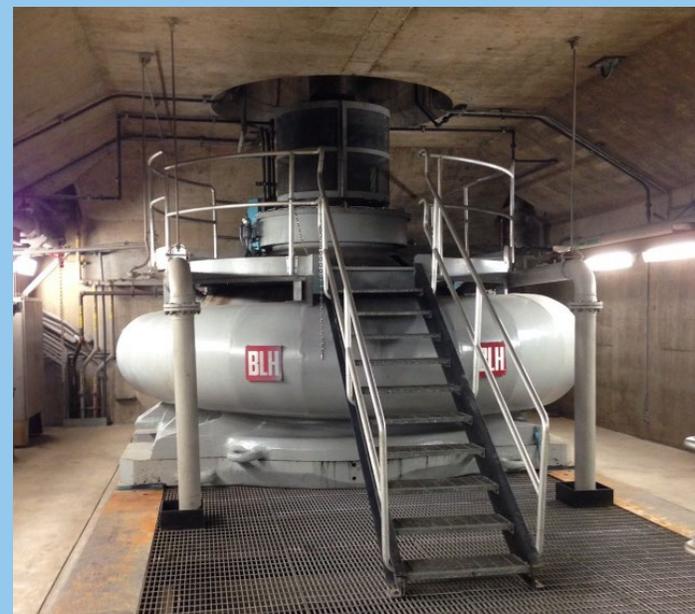


DWR - O&M Maintenance Management

Water Commission Meeting

June 21st, 2023

Behzad Soltanzadeh, O&M Division Manager



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DIVISION OF OPERATIONS AND MAINTENANCE

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Agenda

- Maintenance Management Policy
- Maintenance Management Process and Quality
- Maintenance Management Modernization
 - Mobility
 - SAP Asset Manager
 - Functions
 - Devices
 - Bar Coding



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Beginnings

State of California
California Natural Resources Agency
DEPARTMENT OF WATER RESOURCES
Division of Operations and Maintenance

PROJECT O&M POLICY NO. MM_01

SUBJECT: O&M Maintenance Management Policy **ISSUE DATE:** January 23, 2019
SUPERSEDED: New

PURPOSE

To provide direction for maintenance management of the State Water Project (SWP) assets for which the Division of Operations and Maintenance (O&M) is responsible.

DISCUSSION

O&M's core business is to ensure safe, reliable, and predictable operation of SWP infrastructure. This is accomplished through a proactive, reliability-based maintenance program to:

- Protect public and employee safety.
- Preserve the integrity and extend the useful life of the SWP assets.
- Achieve the SWP's operational goals.
- Prevent unplanned asset failures.
- Minimize the likelihood or consequence of failure.

The Division of O&M has established five goals for its maintenance management program:

- Maintenance is managed consistently across all O&M Field Divisions and asset types.
- Maintenance activities are executed in accordance with established procedures.
- Preventive/Predictive maintenance programs minimize unscheduled outages and increase reliability.
- Maintenance decisions are supported by effective use of SAP.
- Maintenance performance is tracked and managed.

January 23, 2019, MM01 Maintenance Management Policy signed.

January 24th, 2019, MM_01_01 Maintenance Management Strategy signed - document included the following recommendations:

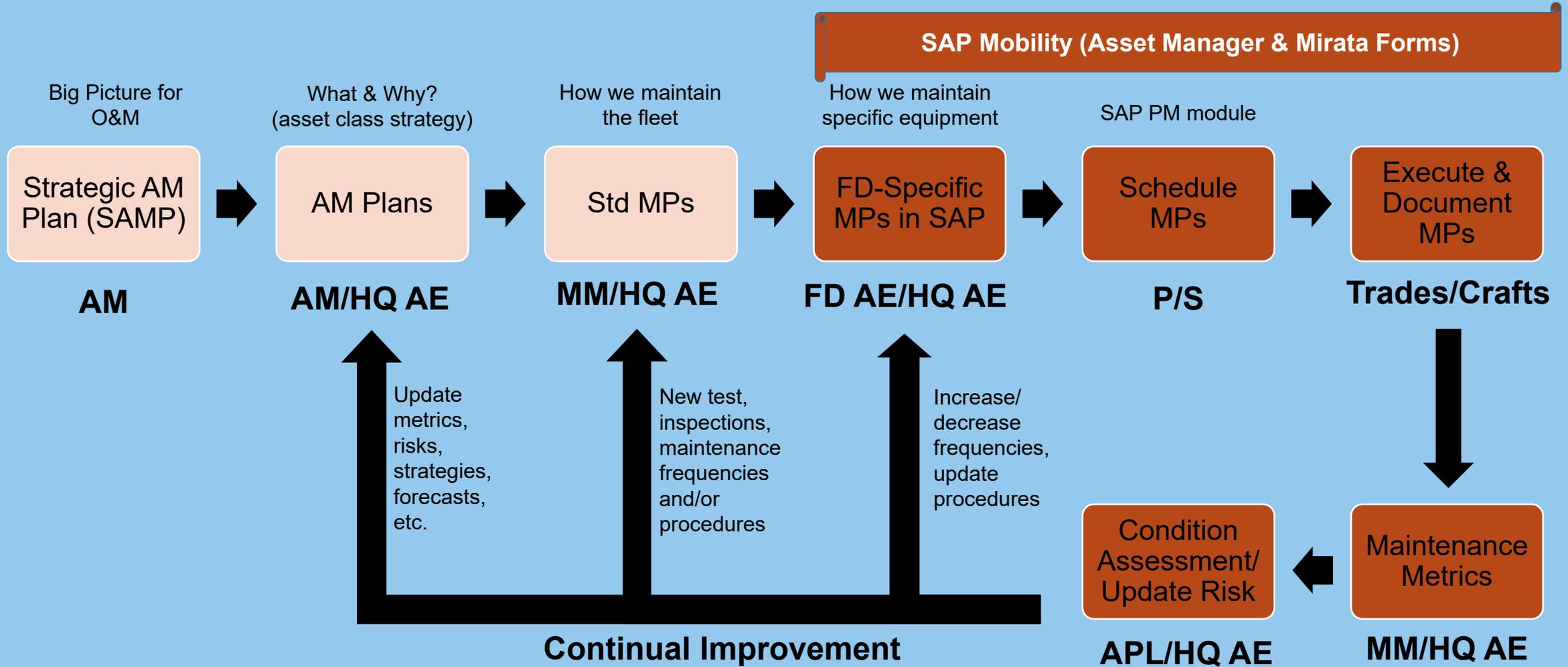
- Establish centralized maintenance management leadership
- Creation of Asset Engineer Positions in HQ
- Creation of Asset Engineer Positions in FDs
- Realignment of maintenance priorities to include preventative maintenance as a #1 priority
- Use of criticality to prioritize maintenance work
- Balanced maintenance approaches
- Engineered development of MPs for all assets
- Proper use and maintenance of SAP as system of record for assets
- Development of maintenance POMDs



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How it Fits



- Change in conditions (trending)
- Changes in risk
- % of MPs completed
- PM/CM ratio



Maintenance Plan Quality

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California Natural Resources Agency | Department of Water Resources
Division of Operations & Maintenance
Maintenance Plan (MP)

State Water Project Current Transformers & Potential Transformers

MP Number: MP070-02-014
MP Type: Master
Issue Date: 12/09/2022
Superseded: New
MP Area: Civil Dam Plant

Mirata Form Number(s):

I. Cover & Signatures
A. Approvals

The approvers listed below agree that they have reviewed the content of the Maintenance Plan listed above and approve of the content (interval table and work plan(s) included below) to the best of their knowledge.

All Master Civil, Electrical, and Mechanical maintenance plans (those developed by the centralized Headquarters Engineering groups) will be reviewed, approved, and stamped by a licensed Professional Engineer (PE). Approval by a licensed PE is optional for maintenance plans developed within Field Divisions for use on localized equipment or any plans which cover either communications or control equipment.

