipment documentation, O&M manuals, standard operating procedures, and warranty information.
- Documents stored in both electronic and paper formats.
- Drawings checked out for extended periods of time, driving users to create their own versions of the drawing. Divergent copies of a given drawing are then stored on local hard drives across the organization leading to multiple versions of the truth stored outside of the Meridian drawing management system.

System Effectiveness, Efficiency and Ease of Use

Theme 3: GCPO Business Needs are Not Always Met by Centralized BOR Systems

The centralization of systems for use across the Bureau of Reclamation while efficient in many regards, does prove challenging to GCPO operations. In some cases, BOR systems are more focused on compliance and standardization than on aiding staff in managing day to day work, driving a need for GCPO and the regional office to implement various “mission critical” systems which can overlap to a degree with BOR systems. Additionally, security and access issues plague certain BOR systems, forcing timeouts when local “away from keyboard” computer policies and settings are already in place to ward against security breaches. These problematic timeout policies cause frustration when they force the user to log into the system repeatedly when in fact they had not walked away from the terminal. Otherwise minor frustrations, these issues mount over time, leading to decreased usage and reliance on systems the Bureau has invested heavily in.

Latency is also an issue – likely because the centralized BOR systems are being accessed from all over the country at the same time, and because of localized network issues at GCPO. Attempts at increasing responsiveness by the TSC have so far been unsuccessful; real clarity on the issue will require analysis by a dedicated team of network engineers.

Prior to the centralization of certain BOR systems, GCPO had locally-deployed solutions and therefore enjoyed direct access to the back-end data sources, which allowed ease of reporting. With the centralization of certain BOR systems, report writing has also been centralized, leaving GCPO more disconnected from its operational data. Key Performance Indicators for both routine and non-routine work have not been defined and GCPO has been unable to leverage the data in the system to drive or support their decision-making.

Theme 4: Issues with Financial Coding vs. Project Coding vs. Work Order Coding

GCPO shows symptoms of a classic problem seen in any industry where “projectized” major works are planned, delivered and measured using a financial application rather than one focused on

project management and project controls. Whereas one system was constructed to follow modern financial principles such as month-end accounting, fixed asset depreciation and annual budgeting, the other excels at encapsulating, measuring and assisting in delivering project-based scopes of work.

What this means is that the systems are frequently out of sync in terms of timing the level of accuracy contained in each system. A financial system will break projects down only so far as it is practical to do so for accounting principles; project management and scheduling applications break the work into discrete work breakdown packages that can be individually planned, designed, delivered and monitored. Doing so requires a much more “real-time” look at project finances, and requires a cost breakdown structure that can seem like overkill to the accounting side of the house. It’s for that reason that both systems are put in place, and ideally integrated or at least reconciled.

GCPO sees additional complexity in this area due to the way CARMA work orders are coded; the work rolls up to high-level accounting funds rather than project-specific codes that could be used to much more closely manage the overlap and interaction of routine and non-routine work.

Theme 5: Lack of System Ownership at the GCPO Level

In an organization, all systems (both centralized and non-centralized) should have a business owner to ensure their adoption, proper use and continual improvement. The business owner is not an administrator of the system or a member of an IT support team, but a local point of contact for users. When a system is centralized, such as many of the systems used by GCPO, the business owner is especially important to assure the system is meeting the needs of the business and to be the contact responsible for troubleshooting and lobbying for fixes, changes and enhancements.

Theme 6: Lack of Training

During the course of the systems review, it surfaced repeatedly that more training on systems was needed. In many cases, training was delivered shortly after the application / version rolled out, and not since. Training is essential for system “super users”, (those with advanced system access and system “know-how”), as well as the general user population. User training helps assure all available system functions are leveraged and data input is consistent and complete, increasing value received from the system outputs. Finally, given the demographics of GCPO, training can be a powerful tool in terms of sustainability, helping a large amount of new staff come up to speed in a short period of time as a large number of senior staff retire or otherwise move on.

From a technology standpoint, there is no single point of access to retrieve all training data per user. The use of a centralized training management system would help GCPO to better manage training received as well as training required/lacking.

System Specific Recommendations

Work Management (CARMA, E-TAS)

In MWH's review of CARMA, they met with a cross-section of the core GCPO business as well as TSC staff from Denver. The current CARMA system is built on Maximo version 6.2.7; there is an anticipated upgrade to Maximo version 7 in the next 12 months.

Define O&M KPIs (ref. SYS-01)

In support of theme 3, the MWH recommendation is for GCPO to define Key Performance Indicators (KPIs), identify data points required to measure those KPIs and then define a standard set of reports for the TSC to generate. For example:

- % of Corrective vs. Proactive Work Orders
- % of Time / Money Spent on Corrective vs. Planned Work Orders
- % of Work Completed On-Time
- Cost Per KWh / Unit
- Cost Per KWh / Powerhouse
- Safety Index
- Environmental Index
- Security Index
- Outages Due to Unscheduled Maintenance / Month
- Critical Spare Levels
- Compliance with Predictive Maintenance Program
- Equipment "Bad Actor" Trend
- Overtime Hours
- Total Lost Hours
- Work Order Backlog in Man-Hours
- % of Work Orders Closed within Two Days of Completed Work

These are generic KPIs – GCPO needs to develop its own set of mission-focused indicators.

Establish CARMA System Ownership, User Group and Training (ref. SYS-02)

System ownership, healthy user groups and sufficient training are all important aspects of a successful system deployment. MWH recommends GCPO put energy towards all three areas with their work management application.

As addressed in theme 5, the CARMA system needs a defined system owner to help assure the system is meeting the needs of the business and to be the contact responsible for troubleshooting and lobbying for fixes, new reports, changes and enhancements. The owner will be the local "go to" person for CARMA at GCPO.

Additionally, the establishment of a Formal User Group will support themes 6 and 7 and provide an internal community to support one another. A formal user group will allow the system owner and super users to share insight into system use and easily distribute knowledge amongst the body of users. Insight and expertise presented in the user group will be retained and accessible for future reference, potentially increasing the consistency and accuracy of the application while at the same time keeping training costs down.

Finally as referenced in theme 6, there is little formal training at this time on the CARMA system. Training for both general users and advanced users (those who use the report writing functionality within CARMA) would help to assure the system is delivering as much value as possible. Note that general / tool-focused / Bureau-wide training will not be as effective as a GCPO-specific curriculum. What is needed is agreement and standardization on how GCPO will use the Bureau-provided tool.

Review CARMA Job Plans for Accuracy around Labor and Equipment (ref. GCP-06)

To support theme 1, MWH recommends that GCPO develop controls to assure accuracy and consistency of job plans. Weak job planning reduces visibility into upcoming project resource requirements causing inefficiency in resource management as well as materials procurement.

Optimize Reporting from the CARMA System (ref. GCP-06)

During the review sessions, MWH heard from GCPO that reporting from CARMA has been limited since the centralization of the system to the TSC in Denver and the migration to version 6. Specific limitations were identified around the types of reports available and the ability to perform “cross-table” queries. When visiting the TSC, MWH confirmed that reporting improvements have been made to CARMA over time and that “cross-table” queries and reports are now available. It was also noted that the TSC has the ability to create “canned reports” to the specifications required for GCPO operations, but that getting those reports approved for production can be onerous or difficult. MWH recommends for GCPO to define a standard set of reports, then work through any approval processes with the TSC to make sure the reports are created and available. It was also noted that the process for requesting new reports should be streamlined to reduce lead time and effort required to get new reports approved.

Project Delivery (No System Currently in Place)

At this time, GCPO does not have a dedicated project delivery system, nor do they have a set of standard practices, processes, templates and forms that all project managers follow and make use of. MWH recommendations are centered on the establishment of a standard cradle to grave project delivery approach that applies to all projectized work, and is ideally enabled by an easy to use, easy to update electronic system.

Implement a Project Delivery System (ref. GCP-05)

To address the issues described in theme 1 (*Project Management, Controls and Reporting Practices are in Their Infancy*) MWH recommends GCPO standardize, optimize and publish their full project delivery methodology. MWH's approach to doing so includes a focus on establishing standard project lifecycles, defining project approvals/gateways/governance, defining standard templates, forms and standard project management practices, and establishing well-defined roles and responsibilities. Specifically:

Project Lifecycle(s) – every project in GCPO should follow the same project lifecycle structure. For GCPO, the identified project structure is Planning, Design, Procurement, Construction/Installation and Closeout. This process needs to be documented and standardized across the organization. The project lifecycle will be the highest level business process defined within project delivery.

Project Approvals/Gateways/Governance – as a project moves from one phase to the next, industry PM practice dictates that there be a defined governance process so that approval gateways are in place to ensure all requirements and obligations (e.g. strategic, financial, technical, risk and regulatory) have been met to allow the project to progress.

Standard Templates, Forms and Standard Project Management Practices – for each step or activity in a project delivery lifecycle, standard practices, procedures and approaches should be followed, supported by templated, reusable forms and guides if possible. MWH recommends that GCPO define its project delivery approach and standards, and that those materials be centralized to allow ease of access and use.

Define Roles and Responsibilities – for each step in the project delivery lifecycle, MWH recommends using a RACI (Responsible, Accountable, Consulted, Informed) matrix to define roles and responsibilities, assisting with alleviating confusion and assigning responsibility.

To support the newly defined lifecycle, processes, forms and standard practices, MWH recommends the implementation of a user-friendly, lightweight web-based project delivery system. The system will provide a central location for all users to view GCPO project delivery content, identify roles and responsibilities in the process, review checklists and necessary steps to move their project forward and obtain pertinent forms and documentation to complete.

Proper administration of the system should include defined system ownership and training.

MWH recommends training be broken up into user and super-user training. As mentioned in theme 6, training for both general users and advanced users (those updating content) would help to assure the system is delivering as much value as possible.

If an electronic project delivery system is implemented, MWH recommends that two classifications of owners are defined. An overall system owner should be named and empowered to keep the GCPO users trained, while the content owner(s) will be focused on assuring the content is complete and up to date, processes are being followed and the system is being used to help the business. While most systems have a single owner, the project delivery system data is specific to a degree where an owner from each

practice area will be necessary to assure content is correct and up to date at all times. Practice area examples might include Project Management, Procurement, Risk Management, etc.

Define Standard Equipment Specifications (*ref. ADM-03*)

MWH recommends that GCPO develop standard equipment specifications to assist in the procurement, installation, operation and maintenance of common asset types.

Project Controls (Microsoft Project, Microsoft Excel Primavera P6 Client)

GCPOs current project controls system consists of desktop installations of Microsoft Project 2007 with client installations of Primavera P6 used at the regional level by the construction management group. An enterprise-class, centralized project controls system would provide the framework necessary for facility-wide scheduling, cash-flow analysis, project management and resource leveling.

Standardize Project Controls Processes (*ref. PDL-01*)

During the systems review, MWH learned that GCPO is devoting energy to making improvements in the areas of project chartering, cost estimation, risk management, commissioning and resource management / leveling. The team recommends that these processes be optimized and standardized across the organization in order to increase transparency, reduce risk, lower costs and improve overall delivery.

Standardize and Automate Program and Project Reporting (*ref. PDL-03*)

GCPO has made strides towards the standardization of project and program reporting. MWH recommends that the effort around improved reporting be reinforced. If earned value management will not be a standard used on all projects for reporting variances in schedules and budgets, a less detailed but still rigorous “EVM lite” approach should be adopted. In addition to an EVM-type solution, it’s recommended that reporting include other aspects of project delivery – KPIs around communications, PR, quality management, regulatory compliance & permitting, change orders and more should be part of the robust reporting model.

The reports generated by Brian Bunker are a good start towards putting in place robust project reporting procedures, but the manual manipulation required to produce them is inefficient and prone to human error. MWH suggests GCPO automate or semi-automate portions of these reports by leveraging systems currently in use such as the “Program and Budget Database” (suggest that Brian Bunker receive access / training) and future systems such as Primavera P6/ERD.

Standardize EPS/WBS Structure (*ref. GCP-04*)

Best practice in project controls requires the standardization of both the Enterprise Project Structure (EPS -- a logical project grouping across the organization) and the Work Breakdown Structure (WBS -- a means by which a project is broken down into smaller, more manageable, measurable components).

Standardizing these items will provide the foundation needed for robust cash flow analysis and project & portfolio reporting.

Implement Enterprise Version of Primavera P6 *(ref. SYS-03)*

In an organization the size of GCPO, the standardized use of an enterprise project controls system is mission-critical, essential to the efficient and effective operation of the facility and the delivery of capital projects. The industry standard for project controls systems is Primavera P6 Enterprise Project Portfolio Management (EPPM). EPPM can run on a server located at GCPO, in the regional office at Boise or at the TSC, but given that power-users of the application tend to prefer using the thick client rather than the web client, it is recommended that GCPO install the application locally. Note that MWH is not advocating for the use of Primavera P6 Client, which would be installed on individual computers. The centrally located EPPM will provide the ability to create GCPO-wide schedules and effectively resource level across the organization. If the use of EPPM is not possible, an alternative would be Microsoft Project Enterprise.

Implement Primavera ERD *(ref. SYS-04)*

Primavera P6 is a robust tool but lacks robust reporting capabilities, particularly with regard to historical project schedule and cost data. Primavera Enterprise Reporting Database (ERD) is a datamart add-on that provides both a data store and more powerful reporting that can be leveraged to show trends and the kinds of historical reports that Brian Bunker is attempting to assemble.

Project Management Training *(ref. GCP-08)*

GCPO is a complex organization with high dollar, high visibility projects. Users would benefit from training on project management methodologies and processes as well as systems and tools. On the tools front, GCPO utilizes multiple systems such as “Impromptu” and the “Program and Budget Database” for reporting. Providing user training on these systems would improve usage of the tools and drive better data accuracy and timeliness, leading to more accurate and actionable reporting. The implementation of Primavera P6 and Primavera ERD will drive the need for both advanced and basic user training.

Integrate P6 and CARMA (discuss actual data to pass – Schedule – Actuals) *(ref. SYS-05)*

CARMA, while an excellent work and maintenance management application, is not well suited to the management of complex, projectized activities that take place over a long period of time. Proper controls systems like P6 are required to manage that type of work in an organization, and at GCPO, with so much overlap and sharing of resources, MWH believes integration between the two systems will provide significant value. With such an integration in place, work can be planned / described in CARMA, then exported to P6, resource-leveled and scheduled and then sent back into CARMA.

The TSC has stated that no integrations will be possible with CARMA, but MWH believes GCPO can make the case that integration between the two systems is mission-critical based on the outage schedule and how it affects both routine and non-routine work.

Integrate SharePoint and P6/ERD (ref. SYS-06)

While Primavera P6 is a key tool in the organization, it is typical to limit the number of users to a small, highly-specialized project controls group. The project controls team is responsible for interfacing with project managers to gather key project data, keeping project schedules up to date in the system, reporting project progress, putting together earned value reports, estimates to complete and other PMI best project controls practice. Due to the limited number of users with access to the system (licenses are not cheap) and the large number of employees needing to see the project schedules, MWH recommends integrating P6/ERD with Microsoft SharePoint to allow a central location (SharePoint) for users to retrieve project schedule information and reports. At a minimum, project schedules can be PDFed on a regular basis and simply posted to SharePoint; a more robust solution would see information flowing from P6 to SharePoint in an automated fashion – making milestone dates, resource availability and progress much more visible to the organization.

Document Management (REDS, Meridian)**Develop a Document Management Plan (ref. SYS-07)**

GCPO, like many organizations, suffers from not having a coherent strategy around managing documents. There are numerous systems, thousands of documents, version control problems with drawings, dozens of document hidey-holes, project files sitting on local drives, and out of date hardcopies. In general, GCPO staff does a decent job tracking the documents that they touch on a day to day basis, but there are significant issues and potential risk to the facility when documents change hands. e.g. During the commissioning process or during the delivery of submittals or RFIs.

“Document management” means many different things to different people – the first step towards managing that risk is to describe what types of documents and processes are unmanaged, and to then put a plan in place that outlines the policies, processes, systems and quality management of each overall area (e.g. technical archive, regulatory compliance, project files, email, drawings, SOPs, construction submittals). Following the plan, GCPO can tactically target the high reward / low effort areas, along with the high risk items that need to be dealt with immediately – construction management document control being the most immediate need (see SYS-10, below).

Initiate Scanning/Archiving Process (ref. SYS-08)

GCPO currently stores documents in multiple formats and multiple locations with a lack of oversight to assure that key documentation is present and accounted for. A significant area for improvement is the digitization of paper documents such as equipment O&M manuals, SOPs and other documents found in the technical data center of the administration building and throughout the three powerhouses. Not an insignificant effort, this activity can be completed over time, using contracted help, interns or staff downtime.

Streamline/Improve Drawing Management (ref. SYS-9)

As mentioned in theme 2, GCPO is currently struggling with version control on as-built & facility drawings. Drawings are routinely “checked out” from Meridian for extended periods of time, and as a result others needing to update those same drawings create one-off “offline” versions, which then become challenging to merge back into the master set. When the merge does not occur, divergent versions of the drawings exist in two or more places. MWH recommends that GCPO make improvements to and enforce the policies, procedures, systems and quality management in this area. Assigning and empowering an owner of the drawing system will help, if one hasn’t already been named. It’s also recommended that a short project be set up to perform “clean up” on the current set of drawings.

Standardize PM/CM Document Control (ref. SYS-10)

To better support project and construction management, reduce risk and increase efficiency, MWH recommends that GCPO standardize the handling of traditional construction documents. This includes the use of an electronic tracking system for contractor submittals, RFIs, field orders, change orders and the like. Big-picture wise, the cost of an enterprise document control system is fractional when compared with the volume of vital information that flows through it, from legal and contractual documents to critical technical designs and regulatory compliance documentation. Having everything from a project in one system will assist with the commissioning process, claims reduction, providing full asset details to equipment in CARMA and more. It is a mission-critical system for GCPO. Steps needed to move this standardization forward:

- Name a champion to own the document controls role within the organization
- Implement/Identify a GCPO system for document management
- Establish standardized system use guidelines (not just vendor training materials, but GCPO-specific materials)
- Adjust contract language to enforce contractors to use the system for submittals

Standardize Capture and Management of Asset Documentation (ref. PDL-08)

The standardization of the capture and management of asset documentation consists of two key elements.

The first is to standardize the handling of commissioning/asset documentation including SOPs, drawings and O&M manuals. In order to improve the capture, handling and management of critical asset information, MWH recommends that GCPO coordinate with the chosen construction management document control system and establish a standard procedure for the approval and handover of critical asset information, including drawings, O&M manuals, specifications, SOPs and CARMA/asset data.

After the standards have been established, MWH recommends GCPO formalize them – load them into a robust, easily updateable, easily accessible electronic asset documentation system containing SOPs, equipment manuals, photographs and more. Standard processes for keeping the eO&M system up the date should be established, as should a system owner.

Create a SharePoint Implementation and Governance Plan (ref. SYS-11)

MS SharePoint can be deceptively difficult to implement. Once installed, it can be easy to get started building – in some cases too easy. In contrast to the months and years-long requirements gathering involved in traditional waterfall enterprise application implementation, where it's common for systems with long gestation periods to fail to meet or keep up with changing business requirements, SharePoint offers a blank slate and rich palette of tools that allows developers and configuration specialists to get started with *no* planning at all. The results often speak for themselves, lacking cohesion, user-friendliness and any kind of impact on the business – a tragedy, considering the time and monetary investment most businesses make in the technology.

To avoid this, MWH recommends that GCPO conduct some "big picture" SharePoint vision / planning sessions. As a result, a detailed implementation plan that calls out tasks, priorities, timelines, milestones and levels of effort can be established. A governance board should be put in place to act as a steering committee for the initial and ongoing build-out of the SharePoint sites, meeting monthly or quarterly, as required. Without such a steering committee, SharePoint's "organic" growth can be hard to control and detrimental to the adoption and usefulness of the application.

