

An Overview of the Dam Safety Program Management Tools (DSPMT)

2005 USACE Infrastructure Conference
3 August, 2005



Objective

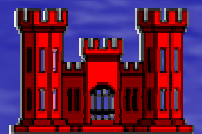
- To provide an overview of why this program is needed, what it is and how it is being utilized.

Why is this Software Needed?

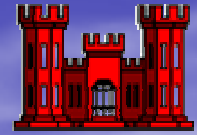
- To Support Broad Information Needs of the National Dam Safety Program, including:
 - Documenting the characteristics and condition of the Nation's dams
 - Tracking the existence and progress of dam safety programs
 - Supporting dam safety professionals who are responsible for evaluating and maintaining the safety of dams in the U.S.

Specifically, the DSPMT:

- Allows quantitative, consistent, un-biased evaluation of dam safety programs
- Monitors program progress
- Consistent interface
- Allows exchange of data with other databases
- Simplifies data collection process allowing true One-time data entry to be possible
- Program Review Tool

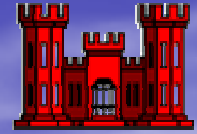


What is the DSPMT ?



- Free Software for States or Federal Agencies
- Desktop-based Software that keeps the User in control of the data
- Benefits:
 - DSPMT Utilization will reduce/eliminate requests for data because the requesting organization can go directly to the data itself
 - Can result in significant time savings for generating:
 - Annual NDSRB State Evaluation Criteria Reports
 - Peer Review Data
 - NID Submittals
 - NPDP Incident Reports
 - Inputs for Biennial Report to FEMA
 - Unbiased data for self-evaluation or evaluation by others

DSPMT Components



- ◆ **Dam Safety Program Performance Measures (DSPPM)**



- ◆ **National Inventory of Dams (NID) Electronic Submittal Workflow**



- ◆ **Reporting Capabilities to National Oversight Organizations**

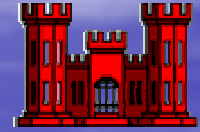


DSPMT

Why do we need dam safety program performance measures?

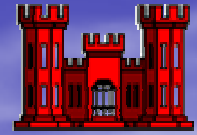
- *They provide the raw unbiased data necessary for helping to evaluate our dam safety programs, for reporting our accomplishments, and for expressing our program needs to others.*

What are the Dam Safety Program Performance Measures?



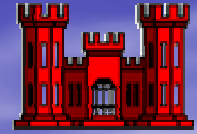
- **DSPPM 1 - Dam Safety Program Legislative Authorities & Management Practices**
 - Demonstrates: Adoption and implementation of uniform National Dam Safety Program management practices.
- **DSPPM 2 - Dam Safety Staff Size & Relevant Experience**
 - Demonstrates: The trends & fluctuations in an organization's dam safety staff size and relevant experience.
- **DSPPM 3 - Inspections & Evaluations**
 - Demonstrates: Number of dams and the number that are and are not being inspected & evaluated.
- **DSPPM 4 - Identification & Remediation of Deficient Dams**
 - Demonstrates: Dam Safety program effectiveness in identifying, prioritizing and correcting critical deficiencies.

What are the Dam Safety Program Performance Measures?



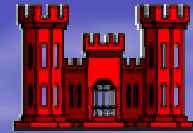
- **DSPPM 5 - Project Response Preparedness**
 - Demonstrates: Amount of dam safety **training** aimed at maintaining capability to **recognize & respond** to conditions that may threaten dam safety & public safety.
 - Demonstrates: Extent of up-to-date project (dam) **documentation** (e.g. as-builts).
- **DSPPM 6 - Agency & Public Response Preparedness**
 - Demonstrates: Extent of agency and public (local) emergency **awareness & preparedness**.
 - Demonstrates: Effectiveness in **development** of EAP's & **coordinating** EAP's with local jurisdictions.
- **DSPPM 7 - Unscheduled Dam Safety Program Actions**
 - Demonstrates: Magnitude of unscheduled, non-deferrable **efforts** and **incidents** that adversely impact routine program execution.

DSPPM 7 will be Expanded very soon to Include:



- **Capability for Notification of Distress in Civil Works Structures to Hq including information such as the following:**
 - Date of incident
 - Date of site visit
 - Category/ reason for site visit
 - Did the dam fail? (current)
 - Failure type
 - Failure mode
 - Was the dam previously identified as being deficient? (current)
 - Was the actual failure mode previously identified as a deficiency? (current)
 - Were emergency remedial actions necessary?
 - Were pool restrictions imposed?
 - Etc.

The Performance Measures are implemented using detailed spreadsheets



Full DSPPM Spreadsheet

Click on a cell to select it. Type into the cell to change the value. Double-click on a cell to cycle through possible values.

Dam Name (32 Dams)	NIDID	Owner Name	Last Inspection Date	Inspection Type	Inspection Performed by	Date Permit Application Rcvd
BALDHILL	ND00309	CEMVP	07/30/2003	Comprehensive	In-House	N/A
BROWN S VALLEY	MN82201	CEMVP	07/27/2004	Comprehensive	In-House	N/A
CHIPPEWA DIVERSION DAM	MN00578	CEMVP	08/06/2002	Comprehensive	In-House	N/A
EAU GALLE	WI00780	CEMVP	09/13/2000	Comprehensive	In-House	N/A
GULL LAKE	MN00596	CEMVP	07/28/2003	Comprehensive	In-House	N/A
HIGHWAY 75 DAM	MN00581	CEMVP	07/28/2003	Comprehensive	In-House	N/A
HOMME DAM	ND00310	CEMVP	07/28/2003	Comprehensive	In-House	N/A
LAC QUI PARLE DAM	MN00580	CEMVP	07/28/2003	Comprehensive	In-House	N/A
LEECH LAKE DAM	MN00585	CEMVP	07/28/2003	Comprehensive	In-House	N/A
LOCK & DAM #1	MN00593	CEMVP - FORD	07/28/2003	Comprehensive	In-House	N/A
LOCK & DAM #10	IA00001	CEMVP	10/10/2002	Comprehensive	In-House	N/A
LOCK & DAM #2	MN00594	CEMVP - CITY OF	09/12/2001	Comprehensive	In-House	N/A
LOCK & DAM #3	MN00595	CEMVP	09/11/2001	Comprehensive	In-House	N/A
LOCK & DAM #4	WI00727	CEMVP	09/12/2002	Comprehensive	In-House	N/A
LOCK & DAM #5	MN00589	CEMVP	09/11/2002	Comprehensive	In-House	N/A
LOCK & DAM #5A	MN00588	CEMVP	09/10/2002	Comprehensive	In-House	N/A
LOCK & DAM #6	WI00802	CEMVP	09/11/2003	Comprehensive	In-House	N/A
LOCK & DAM #7	MN00587	CEMVP	09/10/2003	Comprehensive	In-House	N/A

The performance measure spreadsheet shows All of the performance measure fields as Columns and all of the projects as rows.

Select Cell for Modification.

(1) Set Performance Measure Default Values Show DSPPM Completion Status

(2) Initialize Blank Fields Export to Excel

Show Deficiencies Spreadsheet for: Selected Dam All Dams Delete Dam

Sort By: DamName Get Next Set of Dams Get Prev Set of Dams

Modify Selected Field

Populate Entire Selected Column with Specified Value

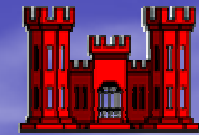
Populate Blank Values in Selected Column with Specified Value

Exit Comment

Screen 33

Specifically, the Performance Measure Spreadsheet is used for:

- **Supporting generation of the biennial report to FEMA**
 - Number of Dams
 - Hazard Potential Classification Information
 - Inspection Information
 - Remediation Needs and Accomplishments
 - Emergency Action Planning Performance
- **Supporting general data requests from both within and external to the Agency**



The Staffing Details Spreadsheet

Dam Safety Staffing Details Spreadsheet

Click on a cell to select it. Type into the cell to change the value. Double-click on a cell to cycle through possible values. Press <Enter> to store the value. After selecting a cell, Press F1 for an explanation of that field.

Name/Number (24 Persons)	Organization	Specialty	Years Dam Safety Experience	Estimated Years to Retirement	Number of Comprehensive (PI) Inspections
Travis Adams	CENWP	Structural Engineer	8	25	
Teresa Morales	CENWP	Structural Engineer	1	30	
Jeff Hurt	CENWP	Structural Engineer	10	25	
Jeff Arment	CENWP				
David Kloewer	CENWP				
Tom North	CENWP				
Arthur Fong	CENWP				
Laurie L Ebner	CENWP				
Doug Richards	CENWP				
Carolyn Flaherty	CENWP				
James B. Griffiths	CENWP				
Jeremy Britton	CENWP				
Matthew Hanson	CENWP				
Kristie Hartfeil	CENWP				
Joseph Bracklin	CENWP				
Lois Miller	CENWP				

Done

Allow Changes to Staff Person's Name

Add New Staff Person

Delete Selected Staff Person

Min->Max
Max->Min

Sort Rows

Modify Selected Field Value

Comment

Print All Records

Print Selected Record

Export to Excel

Exit

Screen 10.5

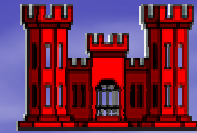
The staffing details spreadsheet includes:

- **Name/Number**
- **Organization**
- **Specialty**
- **Years Dam Safety Experience**
- **# Comprehensive (PI) inspections in career**
- **Supervisor/Team Leader/Program Manager?**
- **# Projects having a major role in design or construction**
- **Normal duties (Engineering Construction or Operations)**
- **Registered Professional?, Type of registration**
- **Degree Year, Level, Type**
- **% Time dedicated to dam safety program**

Specifically, the Staffing Details Spreadsheet can be used for:

- Evaluating the number of FTE's
- Evaluating an Organization's capability to execute the dam safety program
- Supporting generation of the draft biennial report to FEMA
 - Number of FTE's (i.e. Staff multiplied by % of time dedicated to dam safety)
 - Specialty category (i.e. Geotechnical Engineer, Structural Engineer, etc.)

