FIGURE 1. RECOVERY CONTINUUM – DESCRIPTION OF ACTIVITIES BY PHASE

This recovery continuum describes overlapping recovery activities by phase.

PRE-DISASTER PREPAREDNESS
Examples include:

- Pre-disaster recovery planning
- Mitigation planning and implementation
- Community capacity- and resilience-building
- Conducting disaster preparedness excersises
- Partnership building
- Articulating protocols in disaster plans for services to meet the emotional and health care needs of adults and children

SHORT-TERM RECOVERY
Examples include:

- Mass Care/Sheltering
  - → Provide integrated mass care and emergency services
- Debris
  - → Clear primary transportation routes
- Business
  - → Establish temporary or interim infrastructure to support business reopenings
  - → Reestablish cash flow
- Emotional/Psychological
  - → Identify adults and children who benefit from counseling or behavioral health services and begin treatment
- Public Health and Health Care
  - → Provide emergency and temporary medical care and establish appropriate surveillance protocols
- Mitigation Activities
  - → Assess and understand risks and vulnerabilities

INTERMEDIATE RECOVERY
Examples include:

- Housing
  - → Provide accessible interim housing solutions
- Debris/Infrastructure
  - → Initiate debris removal
  - → Plan immediate infrastructure repair and restoration
- Business
  - → Support reestablishment of businesses where appropriate
  - → Support the establishment of business recovery one-stop centers
- Emotional/Psychological
  - → Engage support networks for ongoing care
- Public Health and Health Care
  - → Ensure continuity of care through temporary facilities
- Mitigation Activities
  - → Inform community members of opportunities to build back stronger

LONG-TERM RECOVERY
Examples include:

- Housing
  - → Develop permanent housing solutions
- Infrastructure
  - → Rebuild infrastructure to meet future community needs
- Business
  - → Implement economic revitalization strategies
  - → Facilitate funding to business rebuilding
- Emotional/Psychological
  - → Follow-up for ongoing counseling, behavioral health, and case management services
- Public Health and Health Care
  - → Reestablishment of disrupted health care facilities
- Mitigation Activities
  - → Implement mitigation strategies

What is the NDRF?

- The NDRF is a companion document to the National Response Framework (NRF) which deals with immediate disaster response (perform "Triage") and it is supported by the on-going development of detailed operational, management, field guidance, and training tools for dealing specifically with the Recovery efforts (perform "Physical Therapy") short, immediate, and long term.
- A guide to promote effective Recovery, particularly for those incidents that are large-scale or catastrophic.
- NDRF applies to all Presidentially declared major disasters – invokes the Stafford Act.

Infrastructure Systems Recovery Support Function

Agencies and their roles

COORDINATING AGENCY

PRIMARY AGENCIES

SUPPORTING AGENCIES

Infrastructure Systems Recovery Support Function

- What is the role as Primary Coordinating Agency?
  - An RSF primary agency is a Federal agency with significant authorities, roles, resources or capabilities for a particular function within an RSF.
  - Primary agencies orchestrate Federal support within their functional area for an affected State and may lead interagency field assessment or support teams as necessary.
  - Support organizations are those entities with specific capabilities or resources that support the primary agency in executing the mission of the RSF.
  - The principal distinction between a primary and a supporting agency is the frequency with which the agency may be expected to actively participate in a RSF operation.
  - RSF agencies provide assistance when requested by the Federal Disaster Recovery Coordinator (FDRC) or the designated RSF coordinator, consistent with their authority and resources, or as directed pursuant to section 402 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act).

What is Infrastructure Systems under the NDRF?

The Scope of this RSF includes the following Infrastructure Sector and Subsectors (as defined through the NIPP – National Infrastructure Protection Plan – 18 Sectors/16 Sectors defined in PPD21) **energy, water/waste water, dams, manufacturing, communications, transportation systems, Agricultural (food production and delivery), chemical, financial services, defense industrial base, nuclear reactors, emergency services, government facilities, commercial facilities, IT, and healthcare and public health**.

Two former sectors: National Monuments and Icons falls under Government Facilities and Postal and Shipping falls under the Transportation Systems.