Project Prioritization (MS Excel)

GCPOs current approach to prioritizing projects is built upon solid principles and methodologies, but the tools used (MS Excel) require manual manipulation and the data exists in several places. The foundational principles are sound; our recommendations merely build on what GCPO is already trying to accomplish in the area of project prioritization.

Centralize a Repository of Identified Needs/Projects (ref. SYS-12)

Rather than using a variety spreadsheets that depend on things like funding type / source, MWH recommends the use of a centralized, database driven repository for storing identified facility needs/projects. This repository would act as a central location where approver users would log in and record identified needs and projects.

Support the Prioritization Methodology with More Robust Technology (ref. SYS-13)

While excel spreadsheets can be used for calculations and light prioritizations, the use of a robust methodology and prioritization engine will offer significant benefits. Specifically, it will offer an improved interface, enhanced workshop and collaboration capabilities, the ability to weight or calculate priorities systematically, the ability to factor in constraints and the ability to show projects prioritized by sub-groupings such as fund or department as well as a rolled up enterprise view of the prioritized projects. Ideally, a single application will support both SYS-12 and SYS-13.

Other

Upgrade GCPO network (*ref. SYS-14*)

Concerns are routinely raised regarding network performance / congestion at GCPO. This issue negatively impacts the use of all TSC systems, and MWH recommends that a detailed analysis be undertaken to understand whether improvements (e.g. installing new hardware) at either end of the network will offer increased performance. Of particular interest would be “low-hanging fruit” improvements that require modest investments of time and / or money. Note that as more systems and staff come online at GCPO, network traffic and congestion will also increase.

Separate Hungry Horse Network from GCPO (*ref. SYS-15*)

The Hungry Horse facility routes all of its network traffic through GCPO. As a potential means to reduce congestion within the GCPO network, MWH recommends wiring Hungry Horse on a separate, dedicated network line.



Grand Coulee Power Office – Review of Staffing and Processes

Appendix 8

Staff Survey Analysis

Staff Survey Analysis

To gain input from a larger cross section of GCPO personnel beyond those able to participate in staffing study workshops, MWH developed a survey for distribution to plant personnel – primarily maintenance and operations staff. The survey, administered in hardcopy paper format, consisted of 21 questions related to workers' perceptions of work performance, engineering and maintenance support, work planning, knowledge transfer, group morale, and other issues relevant to GCPO staffing and organization.

A total of 208 completed surveys were received. MWH compiled the results of the 19 multiple-choice questions into pie charts, shown in Section 1 below, and compared answers across these multiple-choice questions to see if they showed important trends for GCPO to consider. Selected figures highlighting these comparisons and a short description of the findings are shown in Section 2 below. The last two questions of the survey, which were open-ended free-response style questions, provided opportunities for workers to suggest general improvements to plant practices and procedures. Responses to these questions were implicitly considered and incorporated into broader study findings and recommendations.

A copy of the survey is included in Section 3 below.

1. Survey Results

Pie charts showing the breakdown of results for the first 19 survey questions are displayed below along with brief takeaway points.

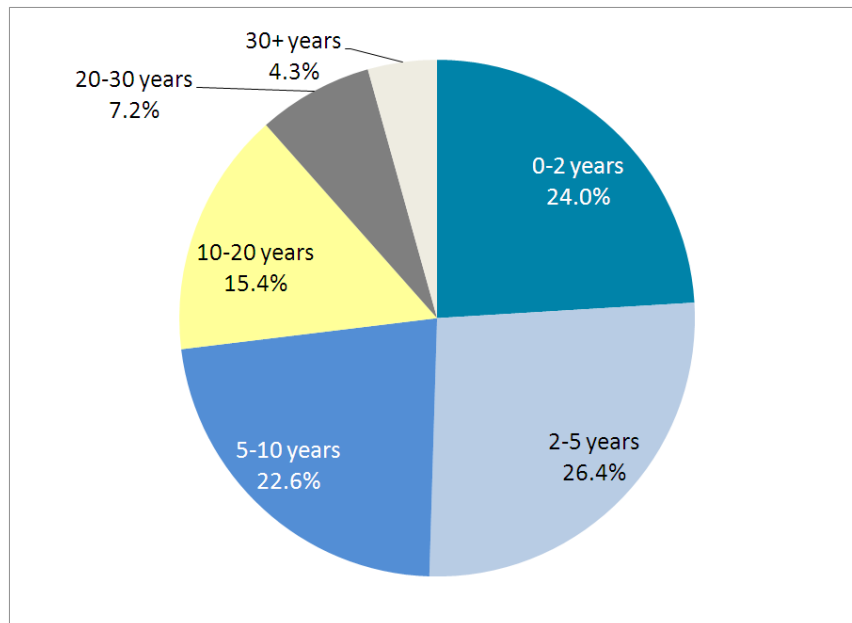


Figure 1 – Survey responses to “How many years have you worked at Grand Coulee?”

Figure 1 shows that approximately half of the survey respondents have been with the GCPO for less than 5 years.

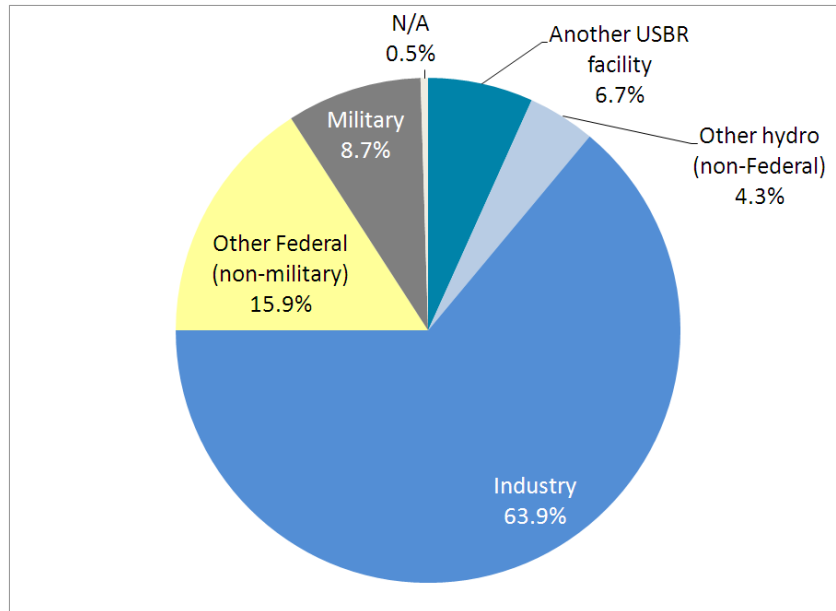


Figure 2 - Survey responses to “Where did you work before Grand Coulee?”

Figure 2 shows that only 11% of respondents came from another hydropower facility (either another USBR facility or a non-Federal hydro plant). While some of the employees who reported their previous employment as either industry, military, or other federal may have previously worked at a hydropower facility, the majority of workers did not have hydro experience prior to GCPO.

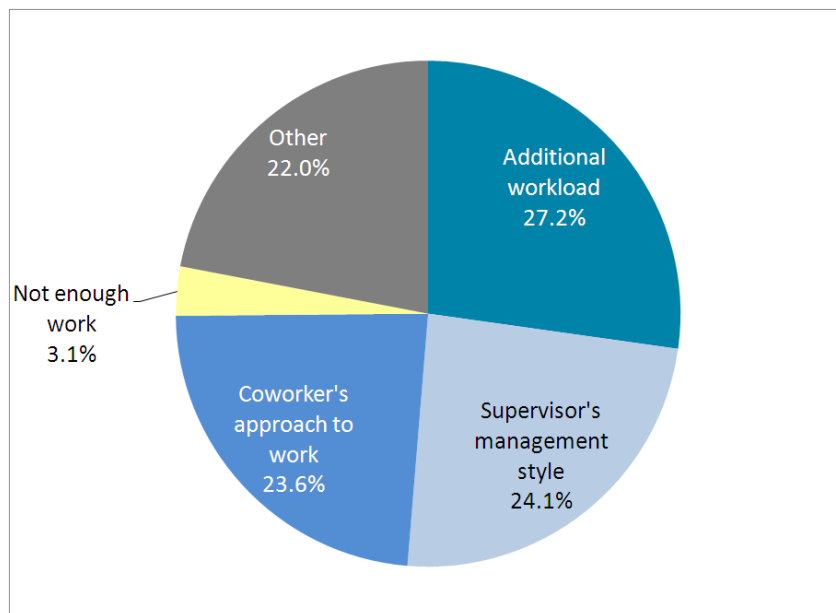


Figure 3 - Survey responses to “What is the greatest cause of stress in your job?”

Figure 3 shows an almost even distribution between workers reporting “additional workload,” “supervisor’s management style,” “coworker’s approach to work,” and “other” as their greatest cause of stress. Only 3.1% listed “not enough work” as their greatest cause of stress.

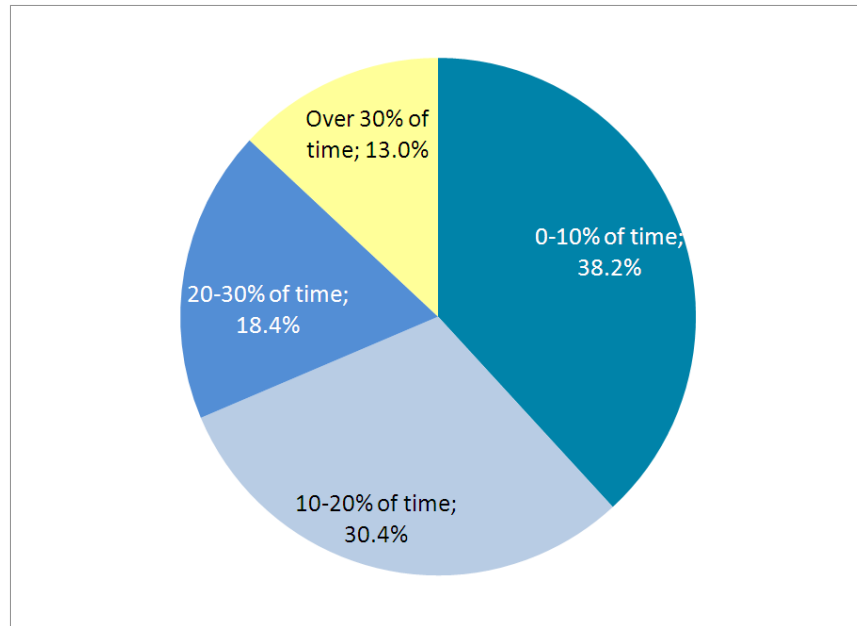


Figure 4 - Survey responses to “What percentage of your time is spent waiting for something or someone else?”

Figure 4 shows that approximately one-third of respondents spend more than 20% of their time waiting for someone or something else. This represents a significant amount of productivity potentially lost to insufficient upfront planning to ideally mitigate or substantially reduce employee “waiting time.”

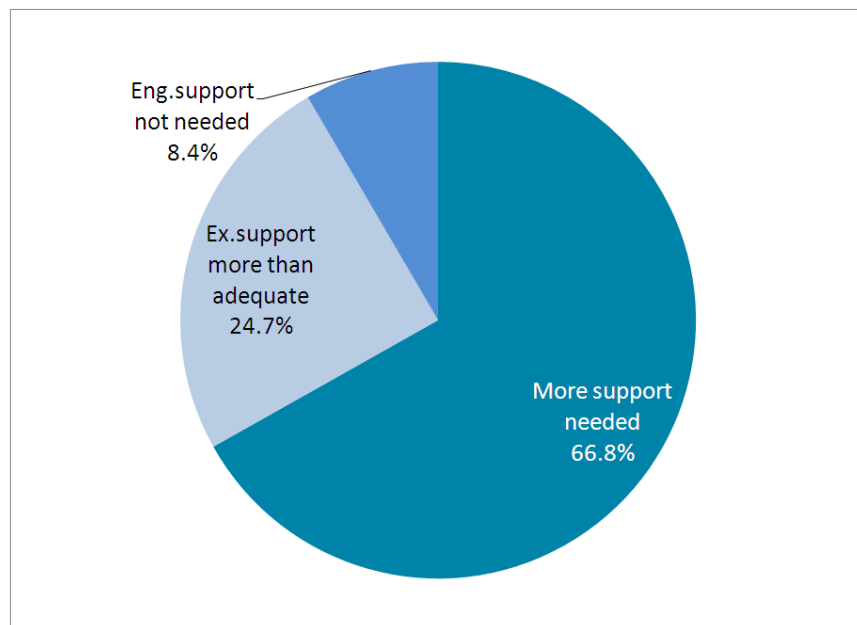


Figure 5 - Survey responses to “Rate the amount of engineering support for O&M”

Figure 5 shows that approximately two-thirds of respondents believe that more engineering support is needed, in alignment with other staffing study findings.

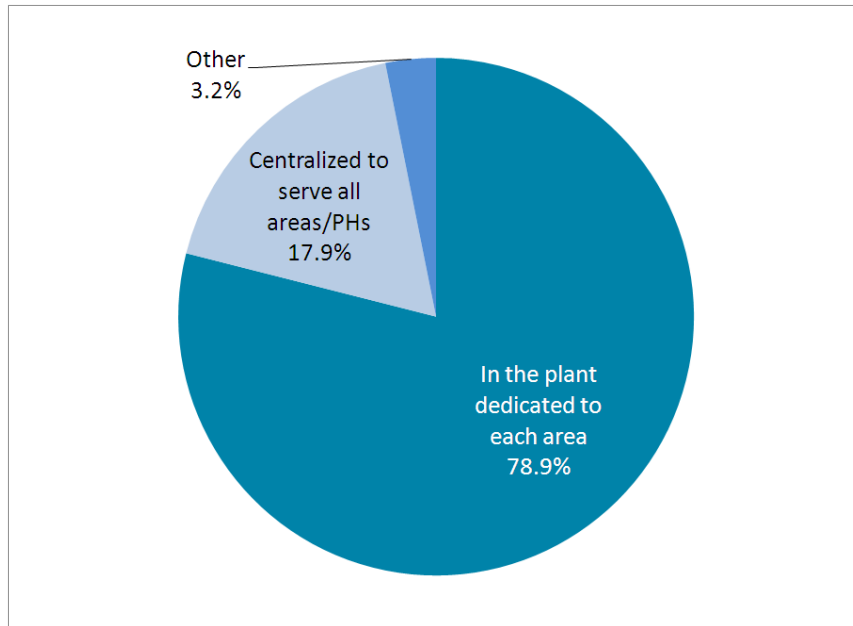


Figure 6 - Survey responses to “Do you believe that engineering support is better to be...”

Figure 6 shows the majority of respondents, who are primarily plant operations and maintenance staff, would prefer engineering support in the plant dedicated to each maintenance area.

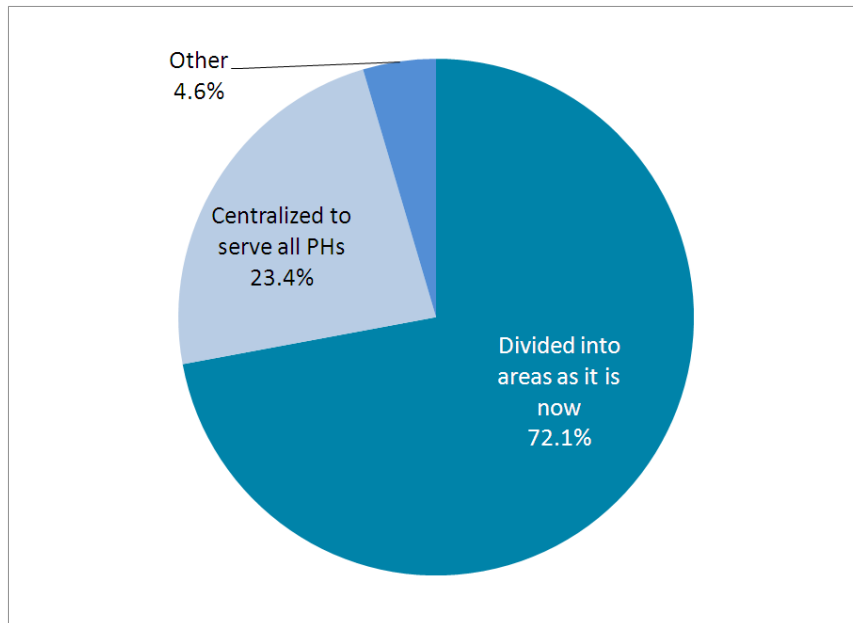


Figure 7 - Survey responses to “Do you believe that maintenance is better to be...”

Figure 7 shows the majority of respondents, who are primarily plant operations and maintenance staff, prefer that the maintenance functional group remain divided into areas as it is now.

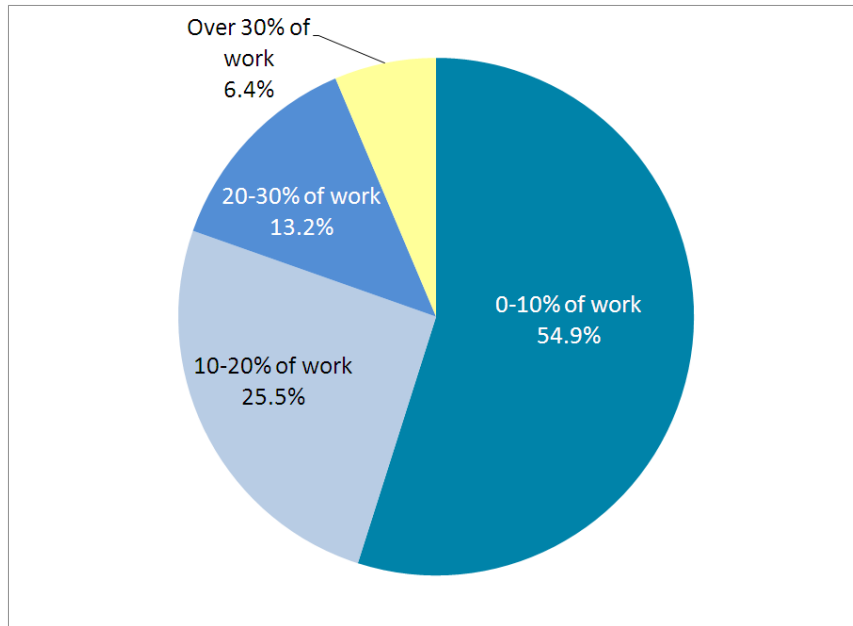


Figure 8 - Survey responses to “What percentage of your work could be performed by someone with lesser skill / training / experience (like cleanup and housekeeping)?”

Figure 8 shows approximately one-fifth of workers believe that 20% or more of their work could be performed by someone with lesser skills, training, or experience. These results indicate that not much time is spent doing less skilled work.

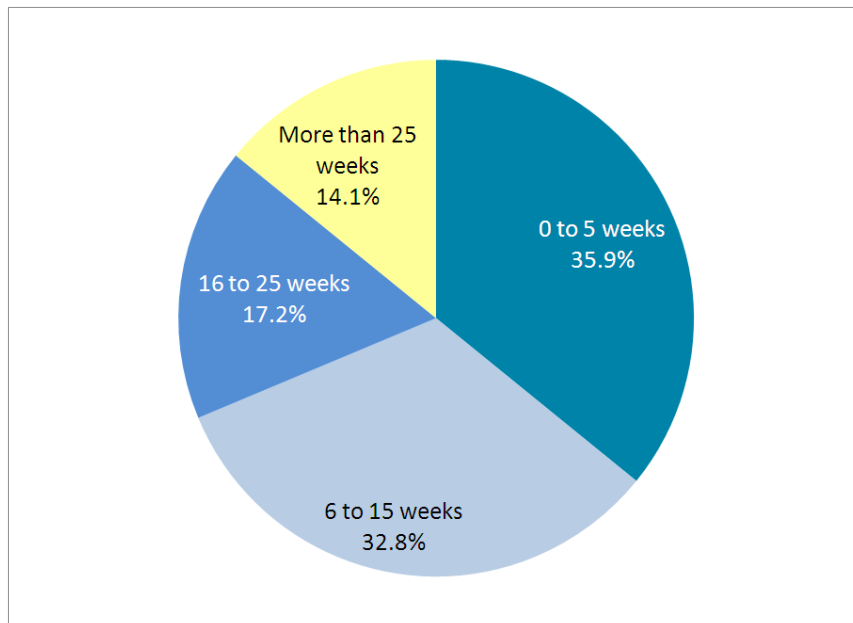


Figure 9 - Survey responses to “In your opinion, how many weeks per year does your work plan change significantly?”