The Deficiencies Spreadsheet



Deficiency Spreadsheet (After Selecting a cell, Press F1 for an explanation of that field)

Dam: **BALDHILL**

Click on a cell to select it. Type into the cell to change the value. Double-click on a cell to cycle through possible values.

Project Name	Organization/ Agency/ State	Deficiency Category	Description	District Priority (x.x)	MSC Priority (x.x)	HQ Priority (x.x)	Budget Request (\$1,000's)	Cumulative Budget Request	Total Estin Cost
BALDHILL	CEMVP	Stability (Static)	Unstable DS Spillway	8.1			\$0.	\$0.	\$0.
BALDHILL	CEMVP	Hydrologic	Emergency Spillway	8.2			\$0.	\$0.	\$0.
BALDHILL									
EAU GALLE									
EAU GALLE									
HIGHWAY 75									
HOMME DAM									
HOMME DAM									

of Dams w/ Deficiencies:
 Total # of Deficiencies:
 Show Top:

Deficiencies Spreadsheet includes information regarding:

- Project/Dam Name
- Project Identification Code
- Date Found
- Date Corrected
- Deficiency #
- Inspection Item
- Short Title
- Organization, Agency, or State
- Dam Safety Issue?
- Date Coordinated w/Ops & Budget
- Funding Priorities
- Work Category Code
- Estimated Cost (\$1,000's)
- Inspection Type
- Category
- Description
- Repeating Deficiency?
- Correction
- Additional Evaluation Required?
- Comment

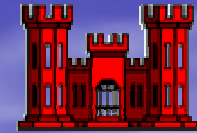
Buttons: Add New Deficiency, Sort Rows, ReSort, Modify Selected Field Value, Fill in Gaps, Comment, Delete Selected Deficiency, Print Selected Deficiency, Print All Deficiencies, Export to Excel, Exit

Screen 4.5

Specifically, the Deficiencies Spreadsheet is used for:

- Documenting the specific remediation needs within the district, plans for studies, and remediation accomplishments
- Supporting the performance measure spreadsheet in generating the biennial report to FEMA
 - Remediation Needs and Accomplishments
- Providing budgeting guidance from the Districts to Division on prioritization of deficiencies and developing a remediation plan.
- Reviewing budgeting guidance from the Districts at the Division level, establishing a Division ranking for all deficiencies within the Division and communicating that ranking to Headquarters and back to the Districts.

The Documentation Spreadsheet



Documentation Details

Dam: HOMME DAM

Click on a cell to select it. Type into the cell to change the value. Double-click on a cell to cycle through possible values.

Documentation	Required?	Prepared?	Publication Date	Most Recent Update	Executive
Operations & Maintenance Manual	Yes	No			Click for Details
Water Control Manual	Yes	Yes	DECEMBER 1955	JULY 1981	Click for Details
As-Built Drawings	Yes	Yes	1949	NOVEMBER 1999	Click for Details
Periodic Inspection Reports	Yes	Yes	NOVEMBER 1971	JULY 2003	Click for Details
Emergency Action Plan	Yes	Yes	AUGUST 1989	FEBRUARY 1999	Click for Details
Flood Emergency Plan	Yes	Yes	AUGUST 1989	FEBRUARY 1999	Click for Details
Evacuation Plan	Yes	No	N/A		Click for Details
Project Geotechnical and Concrete Mate					ails
Annual Instrumentation Evaluation Repor					ails
Foundation Report					ails
Embankment Criteria & Performance Rep					ails

Done

Executive Summ

Comment Update D

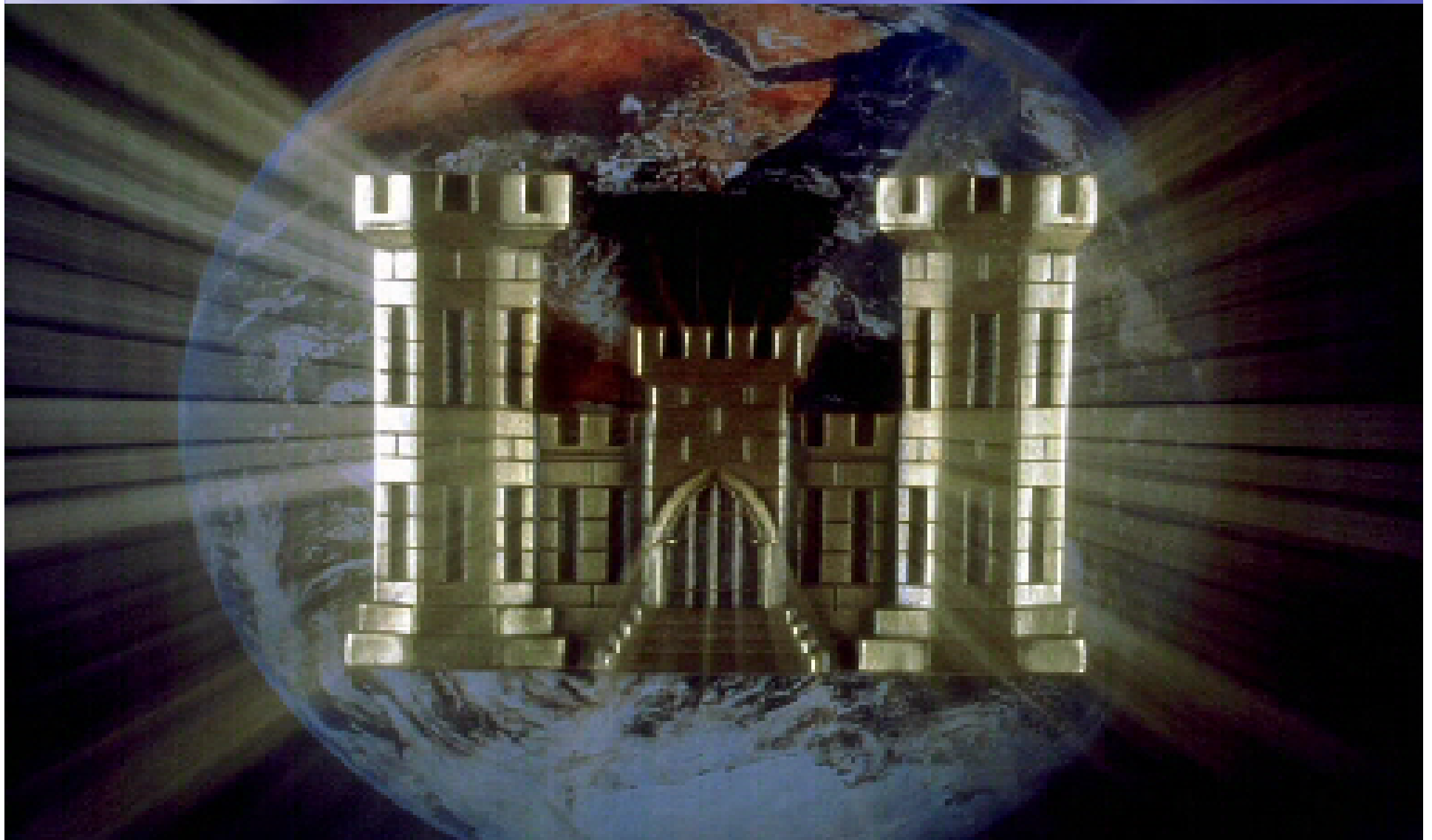
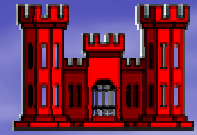
Screen 4.75

- **Documentation Spreadsheet includes information regarding:**
 - Documentation Category
 - Is the Document Required?
 - Has it been prepared?
 - When was it originally published?
 - When was it most recently updated?
 - Executive summary details

Specifically, the Documentation Spreadsheet can be used for:

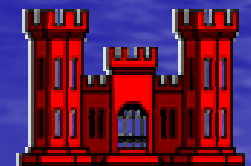
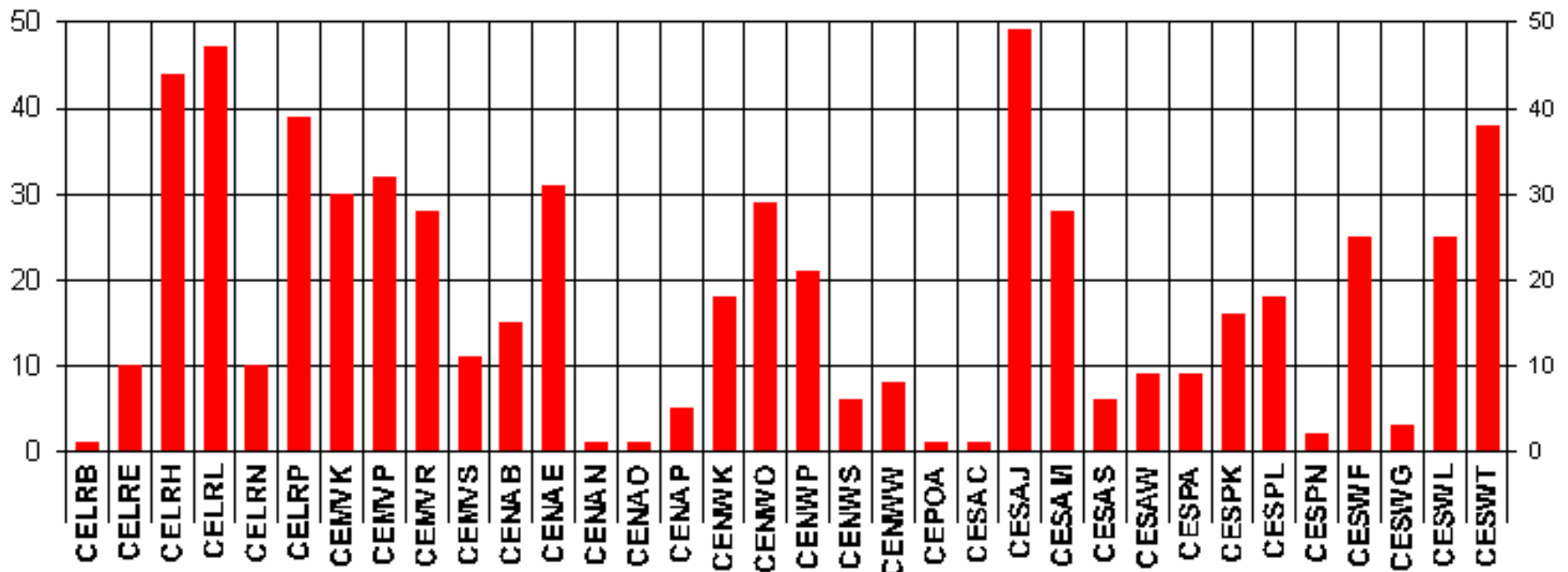
- Supporting generation of the biennial report to FEMA
 - Emergency Action Planning Performance
- Providing executive summaries of periodic inspection reports, and other reports, to the Division.

Examples of Performance Measure Outputs within USACE

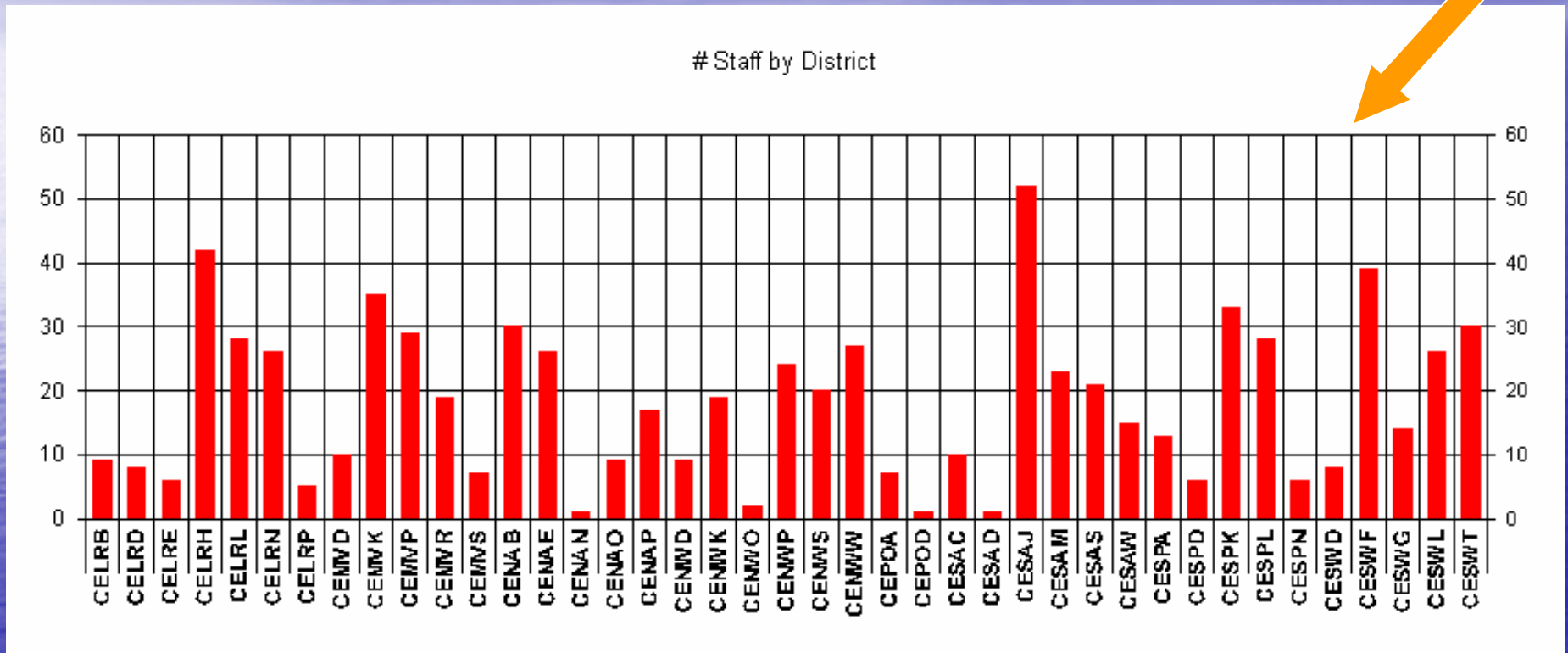


Number of Dams, (by District) (617 Total)

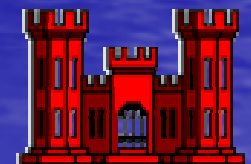
of Dams by Owner



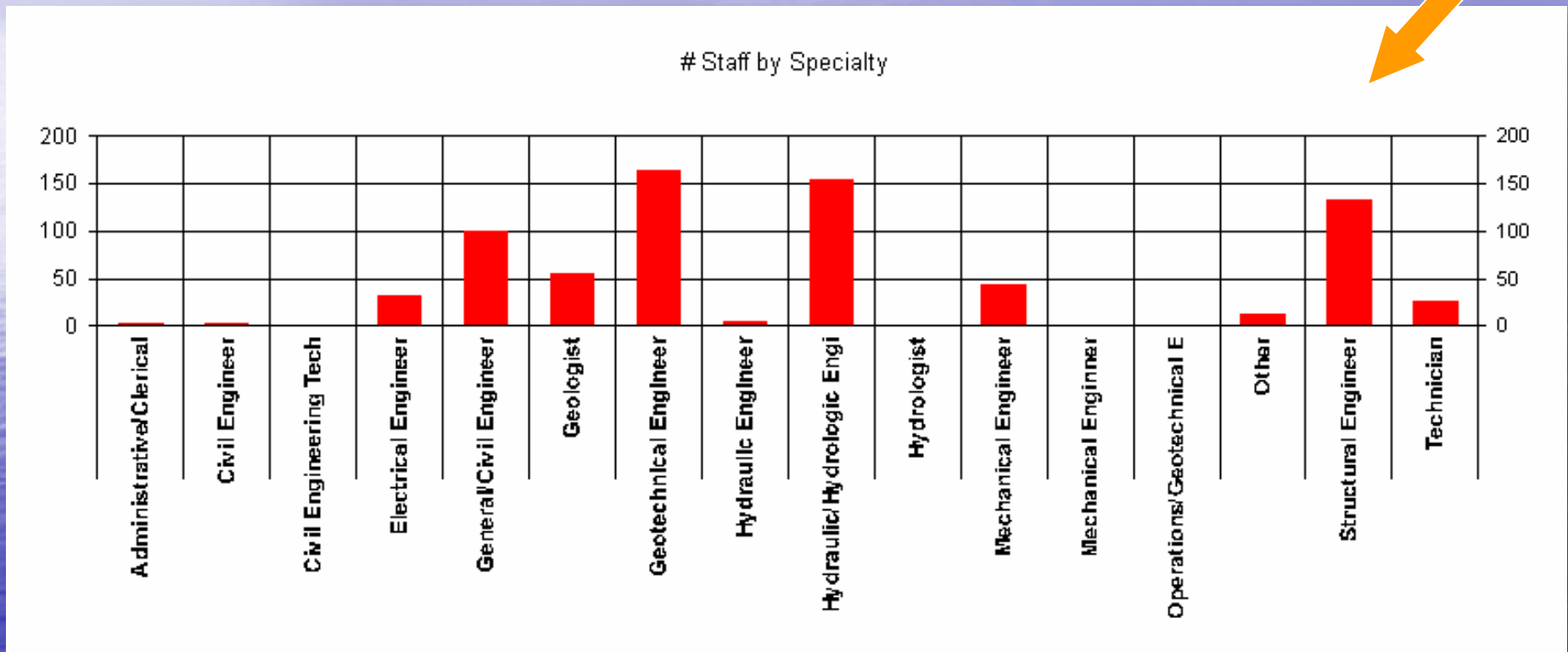
Dam Safety Staff Size (By District)