Infrastructure Specific Agency and Key Resources Sectors

Department of Agriculture
Department of Health and Human Services
Agriculture and Food

Department of Defense
Defense and Industrial Base

Department of Energy
Energy

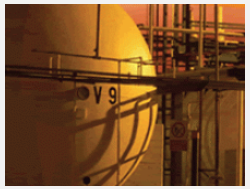
Department of Health and Human Services
Public Health and Healthcare

Department of Homeland Security
Critical Manufacturing Sector

Department of the Treasury
Banking and Finance

Environmental Protection Agency
Drinking Water and Water Treatment Systems

Infrastructure Specific Agency and Key Resources Sectors



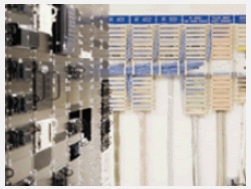
Department of Homeland Security
Office of Infrastructure Protection
Chemical

Department of Homeland Security
Office of Infrastructure Protection
Commercial Facilities

Department of Homeland Security
Office of Infrastructure Protection
Dams

Department of Homeland Security
Office of Infrastructure Protection
Emergency Services

Department of Homeland Security
Office of Infrastructure Protection
Nuclear Reactors, Materials and Waste



Department of Homeland Security
Office of Cyber Security and Communications
Information Technology

Department of Homeland Security
Office of Cyber Security and Communications
Communications

Department of Homeland Security
Transportation Security Administration/
U.S. Coast Guard
Transportation Systems

Department of Homeland Security
Office of Infrastructure Protection
Government Facilities

Intro to the RSF & its Capabilities

The goal of the infrastructure systems recovery process is to match the capacity of all infrastructure systems to a community's current and projected demand on its built and virtual environment

- The IS RSF's will pursue this course of action to the extent allowable by available resources and current program authorities.
- Accordingly, the end-state for IS RSF engagement occurs when infrastructure systems recovery goals are met **OR**
- When IS RSF member agencies' existing programs and authorities are exhausted and/or external funding is no longer available to continue operations.