Figure 9 shows that approximately one-third of respondents reported that their work plan changes more than 16 weeks per year while another third reported work plans changing 6-15 weeks per year. This supports a staffing study-defined need for improved upfront work planning.

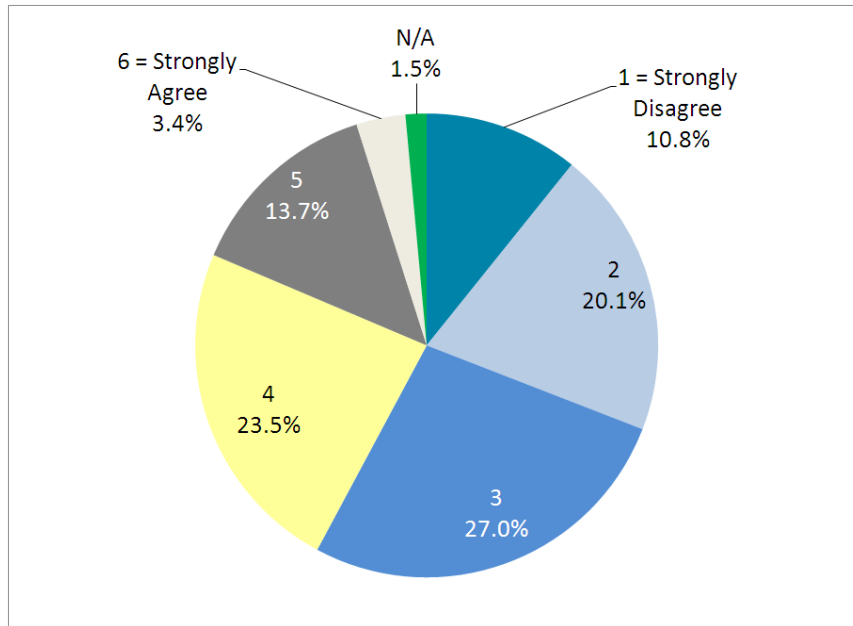


Figure 10 - Survey responses to “Work is well planned” (1 = Strongly Disagree to 6 = Strongly Agree)

Figure 10 shows the survey respondents reported a generally unfavorable view of work planning. 30.9% of workers scored work planning a 1 (strongly disagree) or 2 out of 6 while only 14.1% scored work planning a 5 or 6 (strongly agree).

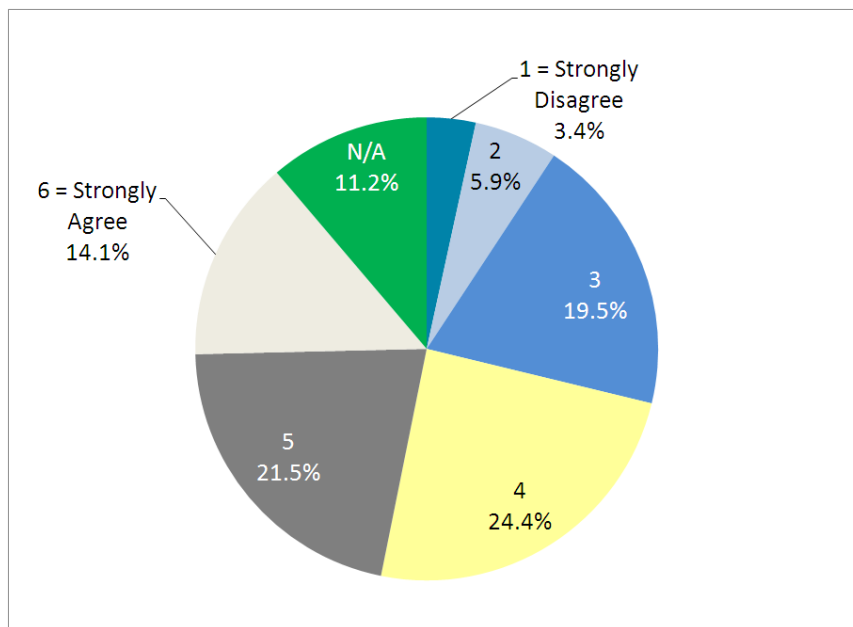


Figure 11 - Survey responses to “If more time could be spent on PM work, then there would be less Trouble Report work generated” (1 = Strongly Disagree to 6 = Strongly Agree)

Figure 11 shows most respondents believe that more time spent on preventive maintenance work would decrease the amount of trouble work (i.e., corrective maintenance).

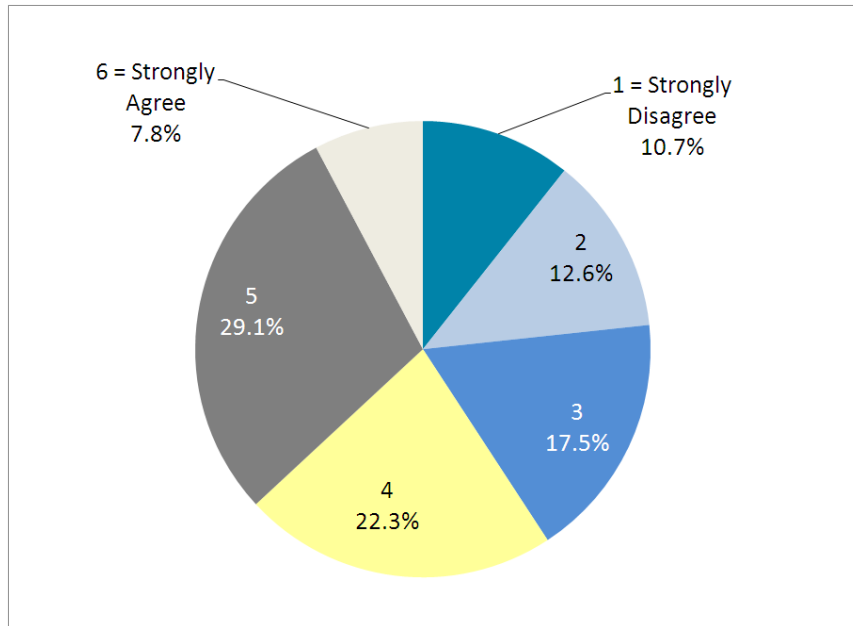


Figure 12 - Survey responses to "I am provided the necessary training to complete my job" (1 = Strongly Disagree to 6 = Strongly Agree)

Figure 12 shows that more respondents believe they are provided the necessary training to complete their jobs than those who disagree. However, 10.7% strongly disagree and another 12.6% responded with the next lowest response, indicating likely room for improvement with respect to organizational training.

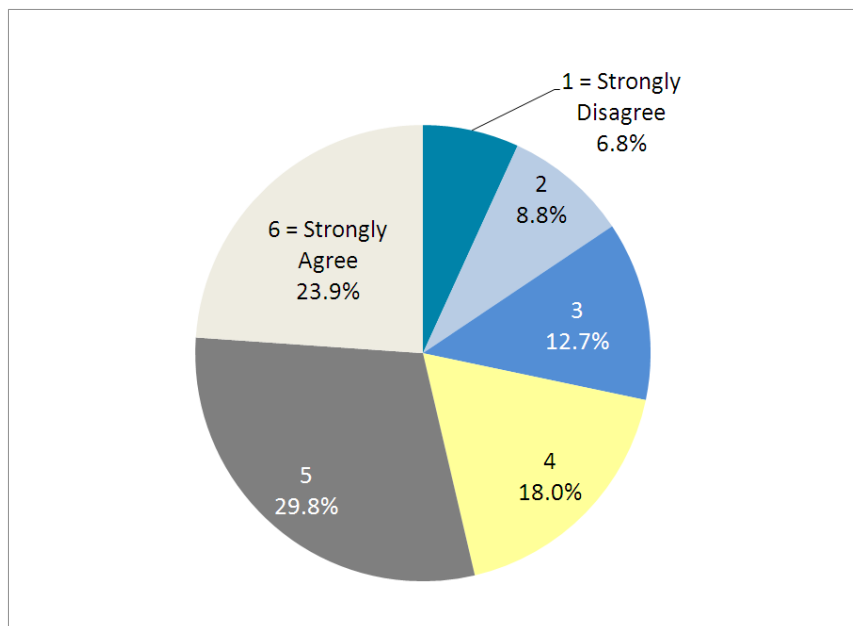


Figure 13 - Survey responses to "My supervisor listens to my ideas and suggestions" (1 = Strongly Disagree to 6 = Strongly Agree)

Figure 13 shows the majority of respondents believe their supervisors listen to their ideas and suggestions.

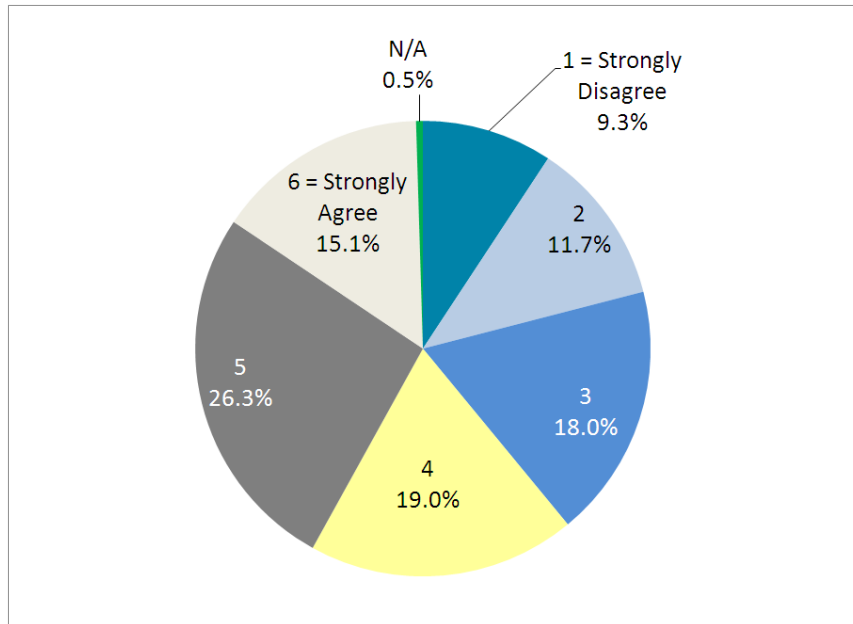


Figure 14 - Survey responses to “The morale in my department / team / group is positive” (1 = Strongly Disagree to 6 = Strongly Agree)

Figure 14 shows that respondents more often reported that their department, group, or team morale was positive than not.

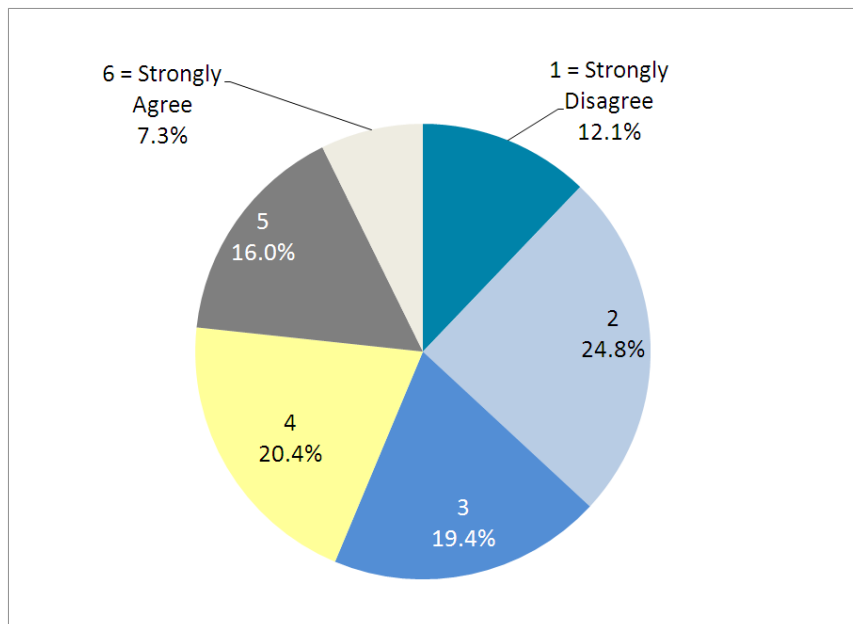


Figure 15 - Survey responses to “Knowledge is sufficiently being transferred down from experienced employees” (1 = Strongly Disagree to 6 = Strongly Agree)

Figure 15 shows GCPO workers have a slightly unfavorable view of knowledge sharing and transfer. More GCPO employees strongly disagree or report a 2 out of 6 that knowledge is sufficiently transferred from skilled to less-skilled employees than those who strongly agree or report a 5 out of 6.

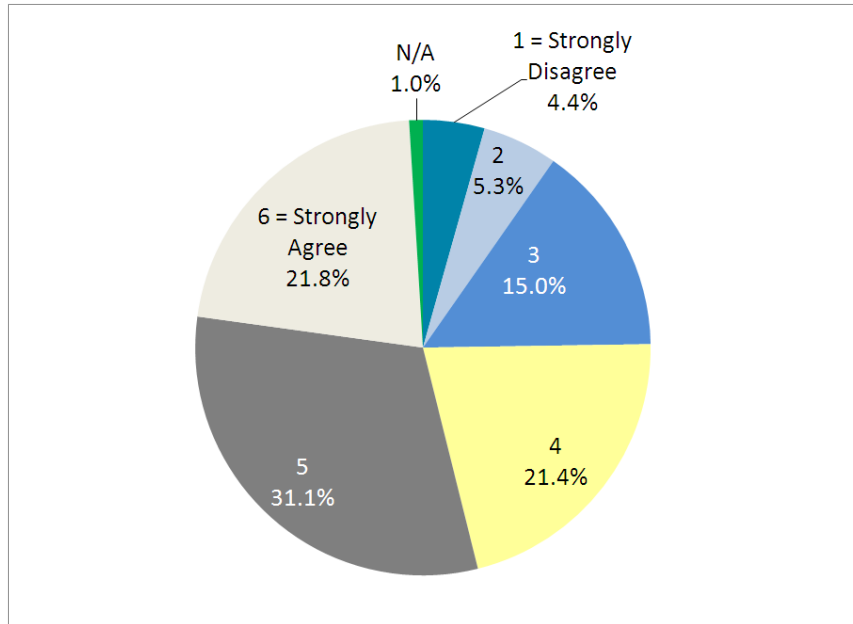


Figure 16 - Survey responses to “Safety is the number one priority for BOR employees” (1 = Strongly Disagree to 6 = Strongly Agree)

Figure 16 shows most GCPO respondents agree that safety is the number one priority for BOR employees.

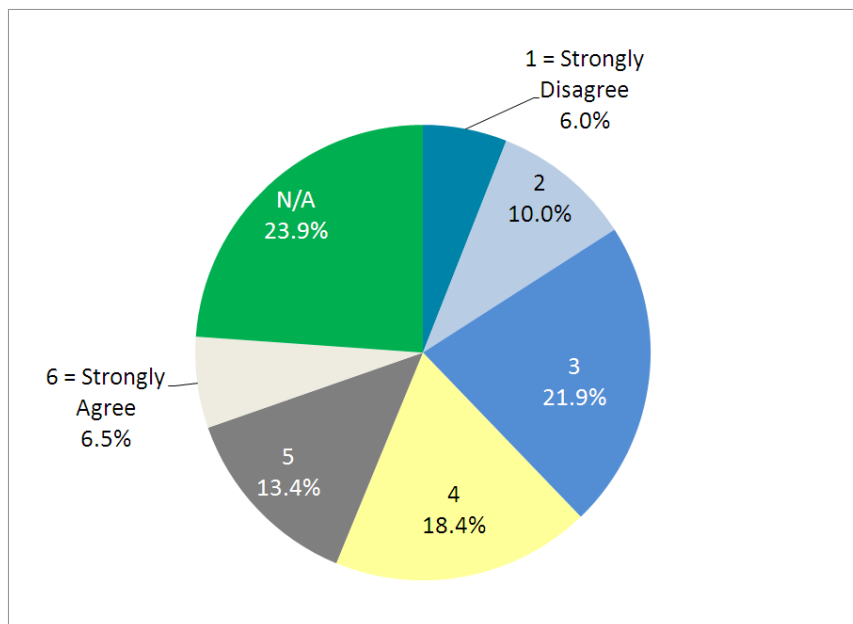


Figure 17 - Survey responses to “Safety is the number one priority for Contractors on site” (1 = Strongly Disagree to 6 = Strongly Agree)

Figure 17 shows almost even numbers of respondents believe that safety is the number one priority for contractors as those who disagree.

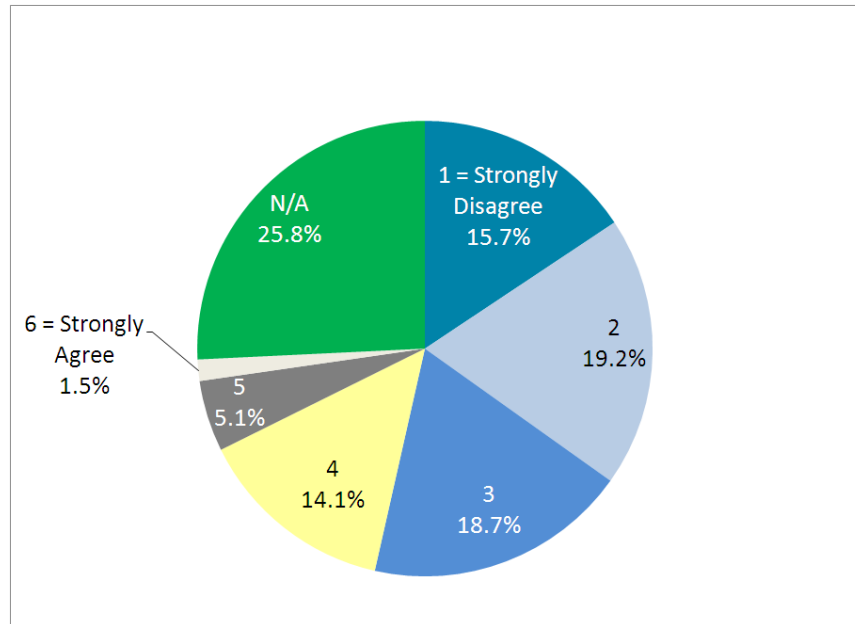


Figure 18 - Survey responses to “There is adequate plant input / review of contracted work” (1 = Strongly Disagree to 6 = Strongly Agree)

Figure 18 shows only 6.6% of GCPO respondents either strongly agree or responded with a 5 out of 6 when asked if there is adequate plant input into and review of contracted work. Conversely, more than one-third of GCPO respondents either disagreed or gave a 2 out of 6.

