WIPP Recovery Workshop

U.S. Department of Energy

Waste Isolation Pilot Plant

January 14, 2015

Agenda

- Introduction and Workshop Objective
- WIPP Recovery Approach
- Interim Performance Measurement Baseline
- WIPP Recovery Project Summary Level Schedule
- Questions and Answers

Introductions and Workshop Objective

- Introductions
- The objective of this workshop is to provide a forum for a detailed discussion of the WIPP Recovery Project Interim Baseline and to address stakeholder questions and comments
- The review will include:
  - Development of the Recovery Project Interim Baseline
  - The scope and schedule of the recovery effort
  - The cost to complete the recovery effort
  - The risks and challenges associated with the recovery effort
  - How progress is being monitored and measured

WIPP Recovery

- The Recovery effort has been divided into two phases:

- **Phase I – Mitigation**
  (stabilize the plant)

- **Phase II – Recovery**
  - Complete the programmatic and operational activities necessary to resume waste emplacement operations by the first quarter of 2016 in alignment with the DOE Recovery Plan
  - Complete and make operational a new ventilation system that will support pre-event waste emplacement rates and mining operations

Phase I – Mitigation

- Performance of Radiological Surveys throughout the WIPP site
- Installation of a Continuous Air Monitor at Station B for real time monitoring
- Sealing of the Bypass Dampers
- Collection and Analysis of Environmental Samples
- Entering the RCRA Contingency Plan
- Emergency Management Event Declaration Conservatism
- Completion of the event bioassay program
- Development of Nuclear Safety Documentation to support recovery activities
  - U/G Ventilation System Operation
  - Entries
  - Processing of existing surface CH waste
  - Venting of Type B packages
- Cleaning of the Waste Hoist Tower and Waste Hoist Components
- Replacement of U/G Ventilation System Filters

Phase II – Recovery and Resumption of Operations

- ESS Documents to support recovery activities and DSA Revision
- Underground restoration
- Panel 6 Initial Closure and Panel 7, Room 7 Closure
- Interim Ventilation Modifications
- Supplemental Ventilation Modifications
- Safety Management Program (SMP) Revitalization
- New Ventilation System
- Readiness Activities

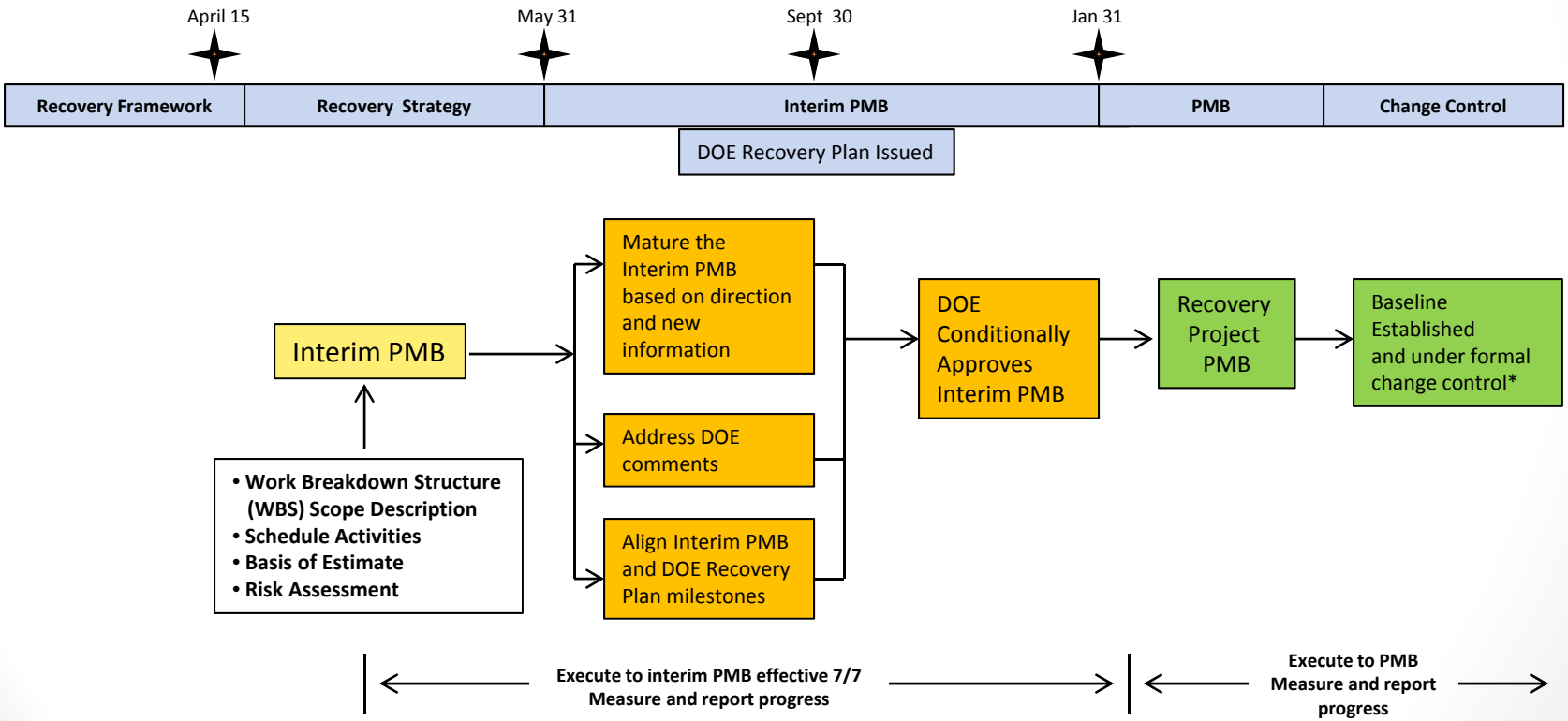
Interim Performance Measurement Baseline (PMB)

What is the interim PMB?

- WIPP is an Management and Operations (M&O) contract. Under an M&O contract, work activities are managed as a level of effort
- Although the WIPP site is not processing TRU waste at this time, there continue to be operational and business activities that must be performed under the M&O contract
- The WIPP Recovery effort is being managed separately, as a project with discrete resource loaded schedule activities and a detailed cost estimate reflective of the schedule activities
- The interim PMB presents the scope, cost and schedule activities that comprise the WIPP recovery and commencement of waste emplacement operations, including both operating and capital asset project scopes of work
- The interim PMB was established in July and has been refined as new information has been learned regarding the recovery effort, without the need for a formal change control process. The interim PMB is the basis for the final PMB, which is considered the baseline for the recovery effort
- Changes to the scope, schedule and estimate are being managed through a formal Change Control Process
- Execution of the PMB as presented is contingent on adequate funding in out years, and no major changes to assumptions for current year funding

Interim Performance Measurement Baseline (PMB)

How was the Interim PMB developed?



Execution of the PMB is contingent on adequate funding in outyears, and no major changes to assumptions for current year funding.