Menish Sharma, Asset Engineer 12/14/2022
Armando Ortiz, Office Manager 12/9/2022

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Department of Water Resources
Maintenance Plan (MP)

Each plan is approved by manager and stamped by PE

Lead	Support	Standards	Content	Reviewer	Approver	Position	Assigned Staff	Email
✓			✓	✓	✓	Asset Engineer	Menish Sharma	Menish.Sharma@water.ca.gov
	✓					Staff Asset Engineer	Chris So	Christopher.So@water.ca.gov
	✓					Maintenance Procedure Writer	Balwinder Dhillon	Balwinder.Dhillon@water.ca.gov
	✓					Tech Docs Standard	Balwinder Dhillon	Balwinder.Dhillon@water.ca.gov
				✓		Field Division Branch Manager	Mark Hafner	Mark.Hafner@water.ca.gov
				✓	✓	Field Division Engineer	Bikram Singh	Bikram.Singh@water.ca.gov
				✓	✓	Field Division (Trade) Supervisor	Kevin Backes	Kevin.Backes@water.ca.gov
				✓		Field Division Trades and Crafts	N/A	N/A
				✓	✓	Safety Engineer	Bryan Coulter	Bryan.Coulter@water.ca.gov
				✓	✓	Environmental Scientist	Jennifer Worsley	Jennifer.Worsley@water.ca.gov
				✓	✓	Designer	Damon Grimes	Damon.Grimes@water.ca.gov
					✓	Office Manager	Armando Ortiz	Armando.Ortiz@water.ca.gov
				✓		Outside SMEs	Simon Watson	WatsonSL@bv.com

Table 1: Assignment Table

It takes a 'team' to build each plan and involves both safety and environmental input.

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Department of Water Resources
Maintenance Plan (MP)

E. Precautions and Limitations

- Follow OP-2 and associated Lock-out Tag-out procedures, rules, and guidelines
- Potential risk of shock to personnel. Follow ST_19 procedures.
- All inspections and checks (except in-service temperature) are performed with equipment de-energized and with personal grounds installed
- Electrical Hazard—Test circuits to verify dead condition
- Doble, DGA/oil sample, fuse continuity, and injection tests are performed with equipment de-energized
- Do not disconnect the ground connection from the CT/PT
- Hazardous materials present (asbestos, lead, oil)
- If a CT is unused or is a spare, the secondary terminals must be jumpered together or the result will be arcing between the secondary terminals. Confirm a jumper is in place or apply a jumper accordingly before energizing equipment.
- If a PT is unused or is a spare, the secondary terminals and unused windings must not be jumpered together, or this can short circuit and damage the secondary windings. Verify with Engineering before removing any secondary jumper(s) accordingly.

CAUTION
Some equipment in the following procedure must be done under an "OK to Work." Follow OP-2 for all work on energized equipment.

- Each plan includes sections on:
- Scope
 - Resources
 - References
 - Intervals
 - Precautions & Limitations
 - Tools Required
 - Materials
 - Detailed Step by Step Work Instructions (Asset Engineers look at industry best business practice and internal staff knowledge to write these)

Each 'Standard' plan is converted and adjusted as needed in each applicable field division. Each form is delivered with a Mirata form to be used in SAP for the technician to complete as they perform work.

Menish Sharma
Registered Professional with Stamp

SAP Mobility



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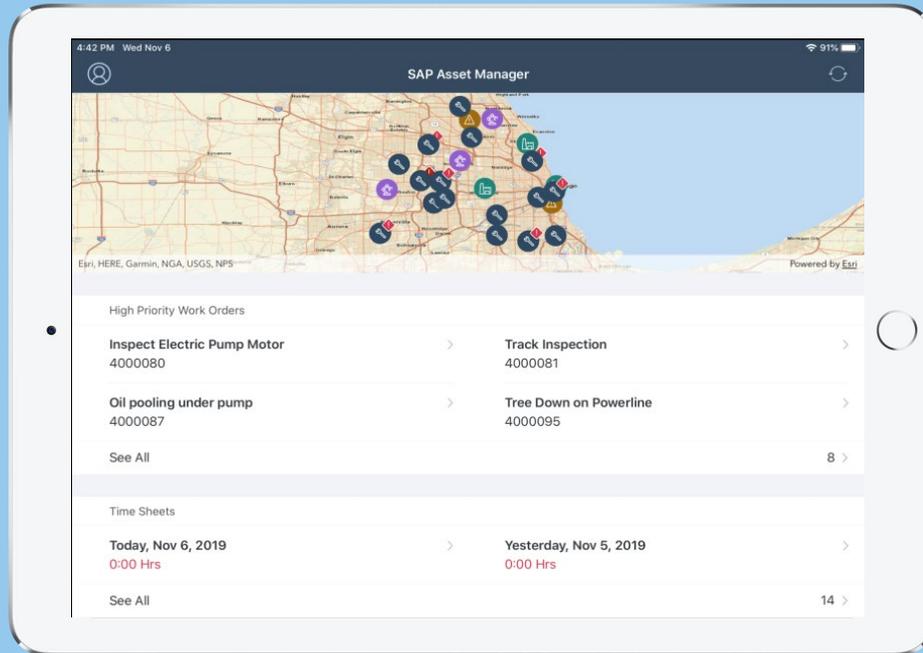
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SAP Asset Manager