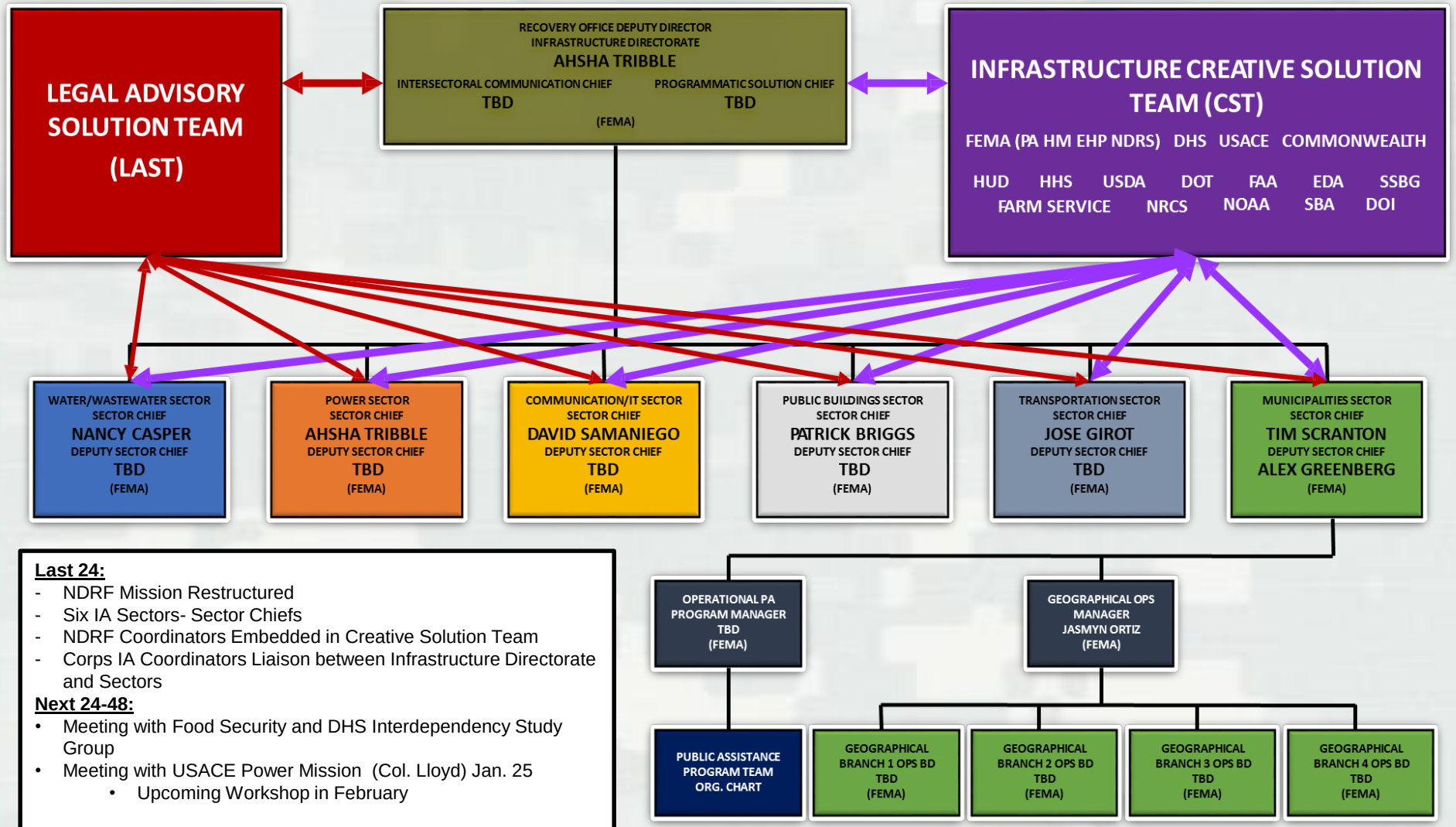
Pre-Disaster: Infrastructure RSF

- Develops guidance and standard procedures for rapid activation of RSF capabilities to support community recovery.
- Identifies relevant statutory and/or regulatory programs, potential capabilities and/or limiting factors pertaining to recovery support for infrastructure systems.
- Provides a forum for interagency coordination, information sharing and exchange of effective practices.
- Supports planning, preparedness, education, training and outreach efforts to enhance capabilities for recovery.
- Works with partners to identify critical facilities and ensure considerations are made to reduce risk pre- and post-disaster.

Post-Disaster: Infrastructure RSF

- When activated by the FDRC, the primary and supporting departments and agencies deploy in support of the Infrastructure Systems RSF mission.
- Supports the recovery of infrastructure systems, dependent on the nature and scope of the disaster, and the specific authorities and programs within the jurisdiction of participating departments and agencies.
- Participates in the national-level coordination of damage and community needs assessments as appropriate to ensure infrastructure considerations integrate into the post- disaster public and private sector community planning process.
- Deploys RSF resources, as required by the specific disaster situation and consistent with the specific authorities and programs of the participating departments and agencies, to the field to assist the affected community in developing an Infrastructure Systems Recovery action plan that:

National Disaster Recovery Framework- Infrastructure Assessment Mission- Puerto Rico



Last 24:

- NDRF Mission Restructured
- Six IA Sectors- Sector Chiefs
- NDRF Coordinators Embedded in Creative Solution Team
- Corps IA Coordinators Liaison between Infrastructure Directorate and Sectors

Next 24-48:

- Meeting with Food Security and DHS Interdependency Study Group
- Meeting with USACE Power Mission (Col. Lloyd) Jan. 25
    - Upcoming Workshop in February

Mission Assignment #	Mission	Mission Amount	MA End Date
4339DR-PR-COE-SAD-23	IS-RSF (FOS)	250,000	June 2018

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Johann.M.Sasso@usace.army.mil

IS RSF JFO Configuration

- Level 1 Disaster Threat (All hands on Deck)
  - IS RSF Configuration
    - Normal USACE IS RSF Field Coordinator – Johann Sasso
    - SME from DHS-NPPD-IP – Sandra Pinel
    - SME from DOT – Jim Robinson
    - SME from DOE – Joseph Hanna
    - SME from FEMA PA – Rachel Hildenbrand
    - SME from EPA – Jamie Geliga
  - Ensured the USACE Division had what was needed
    - Included Coastal Restoration SME
    - 1 Additional Field Coordinator because of the volume of work
  - Established Timeline
    - Mission Scoping Assessment (30-60 days, projected end of early to mid February 2018)
      - Detail description of damage in all sixteen Infrastructure Sectors –before and after
    - Recovery Support Strategy (30-60 days, projected end of April/early May)
      - Detailed Solutions to all issues in Short, Intermediate, and Long Term (All sectors)

US Army Corps of Engineers

HURRICANE IRMA & MARIA RESPONSE

Updated as of 19 NOV 17

	Puerto Rico	US Virgin Islands
Mission Assignments / Cumulative Cost / Personnel On Ground	mission assignments issued by FEMA 25 / $1.5 billion / 475	mission assignments issued by FEMA 24 / $186 million / 153
Temporary Roofing	60,000 roofs estimated for repair 23% 11,169 blue roof installs completed out of 48,575 requested	4,140 roofs estimated for repair 87% 3,496 blue roof installs completed out of 4,024 requested
Temporary Emergency Power	59% 632 generator installs completed out of 1080 installs requested	91% 157 generator installs completed out of 172 installs requested
Debris Management	52 municipalities requested assistance, currently working in 28 12% 394K cubic yards removed of 3.4 million assigned	1.1 million cubic yards estimated for removal 22% 240K cubic yards removed
Critical Public Facilities Assessment	% assessments complete 100% 4 / 4 airports 97% 1102 / 1131 schools 100% 184 / 184 emergency response structures	% assessments complete 100% 6 / 6 hospitals 100% 2 / 2 airports 100% 9 / 9 water/ waste water facilities 100% 32 / 32 schools 100% 24 / 24 emergency response structures