Work Breakdown Structure

1.0 TRU Waste

1.7 WIPP Recovery Project

1.7.1 Facility Program Enhancements

1.7.1.01 Nuclear Safety Program
1.7.1.02 Emergency Management Program
1.7.1.03 Radioactive and Hazardous Waste Management Program
1.7.1.04 Human Factors Program
1.7.1.05 Testing/Surveillance/Maintenance Program
1.7.1.06 Conduct of Operations Program
1.7.1.07 Fire Protection Program
1.7.1.08 Procedures and Training Program
1.7.1.09 Quality Assurance Program
1.7.1.10 Radiation Protection Program
1.7.1.11 Industrial Safety Program
1.7.1.12 Engineering Program
1.7.1.13 Contractor Assurance Program
1.7.1.14 Hazardous Material Protection Program
1.7.1.15 Decontamination and Decommissioning Program
1.7.1.16 Criticality Safety Program
1.7.1.17 Integrated Safety Management System Program
1.7.1.18 Work Control Program

1.7.2 Placeholder

1.7.2.01 Placeholder

1.7.3 Documented Safety Analysis

1.7.3.01 Placeholder
1.7.3.02 Evaluation of the Safety of the Situation (ESS) Revisions
1.7.3.03 Documented Safety Analysis (DSA) Revision

1.7.4 Underground Habitability/Operations

1.7.4.01 Decontamination and Remediation (D&R)
1.7.4.02 Underground Stabilization
1.7.4.03 Interim Ventilation System
1.7.4.04 Supplemental Ventilation
1.7.4.05 Underground Equipment/Systems
1.7.4.06 Panel /Room Closures

1.7.5 Facility Upgrades

1.7.5.01 Salt Hoist Controller Upgrade
1.7.5.02 Waste Hoist Controller Upgrade
1.7.5.03 Temporary Office Space
1.7.5.04 Temporary Change Facility
1.7.5.05 Placeholder
1.7.5.06 Placeholder
1.7.5.07 In Town Emergency Operations Center (EOC)

1.7.6 Waste Placement

1.7.6.01 Waste Handling Operations

1.7.7 Readiness for Operations

1.7.7.01 Line Management Assessment/Readiness Assessment/ORR

1.7.8 Program Management Support

1.7.8.01 Administrative Programs

1.0 TRU Waste

1.8 Permanent Ventilation System

1.8.1 Ventilation Equipment Project

1.8.1.01 Ventilation Equipment Requirements and Design Criteria
1.8.1.02 Ventilation Equipment Design
1.8.1.03 Ventilation Equipment Procurement and Fabrication
1.8.1.04 Ventilation Equipment Installation and Construction
1.8.1.05 Ventilation Equipment Regulatory Documents
1.8.1.06 Ventilation Equipment Documented Safety Analysis (DSA)
1.8.1.07 Ventilation Equipment Readiness for Operations
1.8.1.08 Ventilation Equipment Program Management Support

1.8.2 Shaft and Drifts Project

1.8.2.01 Shaft and Drifts Requirements and Design Criteria
1.8.2.02 Shaft and Drifts Design
1.8.2.03 Placeholder
1.8.2.04 Shaft and Drifts Installation and Construction
1.8.2.05 Shaft and Drifts Regulatory Documents
1.8.2.06 Placeholder
1.8.2.07 Placeholder
1.8.2.08 Shaft and Drifts Program Management Support

Basis of Estimate (BOE)

- Critical element in the project management process.
- Realistic costs of an item or activity and the availability of resources and funding are key considerations in building an executable baseline.
- CBFO reviews the BOE as part of the PMB approval process, assessing the reasonableness and completeness of the contractor estimates.
- The BOE provides the foundation of the recovery portion of the CBFO budget request(s).
- The BOE includes a scope description, cost uncertainty range, the method used to measure performance, methodology to develop the estimate, existing data to support the estimate, estimating assumptions, etc.
- Different estimation methods are used, e.g., historical costs, expert opinion, subcontractor quotes, management judgment, and activity-based detailed estimates.

Interim PMB – Risk Approach

How were risks identified?

Technical and Programmatic Risk

- Risks were identified for all areas of recovery scope during the Framework development and refined during the Interim PMB development. Likelihood and consequence thresholds were established for the Interim PMB and used to grade risks. Risk handling strategies were developed for risks and the post handling impact data used to derive a Management Reserve and contingency using a Monte Carlo analysis.

Estimate Uncertainty

- Estimate uncertainty was derived from estimate ranges (BOE sheets). The low, base and high range values were modeled using the Monte Carlo techniques to derive Management Reserve (MR) and DOE contingency.

- The MR and DOE contingency for the permanent ventilation projects (Capital projects) were estimated based on the upper most bounded range of the rough order of magnitude (ROM) estimates due to the uncertainty in the scope definition. The estimate will be refined as the scope is more clearly defined.

Schedule Uncertainty

- The schedule uncertainty was derived by Pertmaster schedule analysis for the recovery scope.

Risk based, estimate and schedule uncertainties are used to derive Total MR and DOE contingency.

Interim PMB Risk Matrix

ID	Event	DOE or Contr	WBS	Likelihood	Basis	Unmitigated Consequence	Basis	Unmitigated Risk Level (Grading)	RHS	Handling Strategy	Mitigated Consequence	Likelihood	Basis	Cost BC $K	Cost MLC $K	Cost WC $K	Sched BC	Sched MLC	Sched WC	Residual Risk Level (Grading)
RC-9	EPA requires DOE to submit a PCR for changes resulting from the supplemental ventilation system	DOE	1.7.4.04	Unlikely	Although a regulatory analysis assumes that a PCR is not required, EPA may require DOE to submit a PCR	Severe (Critical)	EPA determines that changes pertaining to the supplemental ventilation system differ significantly from the most recent compliance certification baseline. Public interest and Congressional pressure may drive EPA to require DOE to submit a PCR	MODERATE	Mitigate	Conduct discussions and organize meeting(s) with EPA ORIA and Region 6 to discuss separation of the construction and disposal circuit planned for the supplemental ventilation system	Severe (Critical)	Unlikely	Continued dialogue will be the key factor in mitigation of this risk.	100	1,000	2,000	20 Months	22 Months	24 Months	MODERATE
39	Construction delays due to material availability, supplier contract problems, design construction issues (e.g. asbuilt/field conditions), prerequisites for construction not performed on schedule, regulatory issues.	CONTR	1.7.4.03	Very Likely	Based on previous experience	Significant	The worst case assumes design issues, regulatory activities or prerequisites are not well defined or met. This could delay activities up to 6 months.	HIGH	Mitigate	Identify difficult and long lead procurements and start early, ensure a valid and updated qualified supplier list is maintained, consider independent validation of constructability in field, ensure progress of prerequisite activities are monitored and alternate plans (when available) used. Have regulatory issues defined and mitigated early in the project. Ensure prerequisites are performed early to	Marginal	Likely	Excessive weather delays or labor issues remain.	10	20	30	1 Wk	2 Wks	3 Wks	MODERATE
1	Qualified Work Planners are required to support work planning demands. A risk exists that qualified work planners not available when required to support work planning demands.	CONTR	1.7.1.01	Likely	Multiple Recovery Project operations activities will be competing for resources.	Significant	Schedule impact of 9 months; cost impact of $500k to obtain subcontractor resouces at a premium.	MODERATE	Mitigate	Two new NWP work planners reported June 16, 2014 to begin training. Additional NWP work planner to be hired. Four contract work planners to be hired with radiological work planning experience. Demand to be assessed as new work is identified to determine need for additional funding/headcount to sustain at an acceptable level. Early procurement before the end of the FY to avoid issues at the end of FY.	Marginal	Unlikely	Planners are continuing to rotate out	50	125	250	1 Mth	2 Mths	4 mths	LOW
4	Mentoring of work crews is required to enhance disciplined operations required for nuclear safety. If mentors are not available when required there would be a slow down in the execution of conduct of maintenance corrective actions	CONTR	1.7.1.01	Unlikely	Corporate reachback is being exercised	Negligible	In the worst case, mentors are not available when required which would slow down the execution of conduct of maintenance corrective actions up to 2 months.	LOW	Mitigate	Identify, by name, assigned mentors to support Conduct of Maintenance actions by 06/16/14	Negligible	Very Unlikely	Likelihood has been reduced by assigning specific mentors.	0	0	0	2 Wks	1 Mth	2 Mths	LOW
5	Work load identified for Work Planners exceeds budgeted headcount	CONTR	1.7.1.01	Likely	The corrective maintenance required has not been fully developed and could easilly be greater than anticipated, requiring an increased demand in the need for work planning resources.	Marginal	In the worst case, increased workload without comensurate increase in resources could impact completion of maintenance activities up to 3 months and result in increased costs of up to $1M for additional resources.	MODERATE	Mitigate	Identify additional work planning resources (subcontractor, reach back) and advance procurement process as far as practical. Monitor corrective action required as it is being developed and obtain additional contract work planning support immediately the addional need for resources is projected.	Marginal	Unlikely	Likelihood has been reduced by identifying additional resources and readying for immediate deployment	500	500	1,000	2 Wks	1 Mth	2 Mths	LOW
6	Only "Key Risks" are identified during this initial assessment. A risk exists that when the underpinning assessmnet is performed on this activity, additional risks are identified.	CONTR	1.7 & 1.8	Likely	When activity team is assembled to finalize risk identification, the scope of the activity will have been definitiaed and it is likely additional risk may be identified.	Negligible	All "Key Risks" are understood and and have been already identified, it is likely that less significant risks may emerge during formal assessment, however their impact will be limited.	LOW	Mitigate	These risks will generally be low and comprehensive identification will result in successful handling and management. To ensure their residual impact is included in the derived MR and contingency, the mitigated consequences have been estimated as a placeholder for these risks. During the early stages of execution, formal risk management will identify and manage these risks.	Negligible	Likely	Likelihood remains the same	1,000	1,000	1,000	2 Mths	2 Mths	2 Mths	LOW