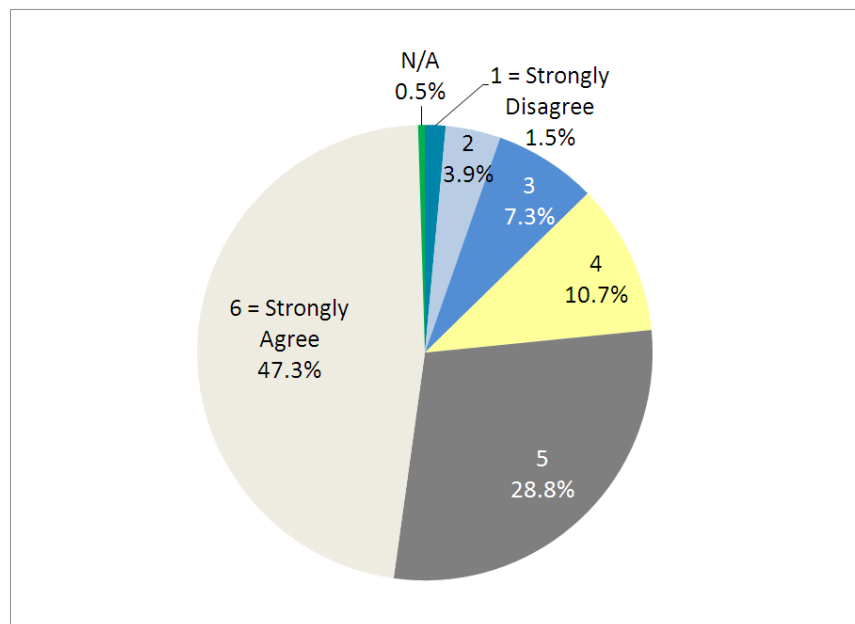


Figure 19 - Survey responses to “I am proud to work at Grand Coulee” (1 = Strongly Disagree to 6 = Strongly Agree)

Figure 19 shows the majority of respondents are proud to work for the GCPO, indicating a generally positive culture among the maintenance and operations staff.

2. Survey Results Comparisons

The following figures compare results from selected survey questions to identify relevant trends in worker responses.

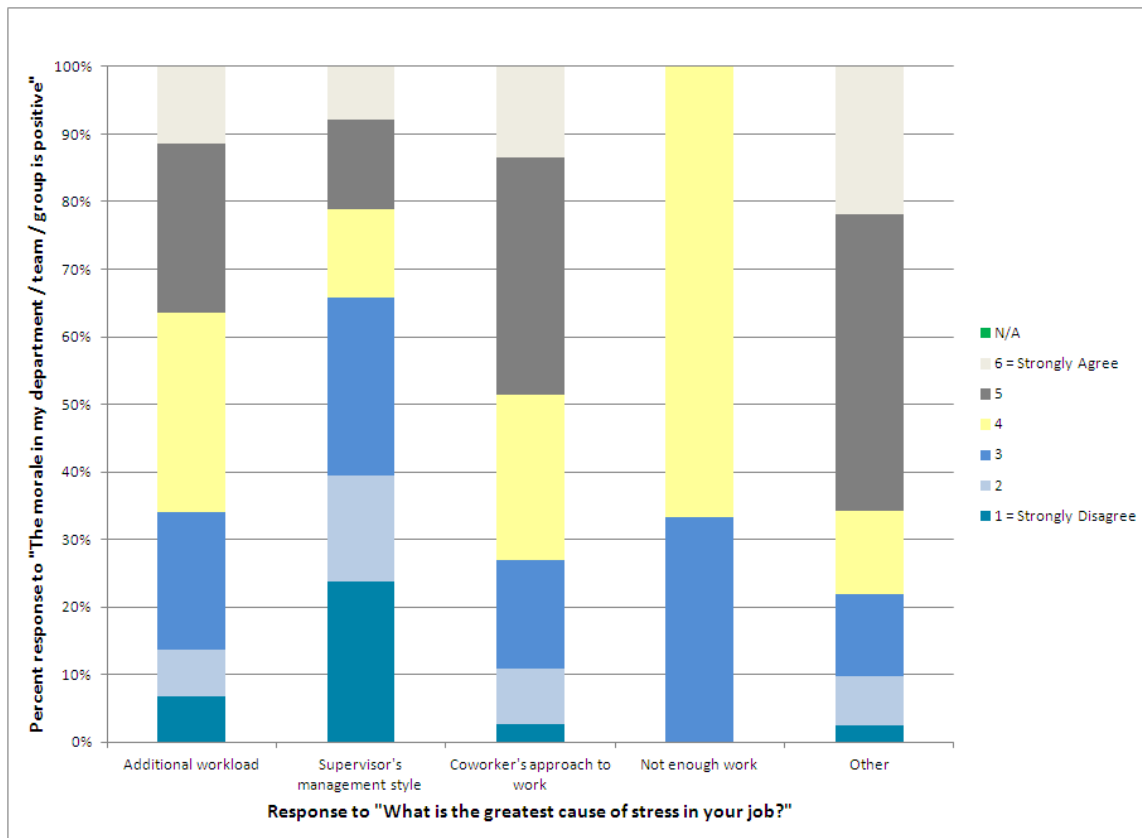


Figure 20 – View of group morale by greatest cause of stress

Figure 20 shows how workplace morale is strongly dependent on the supervisor’s management style. Workers who list their supervisor’s management style as their greatest source of stress are much more likely to have a negative view of department, team, or group morale than others.

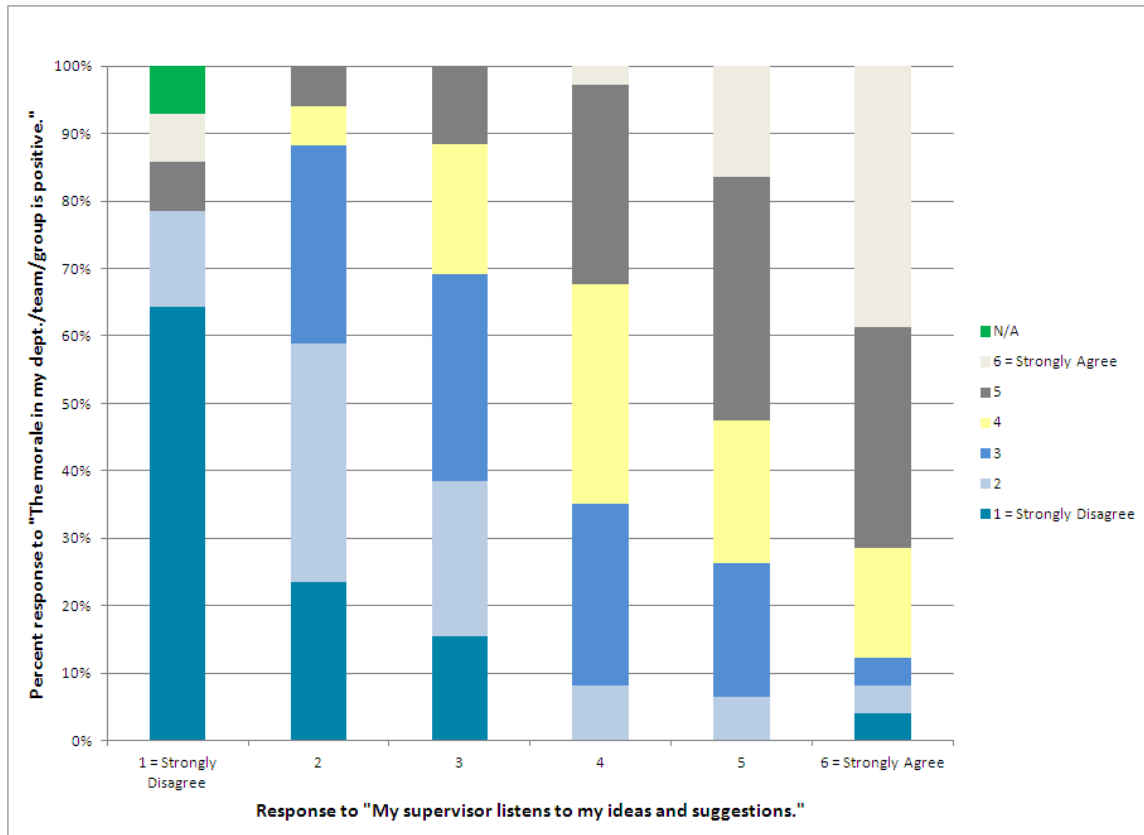


Figure 21 - View of department, team, or group morale by perception of supervisor

Figure 21 shows that workers who believe their supervisors pay attention to their ideas and suggestions (a 5 or 6 on the x-axis) are much more likely to believe that their department, team, or group has good morale. This complements the result shown in Figure 20 to show that supervisors play a major role in steering group morale at GCPO.

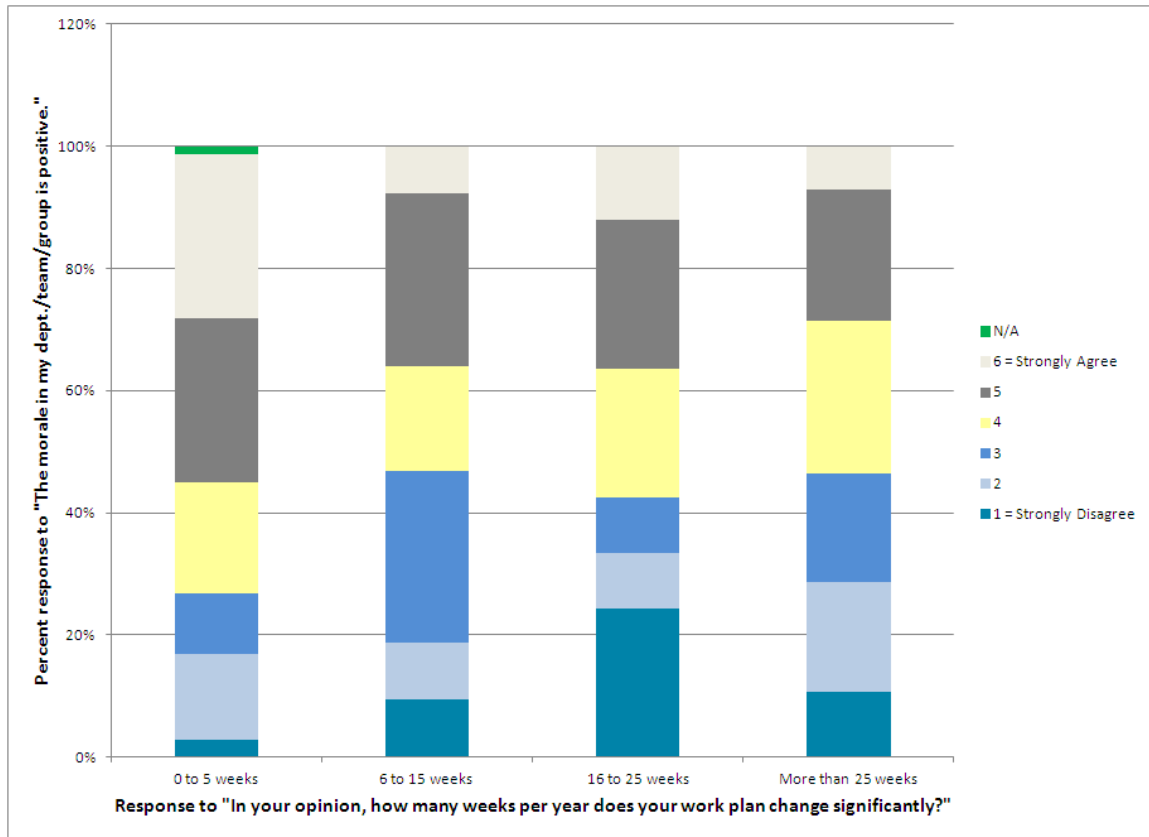


Figure 22 - View of group morale by weeks per year work plan changes

Figure 22 shows that in general, as changes to an employee’s work plan increase in frequency, his or her perception of group morale decreases. In other words, frequently changing work plans appear to adversely affect morale.

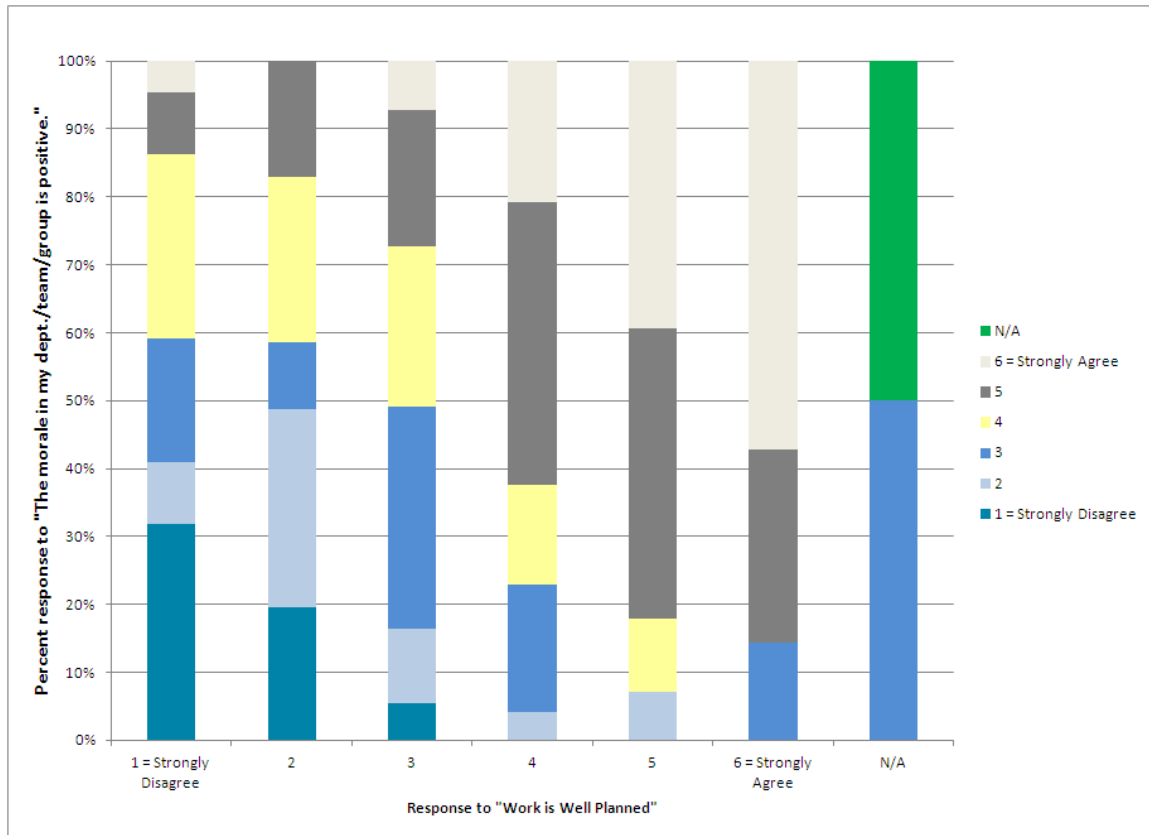


Figure 23 - View of group morale by view that work is well planned

Figure 23 shows that workers who believe that work is well planned (those who responded with a 5 or 6 on the x-axis) are much more likely to believe that morale in their department, team, or group is positive. This complements the results in the previous figure, which shows that more frequent work plan changes have an adverse effect on morale.

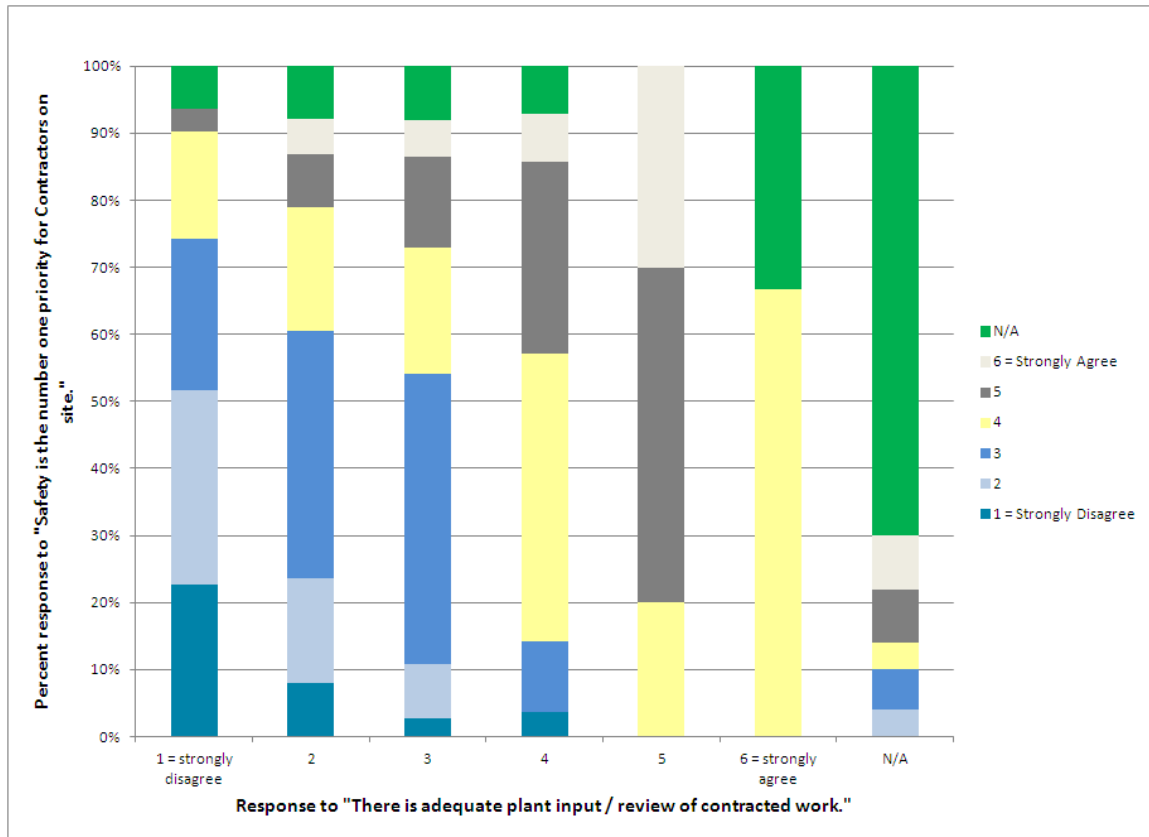


Figure 24 - View of contractor safety by view of plant input/review of contracted work

Figure 24 shows that workers who believe that there is adequate plant review of contracted work (those scoring a 5 or 6 on the x-axis) are much more likely to believe that contractors are making safety their top priority. Conversely, workers who believe there is not enough plant review have a much worse opinion of contractor safety practices.