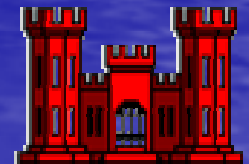
- Total persons contributing to dam safety program (733 persons)



Dam Safety Staff (by Specialty)

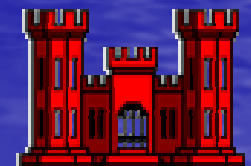
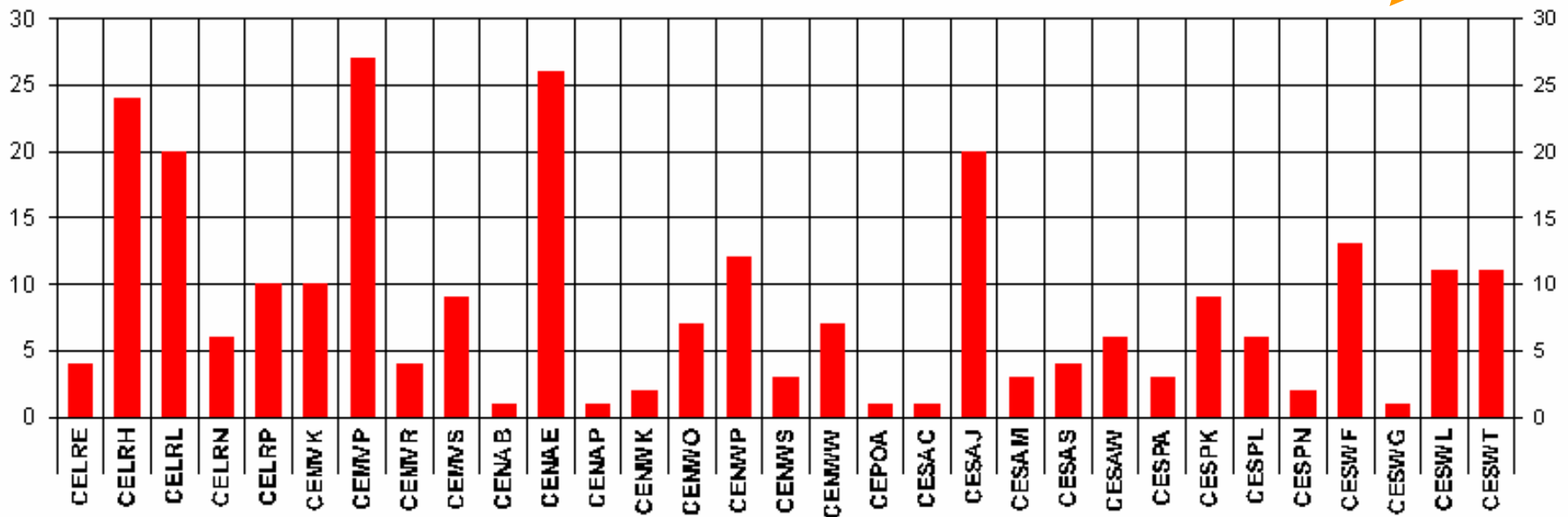


- The data indicates that the dam safety staff consists primarily of Geotechnical, H&H and Structural engineers.

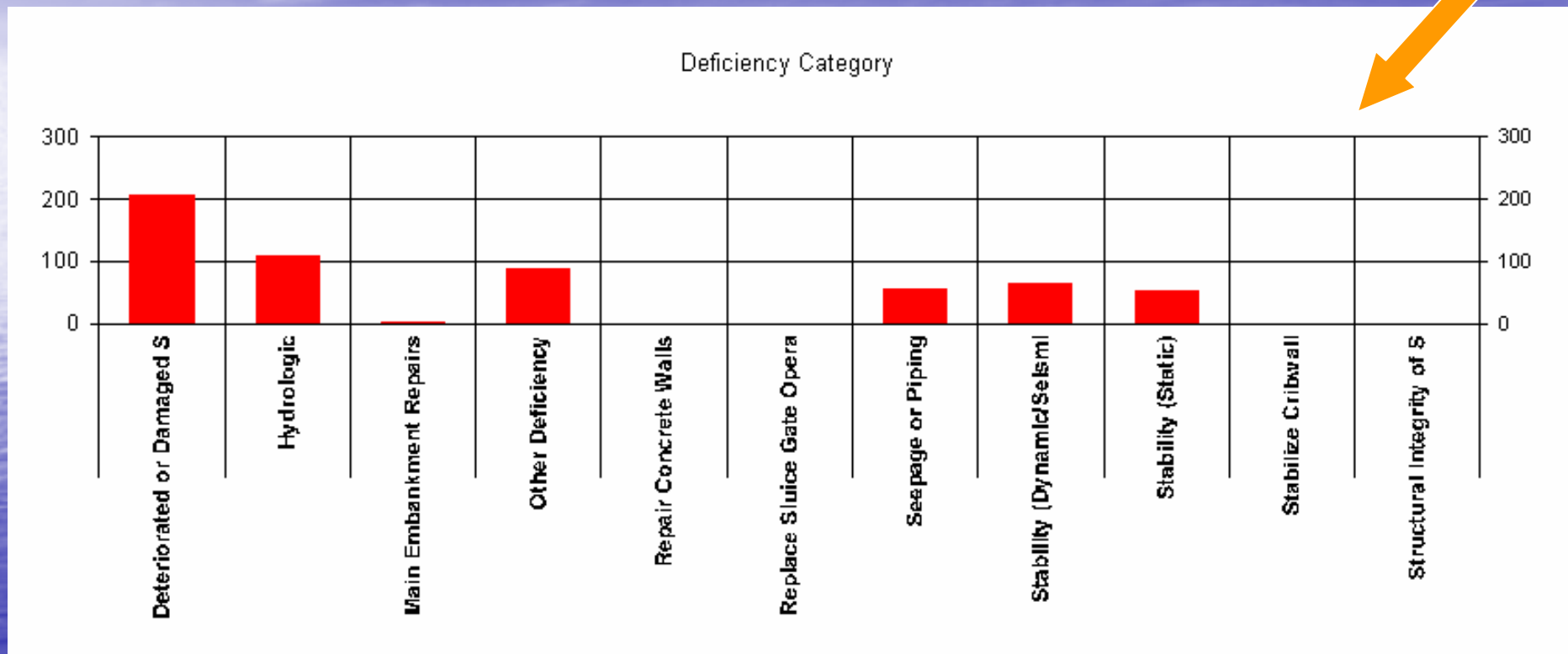


Dams in Need of Remediation

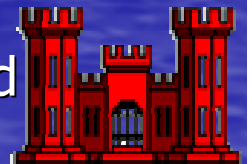
Owners of Dams in Need of Remediation, # of Dams



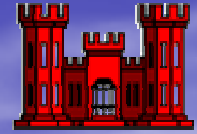
Identified Deficiencies



- Identified deficiencies primarily consist of deteriorated or damaged structures, and hydrologic deficiencies. Of significance, seepage and piping and static stability is identified, or is identified for future study, for 50 or more structures.



DSPMT Components



◆ **Dam Safety Program Performance Measures (DSPPM)**



→ ◆ **National Inventory of Dams (NID) Electronic Submittal Workflow**



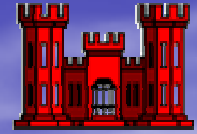
◆ **Reporting Capabilities to National Oversight Organizations**