Sample page

WIPP Cost Summary—WIPP Recovery Plan

Table 2. Cost Summary Profile

WBS		FY2014	FY2015	Outyears	Total
1.7	**Event Recovery Project**				
1.7.1	Facility Program Enhancements	$8,174	$38,733	$10,718	$57,625
1.7.3	Documented Safety Analysis	$2,374	$3,015	$0	$5,389
1.7.4	Mine Habitability/Operations	$12,230	$57,852	$25,985	$96,066
1.7.5	Facility Upgrades	$825	$6,454	$3,960	$11,239
1.7.6	Waste Placement	$0	$86	$7,092	$7,178
1.7.7	Readiness for Operations	$0	$0	$9,983	$9,983
1.7.8	Program Management Support	$4,603	$30,216	$19,684	$54,504
1.7	**Recovery Project Total**	$28,206	$136,356	$77,421	$241,983

Note: Costs in $thousands.

*Restoration of WIPP to full operations will require additional capital asset project(s). A permanent ventilation system with a cost range of $77 - $309 million, pending completion of an alternatives analysis. These cost estimates are preliminary and will be refined as the alternative(s) are determined and detailed planning is developed and as uncertainties are reduced.

Interim PMB – Monitoring of Progress

How is the WIPP Recovery Project implemented and tracked?

Plan of the Day (POD) meetings (Monday – Friday)

- Review of the current two week window of schedule activities
- The Champions status schedule activities to be performed in that window that are scheduled to start or scheduled to complete
- Issues that would prevent activities from starting or completing as scheduled are discussed and a path forward is developed to minimize impact

Plan of the Week meetings (Wednesday)

- A review of the activities that are on critical path (have no schedule float or is impacting the start of waste emplacement milestone)
- Actions are taken to mitigate the critical path activities

Monthly Project Status Meetings with CBFO

- Cost and schedule performance are reviewed against the baseline

Monthly Change Control Board Meeting

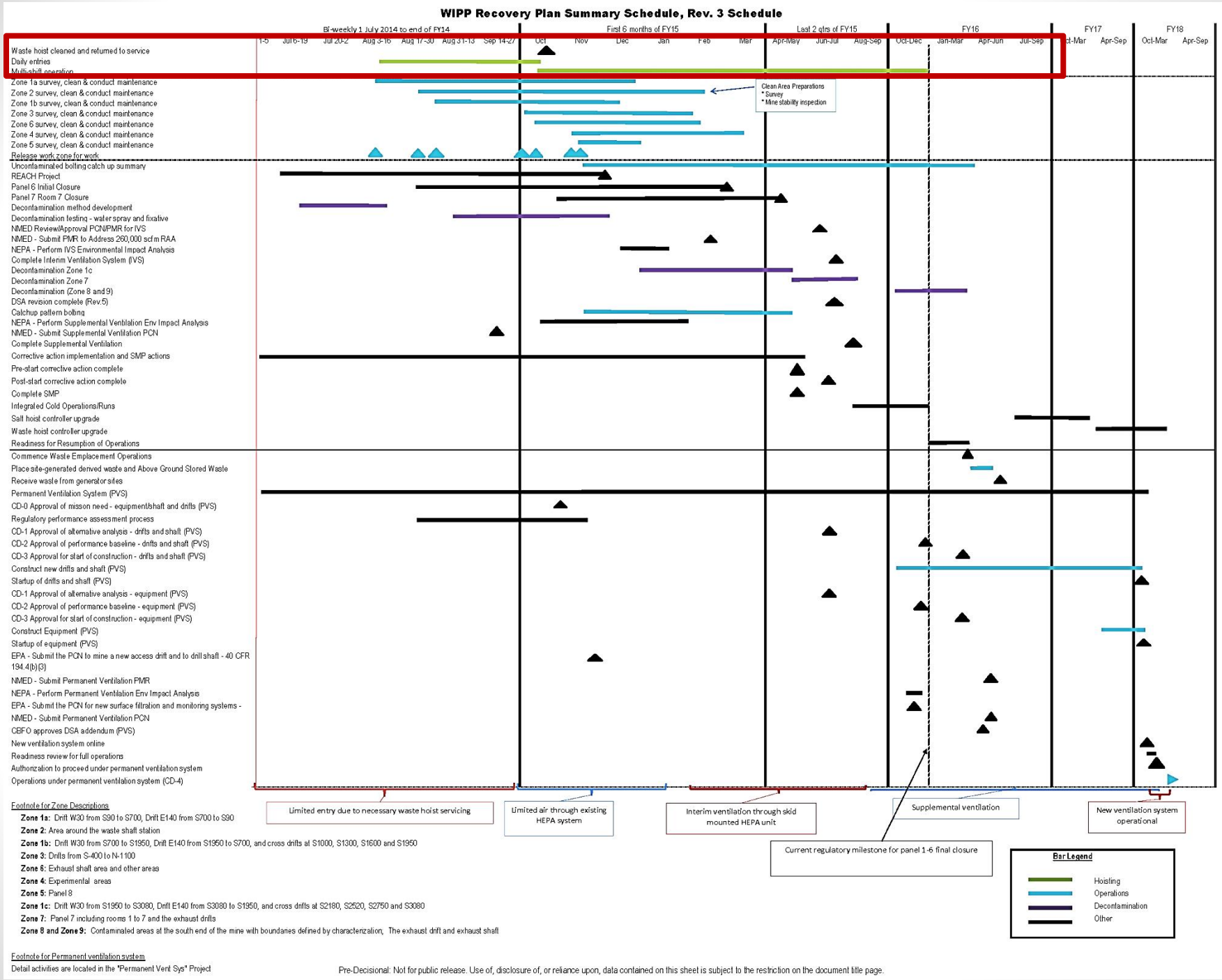
- Changes to the baseline (schedule or cost) that impact schedule milestones or cost impacts greater than $250,000 are reviewed.

