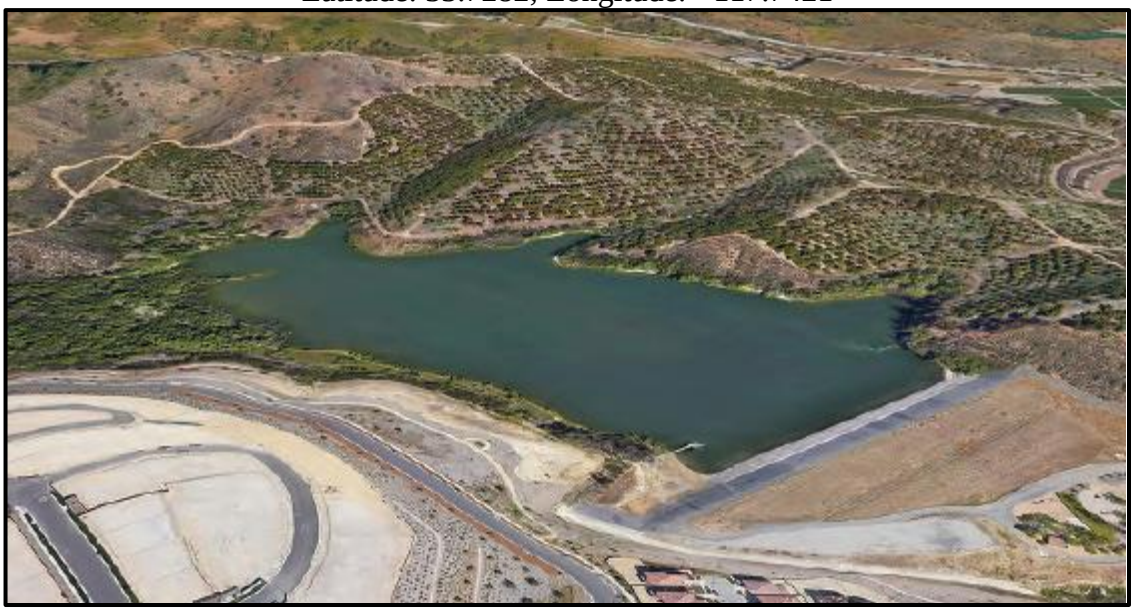
Emergency Action Plan (EAP)

For

Rattlesnake Canyon Dam
Orange County, California

4955 Portola Parkway
Irvine, CA 92620
Latitude: 33.7282; Longitude: -117.7421



Dam Owner: Irvine Ranch Water District

DSOD South Region

DSOD Dam No. 1029.003

National Inventory of Dams (NID) No. CA00855

Federal Energy Regulatory Commission (FERC) No. N/A

Public Copy

Date Prepared: April 24, 2024
Prepared By: Stetson Engineers Inc. (760) 730-0701

HAZARD
EH
CLASSIFICATION

Phone numbers and email addresses have been removed from this publicly posted copy of this Emergency Action Plan. That information is available from Irvine Ranch Water District's district secretary: Phone 949-453-5300, Email Comments@IRWD.com

Dam Contact Information

Rattlesnake Canyon Dam
4955 Portola Parkway
Irvine, CA 92620
(33.7282, -117.7421)

24-Hour Emergency Contact:
Jose Zepeda, IRWD Director of Water and Recycling Operations

Dam Owner:
Irvine Ranch Water District
Contact: Paul Cook, P.E., General Manager

Dam Operator:
Bryan Clinton, IRWD Operations Supervisor

Dam Safety Engineer:
Jacob Moeder, IRWD Engineering Manager

EAP Coordinator:
Steve Choi, IRWD Director of Safety and Security

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Key Dam Information

Dam Description

Height:	73 feet	DSOD #:	1029.003
Year Built:	1959	NID #:	CA00855
Dam Operator:	Ken Pfister, IRWD	Hazard Classification:	Extremely High
Dam Owner:	IRWD	Property Owner:	City of Irvine

Potential Impacted Area

Rattlesnake Canyon Dam is located at the west end of Rattlesnake Reservoir on land in Irvine, CA. The area downstream of the dam is mostly flat, urban space, which drains southwest toward the Pacific Ocean. If Rattlesnake Canyon Dam were to fail, parts of the City of Irvine, the City of Tustin, and the City of Newport Beach would be affected (see Part II: Inundation Maps).

Directions to Rattlesnake Canyon Dam

In order to access Rattlesnake Canyon Dam from I-5, take the exit for Culver Drive and head northeast for roughly two miles. Turn right on Portola Parkway, and then left at Orange County Fire Station 55, just past Orchard Hills and the Irvine Ranch Conservancy. The dam access road is located at the end of that street. The street address that can be used to find the dam is 4955 Portola Parkway, Irvine, CA 92620.

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PART I: EAP INFORMATION

Section 1: Introduction

1.1 Background

Irvine Ranch Water District (IRWD) is an independent special district that serves 447,000 residential customers in central Orange County, CA. IRWD owns and operates five jurisdictional dams, one of which is at the Rattlesnake Reservoir. Rattlesnake Canyon Dam is located in Irvine, CA. The spillway is located on the northwest corner of the reservoir, and is not considered a critical appurtenant structure (CAS) by California's Division of Safety of Dams (DSOD). The reservoir collects natural runoff from a drainage area of 2 square miles and stores recycled water from IRWD's Michelson Water Recycling Plant (MWRP).