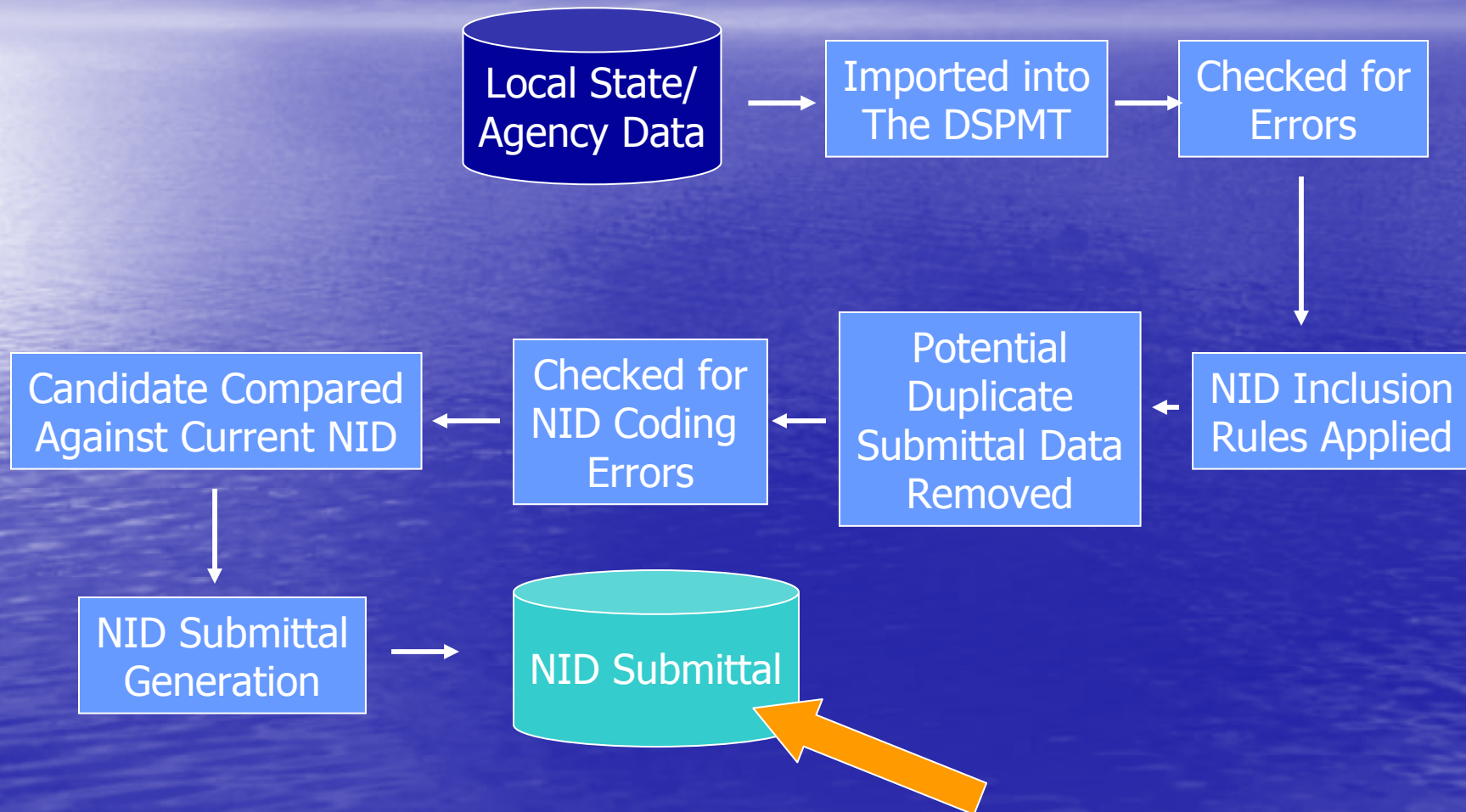
DSPMT

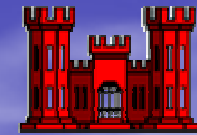
What is the NID Electronic Submittal Workflow?

“A natural extension of the NID and the Dam Safety Program Management Tools (DSPMT) to help users provide a consistent, error-checked electronic submittal of inventory information.”



NID Electronic Submittal Workflow





Applying the NID Inclusion Rules

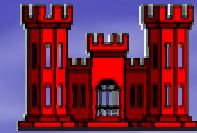
Dams Meeting Search Criteria

Dam Name (1042 Dams)	River	Hazard	Dam Height	NID Height	Struct. Heigl	Hyd. Height	NID Storage	Max. SI
			0	0	0	0	0	
PORTER DAM	JOY CREEK		0	0	0	0	5	
1,2,3,4	ONION CREEK		0	0	0	0	182	
2-B FARM AND RANCH DAM	OFF CH-TR-OSO CREEK	LOW	5	5	5	5	5	
3M DETENTION POND	NONE	LOW	5.9	5.9	0	0	0	
ABERCROMBIE LEVEE	OFF CH-GUADALUPE RIVER	LOW	8	8		8	11	
AIC LAKE	PEDERNALES RIVER		0	0	0	0	36	
AINSWORTH DAM	DEEP CREEK		0	0	0	0	18	
AKERS DAM	MIDDLE COPPERA S CREEK		0	0	0	0	10	
ALLEN RESERVOIR	HORDS CREEK	LOW	0	0	0	0	5	
		LOW	0	0	0	0	22.5	
			0	0	0	0	80	
			0	0	0	0	24	
			0	0	0	0	12	
			0	0	0	0	12.5	
E			0	0	0	0	130	
		LOW	11.1	11.1	0	0	49	
			0	0	0	0	10	
			0	9	9	0	1	
			0	0	0	0	1	
			15	15	15	15	28	
			18	18	18	18	48.6	
			14	14	14	14	17	
			17	17	17	17	41	
			17	17	17	17	41	

Notes:

- NID Inclusion is based strictly on Hazard Potential, NID Height, and NID Storage.
- For each record, the value which caused the dam to be excluded is shown in RED.

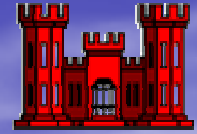
Buttons: Review DSPPM, Modify Selected, Modify ALL, Sort Rows (Min->Max, Max->Min), Comment, Show Details, Print Summary, Delete Selected, Exit/ Return to Search Criteria, ? Screen 58



Quality Assurance Tools Interface

The screenshot shows a software window titled "NID Submittal Quality Assurance Tools". The interface is divided into two columns of buttons. The left column contains: "Define Synonyms Set Coded Fields", "Show Candidate NID Submittal Dams which do not have an NID ID Assigned", "Show Dams with Duplicate NID Identification Numbers", "Identify/Delete Potential Duplicate Submittal Data", "Histograms/ Search Capability", "Re-Import a Field from the State/Federal Agency Local Inventory Database Overwriting an Existing Field in the NID Submittal", and "Convert State Regulated Dam Field to 'Y' if the Current Value is Non-Zero or to 'N' if the Current Value is Zero or Blank". The right column contains: "Show the Candidate NID Submittal", a section for "Special NID Comparison Functions Requiring a Password" with a password input field, "Show Differences Between the Candidate Submittal and the Current NID", "Show Dams which are in the NID but are NOT in the Candidate Submittal", "Show New Dams in the Candidate Submittal NOT in the Current NID", "Convert Last Inspection Date to MM/DD/YYYY", and "Globally Populate a Selected NID Candidate Field with a Specified Value". At the bottom, there are buttons for "Comment", "Exit", and "? Screen 81". Seven orange arrows point to the following buttons: "Show Candidate NID Submittal Dams which do not have an NID ID Assigned", "Show Dams with Duplicate NID Identification Numbers", "Identify/Delete Potential Duplicate Submittal Data", "Show Differences Between the Candidate Submittal and the Current NID", "Show Dams which are in the NID but are NOT in the Candidate Submittal", "Show New Dams in the Candidate Submittal NOT in the Current NID", and "Globally Populate a Selected NID Candidate Field with a Specified Value".

DSPMT Components



◆ **Dam Safety Program Performance Measures (DSPPM)**



◆ **National Inventory of Dams (NID) Electronic Submittal Workflow**



→ ◆ **Reporting Capabilities to National Oversight Organizations**



DSPMT

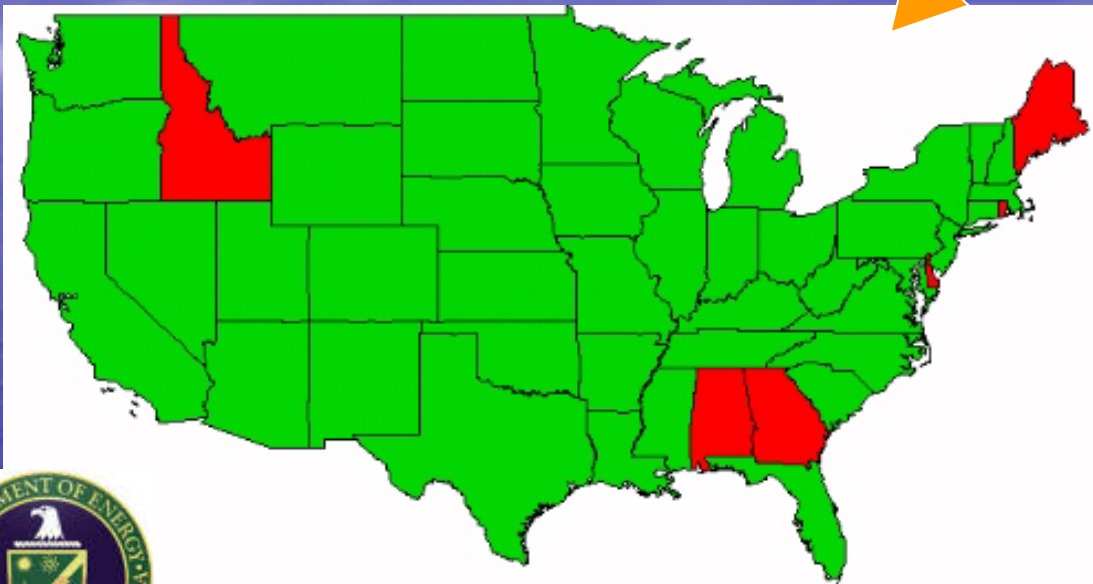
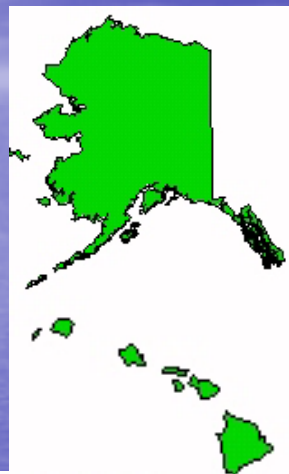
Why are Reporting Capabilities Needed to National Oversight Organizations?