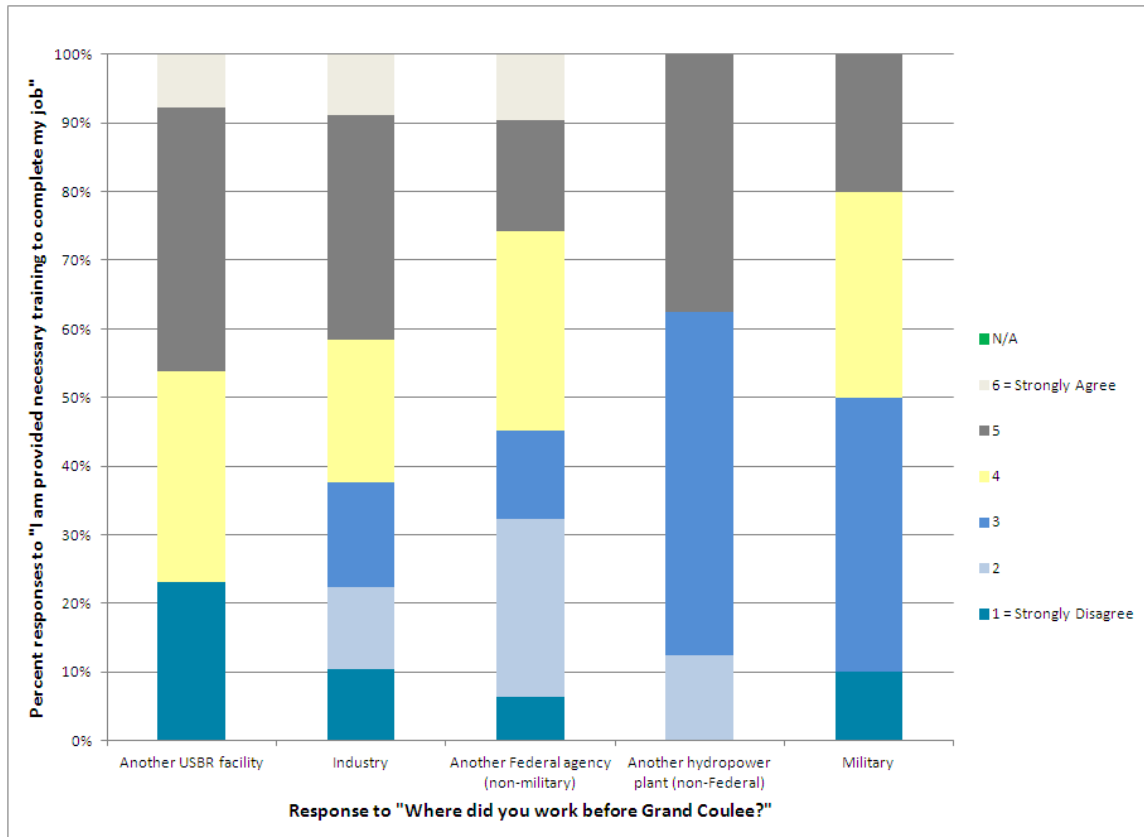


Figure 25 - View that adequate training is provided by employer before GCPO

Workers were asked if they are provided the necessary training for their job. As Figure 25 shows, the profile of responses varies when selecting for the previous employer of the worker; however, the average value of the responses remained almost the same among these groups. For example, while there were many workers who came from previous USBR facilities and responded with a 1 (strongly disagree), there were more who responded with a 5 or a 6 (strongly agree). There is almost no difference in average response between those whose previous job was in the hydro industry (another USBR facility or another hydropower plant) than those who came from outside the hydro industry. Therefore, this data shows no evidence that training practices at GCPO are significantly better or worse than at other hydro facilities.

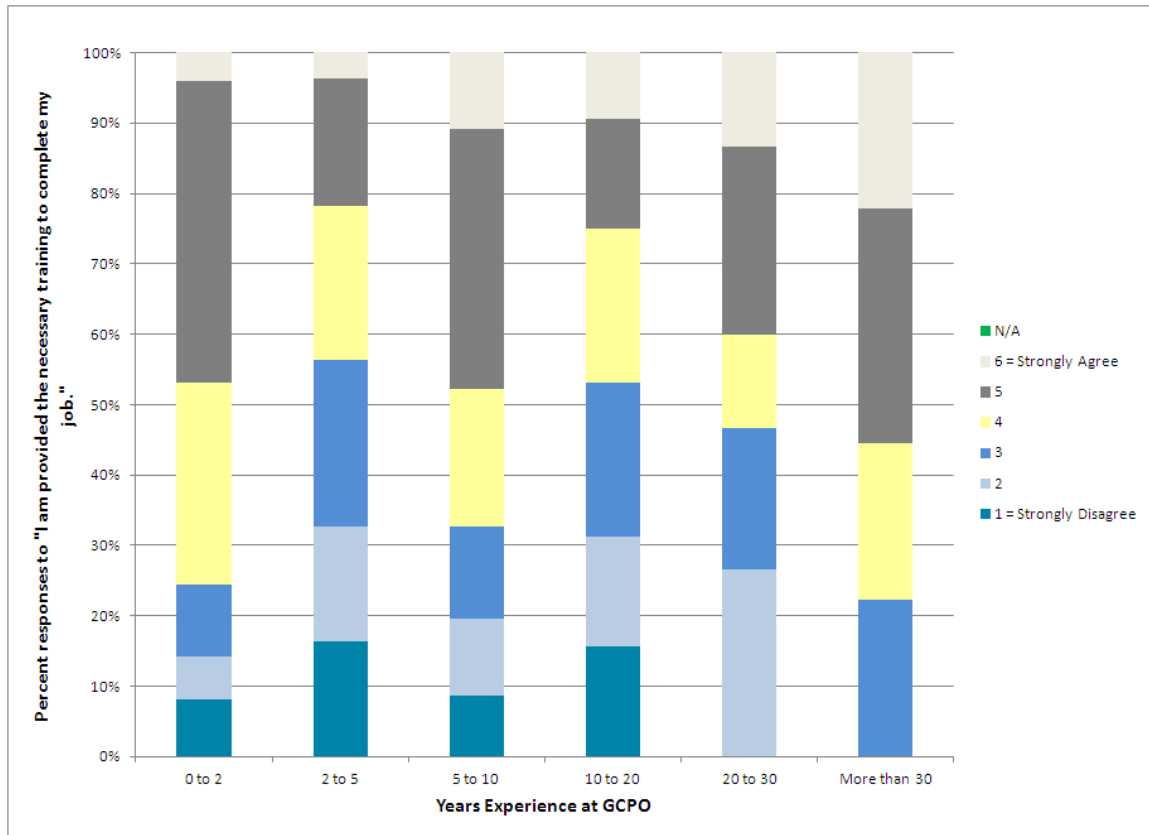


Figure 26 - Workers' perceptions of training by tenure at GCPO

Figure 26 shows no strong correlation between a worker’s tenure at GCPO and opinion of whether he or she receives enough training.

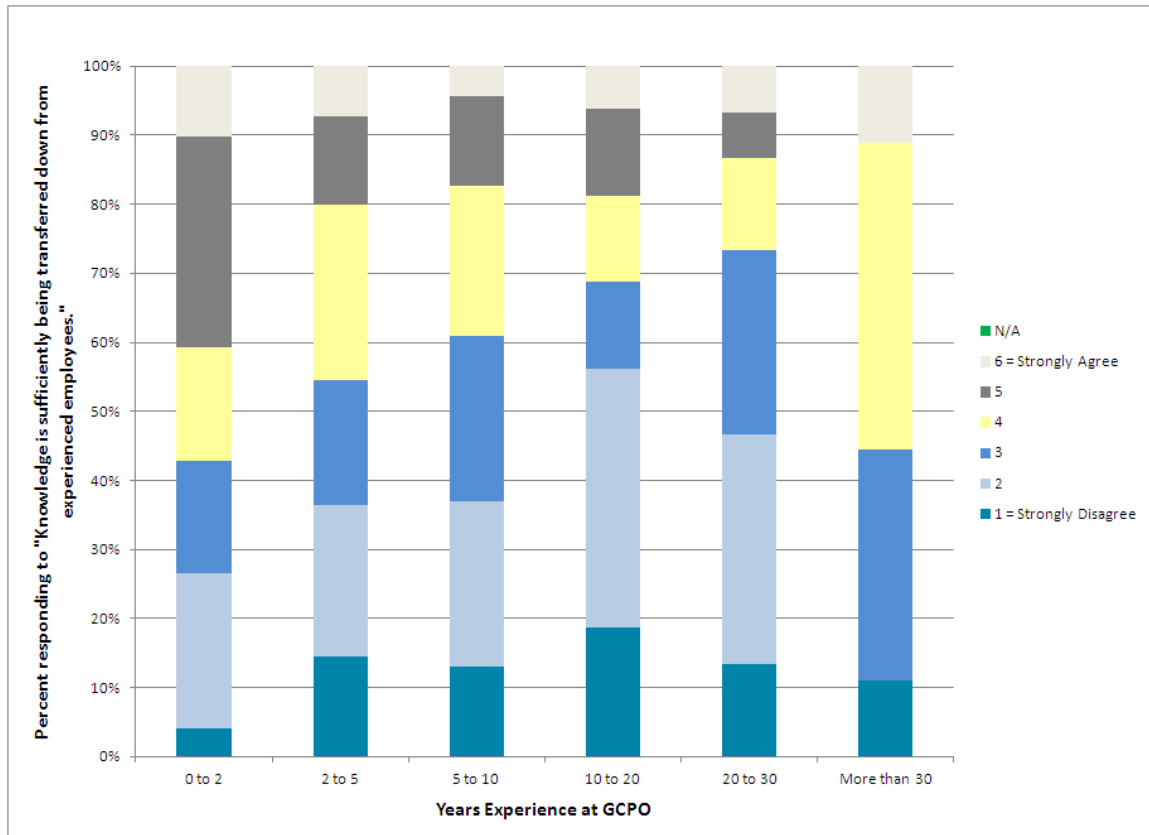


Figure 27 - View of knowledge transfer by tenure

Figure 27 shows no strong correlation between a worker’s tenure at GCPO and his or her opinion that knowledge is effectively shared from more experienced to less experienced employees.

3. Distributed Survey

Following is a copy of the two-page survey provided to GCPO employees.

GCPO Staffing Study Survey

As part of the staffing study currently underway across the GCPO organization, we are gathering input from the broader plant staff to contribute to our analysis. We are seeking honest, constructive feedback from all survey participants. The more accurate, complete, and honest your responses, the more successful we will be in making the case to your management team to get you the support and help that you need to meet today's work demands and tomorrow's capital and O&M requirements. Thanks in advance for your support.

– The MWH Team

1. How many years have you worked at Grand Coulee?
 - a. 0 to 2
 - b. 2 to 5
 - c. 5 to 10
 - d. 10 to 20
 - e. 20 to 30
 - f. More than 30

2. Where did you work before Grand Coulee?
 - a. Another USBR facility
 - b. Industry
 - c. Another Federal agency (non-military)
 - d. Another hydropower plant (non-Federal)
 - e. Military

3. What is the greatest cause of stress in your job?
 - a. Additional workload
 - b. Supervisor's management style
 - c. Coworkers' approach to his/her work (inefficiencies, quality of work, etc.)
 - d. Not enough work
 - e. Other: _____

4. What percentage of your time is spent waiting for something or someone else?
 - a. 0% to 10%
 - b. 10% to 20%
 - c. 20% to 30%
 - d. More than 30%

5. Rate the amount of engineering support for O&M:
 - a. More engineering support is needed
 - b. Existing engineering support is more than adequate
 - c. Engineering support is not needed

6. Do you believe that engineering support is better to be...
 - a. In the plant, dedicated to each area
 - b. Centralized to serve all areas/powerhouses
 - c. Other _____

7. Do you believe that maintenance is better to be...
 - a. Divided into areas as it is now
 - b. Combined to serve all powerhouses
 - c. Other _____

8. What percentage of your work could be performed by someone with lesser skill / training / experience (like cleanup and housekeeping)?
 - a. 0% to 10%
 - b. 10% to 20%
 - c. 20% to 30%
 - d. More than 30%

9. In your opinion, how many weeks per year does your work plan change significantly?
 - a. 0 to 5 weeks
 - b. 6 to 15 weeks
 - c. 16 to 25 weeks
 - d. More than 25 weeks

GCPO Staffing Study Survey

For questions 10 through 19, please rank your level of agreement with the statement provided. If the question does not apply to you, please circle "N/A."

	Strongly Disagree Strongly Agree						Not Applicable
	1	2	3	4	5	6	
10. Work is well planned.	1	2	3	4	5	6	N/A
11. If more time could be spent on PM work, then there would be less Trouble Report work generated.	1	2	3	4	5	6	N/A
12. I am provided the necessary training to complete my job.	1	2	3	4	5	6	N/A
13. My supervisor listens to my ideas and suggestions.	1	2	3	4	5	6	N/A
14. The morale in my department / team / group is positive.	1	2	3	4	5	6	N/A
15. Knowledge is sufficiently being transferred down from experienced employees.	1	2	3	4	5	6	N/A
16. Safety is the number one priority for BOR employees.	1	2	3	4	5	6	N/A
17. Safety is the number one priority for Contractors on site.	1	2	3	4	5	6	N/A
18. There is adequate plant input / review of contracted work.	1	2	3	4	5	6	N/A
19. I am proud to work at Grand Coulee.	1	2	3	4	5	6	N/A

20. What could be changed to increase the amount of "tool time"?

21. What one improvement would you make to your day-to-day job if you could? Please explain your suggestion.



Grand Coulee Power Office – Review of Staffing and Processes

Appendix 9

Implementation Planning Workshop Summary

Implementation Planning Workshop Summary

MWH facilitated a series of workshops with GCPO on April 10-12, 2012. These workshops were conducted to review the recommendations contained in Chapter 6 of the staffing study report in greater depth, identifying more discrete implementation steps, relative levels of effort, relative impact of implementation, logical sequencing, and ownership. The following describes the process in more detail.

1. Implementation Steps

Recommendations were grouped by functional area. Workshop participants were asked to break into small groups, with each group focused on a particular functional area. Each group reviewed the recommendations for the functional area and identified the following:

- A number of more discrete implementation steps;
- Barriers to implementation (such as resource limitations, policies, organizational resistance, etc.);
- Specific person or position title responsible for directing the implementation steps; and
- Method to measure progress towards implementing the recommendation (key performance indicator, or KPI)

2. Relative Impact and Effort Scoring

To begin the process of prioritizing the various recommendations, workshop participants scored the implementation of each recommendation in two ways: 1) the relative impact of the recommendation on the GCPO organization (high, medium, or low), and 2) the relative effort associated with implementing the recommendation at GCPO (low, medium, high). These values were used to plot each recommendation on an Impact versus Effort graph. A blank example is shown in Figure 1.



Figure 1 – Blank Impact versus Effort Graph

As can be seen in Figure 1, the recommendations that produce the greatest impact (the right side of the graph), while requiring (relatively) the lowest effort to implement (the top of the graph) are typically good candidates for early implementation. As a result, the “best” projects lie in the upper right portion of the graph. The successful completion of these projects may provide “quick wins”, which help justify the greater efforts associated with some longer-term recommendations.

Each small group developed their own effort and impact scores and then reported to the group at large to receive feedback. Based on that feedback, the scores were finalized. Each recommendation was scored using this methodology, and the overall results (color coded by functional area abbreviation) are shown in Figure 2.

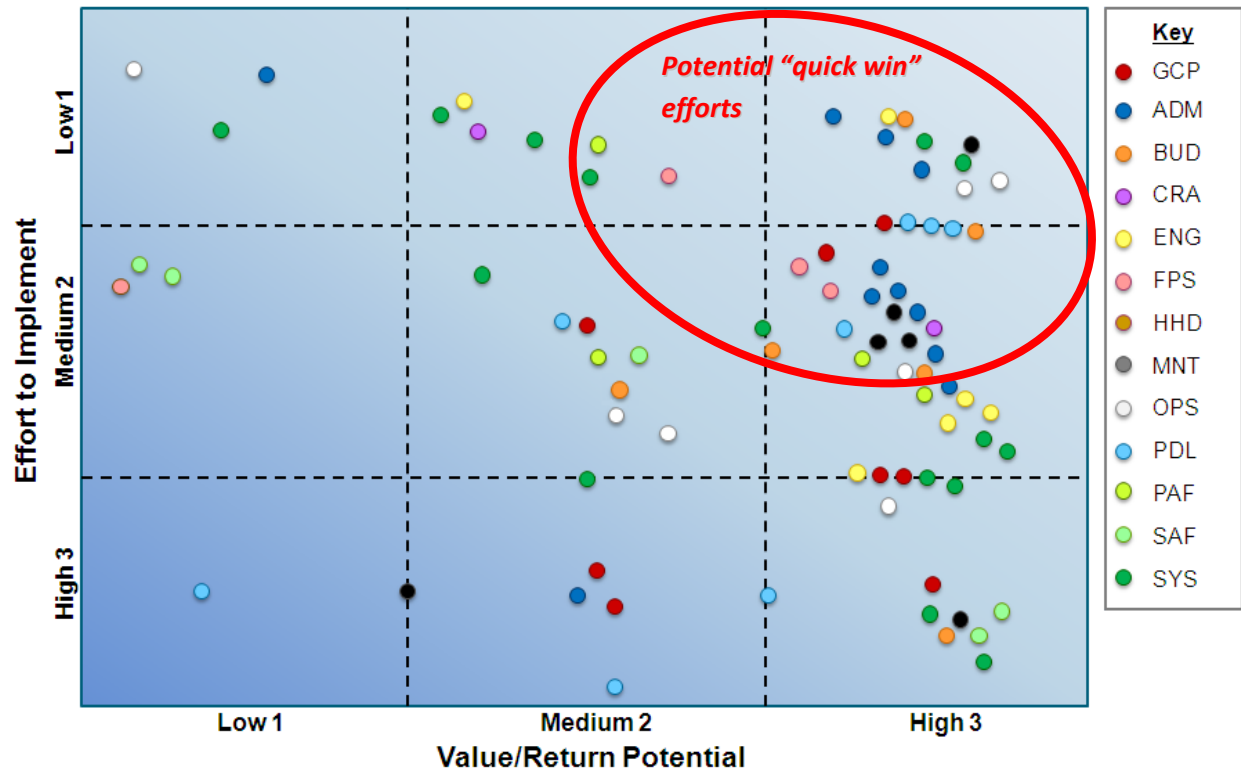


Figure 2 – Results of Effort versus Impact Scoring

Participants were encouraged to consider the recommendations that fell in the upper right of Figure 2 for early implementation.

3. Initial Sequencing and Schedule Development

Using the information previously developed, including a consideration of barriers, resource constraints, predecessor tasks, and the effort versus impact scores, the groups categorized each recommendation as “start now”, “start soon”, “start later”, or “don’t bother”. These broad categories were then used to build initial implementation schedules in Gantt chart form on large-format schedules. Each schedule identified implementation tasks, task duration, and suggested schedule (by quarter) for implementation over the next four years. The schedules were transcribed into MS Project, standard schedule logic was applied, and the master implementation schedule is shown on the following pages.