Puerto Rico Power Grid Repair

54.3% of Historic Average Load

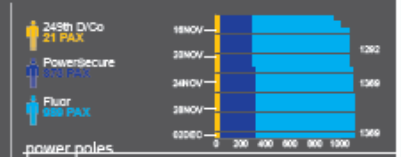
current instant max demand: 1160 MW
pre-storm avg monthly load: 2800-3000 MW

Installation equaling 60MW at Palo Seco Power Plant completed to help stabilize the power grid

1,146 transmission lines or line segments — 58.4% functioning

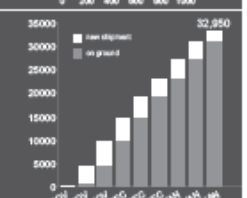
344 substations — 74.9% functioning

Logistics Support



power poles

A local pole manufacturer is supplying 200 poles/week to USACE. The local power authority is also providing available supplies.



USACE Public Affairs
hq-publicaffairs@usace.army.mil
https://www.facebook.com/USACEHQ/

* percentages may remain unchanged for periods of time as requests and installs completed can increase concurrently

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TASK FORCE POWER RESTORATION
ELECTRICAL GRID

US Army Corps of Engineers

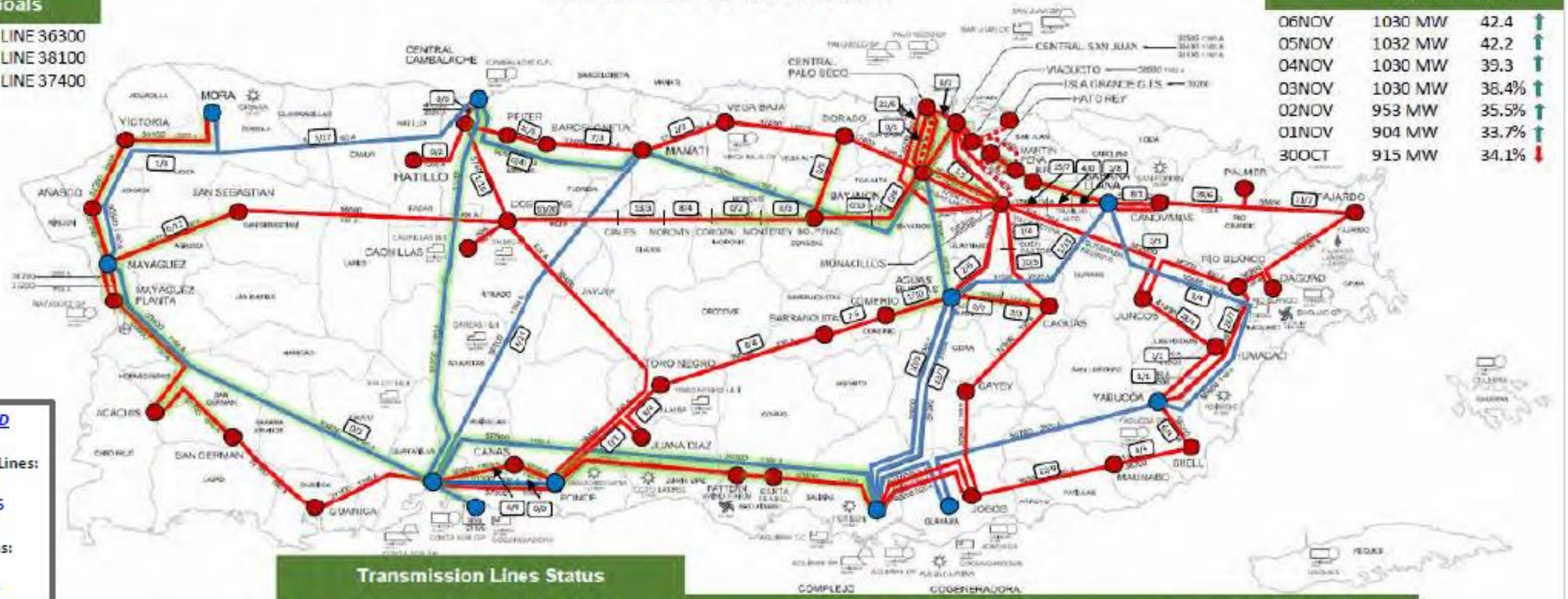
FEMA

7 Day Goals

LINE 41000	LINE 36300
LINE 38800	LINE 38100
LINE 38400	LINE 37400

Instant Max Demand

06NOV	1030 MW	42.4 ↑
05NOV	1032 MW	42.2 ↑
04NOV	1030 MW	39.3 ↑
03NOV	1030 MW	38.4% ↑
02NOV	953 MW	35.5% ↑
01NOV	904 MW	33.7% ↑
30OCT	915 MW	34.1% ↓