Key Milestones Page 1

Milestone	Description	Date
Completion of moderate and high efficiency filter change out	Current filtered ventilation system returned to full operation	3rd Qtr FY14 Completed
Start of underground entries	Planned execution of entry to the underground	4TH Qtr FY14 Completed
Release of zone 1a RBA (radiological buffer zone) for work	Completion of radiological survey and clear demarcation of RBA	4TH Qtr FY14 Completed
NMED - Submit Interim Ventilation Regulatory Review	Development and submittal of planned changes to the permitted facility and appurtenances	4TH Qtr FY14 Completed
Start of bolt catchup	Resumption of bolting activities in first cleared RBA/clean area	1st Qtr FY15
Restart of the waste hoist	Waste hoist returned to service following cleaning from soot damage and completion of all preventative maintenance	1st Qtr FY15
Approval of Critical Decision (CD) 0	CD-0 Approval of mission need for the permanent ventilation system (PVS) capital line-item project	1st Qtr FY15
NMED - Submit PMR to Address 260,000 scfm RAA	Development and submittal of a Permit Modification Request (PMR) to address the change from 260,000 scfm annual running average (RAA) of U/G ventilation	2nd Qtr FY15
Completion of Panel 6 Initial Closure	Expedited initial closure of Panel 6, including development of closure approach, design, and installation.	2nd Qtr FY15
NEPA - Perform Supplemental Ventilation Env Impact Analysis	Analysis of environmental impacts to human health and the environment. Regulatory analysis. Approved by CBFO NEPA Compliance Officer	2nd Qtr FY15
NEPA - Perform Interim Ventilation Env Impact Analysis	Analysis of environmental impacts to human health and the environment. Regulatory analysis. Approved by CBFO NEPA Compliance Officer	2nd Qtr FY15
Start of decontamination area 1c	Initiate decontamination of area 1c (removal of equipment)	2nd Qtr FY15
Completion of all uncontaminated Zone survey, cleaning, and maintenance	Completion of areas 1a, 1b, 2, 3, 4, 5, and 6	2nd Qtr FY15
NMED - Submit Supplemental Ventilation PCN	Development and submittal of planned changes to the permitted facility and appurtenances	2nd Qtr FY15
Completion of corrective actions and SMP activities	Completion of pre-start and post-start corrective actions and SMP activities	3rd Qtr FY15
Approval of Critical Decision (CD) 1*	CD-1 Approval of alternative selection and cost range for the PVS shaft/drifts	3rd Qtr FY15
Approval of Critical Decision (CD) 1*	CD-1 Approval of alternative selection and cost range for the PVS equipment	3rd Qtr FY15
Completion of Interim Ventilation System	Completion of installation, startup, and testing of supplemental skid-mounted HEPA units to provide incremental airflow in the underground	4th Qtr FY15
Completion of DSA Revision 5	Completion of a DSA revision that reflects current underground conditions and eliminates compensatory measures prior to waste emplacement Operations and includes DOE/CBFO review and implementation	4th Qtr FY15
Completion of Supplemental Ventilation	Provide additional air flow on the clean side of the underground enabling operations on a reduced scale	4th Qtr FY15
Completion of decontamination activities to affix radioactive contaminates in panel 7	Release of panel 7	4th Qtr FY15

Key Milestones Page 2

Milestone	Description	Date
EPA - Submit the PCN to excavate a new access drift and to drill shaft	40 CFR 194.4(b)(3); 40 CFR Part 191, Subpart A.	1st Qtr FY16
NEPA - Perform Permanent Ventilation Env Impact Analysis	Analysis of environmental impacts to human health and the environment. Regulatory analysis. Approved by CBFO NEPA Compliance Officer	1st Qtr FY16
EPA - Submit the Regulatory review for new surface filtration and monitoring systems	40 CFR 194.4(b)(3) and 40 CFR Part 191, Subpart A.	1st Qtr FY16
NMED - Submit Permanent Ventilation PCN	Development and submittal of planned changes to the permitted facility and appurtenances	1st Qtr FY16
Approval of Critical Decision (CD) 2*	CD-2 Approval of performance baseline for the PVS shaft/drifts	1st Qtr FY16
Approval of Critical Decision (CD) 2*	CD-2 Approval of performance baseline – PVS equipment	1st Qtr FY16
Approval of Critical Decision (CD) 3*	CD-3 Approval for start of construction for the PVS shaft/drifts	2nd Qtr FY16
Approval of Critical Decision (CD) 3*	CD-3 Approval for start of construction – PVS equipment	2nd Qtr FY16
Authorization to proceed – Commence Waste Emplacement Operations	Completion of readiness process for Commence Waste Emplacement Operations addendum	2nd Qtr FY16
Completion of Contaminated Zones	Completion of decontamination of Zones 8 and 9	2nd Qtr FY16
Completion of DSA Addendum	Completion of a DSA addendum prior to Permanent Ventilation	3rd Qtr FY16
Capability to emplace site derived waste	NWP will be capable of emplacing the first package of site derived waste	3rd Qtr FY16
Capability to emplace above ground stored TRU waste	NWP will be capable of emplacing the first package of stored TRU waste in panel 7	3rd Qtr FY16
NMED - Submit Permanent Ventilation PMR	Development and submittal of a PMR to address the new exhaust shaft	3rd Qtr FY16
Capable of receiving offsite TRU waste from generator site	Receipt of TRU waste from generator site for emplacement in panel 7	3rd Qtr FY16
Completion of Salt Hoist Controller Upgrade	Phased upgrade to the Salt Hoist Controls to minimize system outage	2nd Qtr FY17
Approval of Critical Decision (CD) 4*	Completion of the Readiness process for utilizing the permanent ventilation system	1st Qtr FY18
Completion of Waste Hoist Controller Upgrade	Phased upgrade to the Waste Hoist Controls to minimize system outage	2nd Qtr FY18
Startup of the PVS system - Authorization to Proceed – PVS	Completion of installation, startup, and testing activities for the PVS	2nd Qtr FY18