4. Supporting Documents

Two documents follow this narrative:

- Detailed Implementation Planning Table
- Initial Master Implementation Schedule

Grand Coulee Power Office - Review of Staffing and Processes
Implementation Planning Table

Number	Functional Group	Recommendation	Implementation Steps	Barriers to Implementation	Responsible Person/Group	KPI	Impact (Low=1, Moderate=2, High=3)	Effort to Implement (Low=1, Moderate=2, High=3)	Start Now	Start Soon	Start Later	Don't Bother
GCP-01-R	GCPO-wide	Quantify the work, estimate the effort, and increase staff accordingly	<ul style="list-style-type: none"> - Define a five-year horizon, including risk analysis - Apply resource allocations to the projects - Identify budgetary needs 	<ul style="list-style-type: none"> - Understanding if budget is a limiting factor - Determining how to execute the effort (on site staff, contracting?) - Preliminary cost estimating 		<ul style="list-style-type: none"> - Long-range workload estimates exist? - Staff count towards peak - Hiring rates (emp/quarter) 	3	3				
GCP-02-R	GCPO-wide	Establish priorities of organization and implement revised organizational structure	<ul style="list-style-type: none"> - Power Manager should lead effort to: - Define the priorities of the enterprise, - Clearly communicate the mission of each functional group in support of the facility's overall mission, - Implement revised org structure 	<ul style="list-style-type: none"> - Power Manager having time to effectively lead this task - Regional or higher approval required for higher level (GS13+) positions 	Power Manager	<ul style="list-style-type: none"> - Conversion from old to new org chart (% complete) - Documented organizational priorities available? 	3	2	X			
GCP-03-R	GCPO-wide	Adjust the hiring strategies	<ul style="list-style-type: none"> - Prioritize hiring needs, - Consider replacing term employee hires with permanent hires - Establish process and overall plan/strategy and identify appropriate sources in coordinate with Boise, then work the plan - Improve on boarding and orientation recruitment program 	<ul style="list-style-type: none"> - Federal hiring processes limit what you can offer - Inconsistent interviewing processes/policies - Regional capacity to support - Location, local amenities, schools, etc. - No option for term to permanent employees (OPM) 	Deputy Support Ops & Admin Officer	<ul style="list-style-type: none"> - # new hiring approaches implemented - Staff retention improving? 	3	2.5	X			
GCP-04-R	GCPO-wide	Establish centralized planning group	<ul style="list-style-type: none"> - Implement new org structure, - Populate the new group, - Identify and implement standard scheduling system/practices/approach that works with PNRO, TSC, BOR, DOI, OPM, and BPA - Create standardized EPS/WBS structure, - Implement resource-loaded scheduling across the enterprise for all projects; - In parallel, set up asset management/long-term planning operation within the Planning group, with appropriate systems, tools, practices 	<ul style="list-style-type: none"> - Establishing adequate funding - Multiple constraints/requirements from higher Federal levels 	Deputy Power Manager, Planning	<ul style="list-style-type: none"> - Using documented/common measure to set priority? - Central group meets monthly to review? 	2	3		X		
GCP-05-R	GCPO-wide	Establish Project Delivery organization with defined governance, life cycle, roles and responsibilities, and standard practices	<ul style="list-style-type: none"> - Define standard project governance life cycle; - Define project approvals/gateways/governance; - Define standard templates, forms and Project Management Practices; - Define Roles and Responsibilities; - Define delivery practices; - Implement project delivery system; - Define a system owner; - Define content owners; - Conduct user training 	<ul style="list-style-type: none"> - Differing views from Regional procurement and construction on who owns various phases of projects - Lack of a BOR manual for project management 	Deputy PM Planning/Sr Project Manager	<ul style="list-style-type: none"> - Establishment of PD according to org chart? - Documented life cycle, R&Rs, etc.? 	2	2	X			
GCP-06-R	GCPO-wide	Leverage full capabilities of CARMA system for all work, all functional groups	<ul style="list-style-type: none"> - Assign CARMA system responsibility - Implement consistent CARMA user training, - Review current work orders, - Develop set of required work orders/job numbers for all functional groups, - Set up in CARMA, - Review and update current estimated labor hours; - Define a set of standard "canned" reports for TSC to build; - Have TSC build the reports; - Streamline the report request process 	<ul style="list-style-type: none"> - Denver system not conducive/responsive to flexible project needs - Dependent on systems recommendation to review and update the user manual - Availability 	Deputy PM, O&M	<ul style="list-style-type: none"> - Ease of generating consistent CARMA reports across maint areas? - Similar/realistic backlog across maint areas? 	2	3		X		
GCP-07-R	GCPO-wide	Develop a knowledge strategy and information capture approach	<ul style="list-style-type: none"> - Assess best approach to knowledge capture, - Investigate/study various third-party products for capturing, documenting, and presenting standard project procedures, - Implement appropriate system/strategy; - Begin active succession planning in fostering multiple "back-ups" to all key positions 	<ul style="list-style-type: none"> - Budget: may be limited in ability to overhire - OPM very conservative in hiring - Time 	IT Supervisor/Admin Officer	<ul style="list-style-type: none"> - Formal strategy documented? - # of knowledge capture efforts 	3	2.5	X			
GCP-08-R	GCPO-wide	Improve training program under a centralized Training Officer	<ul style="list-style-type: none"> - Hire Training Officer and supporting staff, - Assess effectiveness of current training, - Implement necessary improvements; - Secure funding for formalized, larger apprenticeship program, develop program, implement - Identify other training resources, e.g. union 	<ul style="list-style-type: none"> - Difficult to get DOI approval for a new training program because DOI Learn is the enterprise program - Staff availability constrains effective training 	Admin Officer/Training Officer	<ul style="list-style-type: none"> - Documented training goals by job category? - Training hours tracked against goal? 	3	3	X			
GCP-09-R	GCPO-wide	Set expectations, track performance, and implement a document management system	<ul style="list-style-type: none"> - Formalize expectations from service providers, - Define doc management needs/requirements, - Assess various options, - Select preferred approach, - Implement (including definition of standard procedures) - Report back on delivery from service providers 	<ul style="list-style-type: none"> - Mandated Reclamation enterprise systems 	Power Manager	<ul style="list-style-type: none"> - # discussions with support agencies - Document management standards established? 	3	1.5	X			

Grand Coulee Power Office - Review of Staffing and Processes
Implementation Planning Table

Number	Functional Group	Recommendation	Implementation Steps	Barriers to Implementation	Responsible Person/Group	KPI	Impact (Low=1, Moderate=2, High=3)	Effort to Implement (Low=1, Moderate=2, High=3)	Start Now	Start Soon	Start Later	Don't Bother
ADM-01R	Admin	Adjust IT staffing accordingly	- Define IT positions by working with HR - Figure out how to tie positions to mission - Request a waiver - Announce position - Training period (1 year)	- The move to consolidation - Hiring freeze - Waiver process - Staffing priorities	Matt Tillman	- SharePoint Spreadsheet	3	2			X	
ADM-02-R	Admin	Adjust IT staffing accordingly	(same as ADM-01)		Matt Tillman		3	2				X
ADM-03-R	Admin	Create standard specification templates	- Identify the information needed - Determine method/media for templates - Communicate availability - Get user buy-in - Track completion of forms	- Changing culture of how specs are written	Caroline Walsh		3	2		X		
ADM-04-R	Admin	Create internal reference document showing typical lead times	- Develop timelines for each level of procurement		Caroline Walsh		3	1	X			
ADM-05-R	Admin	Include Contracts in major purchase acquisitions at the beginning of project planning	- Invite Contracts to initial planning meeting		Caroline Walsh and Project Managers		3	1	X			
ADM-06-R	Admin	Create and staff technical purchasing writer position	(see ADM-01) - Define positions with HR - Announce - Select - Train		Caroline Walsh and Project Managers		3	2		X		
ADM-07-R	Admin	Provide performance based acquisition training	- Develop training based on requirements		Caroline Walsh		2	1		X	X	
ADM-08-R	Admin	Adjust Contracts staffing accordingly	(see ADM-01) - Define positions with HR - Announce - Select - Train		Caroline Walsh		3	2	X			
ADM-09-R	Admin	Create GCPO-specific position with warrant of \$100,000	- Reorganization		Caroline Walsh		3	1	X			
ADM-10-R	Admin	Develop greenhouse gas emissions program	- Learn about program		Richard Coffland		1	1			X	
ADM-11-R	Admin	Improve performance management	- Training		Darlene Pryor		3	2		X		
ADM-12-R	Admin	Assess compensation	- Evaluate Regional salary data		Darlene Pryor		2	3				X
BUD-01-R	Budget	Increase budget analyst staffing	- Update revised responsibilities (work not getting done) - Identify specific positions required - Prepare requirements and hire - Training	- Clarify regional / local roles	Deputy Planners / Budget Officer	- % Filled - % Filled by scheduled	3	1.5	X			
BUD-02-R	Budget	Better customize (or utilize) systems to generate proactive budgets, across all functional groups	2A: - Define required support budgets - Determine best delivery of costs to end users - Implement preferred approach 2B: - Train functional group managers to do bottoms-up estimates - Grand Coulee prioritization	- Staff	Deputy Planning	- % improvement - Budget utilization	Task 2A: 2 Task 2B: 3	Task 2A: 2 Task 2B: 3		X		
BUD-03-R	Budget	Leverage project managers to report actual performance	- Continue PRB process (typically non-routine)	- None	Deputy Engineer Scott Ross		3	1	X			
BUD-04-R	Budget	Implement training and materials to encourage more consistent budget development	- Define knowledge required for managers - Develop training - Deliver training	- Staff - Establish training materials	Budget Officer		3	2		X		
BUD-05-R	Budget	Better justify/track labor needs	- Increase manager awareness/training - Develop tools and methods to assist in tracking - Train - Implement	- Staff - Exposure to Budget process	Deputy O&M / Budget Office	- Increased expenditures of funds, labor	2.5	2		X		
CRA-01-R	Cult Res	Integrate regulatory approvals into standardized project life cycle	- Identify and develop standardized project lifecycle - Create milestones within lifecycle for project manager to take CR issues into account	- No standardized project lifecycle yet, time to implement it - Lack of staffing, no ownership	Project Managers, Deputies		2	1		X		
CRA-02-R	Cult Res	Add junior archaeologist role to support manager with associated reporting and Plan updates	- Develop detailed personnel description - Acquire funding - Hire individual	- Funding - Location - Staff (current level)	Admin Officer, Archaeologist		3	2	X			

Grand Coulee Power Office - Review of Staffing and Processes
Implementation Planning Table

Number	Functional Group	Recommendation	Implementation Steps	Barriers to Implementation	Responsible Person/Group	KPI	Impact (Low=1, Moderate=2, High=3)	Effort to Implement (Low=1, Moderate=2, High=3)	Start Now	Start Soon	Start Later	Don't Bother
ENG-01-R	Engineering	Increase staff; integrate as-built process into standard closeout procedures. Identify backlog and quantify (this recommendation added in the implementation workshop)	- Hire O&M Supervisory Engineer - Start hiring techs - Establish procedure - Establish tracking system - Measure/reduce turn-around time in drafting	- Budget - Physical Location (where to put new staff) - Hiring authority - Dam location	O&M Supervisory Engineer		3	2	X			
ENG-02-R	Engineering	Leverage Planning Group to understand work prioritization	- Hire Asset Manager - Implement CARMA at engineering - Establish Enterprise Planning Group - Establish planning tools	- Budget - Physical location	Asset Manager		3	2.5		X		
ENG-03-R	Engineering	Rotate engineers through plants	- New engineers assigned to plants at beginning of employment - Assign a mentor to each new engineer, preferably a PSCC	- Availability/qualifications of mentors	Engineering Supervisor		3	1		X		
ENG-04-R	Engineering	Increase staffing to improve purchasing support	- Create specialized procurement tech position - Establish standard specs/procedures				3	2	X			
ENG-05-R	Engineering	Integrate environmental review into the standard project life cycle	- Establish procedure to process through safety, environmental group - Incorporate into project lifecycle	- Need depth and continuity			2	1		X		
ENG-06-R	Engineering	Assign a dedicated protection engineer for PSCC support and coordination with TSC	- Hire dedicated Protection Engineering staff		O&M Supervisory Engineer		3	2		X		
FPS-01-R	Fire & Phys Sec	Explore staffing through new positions and/or transfer of inspectors to firefighters	- Budget for positions - Announce - Select - Train	- Hard to fill trained firefighter positions	Supervisory Fire Protection (Dale)	2 persons/year	3	2	X			
FPS-02-R	Fire & Phys Sec	Separate existing role of Fire Chief; split into two functional groups	- Revise PD - Announce - Select		Supervisory Fire Protection (Dale)	Separate by December 2014	1	2			X	
FPS-03-R	Fire & Phys Sec	Investigate optimal solution to increase safety precautions	- Identify level of training needed - Train		Supervisory Fire Protection (Dale)	Training delivered by end of 2012	2	1		X		
FPS-04-R	Fire & Phys Sec	Add staff to address resource issue	- Budget for positions - Announce - Select - Train		Supervisory Fire Protection (Dale)	Staffed by end of 2012	3	2	X			
HHD-01-R*	Hungry Horse	Increase staff levels and degree of self-direction	- Identify job description(s) and budget justification - Announce/Advertise - Train				3	2				
HHD-02-R*	Hungry Horse	Investigate better cross-training opportunities	- Identify Cross-Training Needs and Goals - Utilize GCPO Training Manager to Create Plan - Deliver Training				2	2				
HHD-03-R*	Hungry Horse	Train mid-level CARMA users; leverage complete team for work order and SOP creation	- Identify Additional CARMA Users and Training Level Needed - Coordinate Training with CARMA User Group and Owner - Deliver Training				2	2				
HHD-04-R*	Hungry Horse	Assign one operator to assist with SOP development	- Train Operator on SOP formats and standards - Operator Develops/Updates SOPs				2	2				
HHD-05-R*	Hungry Horse	Temp/contractor support for conversion and consolidation of as-builts	- Utilize (through Service Agreement) GCPO Engineering process				3	2				
HHD-06-R*	Hungry Horse	Investigate support agreements and/or service contract	- Identify Security Needs and Delivery Mechanism (GS, Contract, or Support Agreement) - Develop Budget Justification - Implement				2	2				
HHD-07-R*	Hungry Horse	Assign a project manager to HH	- Utilize (through Service Agreement) GCPO Project Delivery staff				3	1				
MNT-01-R	Maintenance	Rotate craftsmen on each crew on a regular basis; rotate across areas as well	- ID employees who would rotate - Look at schedules for rotation - Coordinate between powerhouses - Start rotation and decide on frequency - Improve consistency between powerhouses - Union coordination	- Who does the evaluations? - Potential delays - Safety may be compromised (or enhanced) - Need to staff up first	Eric		1.5	3			X	
MNT-02-R	Maintenance	Build time and resources into every job plan for closeout documentation	- Staff up and plan jobs - Add time to finish and close out - Prepare closeout procedures	- Cultural change - Consistency among Supers	Supers		3	2		X		
MNT-03-R	Maintenance	Increase staffing levels to keep up with the routine PMs	- Determine who to hire first - Recruit and hire - Train	- Budget - Getting people to come to Grand Coulee and retaining them - Limited HR staff	Eric		3	3	X			

Grand Coulee Power Office - Review of Staffing and Processes
Implementation Planning Table

Number	Functional Group	Recommendation	Implementation Steps	Barriers to Implementation	Responsible Person/Group	KPI	Impact (Low=1, Moderate=2, High=3)	Effort to Implement (Low=1, Moderate=2, High=3)	Start Now	Start Soon	Start Later	Don't Bother
MNT-04-R	Maintenance	Adjust staffing levels in Procurement and Project Delivery	(see ADM-01) - Define positions with HR - Announce - Select - Train				3	2				
MNT-05-R	Maintenance	Estimate the cost of unit outages to justify adding resources and/or adjusting shift schedules	- Staff up and look at schedule alterations - Set up Enterprise Planning Group - Union coordination - Look at better planning alternatives (e.g. eliminate some tasks)	- Union issues	Eric		3	2		X	X	
MNT-06-R	Maintenance	Contract out ring seal and drum gate maintenance	- Scope the job - Get Contractor - Get them working	- Drumgates - contractor not being able to be there when needed - Lack of a cofferdam - Shortage of Engineering staff - Staff in Contracting group	Scott		3	1	X			
OPS-01-R	Operations	Improve enterprise-wide work planning, including clearances, to better coordinate advanced placement	- Planning group implementation - Communication with outage dispatcher	- Setup of planning group - Communications with ops	Scott Ross / Asset Manager		2	2		X		
OPS-02-R	Operations	Adjust sign-off procedures to require Operations to review completed work orders after being briefed by Maintenance crew	- Place ops review in job plans 'policy' - Identify which types require ops review - Update job plans - Use CARMA to track and get reports and enforce	- Staff - CARMA uses and training - Culture	Eric Corbin		3	1	X			
OPS-03--R	Operations	Set policies for SOP requirements and staff accordingly	- Staff up - Contract to catch up	- Ups super	Stanley		3	1	X			
OPS-04-R	Operations	Integrate Operations into review of capital project design requirements and submittals	- Policy to have operational reviews in all projects - Staff to review projects - Staff QA Manager position	- Culture - Getting staff to review	Scott Ross / Quality Manager		3	2		X		
OPS-05-R	Operations	Schedule and implement all FAC 02-01 required testing	- Write work orders - Complete work orders	- Appropriated funding	Stanley		1	1	X			
OPS-06-R	Operations	Track and fix automation issues as a performance goal	- Identify start/stop permissions and update - Have engineer update a new project - TR issues	- Identify needs to update - Funding - Engineering	Stanley / Superintendents		3	3			X	
OPS-07-R	Operations	Coordinate to determine root cause and test after rectification	- Ops review of TR work orders	- Root cause analysis	Stanley		3	1	X			
OPS-08-R	Operations	Increase engineering support to conduct root cause analysis	- Identify need - Staff up	- FIST 6.3 172	Stanley		2	2		X		
PDL-01-R	Project Delivery	Continue with ongoing formation of GCPO Project Delivery organization	- Underway	- None - approved staffing levels	Scott	# of projects assigned to PMs; projects per PM	3	1.5	X			
PDL-02-R	Project Delivery	Improve coordination between COTR and Project Delivery	- ID roles of PM, CO, COTR in project delivery - Define authorities - Establish policies - Implement and train	- Historic practices and preparedness - Level of PM maturity - AAMD policy - staff	Scott	GR/RED schedule	3	1	X			
PDL-03-R	Project Delivery	Implement project and program-level reporting capabilities	- Identify reporting requirements - Develop alterations - Automate as far as possible - Coordinate with region - Implement and train	- Compatibility with FFS, etc. - Non-standard BOR WBS does not address PM needs - Staff	Scott & Chris & Larry	# of programs and projects "automated"	2	2	X			
PDL-04-R	Project Delivery	Engage in up-front project planning	- Develop planning model - Identify roles and responsibilities - Hire AM and Estimator - Implement planning model and train	- Staff	Scott	GR/RED schedule	3	2		X		
PDL-05-R	Project Delivery	Establish system to record decisions, priorities, and justifications	- Identify documentation need and type - Research available tools - Coordinate with BOR systems - Select tool - Implement and train	- BPR systems and policies (REDS)	Scott	GR/RED schedule	2	3			X	
PDL-06-R	Project Delivery	Implement industry standard QA/QC program and coordinate with Construction	- Define project needs (lifecycle) - Research available programs - Coordinate with CO, COTR, O&M, PM - Select and test - Implement and train	- BOR practices (GADOCS)	Brandi Demars	GR/RED schedule	1	3			X	
PDL-07-R	Project Delivery	Increase coordination through commissioning	- Identify need - Communicate - Policy/procedure - Checklists and signoffs	= Staff	O&M engineer supv and comm engr	Substantial complete efforts with commissioning plant done	3	1.5	X			

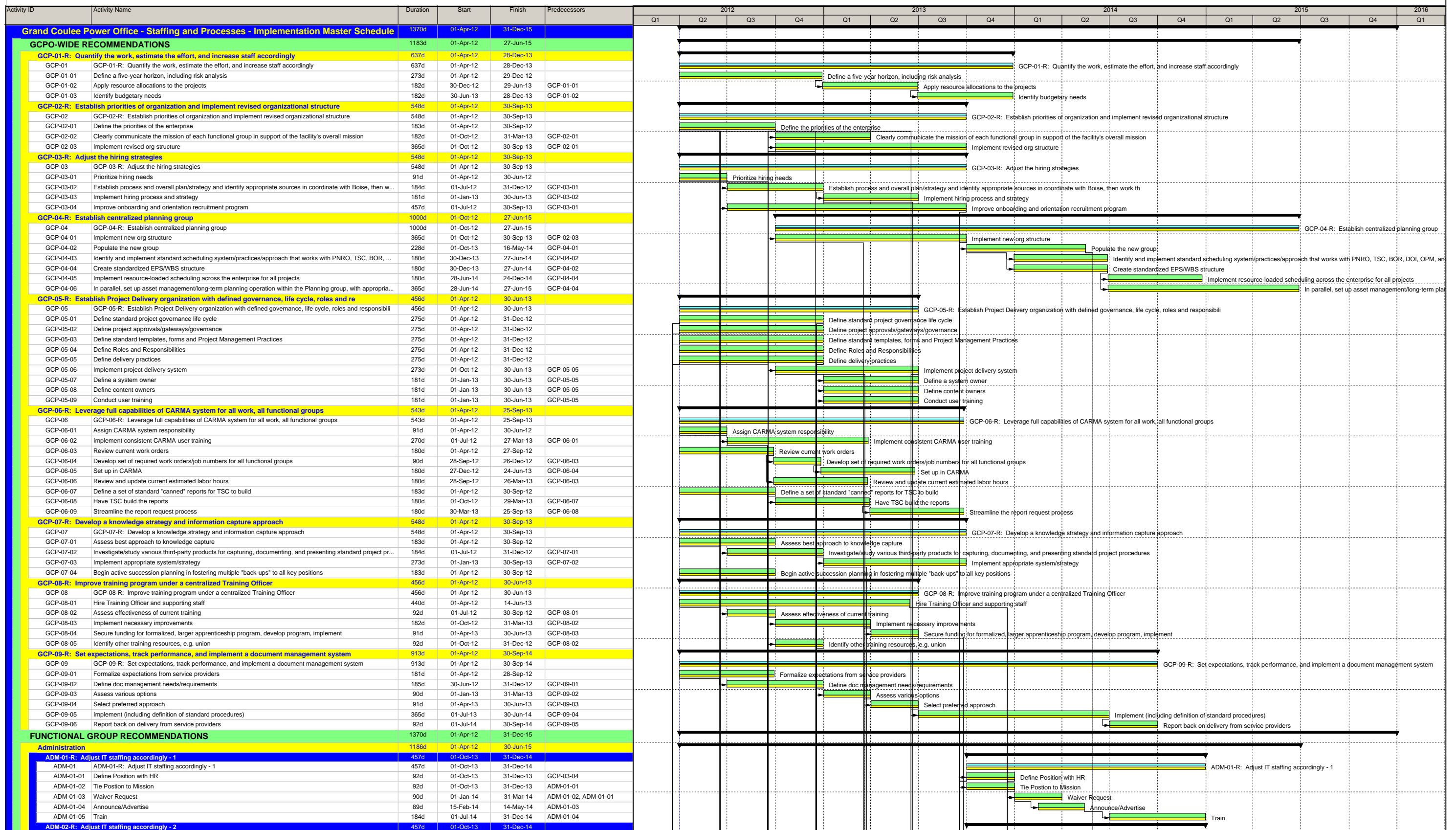
Grand Coulee Power Office - Review of Staffing and Processes
Implementation Planning Table