“Facilitating the development, documentation, and modification of practices by supporting performance measures which directly address all aspects of an organizations dam safety program.”

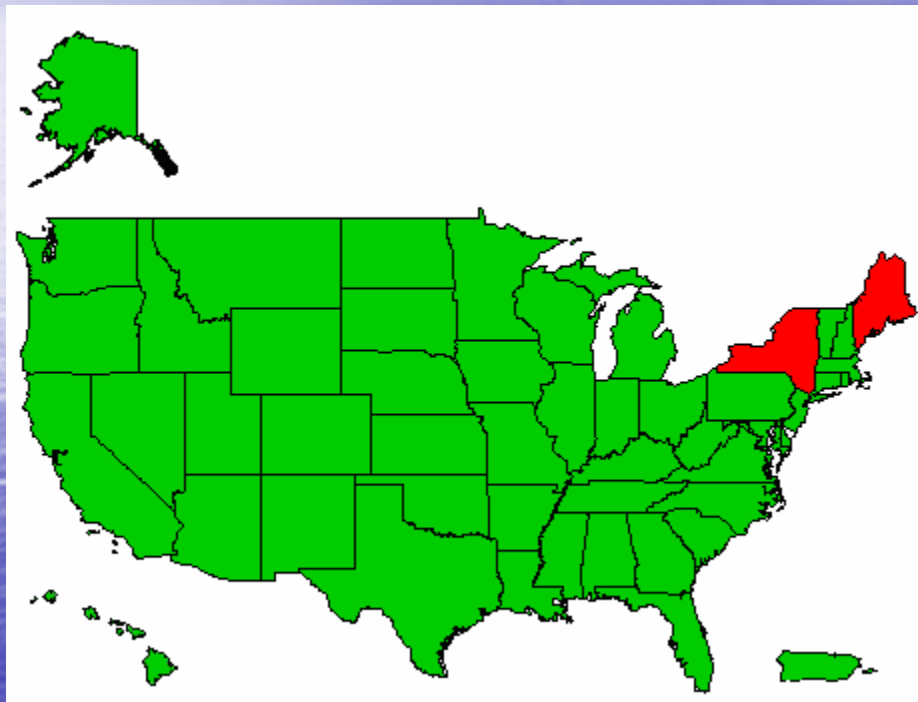
What National Data Collection Efforts have Utilized the DSPMT?

- 2002 NID Update
- 2003 NDSRB State Evaluation Criteria Reports (2002 Reporting Year)
- 2004 NDSRB State Evaluation Criteria Reports (2003 Reporting Year)
- 2005 Combined NDSRB/ASDSO Questions (State Evaluation Criteria Report + ASDSO Annual Survey), (2004 Reporting Year)
- 2004 Update of State Regulated Dam Field in the 2002 NID
- 2004 Update of USACE Dam Safety Deficiencies and Budgeting Priorities for FY06
- 2005 Generation of the draft USACE Biennial Report to FEMA (Reporting Years 2004-2005) (Data collection effort completed)
- 2005 NID Update (effort underway)

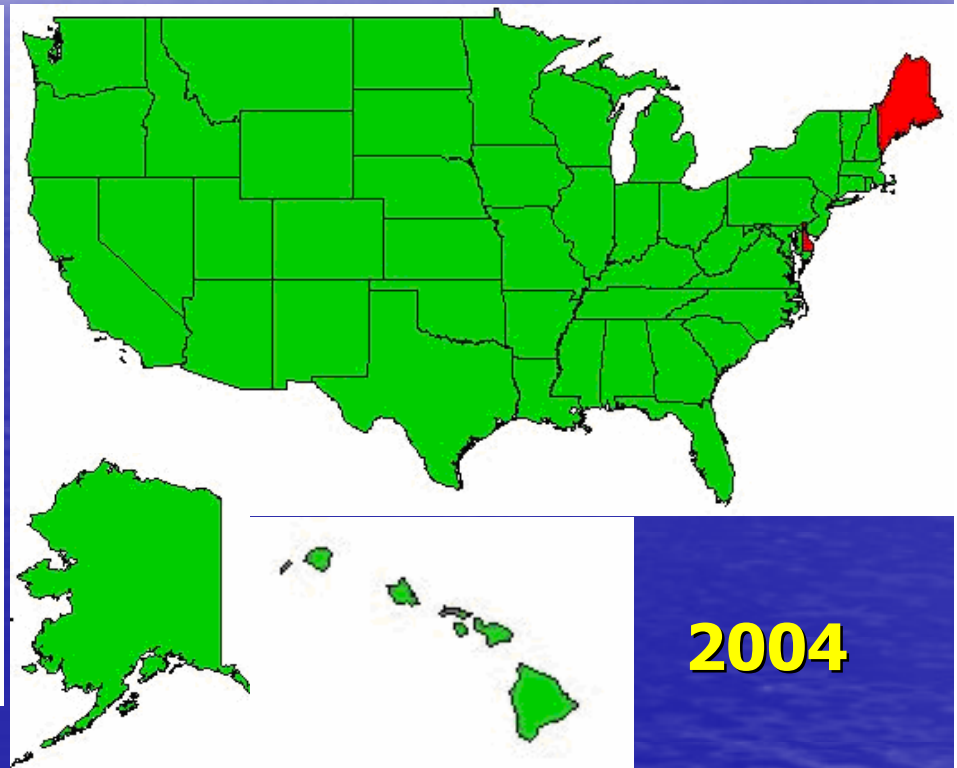
NID Electronic Submittal Status (9/16/2002)



State Participation in the 2003, 2004 NDSRB State Evaluation Criteria Report



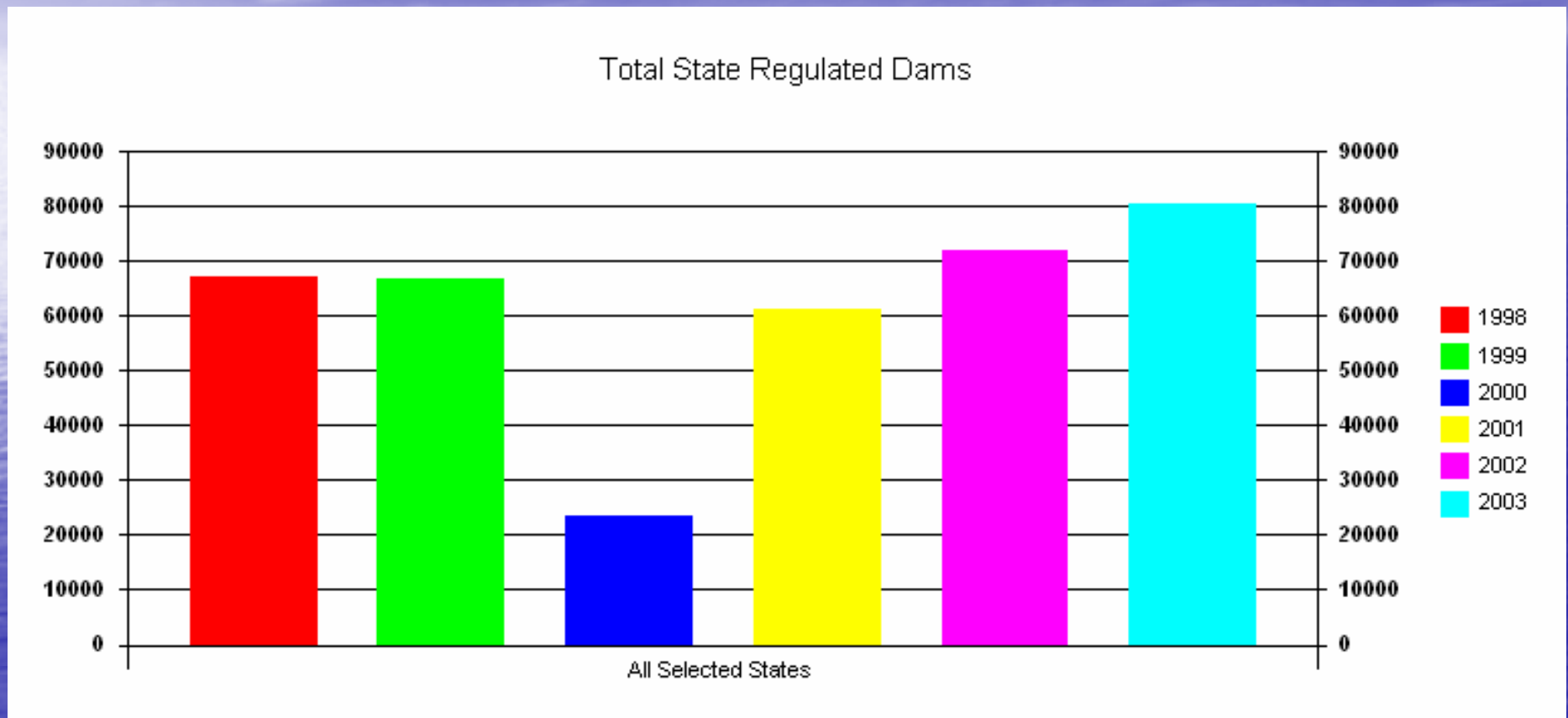
2003



2004

- Green indicates that the State provided the NDSRB data.