SAP Asset Manager is a predictive application that encompasses a series of processes required to assure superior asset performance through:



iOS



- Maintain, inspect and repair mission critical assets
- View asset schematics, history, and dependencies
- Generate notifications and work orders on the spot
- Report worker's status, progress, and location
- Install and tag equipment – barcode, RFID, geotag

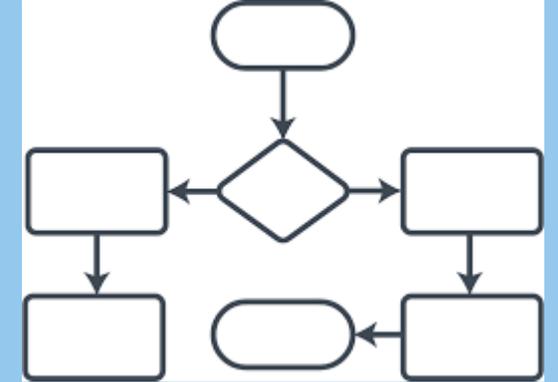
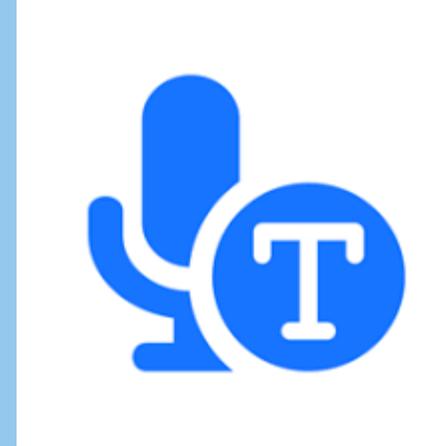


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SAP Asset Manager Features

- Workflow for:
 - Work Orders
 - Notifications
- Collect digital signatures at the point of performance
- Attachments of photos/video
- Voice to text
- Ability to see historical work orders
- Validate parts availability required for a repair



Functions



There is more value to be had

Many forms orbit around your department...

... BUT there's a lot of manual effort required to process them



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Devices

- Integrated enterprise-class barcode scanner with laser aiming and dedicated physical button
- Waterproof, dustproof, drop-proof, Certified for Hazardous environments
- Magnesium alloy frame
- External elastomer corner bumpers
- Integrated carrying handle
- Blazing fast 8-core processor, 8 GB Ram
- High resolution 10" display
- Hot-swappable batteries



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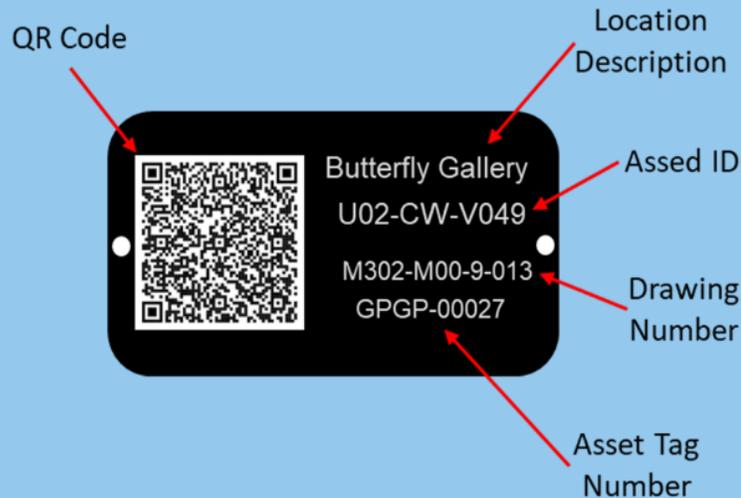
Barcoding



- Tagged 75,000 assets
- Tagged 70,000 P&IDs
- 15,500 Work Clearance Points

All major assets

- Oroville
- Delta
- San Luis
- San Joaquin
- Southern



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Thank you!



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