Number	Functional Group	Recommendation	Implementation Steps	Barriers to Implementation	Responsible Person/Group	KPI	Impact (Low=1, Moderate=2, High=3)	Effort to Implement (Low=1, Moderate=2, High=3)	Start Now	Start Soon	Start Later	Don't Bother
PDL-08-R	Project Delivery	Implement a closeout and turnover process	- ID need - Communicate - Policy/procedure - Checklists and signoffs - Establish OMI	- Staff	O&M engineer supv and comm engr	Substantial complete efforts with closeout turnover process done	2.5	3	X			
PAF-01-R	Public Affairs	Implement a Request Monitoring System and increase staffing	- Evaluate and choose appropriate tracking system - Determine workload - Identify staff skills to implement	- Staff time	PAO		2	1	X			
PAF-02-R	Public Affairs	Add a resource to update plans	- Identify plans - Determine workload - Prioritize plans - Hire	- Staff time - Funding	PAO		2	2			X	
PAF-03-R	Public Affairs	Proactively maintain communication with the outside entities and increase staffing to support	- Identify various entities - Identify level of involvement - Identify staff skills to implement	- Staff time - Funding	PAO		3	2			X	
PAF-04-R	Public Affairs	Develop and implement an education outreach program to local schools	- Identify service area - Hire education specialist - Identify interface between Reclamation mission and school benchmarks - Develop program with school involvement	- Staff time	PAO		3	2		X		
SAF-01-R	Safety	Assign safety officer to each plant	- Advertise and hire for each area - Train	- Commit FTEs	Chris/Scott	- CARMA Inspection/Training	1	2	X			
SAF-02-R	Safety	Evaluate and align contractor safety and GCPO safety policies	- Define differences between contractor and GCPO policies - Meet with Construction/Contractor reps to negotiate standard policy, language, etc. - Define method to track/measure compliance	- Cultural barrier - out of region - Contractors take directions from PR	Scott/Chris	- Incidents - Complaints	2	2	X			
SAF-03-R	Safety	Encourage cultural shift toward acceptance	- Add deadline ("teeth") to existing incident reporting policy/procedure - Investigate ways to decouple incidents & performance measurement - Train/shift culture	- Cultural/management - Short staffing - Limited time	Eric Corbin	- Near miss reports	3	3		X		
SAF-04-R	Safety	Implement revised Stop Work policy and train plant leadership and staff accordingly	- Finalize policy - Train	- Time	Mark Jensen	- Fewer complaints and incidents	1	2	X			
SAF-05-R	Safety	Make the Foreman 1 clearance holder also the inspector	- Train Foreman I to be the inspector - Change DOI policies to require inspectors to be PAL-2 trained - Train inspectors as PAL-2	- Staffing - Comm duties/const inspection - DOI policies - Separate managers	Mark Jensen / Eric / Stacey		3	3			X	X
SYS-01-R	Systems	Define O&M key performance indicators	- Identify key players - Compare to BPA PI's - Identify mission critical areas/drivers - Find what other FCPS and industry are doing - Implement and train	Lack of staff resources and time			2	2		X		
SYS-02-R	Systems	Establish CARMA system ownership, user group, and training	- Identify key players, create a user group - Identify gaps that exist - Implement training	Lack of staff resources and time			3	1	X			
SYS-03-R	Systems	Implement enterprise version of Primavera P6	- Identify system requirements - Purchase hardware / software license - Hire contractor to implement / train employees, support end users - Implement - Train	- IT consolidation - Staff - Over \$25k requires DOI spending plan - Budget	Matt, PM, Crockett or Planner, Rockstad		3	2.5		X		
SYS-04-R	Systems	Implement Primavera ERD	- Identify system requirements - Report output - Hire contractor - Implement - Train	- IT consolidation - Staff - Over \$25k requires DOI spending plan - Budget	Matt, PM, Crockett or Planner, Rockstad		3	2.5		X		
SYS-05-R	Systems	Integrate Primavera P6 and CARMA	Coordinate with Adam Sensen about CARMA upgrade - ID integration requirements - ID scope of integration - Next steps depend on scope of integration	- Politics, ownership, access - Security	Matt and Adam. Eric		3	3			X	

Grand Coulee Power Office - Review of Staffing and Processes
Implementation Planning Table

Number	Functional Group	Recommendation	Implementation Steps	Barriers to Implementation	Responsible Person/Group	KPI	Impact (Low=1, Moderate=2, High=3)	Effort to Implement (Low=1, Moderate=2, High=3)	Start Now	Start Soon	Start Later	Don't Bother
SYS-06-R	Systems	Integrate SharePoint and P6/ERD	<ul style="list-style-type: none"> - Define integration requirements - Define scope for Contractor - Integrate into contract - Implement - Train 	- Maintain local SharePoint	Matt, PM,, Crockett or Planner, Rockstad		2.5	2		X		
SYS-07-R	Systems	Develop a Document Management Plan	<ul style="list-style-type: none"> - Identify needs - Categorize document types - Find/obtain tool considering USBR standards - Implement and train 	Lack of staff resources and time			3	2	X			
SYS-08-R	Systems	Initiate scanning/archiving process	<ul style="list-style-type: none"> - Identify PM - Identify which documents, inventory, and user access - Generate organization/hierarchy - Execute 	Lack of staff resources and time			1	1			X	
SYS-09-R	Systems	Streamline/improve drawing management	See Scott's process	Lack of staff resources and time			3	1	X			
SYS-10-R	Systems	Standardize project and construction management document control	<ul style="list-style-type: none"> - Identify tools and best practices - Establish key players (Construction/TSC/RAB) - Identify other BOR practices - Implement and train 	<ul style="list-style-type: none"> - Coordinate PNRO and BOR - Lack of staff resources and time 			3	3	X			
SYS-11-R	Systems	Create a SharePoint implementation and governance plan	<ul style="list-style-type: none"> - Assess current use - Determine required level of standardization - Define standard governance plan 		Matt, Management		2	1	X			
SYS-12-R	Systems	Create a centralized repository of identified needs/projects	<ul style="list-style-type: none"> - Identify what needs to be captured - Identify type of tool and requirements - Identify lead/PM - Implement and train 	Lack of staff resources and time			2	1		X		
SYS-13-R	Systems	Support the project prioritization methodology with more robust technology	<ul style="list-style-type: none"> - Work with management to define needs/requirements - Market research (call John) - Evaluation criteria - Advertise, select - Implement - Train 	Lack of staff resources and time	Scott		2	2.5		X		
SYS-14-R	Systems	Upgrade the GCPO network	<ul style="list-style-type: none"> - ID what's currently in use (Kevin Winn) - Identify requirements for next 10 years - Define scope of work for entire plan - Assign to a PM - Implement 	- > \$25k spending plan	Matt or Tank		3	2	X			
SYS-15-R	Systems	Separate Hungry Horse network from GCPO	<ul style="list-style-type: none"> - Verify what we have - Make determination based on current solutions 		Matt		2	1	X			

* note that Hungry Horse implementation steps, Impact Scores, and Effort to Implement scores were MWH input, not the result of implementation workshops.



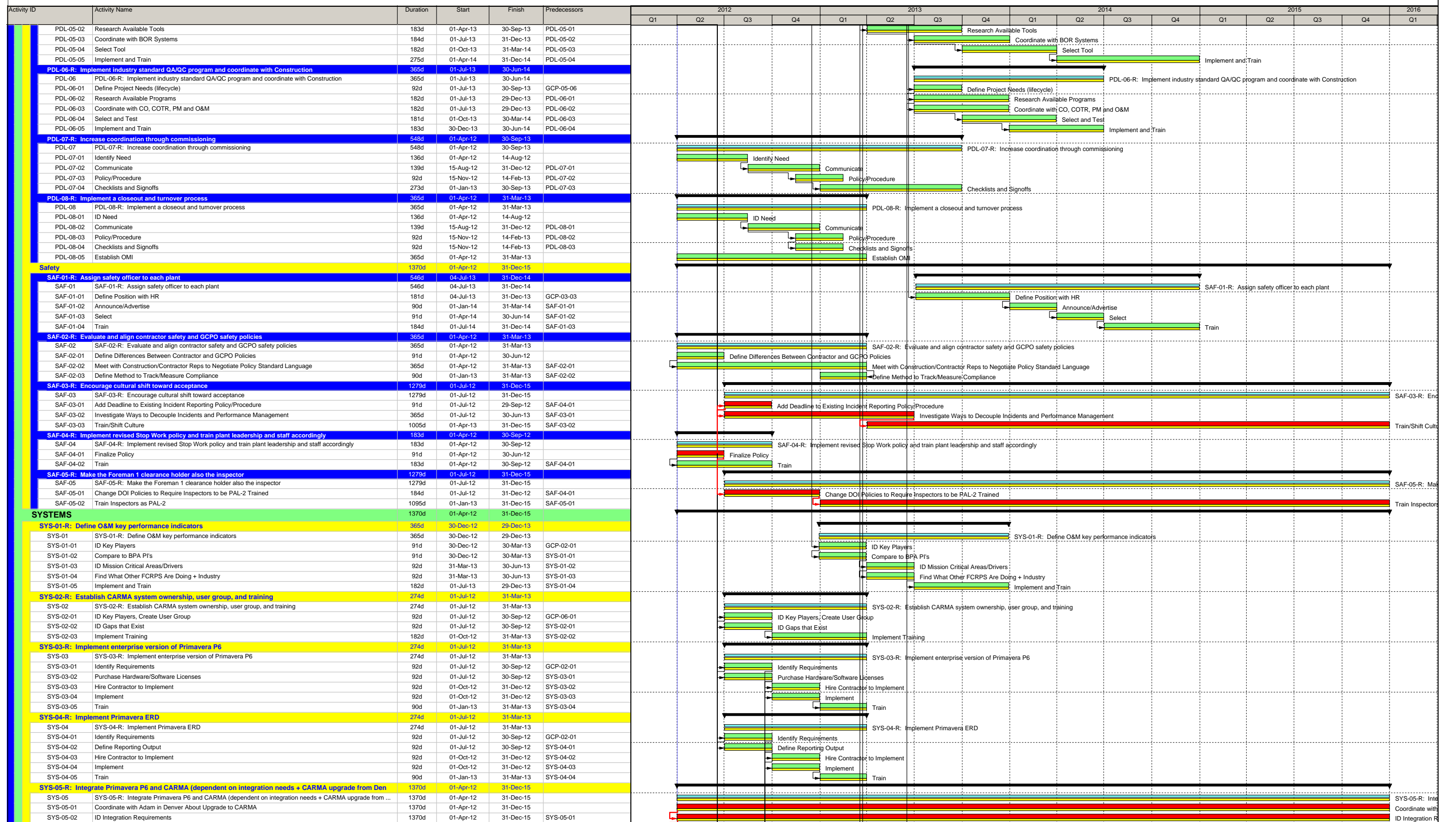
█ Project Baseline Bar
 █ Remaining Work
 █ WBS Summary & Lvl Effort
 ◆ Summary
 █ Actual Work
 █ Critical Remaining Work
 ◆ Milestone

Activity ID	Activity Name	Duration	Start	Finish	Predecessors	2012	2013	2014	2015	2016				
						Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
ADM-02	ADM-02-R: Adjust IT staffing accordingly - 2	457d	01-Oct-13	31-Dec-14										
ADM-02-01	Define Position with HR	92d	01-Oct-13	31-Dec-13	ADM-01-01									
ADM-02-02	Tie Position to Mission	92d	01-Oct-13	31-Dec-13	ADM-02-01									
ADM-02-03	Waiver Request	90d	01-Jan-14	31-Mar-14	ADM-02-02, ADM-02-01									
ADM-02-04	Announce/Advertise	89d	15-Feb-14	14-May-14	ADM-02-03									
ADM-02-05	Train	184d	01-Jul-14	31-Dec-14	ADM-02-04									
ADM-03-R: Create standard specification templates		275d	01-Apr-12	31-Dec-12										
ADM-03	ADM-03-R: Create standard specification templates	275d	01-Apr-12	31-Dec-12										
ADM-03-01	Identify Information Needed	91d	01-Apr-12	30-Jun-12	GCP-05-03									
ADM-03-02	Method/Media for Templates	91d	01-Apr-12	30-Jun-12	ADM-03-01									
ADM-03-03	Communicate Availability	92d	01-Jul-12	30-Sep-12	ADM-03-02, ADM-03-01									
ADM-03-04	User buy-in	92d	01-Jul-12	30-Sep-12	ADM-03-03									
ADM-03-05	Track Completion	92d	01-Oct-12	31-Dec-12	ADM-03-04									
ADM-04-R: Create internal reference document showing typical lead times		92d	01-Jul-12	30-Sep-12										
ADM-04	ADM-04-R: Create internal reference document showing typical lead times	92d	01-Jul-12	30-Sep-12										
ADM-04-01	Develop Timelines	92d	01-Jul-12	30-Sep-12	GCP-03-01									
ADM-05-R: Include Contracts in major purchase acquisitions at the beginning of project planning		275d	01-Apr-12	31-Dec-12										
ADM-05	ADM-05-R: Include Contracts in major purchase acquisitions at the beginning of project planning	275d	01-Apr-12	31-Dec-12										
ADM-05-01	Invite to Initial Planning Meetings	275d	01-Apr-12	31-Dec-12	GCP-05-01, GCP-05-02, G...									
ADM-06-R: Create and staff technical purchasing writer position		365d	01-Oct-12	30-Sep-13										
ADM-06	ADM-06-R: Create and staff technical purchasing writer position	365d	01-Oct-12	30-Sep-13										
ADM-06-01	Define Position with HR	92d	01-Oct-12	31-Dec-12	GCP-03-01									
ADM-06-02	Announce/Advertise	92d	15-Nov-12	14-Feb-13	ADM-06-01									
ADM-06-03	Select	90d	01-Jan-13	31-Mar-13	ADM-06-02									
ADM-06-04	Train	183d	01-Apr-13	30-Sep-13	ADM-06-03									
ADM-07-R: Provide performance based acquisition training		184d	09-Oct-13	10-Apr-14										
ADM-07	ADM-07-R: Provide performance based acquisition training	184d	09-Oct-13	10-Apr-14										
ADM-07-01	Develop Training Based on Requirements	184d	09-Oct-13	10-Apr-14	GCP-08-04									
ADM-08-R: Adjust Contracts staffing accordingly		365d	01-Jul-12	30-Jun-13										
ADM-08	ADM-08-R: Adjust Contracts staffing accordingly	365d	01-Jul-12	30-Jun-13										
ADM-08-01	Define Position with HR	92d	01-Jul-12	30-Sep-12	GCP-03-01									
ADM-08-02	Announce/Advertise	92d	15-Aug-12	14-Nov-12	ADM-08-01									
ADM-08-03	Select	92d	01-Oct-12	31-Dec-12	ADM-08-02									
ADM-08-04	Train	181d	01-Jan-13	30-Jun-13	ADM-08-03									
ADM-09-R: Create GCPO-specific position with warrant of \$100,000		92d	01-Jul-12	30-Sep-12										
ADM-09	ADM-09-R: Create GCPO-specific position with warrant of \$100,000	92d	01-Jul-12	30-Sep-12										
ADM-09-01	GCPO-specific Contracts Position with Reorg	92d	01-Jul-12	30-Sep-12	GCP-03-01									
ADM-10-R: Develop greenhouse gas emissions program		546d	01-Jan-14	30-Jun-15										
ADM-10	ADM-10-R: Develop greenhouse gas emissions program	546d	01-Jan-14	30-Jun-15										
ADM-10-01	Define GHG Monitoring Plan	181d	01-Jan-14	30-Jun-14	GCP-08-01									
ADM-10-02	Implement GHG Monitoring Plan	365d	01-Jul-14	30-Jun-15	ADM-10-01									
ADM-11-R: Improve performance management		730d	01-Jan-13	31-Dec-14										
ADM-11	ADM-11-R: Improve performance management	730d	01-Jan-13	31-Dec-14										
ADM-11-01	Assess Current Performance Management	90d	01-Jan-13	31-Mar-13	GCP-08-05									
ADM-11-02	Define Improvement Needs	183d	01-Apr-13	30-Sep-13	ADM-11-01									
ADM-11-03	Implement Improvements	182d	01-Oct-13	31-Mar-14	ADM-11-02									
ADM-11-04	Train Managers	275d	01-Apr-14	31-Dec-14	ADM-11-03									
ADM-12-R: Assess compensation		365d	01-Jan-14	31-Dec-14										
ADM-12	ADM-12-R: Assess compensation	365d	01-Jan-14	31-Dec-14										
ADM-12-01	Evaluate Regional Salary Data	365d	01-Jan-14	31-Dec-14	GCP-08-01									
Budget														
BUD-01-R: Increase budget analyst staffing		457d	01-Jul-12	30-Sep-13										
BUD-01	BUD-01-R: Increase budget analyst staffing	457d	01-Jul-12	30-Sep-13										
BUD-01-01	Define Position with HR	92d	01-Jul-12	30-Sep-12	GCP-03-01, GCP-02-01									
BUD-01-02	Announce/Advertise	92d	01-Oct-12	31-Dec-12	BUD-01-01									
BUD-01-03	Select	90d	01-Jan-13	31-Mar-13	BUD-01-02									
BUD-01-04	Train New Staff	183d	01-Apr-13	30-Sep-13	BUD-01-03									
BUD-02-R: Better customize (or utilize) systems to generate proactive budgets, across all functional groups		639d	30-Jun-12	30-Mar-14										
BUD-02	BUD-02-R: Better customize (or utilize) systems to generate proactive budgets, across all functional groups	639d	30-Jun-12	30-Mar-14										
BUD-02-01	Define Required Support Budgets	92d	30-Jun-12	29-Sep-12	GCP-02-01									
BUD-02-02	Determine Best Approach for Cost Allocation or WCF	92d	30-Sep-12	30-Dec-12	BUD-02-01									
BUD-02-03	Implement Preferred Approach	90d	31-Dec-12	30-Mar-13	BUD-02-02, BUD-02-01									
BUD-02-04	Train Functional Group Managers to do Bottoms-Up Estimates	91d	31-Mar-13	29-Jun-13	BUD-02-03									
BUD-02-05	Grand Coulee Prioritization	91d	31-Mar-13	29-Jun-13	BUD-02-04									
BUD-02-06	Tie Back to Budgets	92d	30-Jun-13	29-Sep-13	BUD-02-05									
BUD-02-07	Review and Improve Budgeting Reporting Back to Group Managers	182d	30-Sep-13	30-Mar-14	BUD-02-06									
BUD-03-R: Leverage project managers to report actual performance		275d	01-Apr-12	31-Dec-12										
BUD-03	BUD-03-R: Leverage project managers to report actual performance	275d	01-Apr-12	31-Dec-12										
BUD-03-01	Continue PRB Process	275d	01-Apr-12	31-Dec-12										
BUD-04-R: Implement training and materials to encourage more consistent budget development		275d	01-Jul-13	01-Apr-14										
BUD-04	BUD-04-R: Implement training and materials to encourage more consistent budget development	275d	01-Jul-13	01-Apr-14										
BUD-04-01	Define Knowledge Required	91d	01-Jul-13	29-Sep-13	GCP-08-04									
BUD-04-02	Develop Training	92d	30-Sep-13	30-Dec-13	BUD-04-01									
BUD-04-03	Implement Training	92d	31-Dec-13	01-Apr-14	BUD-04-02, BUD-04-01									
BUD-05-R: Better justify/track labor needs		184d	30-Sep-13	01-Apr-14										
BUD-05	BUD-05-R: Better justify/track labor needs	184d	30-Sep-13	01-Apr-14										
BUD-05-01	Increase Manager Awareness/Train	92d	30-Sep-13	30-Dec-13	BUD-04-01									
BUD-05-02	Assess and Develop Tools and Clear Reporting	92d	30-Sep-13	30-Dec-13	BUD-05-01									
BUD-05-03	Train on Updated Tools and Reporting	92d	31-Dec-13	01-Apr-14	BUD-05-02, BUD-05-01									
BUD-05-04	Implement Updated Tools and Reporting	92d	31-Dec-13	01-Apr-14	BUD-05-03									
Cultural Resources														