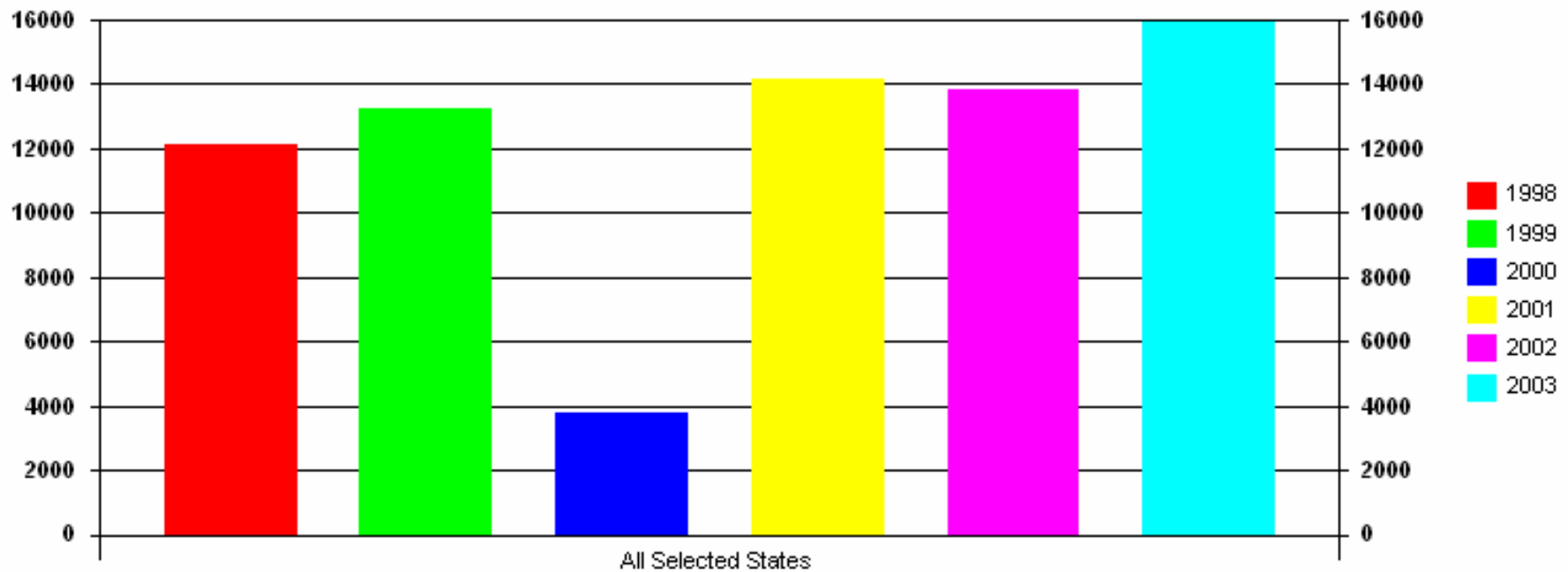
Sample Timeline Data from NDSRB Report



- Total Number of State Regulated Dams

Sample Timeline Data from NDSRB Report

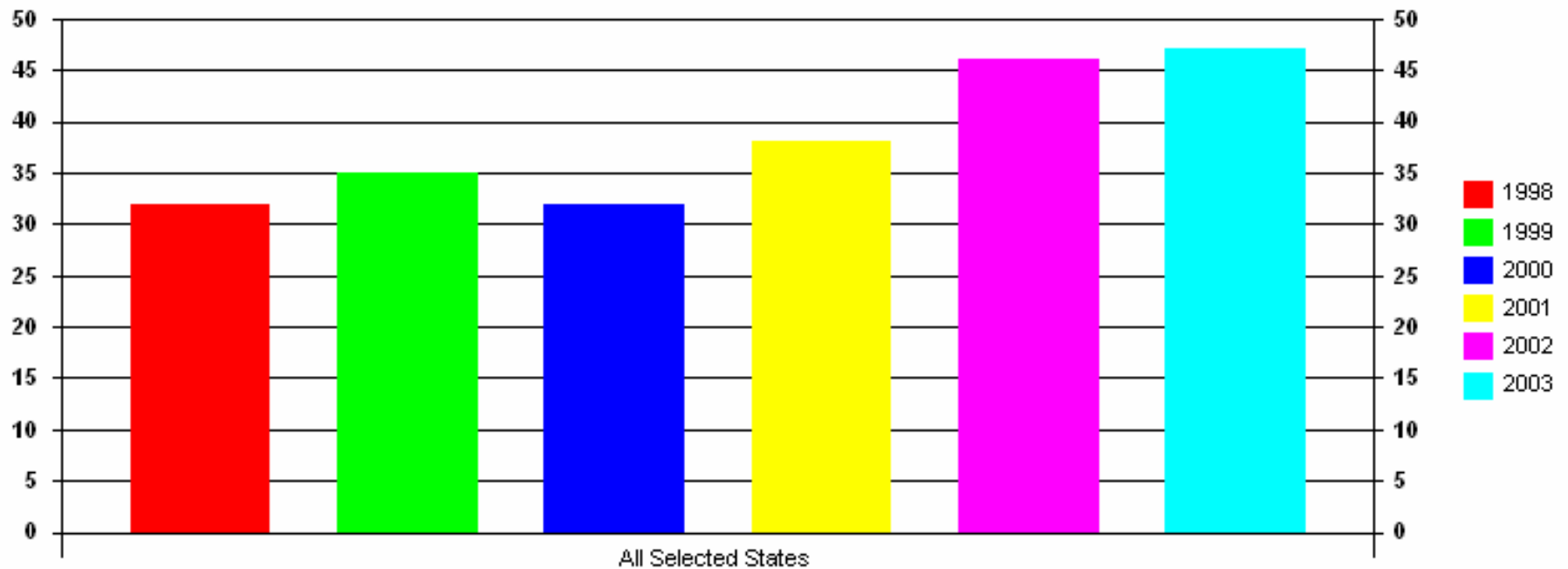
Total # of Inspections of State Regulated Dams