WIPP Recovery Plan Summary Schedule, Rev. 3 Schedule
Bi-weekly 1 July 2014 to end of FY14
First 6 months of FY15
Last 2 qtrs of FY15
FY16
FY17
FY18
1-5
Jul 6-19
Jul 20-2
Aug 3-16
Aug 17-30
Aug 31-13
Sep 14-27
Oct
Nov
Dec
Jan
Feb
Mar
Apr-May
Jun-Jul
Aug-Sep
Oct-Dec
Jan-Mar
Apr-Jun
Jul-Sep
Oct-Mar
Apr-Sep
Oct-Mar
Apr-Sep
Waste hoist cleaned and returned to service
Daily entries
Multi-shift operation
Zone 1a survey, clean & conduct maintenance
Zone 2 survey, clean & conduct maintenance
Zone 1b survey, clean & conduct maintenance
Zone 3 survey, clean & conduct maintenance
Zone 6 survey, clean & conduct maintenance
Zone 4 survey, clean & conduct maintenance
Zone 5 survey, clean & conduct maintenance
Release work zone for work
Clean Area Preparations
* Survey
* Mine stability inspection
Uncontaminated bolting catch up summary
REACH Project
Panel 6 Initial Closure
Panel 7 Room 7 Closure
Decontamination method development
Decontamination testing - water spray and fixative
NMED Review/Approval PCN/PMR for IVS
NMED - Submit PMR to Address 260,000 scfm RAA
NEPA - Perform IVS Environmental Impact Analysis
Complete Interim Ventilation System (IVS)
Decontamination Zone 1c
Decontamination Zone 7
Decontamination (Zone 8 and 9)
DSA revision complete (Rev.5)
Catchup pattern bolting
NEPA - Perform Supplemental Ventilation Env Impact Analysis
NMED - Submit Supplemental Ventilation PCN
Complete Supplemental Ventilation
Corrective action implementation and SMP actions
Pre-start corrective action complete
Post-start corrective action complete
Complete SMP
Integrated Cold Operations/Runs
Salt hoist controller upgrade
Waste hoist controller upgrade
Readiness for Resumption of Operations
Commence Waste Emplacement Operations
Place site-generated derived waste and Above Ground Stored Waste
Receive waste from generator sites
Permanent Ventilation System (PVS)
CD-0 Approval of misson need - equipment/shaft and drifts (PVS)
Regulatory performance assessment process
CD-1 Approval of alternative analysis - drifts and shaft (PVS)
CD-2 Approval of performance baseline - drifts and shaft (PVS)
CD-3 Approval for start of construction - drifts and shaft (PVS)
Construct new drifts and shaft (PVS)
Startup of drifts and shaft (PVS)
CD-1 Approval of alternative analysis - equipment (PVS)
CD-2 Approval of performance baseline - equipment (PVS)
CD-3 Approval for start of construction - equipment (PVS)
Construct Equipment (PVS)
Startup of equipment (PVS)
EPA - Submit the PCN to mine a new access drift and to drill shaft - 40 CFR 194.4(b)(3)
NMED - Submit Permanent Ventilation PMR
NEPA - Perform Permanent Ventilation Env Impact Analysis
EPA - Submit the PCN for new surface filtration and monitoring systems -
NMED - Submit Permanent Ventilation PCN
CBFO approves DSA addendum (PVS)
New ventilation system online
Readiness review for full operations
Authorization to proceed under permanent ventilation system
Operations under permanent ventilation system (CD-4)
Limited entry due to necessary waste hoist servicing
Limited air through existing HEPA system
Interim ventilation through skid mounted HEPA unit
Supplemental ventilation
New ventilation system operational
Current regulatory milestone for panel 1-6 final closure
Bar Legend
Hoisting
Operations
Decontamination
Other
Footnote for Zone Descriptions
Zone 1a: Drift W30 from S90 to S700, Drift E140 from S700 to S90
Zone 2: Area around the waste shaft station
Zone 1b: Drift W30 from S700 to S1950, Drift E140 from S1950 to S700, and cross drifts at S1000, S1300, S1600 and S1950
Zone 3: Drifts from S-400 to N-1100
Zone 6: Exhaust shaft area and other areas
Zone 4: Experimental areas
Zone 5: Panel 8
Zone 1c: Drift W30 from S1950 to S3080, Drift E140 from S3080 to S1950, and cross drifts at S2180, S2520, S2750 and S3080
Zone 7: Panel 7 including rooms 1 to 7 and the exhaust drifts
Zone 8 and Zone 9: Contaminated areas at the south end of the mine with boundaries defined by characterization, The exhaust drift and exhaust shaft
Footnote for Permanent ventilation system
Detail activities are located in the "Permanent Vent Sys" Project
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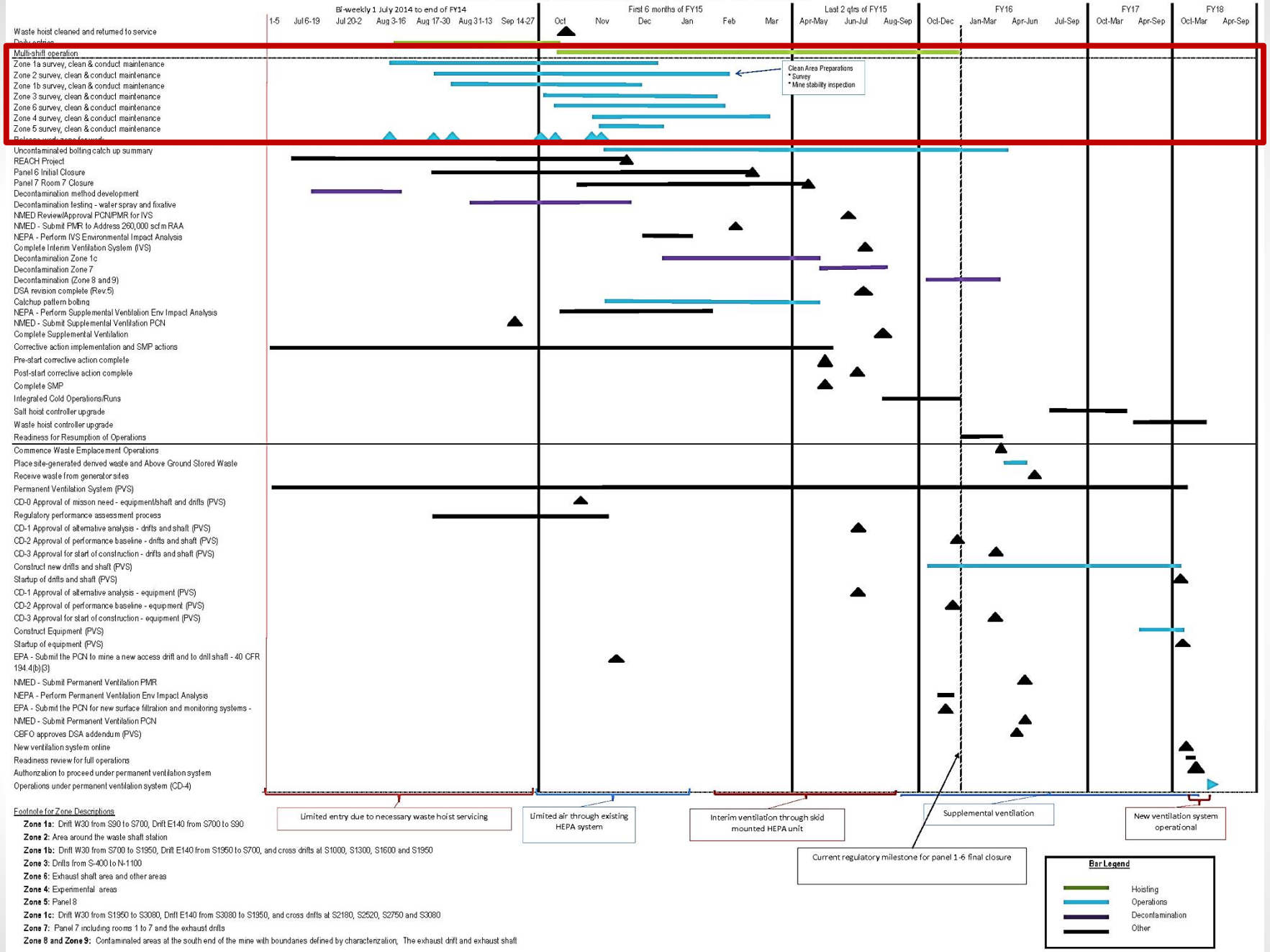
Underground Entries

- Initial entries limited to 24 persons due to waste hoist not in service
  - 4 entries/week
  - Daily entries
  - Two entries daily
  - Multi-shift operation
- Increased up to 75 persons on 11/15 when waste hoist available for emergency egress
- Waste hoist expected to be back in full service in the next month

WIPP Recovery Plan Summary Schedule, Rev. 3 Schedule



Footnote for Zone Descriptions

Zone 1a: Drift W30 from S90 to S700, Drift E140 from S700 to S90
Zone 2: Area around the waste shaft station
Zone 1b: Drift W30 from S700 to S1950, Drift E140 from S1950 to S700, and cross drifts at S1000, S1300, S1600 and S1950
Zone 3: Drifts from S-400 to N-1100
Zone 6: Exhaust shaft area and other areas
Zone 4: Experimental areas
Zone 5: Panel 8
Zone 1c: Drift W30 from S1950 to S3080, Drift E140 from S3080 to S1950, and cross drifts at S2180, S2520, S2750 and S3080
Zone 7: Panel 7 including rooms 1 to 7 and the exhaust drifts
Zone 8 and Zone 9: Contaminated areas at the south end of the mine with boundaries defined by characterization, The exhaust drift and exhaust shaft