Project Baseline Bar
 Remaining Work
 WBS Summary & Lvl Effort
 Summary
 Critical Remaining Work
 Milestone

Activity ID	Activity Name	Duration	Start	Finish	Predecessors	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	
CRA-01-R: Integrate regulatory approvals into standardized project life cycle		275d	01-Apr-12	31-Dec-12																			
CRA-01	CRA-01-R: Integrate regulatory approvals into standardized project life cycle	275d	01-Apr-12	31-Dec-12																			
CRA-01-01	ID and Develop Standard Project Lifecycle	183d	01-Apr-12	30-Sep-12	GCP-05-01																		
CRA-01-02	Create CR Milestones within Lifecycle	92d	01-Oct-12	31-Dec-12	CRA-01-01, GCP-05-02																		
CRA-02-R: Add junior archaeologist role to support manager with associated reporting and Plan updates		457d	01-Jul-12	30-Sep-13																			
CRA-02	CRA-02-R: Add junior archaeologist role to support manager with associated reporting and Plan updates	457d	01-Jul-12	30-Sep-13																			
CRA-02-01	Define Position with HR	92d	01-Jul-12	30-Sep-12	GCP-02-01																		
CRA-02-02	Announce/Advertise	92d	01-Oct-12	31-Dec-12	CRA-02-01																		
CRA-02-03	Select	90d	01-Jan-13	31-Mar-13	CRA-02-02																		
CRA-02-04	Train	183d	01-Apr-13	30-Sep-13	CRA-02-03																		
Public Affairs		1095d	01-Jul-12	30-Jun-15																			
PAF-01-R: Implement a Request Monitoring System and increase staffing		273d	01-Jul-12	30-Mar-13																			
PAF-01	PAF-01-R: Implement a Request Monitoring System and increase staffing	273d	01-Jul-12	30-Mar-13																			
PAF-01-01	Evaluate/Choose Appropriate Tracking System	92d	01-Jul-12	30-Sep-12	GCP-03-01																		
PAF-01-02	Determine Workload	90d	01-Oct-12	29-Dec-12	PAF-01-01																		
PAF-01-03	ID Staff Skills to Implement	181d	01-Oct-12	30-Mar-13	PAF-01-02																		
PAF-02-R: Add a resource to update plans		730d	31-Mar-13	30-Mar-15																			
PAF-02	PAF-02-R: Add a resource to update plans	730d	31-Mar-13	30-Mar-15																			
PAF-02-01	ID Plans	91d	31-Mar-13	29-Jun-13	PAF-01-03																		
PAF-02-02	Determine Workload	92d	30-Jun-13	29-Sep-13	PAF-02-01																		
PAF-02-03	Prioritize Plans	92d	30-Sep-13	30-Dec-13	PAF-02-02																		
PAF-02-04	Define Position with HR	91d	31-Dec-13	31-Mar-14	PAF-02-03																		
PAF-02-05	Announce/Advertise	91d	01-Apr-14	30-Jun-14	PAF-02-04																		
PAF-02-06	Select	92d	01-Jul-14	30-Sep-14	PAF-02-05																		
PAF-02-07	Train	181d	01-Oct-14	30-Mar-15	PAF-02-06																		
PAF-03-R: Proactively maintain communication with the outside entities and increase staffing to sup		182d	01-Oct-12	31-Mar-13																			
PAF-03	PAF-03-R: Proactively maintain communication with the outside entities and increase staffing to support	182d	01-Oct-12	31-Mar-13																			
PAF-03-01	ID Entities	92d	01-Oct-12	31-Dec-12	GCP-03-01																		
PAF-03-02	ID Level of Involvement	182d	01-Oct-12	31-Mar-13	PAF-03-01																		
PAF-03-03	Prioritize Plans	90d	01-Jan-13	31-Mar-13	PAF-03-02																		
PAF-04-R: Develop and implement an education outreach program to local schools		1003d	01-Oct-12	30-Jun-15																			
PAF-04	PAF-04-R: Develop and implement an education outreach program to local schools	1003d	01-Oct-12	30-Jun-15																			
PAF-04-01	ID Service Area	92d	01-Oct-12	31-Dec-12	GCP-03-01																		
PAF-04-02	Hire Education Specialist	273d	01-Jan-13	30-Sep-13	PAF-04-01																		
PAF-04-03	ID Interface Between Reclamation Mission and School Benchmarks	182d	01-Oct-13	31-Mar-14	PAF-04-02																		
PAF-04-04	Develop Program with Schools Involvement	456d	01-Apr-14	30-Jun-15	PAF-04-03																		
Engineering		821d	01-Apr-12	30-Jun-14																			
ENG-01-R: Increase staff; integrate as-built process into standard closeout procedures. Identify backlog and q		640d	01-Apr-12	31-Dec-13																			
ENG-01	ENG-01-R: Increase staff; integrate as-built process into standard closeout procedures. Identify backlog and q	640d	01-Apr-12	31-Dec-13																			
ENG-01-01	Hire O&M Sup Engineer	183d	01-Apr-12	30-Sep-12																			
ENG-01-02	Start Hiring Techs	184d	15-Aug-12	14-Feb-13	ENG-01-01																		
ENG-01-03	Establish Procedure	92d	01-Oct-12	31-Dec-12	ENG-01-01																		
ENG-01-04	Establish Tracking System	92d	15-Nov-12	14-Feb-13	ENG-01-03																		
ENG-01-05	Measure/Reduce Turn-around Time	365d	01-Jan-13	31-Dec-13	ENG-01-03																		
ENG-02-R: Leverage Planning Group to understand work prioritization		593d	01-Oct-12	16-May-14																			
ENG-02	ENG-02-R: Leverage Planning Group to understand work prioritization	593d	01-Oct-12	16-May-14																			
ENG-02-01	Hire Asset Manager	182d	01-Oct-12	31-Mar-13	GCP-02-01																		
ENG-02-02	Establish Enterprise Planning Group	181d	01-Oct-13	30-Mar-14	GCP-04-01																		
ENG-02-03	Establish Planning Tools	228d	01-Oct-13	16-May-14	GCP-04-01																		
ENG-03-R: Rotate engineers through plants		182d	01-Oct-12	31-Mar-13																			
ENG-03	ENG-03-R: Rotate engineers through plants	182d	01-Oct-12	31-Mar-13																			
ENG-03-01	Assign Mentors	92d	01-Oct-12	31-Dec-12	ENG-01-01																		
ENG-03-02	Assign New Engineers to Plants	90d	01-Jan-13	31-Mar-13	ENG-03-01																		
ENG-04-R: Increase staffing to improve purchasing support		274d	01-Jul-12	31-Mar-13																			
ENG-04	ENG-04-R: Increase staffing to improve purchasing support	274d	01-Jul-12	31-Mar-13																			
ENG-04-01	Create Specialized Procurement Tech Position	184d	01-Jul-12	31-Dec-12	GCP-02-01																		
ENG-04-02	Establish Standard Specs/Procedures	90d	01-Jan-13	31-Mar-13	ADM-03-02, ENG-04-01																		
ENG-05-R: Integrate environmental review into the standard project life cycle		275d	01-Apr-12	31-Dec-12																			
ENG-05	ENG-05-R: Integrate environmental review into the standard project life cycle	275d	01-Apr-12	31-Dec-12																			
ENG-05-01	Establish Procedure to Run Through Safety/Env	183d	01-Apr-12	30-Sep-12	GCP-05-01																		
ENG-05-02	Incorporate into Project Lifecycle	92d	01-Oct-12	31-Dec-12	ENG-05-01																		
ENG-06-R: Assign a dedicated protection engineer for PSCC support and coordination with TSC		456d	01-Apr-13	30-Jun-14																			
ENG-06	ENG-06-R: Assign a dedicated protection engineer for PSCC support and coordination with TSC	456d	01-Apr-13	30-Jun-14																			
ENG-06-01	Define Position with HR	91d	01-Apr-13	30-Jun-13	ENG-01-01																		
ENG-06-02	Announce/Advertise	92d	01-Jul-13	30-Sep-13	ENG-06-01																		
ENG-06-03	Select	92d	01-Oct-13	31-Dec-13	ENG-06-02																		
ENG-06-04	Train	181d	01-Jan-14	30-Jun-14	ENG-06-03																		
Fire and Physical Security		1370d	01-Apr-12	31-Dec-15																			
FPS-01-R: Explore staffing through new positions and/or transfer of inspectors to firefighters		1370d	01-Apr-12	31-Dec-15																			
FPS-01	FPS-01-R: Explore staffing through new positions and/or transfer of inspectors to firefighters	1370d	01-Apr-12	31-Dec-15																			
FPS-01-01	Justify/Budget/Space Requirements	91d	01-Apr-12	30-Jun-12																			
FPS-01-02	Advertise	92d	01-Jul-12	30-Sep-12	FPS-01-01																		
FPS-01-03	2012 Hire 2 Firefighters																						

Activity ID	Activity Name	Duration	Start	Finish	Predecessors	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
MNT-06	MNT-06-R: Contract out ring seal and drum gate maintenance	1370d	01-Apr-12	31-Dec-15																		
MNT-06-01	Scope the Job	183d	01-Apr-12	30-Sep-12																		
MNT-06-02	Hire the Contractor	638d	01-Oct-12	30-Jun-14	MNT-06-01																	
MNT-06-03	Start Contractor Working	549d	01-Jul-14	31-Dec-15	MNT-06-02																	
Operations		887d	01-Apr-12	15-Aug-14																		
OPS-01-R	Improve enterprise-wide work planning, including clearances, to better coordinate advance	273d	16-Nov-13	15-Aug-14																		
OPS-01	OPS-01-R: Improve enterprise-wide work planning, including clearances, to better coordinate advanced plac...	273d	16-Nov-13	15-Aug-14																		
OPS-01-01	Planning Group Establishment/Implementation	182d	16-Nov-13	16-May-14	GCP-04-02																	
OPS-01-02	Communications with Outage Dispatch	91d	17-May-14	15-Aug-14	OPS-01-01																	
OPS-02-R	Adjust sign-off procedures to require Operations to review completed work orders after be	456d	01-Apr-12	30-Jun-13																		
OPS-02	OPS-02-R: Adjust sign-off procedures to require Operations to review completed work orders after being bri...	456d	01-Apr-12	30-Jun-13																		
OPS-02-01	Place Ops Review in Policy for Job Plans	91d	01-Apr-12	30-Jun-12																		
OPS-02-02	ID Which Types Require Ops Review	184d	01-Jul-12	31-Dec-12	OPS-02-01																	
OPS-02-03	Update Job Plans	182d	01-Oct-12	31-Mar-13	OPS-02-02																	
OPS-02-04	Use CARMA to Track and Enforce	91d	01-Apr-13	30-Jun-13	OPS-02-03																	
OPS-03-R	Set policies for SOP requirements and staff accordingly	640d	01-Apr-12	31-Dec-13																		
OPS-03	OPS-03-R: Set policies for SOP requirements and staff accordingly	640d	01-Apr-12	31-Dec-13																		
OPS-03-01	Policy review and setting	183d	01-Apr-12	30-Sep-12																		
OPS-03-02	Contract Support where appropriate	92d	01-Oct-12	31-Dec-12	OPS-03-01																	
OPS-03-03	Define New Staff Positions with HR	92d	01-Oct-12	31-Dec-12	OPS-03-01																	
OPS-03-04	Announce/Advertise	90d	01-Jan-13	31-Mar-13	OPS-03-03																	
OPS-03-05	Select	91d	01-Apr-13	30-Jun-13	OPS-03-04																	
OPS-03-06	Train	184d	01-Jul-13	31-Dec-13	OPS-03-05																	
OPS-04-R	Integrate Operations into review of capital project design requirements and submittals	458d	01-Apr-12	02-Jul-13																		
OPS-04	OPS-04-R: Integrate Operations into review of capital project design requirements and submittals	458d	01-Apr-12	02-Jul-13																		
OPS-04-01	Add to Standard Project Lifecycle and Policy	183d	01-Apr-12	30-Sep-12	GCP-05-01, GCP-05-05																	
OPS-04-02	Staff to Review Projects	183d	01-Jan-13	02-Jul-13	GCP-05-01, GCP-05-05																	
OPS-04-03	Staff QA Manager Positions	182d	01-Jan-13	01-Jul-13	GCP-05-01, GCP-05-05																	
OPS-05-R	Schedule and implement all FAC 02-01 required testing	456d	01-Apr-12	30-Jun-13																		
OPS-05	OPS-05-R: Schedule and implement all FAC 02-01 required testing	456d	01-Apr-12	30-Jun-13																		
OPS-05-01	Write W.O.s	91d	01-Apr-12	30-Jun-12																		
OPS-05-02	Complete W.O.s	365d	01-Jul-12	30-Jun-13	OPS-05-01																	
OPS-06-R	Track and fix automation issues as a performance goal	640d	01-Apr-12	31-Dec-13																		
OPS-06	OPS-06-R: Track and fix automation issues as a performance goal	640d	01-Apr-12	31-Dec-13																		
OPS-06-01	ID Trouble Report Issues	91d	01-Apr-12	30-Jun-12																		
OPS-06-02	ID Start/Stop Permissions	92d	01-Jul-12	30-Sep-12	OPS-06-01																	
OPS-06-03	Have Engineer Update a New Project	184d	01-Jul-13	31-Dec-13	OPS-06-02																	
OPS-07-R	Coordinate to determine root cause and test after rectification	91d	30-Dec-12	30-Mar-13																		
OPS-07	OPS-07-R: Coordinate to determine root cause and test after rectification	91d	30-Dec-12	30-Mar-13																		
OPS-07-01	Implement Ops Review of TR Work Orders	91d	30-Dec-12	30-Mar-13	GCP-02-03																	
OPS-08-R	Increase engineering support to conduct root cause analysis	457d	31-Mar-13	30-Jun-14																		
OPS-08	OPS-08-R: Increase engineering support to conduct root cause analysis	457d	31-Mar-13	30-Jun-14																		
OPS-08-01	Define Position with HR	92d	31-Mar-13	30-Jun-13	OPS-07-01																	
OPS-08-02	Announce/Advertise	92d	01-Jul-13	30-Sep-13	OPS-08-01																	
OPS-08-03	Select	90d	01-Oct-13	29-Dec-13	OPS-08-02																	
OPS-08-04	Train	183d	30-Dec-13	30-Jun-14	OPS-08-03																	
Project Delivery		1005d	01-Apr-12	31-Dec-14																		
PDL-01-R	Continue with ongoing formation of GCPO Project Delivery organization	91d	01-Apr-12	30-Jun-12																		
PDL-01	PDL-01-R: Continue with ongoing formation of GCPO Project Delivery organization	91d	01-Apr-12	30-Jun-12																		
PDL-01-01	(Ongoing, already started)	91d	01-Apr-12	30-Jun-12																		
PDL-02-R	Improve coordination between COTR and Project Delivery	550d	01-Apr-12	02-Oct-13																		
PDL-02	PDL-02-R: Improve coordination between COTR and Project Delivery	550d	01-Apr-12	02-Oct-13																		
PDL-02-01	2012 ID Roles of PM, CO, COTR in Project Delivery	91d	01-Apr-12	30-Jun-12																		
PDL-02-02	2012 Define Authorities	91d	01-Apr-12	30-Jun-12	PDL-02-01																	
PDL-02-03	2012 Establish Priorities	92d	01-Jul-12	30-Sep-12	PDL-02-02																	
PDL-02-04	2012 Implement and Train	184d	01-Jul-12	31-Dec-12	PDL-02-02																	
PDL-02-05	2013 ID Roles of PM, CO, COTR in Project Delivery	91d	01-Jan-13	01-Apr-13	PDL-02-04																	
PDL-02-06	2013 Define Authorities	91d	01-Jan-13	01-Apr-13	PDL-02-05																	
PDL-02-07	2013 Establish Priorities	92d	02-Apr-13	02-Jul-13	PDL-02-06																	
PDL-02-08	2013 Implement and Train	184d	02-Apr-13	02-Oct-13	PDL-02-06																	
PDL-03-R	Implement project and program-level reporting capabilities	1005d	01-Apr-12	31-Dec-14																		
PDL-03	PDL-03-R: Implement project and program-level reporting capabilities	1005d	01-Apr-12	31-Dec-14																		
PDL-03-01	2012 Identify Reporting Requirements	91d	01-Apr-12	30-Jun-12																		
PDL-03-02	2012 Define Alternatives	91d	01-Apr-12	30-Jun-12	PDL-03-01																	
PDL-03-03	2012 Automate as far as Practical	92d	01-Jul-12	30-Sep-12	PDL-03-02																	
PDL-03-04	2012 Coordinate with Region	184d	01-Jul-12	31-Dec-12	PDL-03-03																	
PDL-03-05	2013 Implement and Train	365d	01-Jan-13	31-Dec-13	PDL-03-04																	
PDL-03-06	2013 Identify Reporting Requirements	91d	01-Apr-13	30-Jun-13	PDL-03-05																	
PDL-03-07	2013 Define Alternatives	91d	01-Apr-13	30-Jun-13	PDL-03-06																	
PDL-03-08	2013 Automate as far as Practical	92d	01-Jul-13	30-Sep-13	PDL-03-07																	
PDL-03-09	2013 Coordinate with Region	184d	01-Jul-13	31-Dec-13	PDL-03-08																	
PDL-03-10	2014 Implement and Train	365d	01-Jan-14	31-Dec-14	PDL-03-09																	
PDL-04-R	Engage in up-front project planning	547d	02-Apr-13	30-Sep-14																		
PDL-04	PDL-04-R: Engage in up-front project planning	547d	02-Apr-13	30-Sep-14																		
PDL-04-01	Develop Planning Model	92d	02-Apr-13	02-Jul-13	GCP-04-01																	



█ Project Baseline Bar
 █ Remaining Work
 █ WBS Summary & Lvl Effort
 ▶ Summary
█ Actual Work
 █ Critical Remaining Work
 ◆ Milestone