- Total Number of Inspections

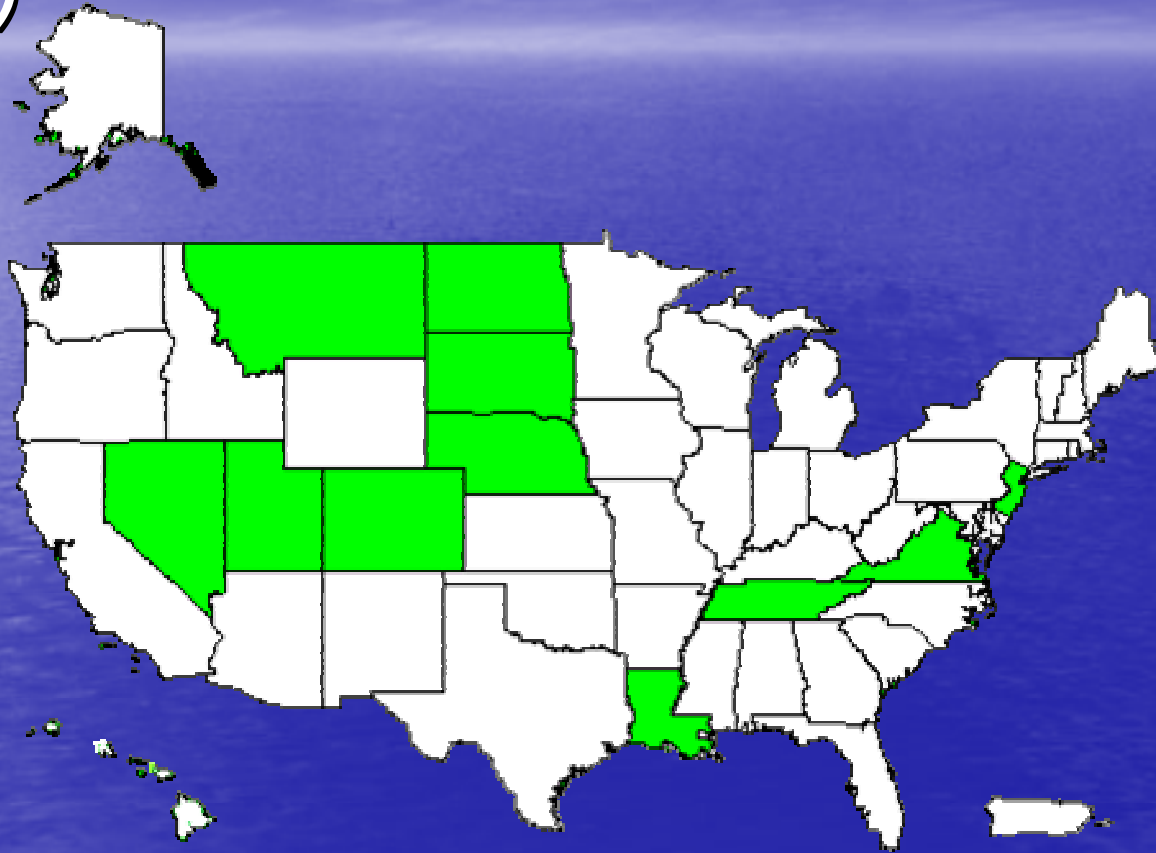
Sample Timeline Data from NDSRB Report

EAP Completion Percentage for High Hazard Potential Dams



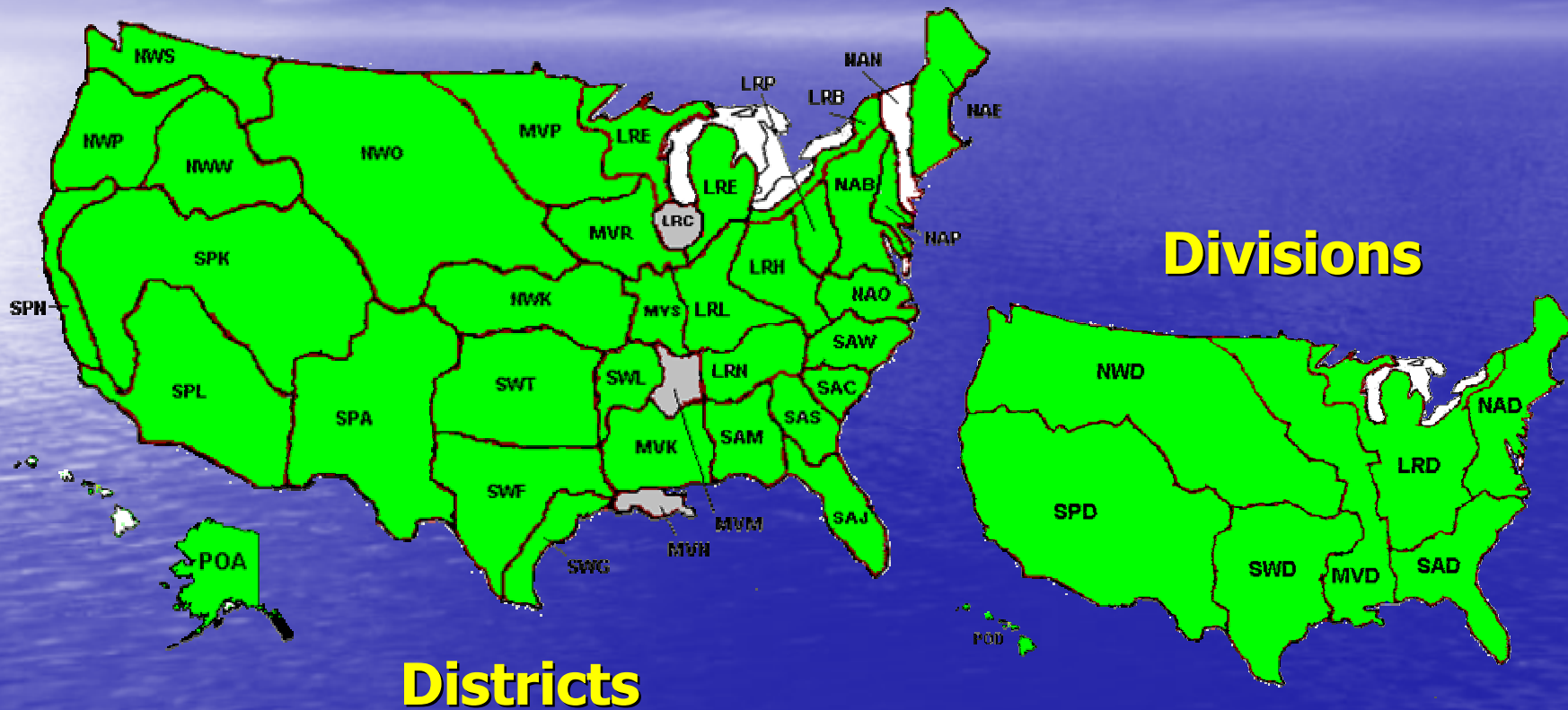
- EAP Completion % for High Hazard Potential Classification Dams

State Participation in the 2005 Combined NDSRB/ASDSO Questions (So Far)



- Green indicates that the State has provided responses to the combined NDSRB/ASDSO questions.

USACE District/Division Participation in Providing Inputs for the Biennial Report to FEMA in 2005

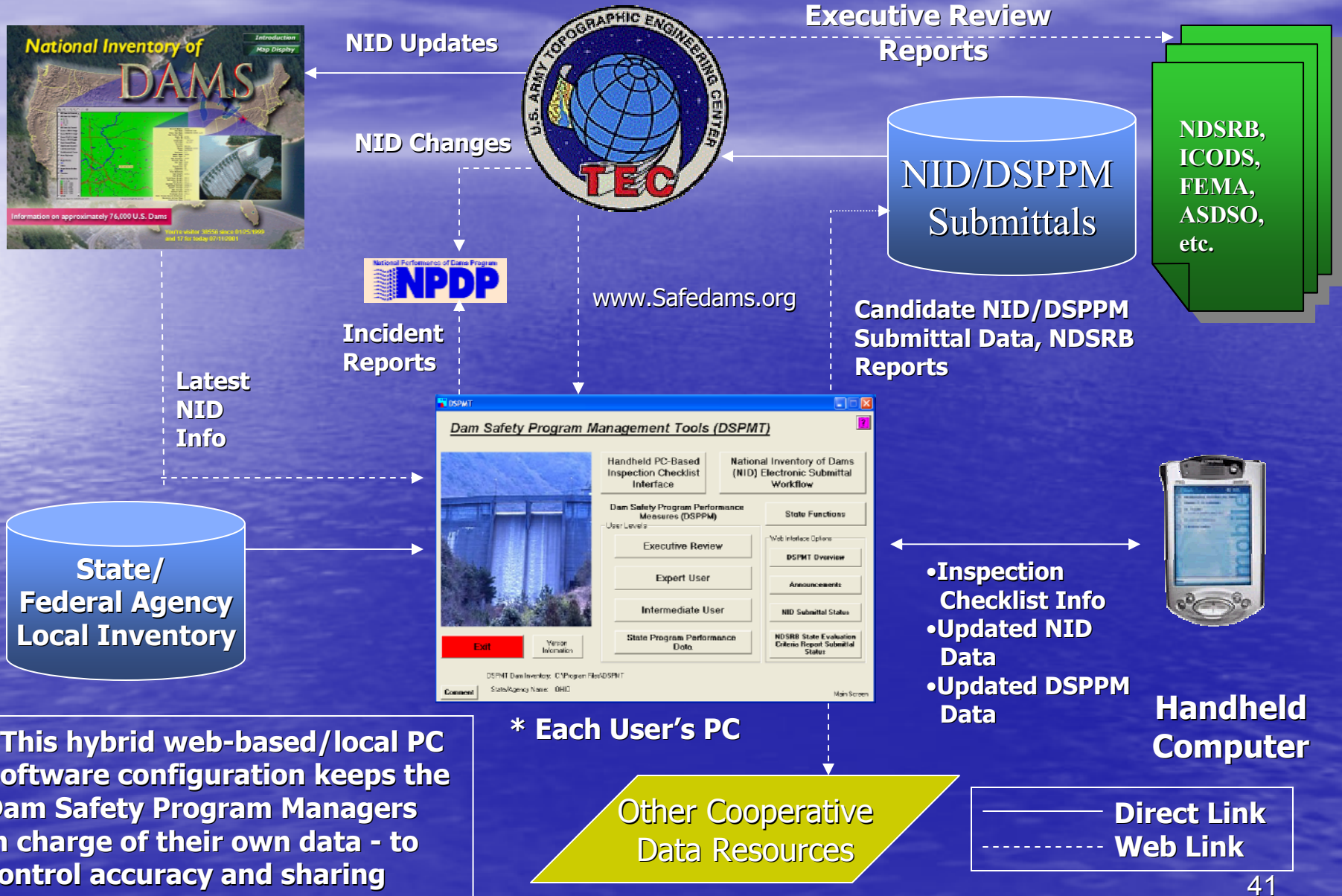


- Green indicates that the Organization provided DSPMT-format electronic submittal data

Where is this going?

- Continued Utilization of DSPMT for Updating the NID
 - Short Term Goal: Annually
 - Longer Term Goal: In Near-Real Time
- Continued Utilization of DSPMT for USACE biennial reporting to FEMA
- Utilization of DSPMT for tracking SPRA within USACE
- Continued Utilization of DSPMT for Combined NDSRB/ASDSO reporting of State Program Performance data
- Incorporation of CRS questions into combined NDSRB/ASDSO/CRS annual reporting starting in 2006

DSPMT Information Flow





Please Stop by the USACE TEC Exhibit booth for a Demonstration

- For help installing or utilizing the software contact Mike Grounds

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