Footnote for Permanent ventilation system

Detail activities are located in the "Permanent Vent Sys" Project

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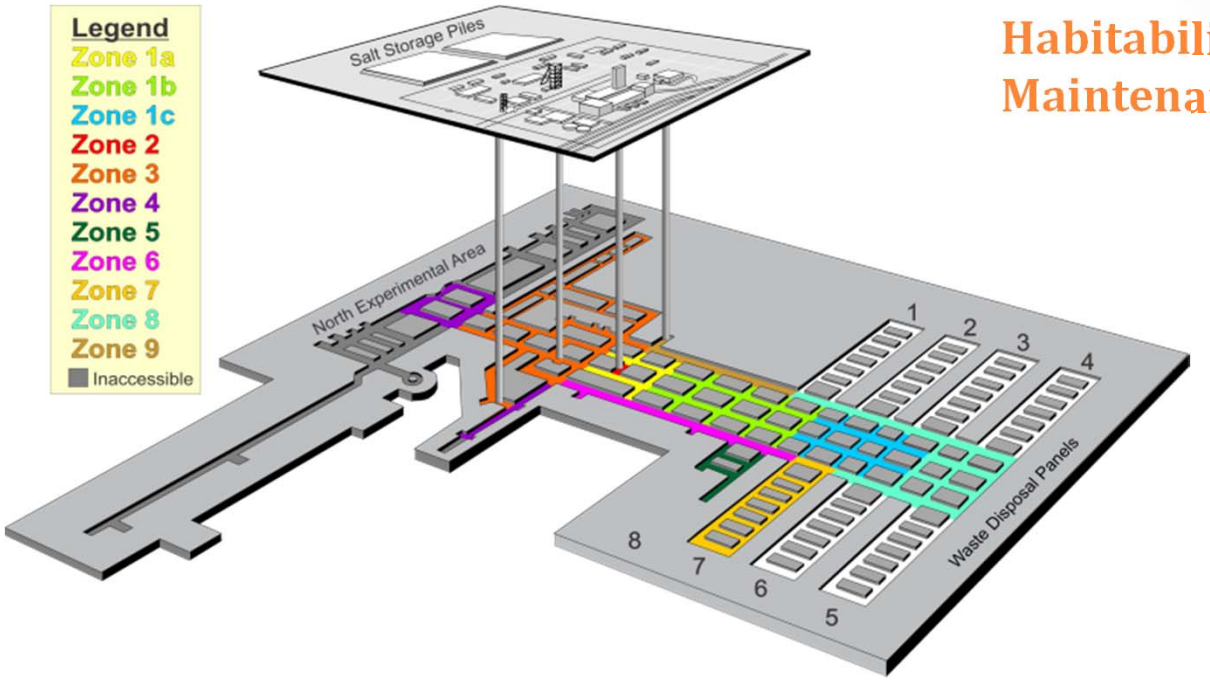
Key Activities (FY14 – mid FY15)

- Zone Cleaning and Habitability
  - Radiological surveys and rollback
  - 60% of u/g rolled back to Controlled Area
  - Mine stability inspections
    - Uncontaminated bolting in progress since 11/15.
    - E-140 drift bolting complete
  - Smoke remediation/cleaning
    - 60% complete
  - Maintenance on required equipment
    - Contaminated bolting equipment restoration in progress

- Challenges
  - Existing ventilation system in filtration mode
  - Limitation on equipment operation due to flow-rate restrictions (60K cfm)
    - 2 pieces of diesel fuel equipment operation

Zone Cleanup, Habitability and Maintenance

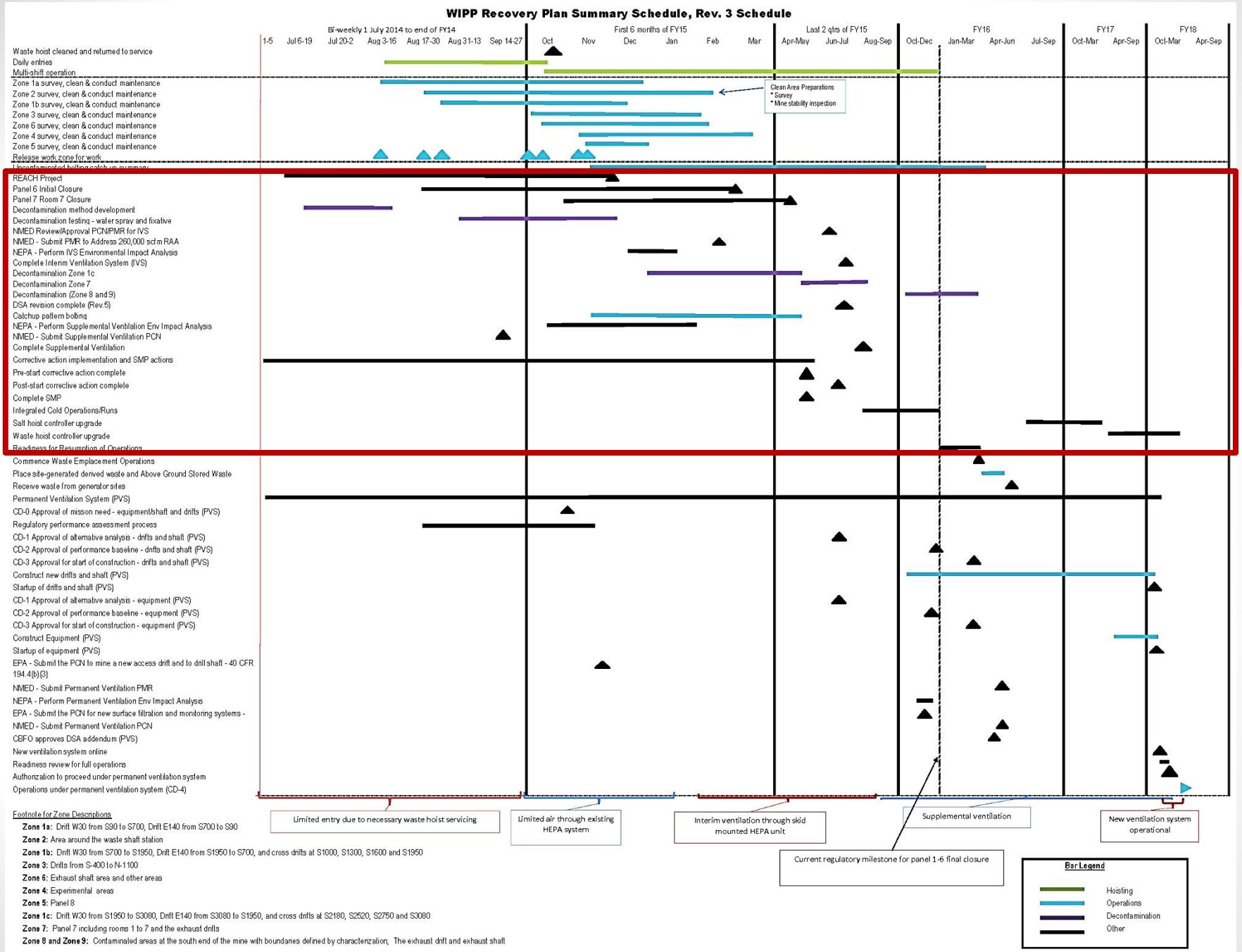


Zone	Description	Radiological Contamination
Zone 1a	Drift W30 from S90 to S700, Drift E140 from S700 to S90	Uncontaminated
Zone 1b	Drift W30 from S700 to S1950, Drift E140 from S1950 to S700, and cross drifts at S1000, S1300, S1600 and S1950.	Uncontaminated
Zone 1c	Drift W30 from S1950 to S3080, Drift E140 from S3080 to S1950, and cross drifts at S2180, S2520, S2750 and S3080.	Contaminated
Zone 2	Area around the waste shaft station including sumps	Uncontaminated
Zone 3	Drifts from S-400 to N-1100 including maintenance area	Uncontaminated
Zone 4	Experimental areas including NEXA, EXO, SDI	Uncontaminated
Zone 5	Panel 8	Uncontaminated
Zone 6	Other uncontaminated areas (e.g., panel entry drifts)	Uncontaminated
Zone 7	Panel 7 including rooms 1 to 7 and the exhaust drifts	Contaminated
Zone 8	Contaminated areas at the south end of the mine with boundaries defined by characterization	Contaminated
Zone 9	The exhaust drift and exhaust shaft	Contaminated