ENERGIZED

Transmission Lines:
44.2%
506/1,146

Substations:
68.3%
235/344

Legend

- 230kv Transmission Line
- 115kv Transmission Line
- Energized Lines
- 0/3 Current Slant (Poles/Transformers) out of service

Transmission Lines Status

Energized Last 24 Hrs	Last 24-72 Hrs	Substations Last 24 Hrs	Generation Last 24Hrs
None	14 x 38 kV	32 Substations Energized:	None

as of: 7-Nov-17 19:52

US Army Corps of Engineers

Not for Distribution

As of 0645, 07NOV17

Photo: 01 NOV 17

Recent Developments

- Pool is 14.91 feet (at 631.09 feet) below spillway crest at 646 ft on 17 NOV. Target elevation for recommendation to lift evacuation order is 14.0 feet and for interim repairs is 17.0 feet below the crest.
- All Thompson pumps are in place and capable of being operated. Seven pipes discharge into the water supply canal and three into the river. A quick change system is being provided to allow two pipes from the river to be moved to the water supply canal as needed.
- Measured flow in the cnal on 16 NOV was 42 cfs.
- An alternative to siphons is currently being discussed due to the prohibitive costs of such a system. The alternative would involve keeping teh pumps on site and constructing a reserve siphon to allow the 54"conduit to be used for water supply.
- PREPA expressed concerns that the target pool elevation for the Phase 2 interim repairs may be too low to sustain water supply during the dry season. The new target elevation for the dry season is 636.3 feet.
- Phase II progress includes completed specs and plans for spillway void grouting, achoring, and crack sealing.
- Rio Grande de Manati levee restoration expected award late NOV; fund request is being submitted to SAD.
- The path forward for PHASE III is still being considered. POTUS approval of additional categories of FEMA public assistance provides an alternate route to fund the repairs other than congressional authorization.

POC: Barefoot, Calvin. Calvin.L.Barefoot@usace.army.mil , 202-761-4692

Who Are The IS-RSF Field Coordinators?

Name	MSC/ District	Exp
Jami Buchanan	LRD/LRH	Y
Noel Clay	LRD	
Chuck Oliver	LRD/LRL	
Greg Bertoglio	MVD/MVS	Y
Crorey Lawton	MVD	Y
Phillip Rogers	MVD/MVK	Y
PJ Varnado	MVD/MVN	Y
Jeff Varisco	MVD/MVN	Y
Scott Wandell	MVD/MVN	Y
Hibba Haber	NAD	Y
Florence Mak	NAD/NAN	Y
Jason Shea	NAD/NAN	Y
Brian Balukonis	NAD/NAE	
Daryl Downing	NWD/NWS	Y
Tim Gouger	NWD/NWO	Y
Robin Wankum	NWD/NWK	Y
Jeff Daniels	POD/POH	
John Emmerson	POD	
Steve Sansone	POD/POH	
Greg Schmidt	POD/POA	Y
Tim Inouye	POD/POH	Y
Mark Wolff	SAD/SAJ	Y
Colton Bowles	SAC/SAD	Y
Johann Sasso	SAD/SAJ	Y
David Apple	SAD/SAJ	Y
Emily Hughes	SAD/	Y
Jason Glazener	SAD/SAW	Y
Dan Sinclair	SAD/SAW	Y
Mark Doles	SPD/SPA	
Don Gallegos	SPD/SPA	
Mike Abate	SWD/SWT	Y
Dana Coburn	SWD/SWL	
Michael Cockrell	SWD/SWF	Y
Eddie Irigoyen	SWD/SWG	Y
Kenneth Jaynes	SWD	Y
Alicia Rea	SWD/SWG	

Statistics

- 30 in Cadre across MSCs
- 50% have experienced an IS-RSF mission
- MVD has most experience (Louisiana)
- SAD & LRD most recently activated
- NAD & NWD pre-2015 experience
- Self-described background shown in chart