Work Steps for Zone Cleanup

1 Update ESS for work in cleared zones
2 Establish survey zones
3 Survey/characterize contamination within zone
4 Establish zone as radiological buffer area (RBA) or contaminated
5 If required, place CAMs and establish connectivity with surface monitoring
6 Place barriers for demarking confirmed clean areas
7 Release RBA areas for other work
  7.1 Identify equipment to be used
  7.2 Initiate equipment maintenance evaluation
  7.3 Prepare work packages as required
  7.4 Conduct operations in RBA zones as scheduled (complete actions zone by zone)
    - Conduct mine stability inspections
    - Inspect zone electrical system and clean soot as required
    - Conduct basic housekeeping activities
    - Remove trash to the surface
    - Assess smoke/fire damage
    - Clean components as required
    - Remove permanently damaged materials/equipment to the surface
    - Validate maintenance of equipment in zone
    - Schedule maintenance for equipment
    - Conduct maintenance of equipment

8 Prepare contaminated zones to release for work
  8.1 Prepare RWP for the zone
  8.2 Ensure boundaries are appropriately marked
  8.3 If not already prepared, establish change room facility
  8.4 If required, establish monitoring/counting station
  8.5 Establish contaminated clothing bins
  8.6 Establish transition (survey) zone for moving items from contaminated to non-contaminated areas
  8.7 Establish procedure for bagging items for movement from one contaminated zone to another
  8.8 Train workers to RWP and radiological worker requirements
  8.9 Train workers in donning and doffing techniques
9 Establish hot maintenance shop
  9.1 Identify area
  9.2 Create tool storage (tool crib) area
  9.3 Collect and inventory tools
  9.4 Validate calibration of tools and instruments
  9.5 Establish process for organizing, segregating and maintaining tools
10 Release contaminated areas for other work
  10.1 Identify equipment to be used
  10.2 Initiate equipment maintenance evaluation
  10.3 Prepare work packages as required
  10.4 Conduct operations in contaminated zone as scheduled
    - Conduct mine inspections
    - Inspect zone electrical system & clean soot if needed
    - Conduct basic housekeeping activities
    - Collect trash in central location for survey and disposal
    - Assess smoke/fire damage
    - Clean or remove components as required
    - Conduct maintenance of equipment


WIPP Recovery Plan Summary Schedule, Rev. 3 Schedule
Bi-weekly 1 July 2014 to end of FY14
First 6 months of FY15
Last 2 qtrs of FY15
FY16
FY17
FY18
1-5
Jul 6-19
Jul 20-2
Aug 3-16
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Waste hoist cleaned and returned to service
Daily entries
Multi-shift operation
Zone 1a survey, clean & conduct maintenance
Zone 2 survey, clean & conduct maintenance
Zone 1b survey, clean & conduct maintenance
Zone 3 survey, clean & conduct maintenance
Zone 6 survey, clean & conduct maintenance
Zone 4 survey, clean & conduct maintenance
Zone 5 survey, clean & conduct maintenance
Release work zone for work
Clean Area Preparations
* Survey
* Mine stability inspection
REACH Project
Panel 6 Initial Closure
Panel 7 Room 7 Closure
Decontamination method development
Decontamination testing - water spray and fixative
NMED Review/Approval PCN/PMR for IVS
NMED - Submit PMR to Address 260,000 scfm RAA
NEPA - Perform IVS Environmental Impact Analysis
Complete Interim Ventilation System (IVS)
Decontamination Zone 1c
Decontamination Zone 7
Decontamination (Zone 8 and 9)
DSA revision complete (Rev.5)
Catchup pattern bolting
NEPA - Perform Supplemental Ventilation Env Impact Analysis
NMED - Submit Supplemental Ventilation PCN
Complete Supplemental Ventilation
Corrective action implementation and SMP actions
Pre-start corrective action complete
Post-start corrective action complete
Complete SMP
Integrated Cold Operations/Runs
Salt hoist controller upgrade
Waste hoist controller upgrade
Readiness for Resumption of Operations
Commence Waste Emplacement Operations
Place site-generated derived waste and Above Ground Stored Waste
Receive waste from generator sites
Permanent Ventilation System (PVS)
CD-0 Approval of misson need - equipment/shaft and drifts (PVS)
Regulatory performance assessment process
CD-1 Approval of alternative analysis - drifts and shaft (PVS)
CD-2 Approval of performance baseline - drifts and shaft (PVS)
CD-3 Approval for start of construction - drifts and shaft (PVS)
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Startup of drifts and shaft (PVS)
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New ventilation system online
Readiness review for full operations
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Operations under permanent ventilation system (CD-4)
Limited entry due to necessary waste hoist servicing
Limited air through existing HEPA system
Interim ventilation through skid mounted HEPA unit
Supplemental ventilation
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Decontamination
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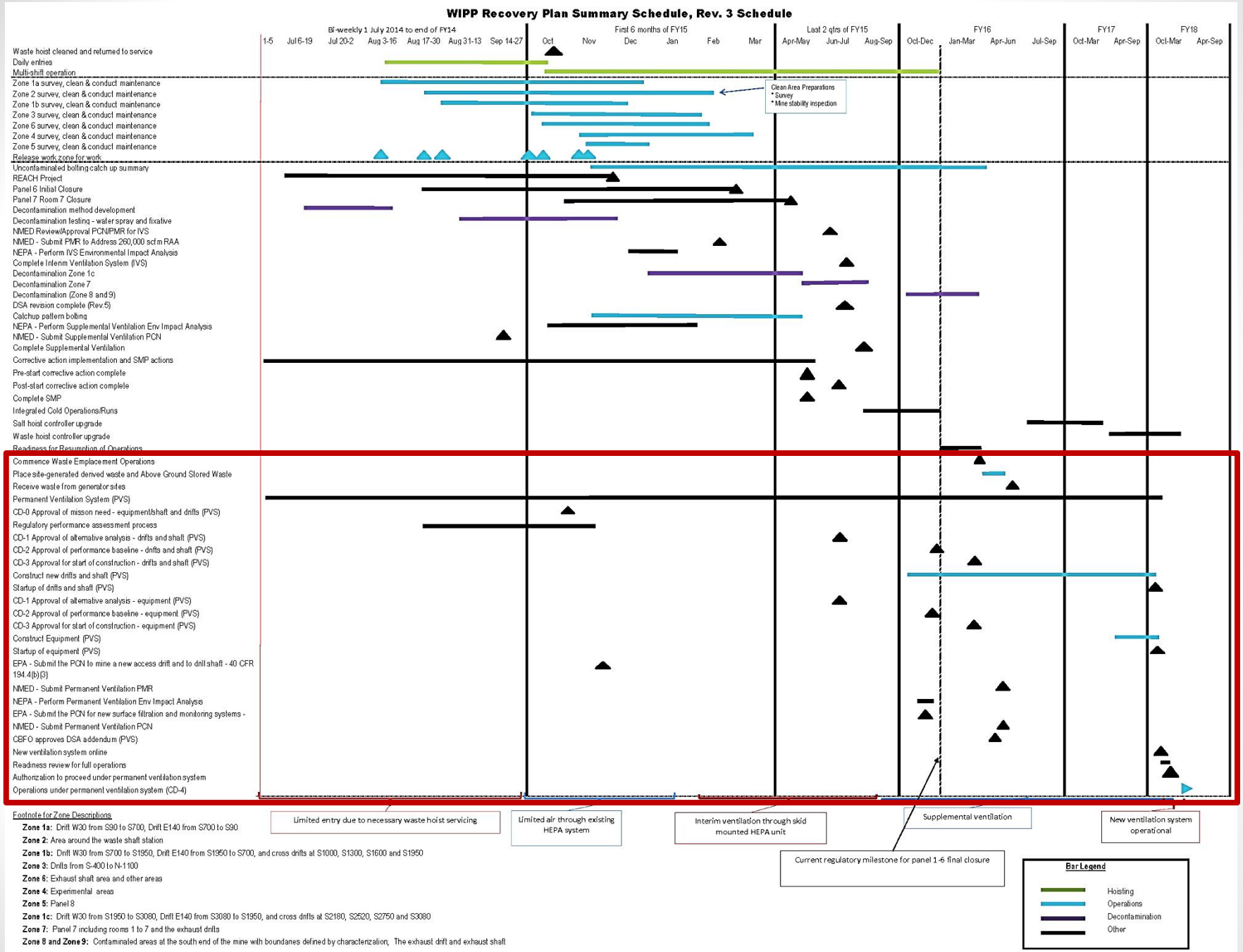
Footnote for Permanent ventilation system
Detail activities are located in the "Permanent Vent Sys" Project
Pre-Decisional: Not for public release. Use of, disclosure of, or reliance upon, data contained on this sheet is subject to the restriction on the document title page.

Key Activities (FY14 – mid FY16)

- Catch up bolting in uncontaminated areas – started 11/15
- Panel 6 Initial Closure – by end of March
  - Bolting required to access closure area Bolting equipment for contaminated areas being prepared
  - Decontamination testing – water spray and fixative – complete
- Interim Ventilation Installation – skid mounted HEPA units and fans
  - Filters and fans being fabricated
  - Ductwork being fabricated
  - Final procurement package in approval for remainder of electrical and mechanical components
- Decontamination activities in Panel 7 to begin in February
- Catch up bolting in contaminated areas – begin in February

Key Activities - continued

- Supplemental Ventilation Installation – provides additional air flow exhausted from the salt shaft
  - Provides unfiltered air for clean area of u/g for mining operations
  - Provides additional air routed to Panel 7 for waste emplacement
  - Design complete
- DSA Revision 5 – in progress
- Catchup Pattern Bolting
- Corrective Action Plan Implementation
  - Pre-start activities completed
- Safety Management Programs – improvements completed
- Readiness Activities for Resumption of Waste Emplacement Operations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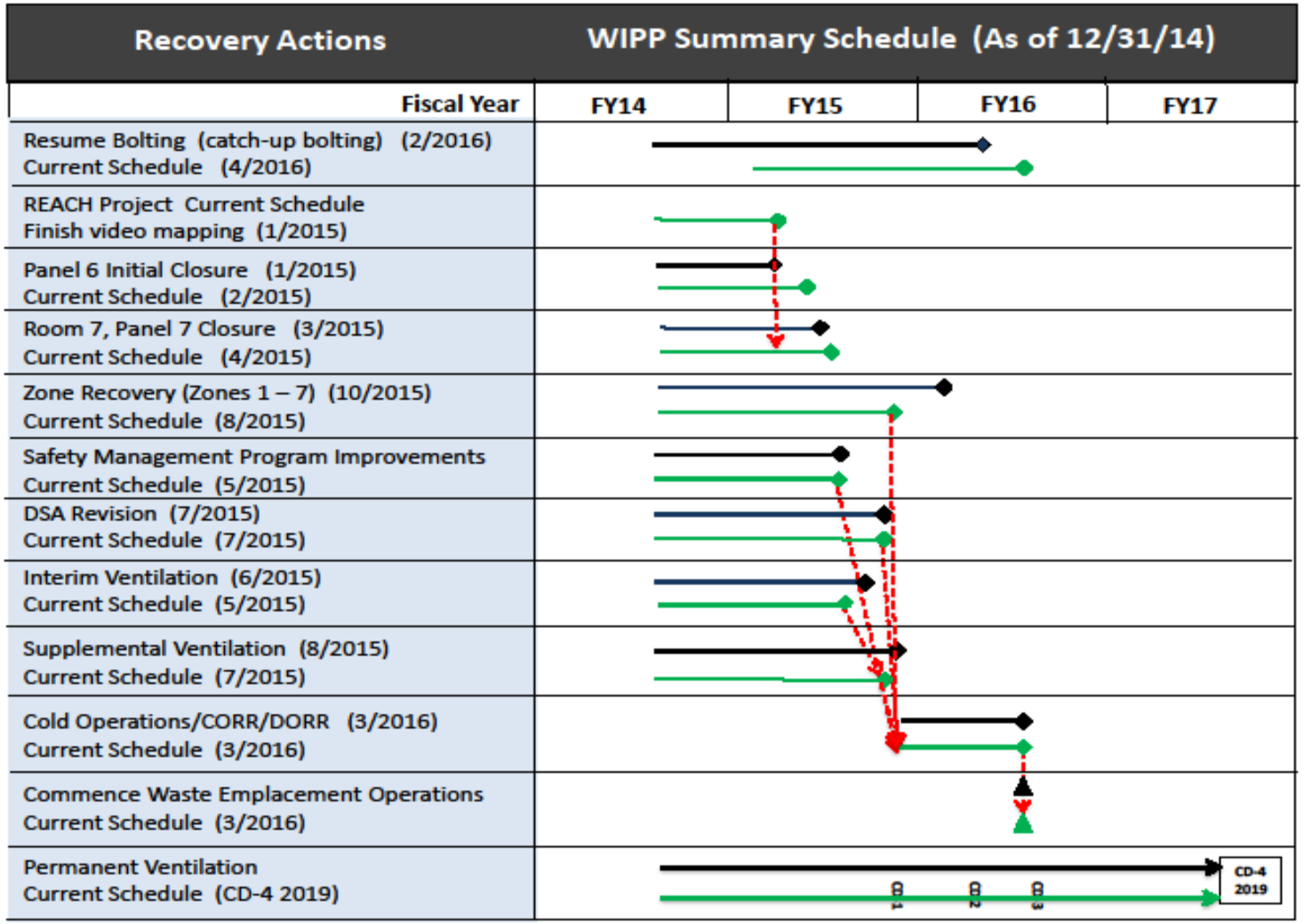
Key Activities (mid FY16 – end of FY18)

- Authorization to Proceed with Commencement of Waste Emplacement Operations
- Place site-generated derived waste and above ground stored waste in the U/G
- Receive waste from generator sites (limited shipments)
- Capital Projects
  - Mission Need Approved by DOE in October 2014
  - Alternatives Analysis scoring completed mid-December
  - Alternatives to be presented to DOE in mid-January
  - Design to begin after determination of alternative to meet the Mission Need
  - Unfiltered ventilation approach reviewed as part of the alternatives analysis

Critical Path



Questions & Answers