The dam at Rattlesnake Reservoir is an earthen dam originally constructed in 1959 by The Irvine Company. The California State Dam Number is 1029.003 and the National Dam Number is CA00855. The dam has a concrete spillway that discharges into an approximately 15-foot wide gunite-lined channel, and has a crest length of 120 feet. In addition to this spillway, Rattlesnake Canyon Dam has a steel outlet pipe which conveys water either into IRWD's recycled water distribution system or to a drain, depending on valve positions.

The dam is located in the San Diego Creek watershed in coastal hills about twelve miles inland from the Pacific Ocean. Topography downstream of the dam is mostly flat and urban, draining gradually southwest to the ocean. Flooding from a dam failure at Rattlesnake Reservoir has the potential to inundate portions of the following communities:

- County of Orange
- City of Irvine
- City of Tustin
- City of Newport Beach

Figure 1-1 shows the location of Rattlesnake Canyon Dam and the above listed communities. Figure 1-2 shows the area immediately downstream of the dam. Rattlesnake Canyon Dam impounds a reservoir along Rattlesnake Canyon Wash, which is tributary to Peters Canyon Wash[1]. The drainage area upstream of the Rattlesnake Canyon Dam is 2 square miles. Peters Canyon Wash flows through the City of Irvine and a small portion of the City of Tustin to join San Diego Creek. San Diego Creek in that area is highly channelized. It flows southwest through the City of Irvine and the City of Newport Beach, where it flows into upper Newport Bay. The total drainage area of Newport Bay is about 150 square miles. San Diego Creek, at its point of discharge to Newport Bay, drains about 120 square miles. Newport Bay is a large estuary and harbor which is influenced by ocean tides.

[1] Peters Canyon Wash is sometimes also referred to as Peters Canyon Channel.

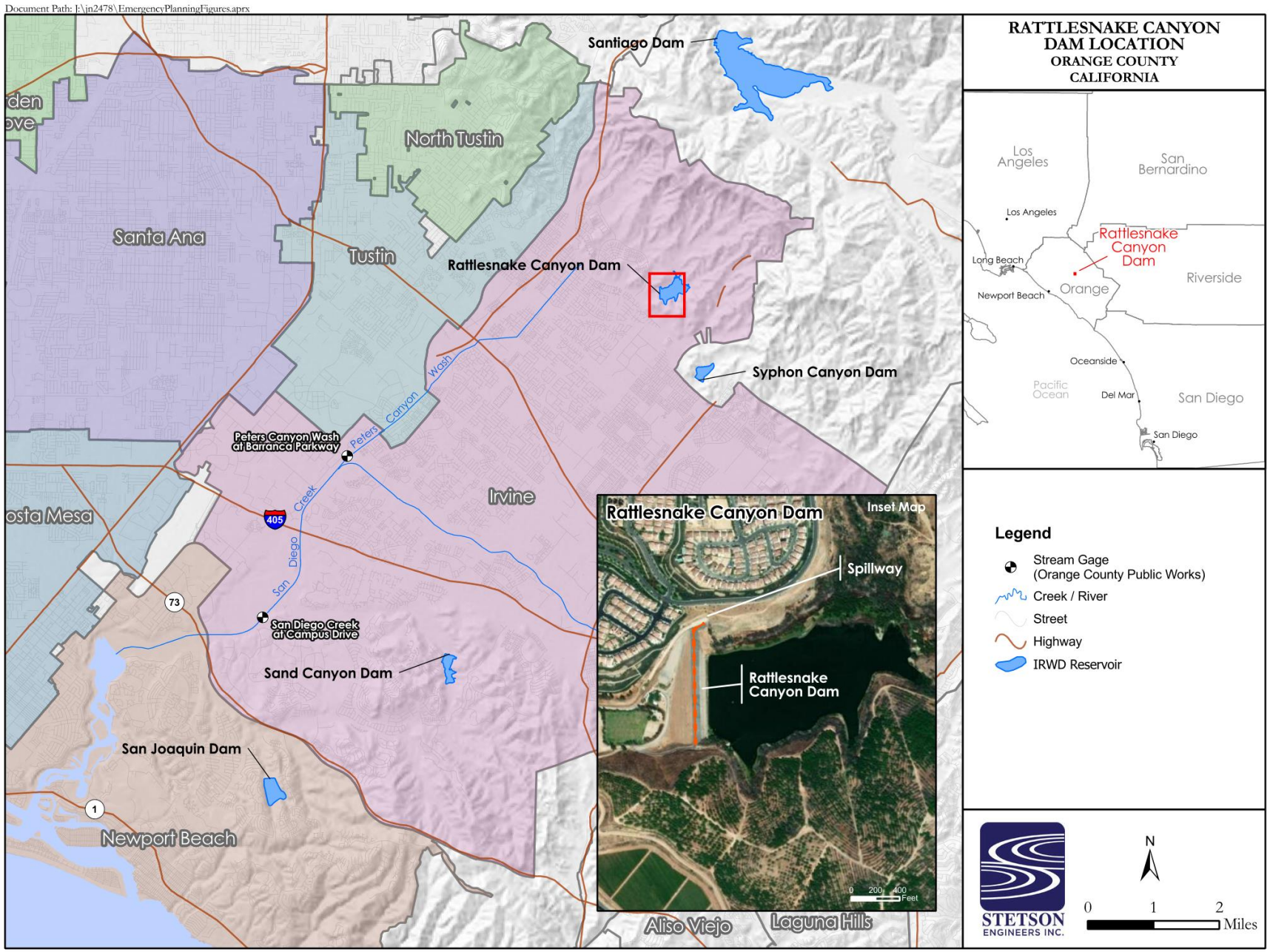


Figure 1-1 Rattlesnake Canyon Dam Area Overview

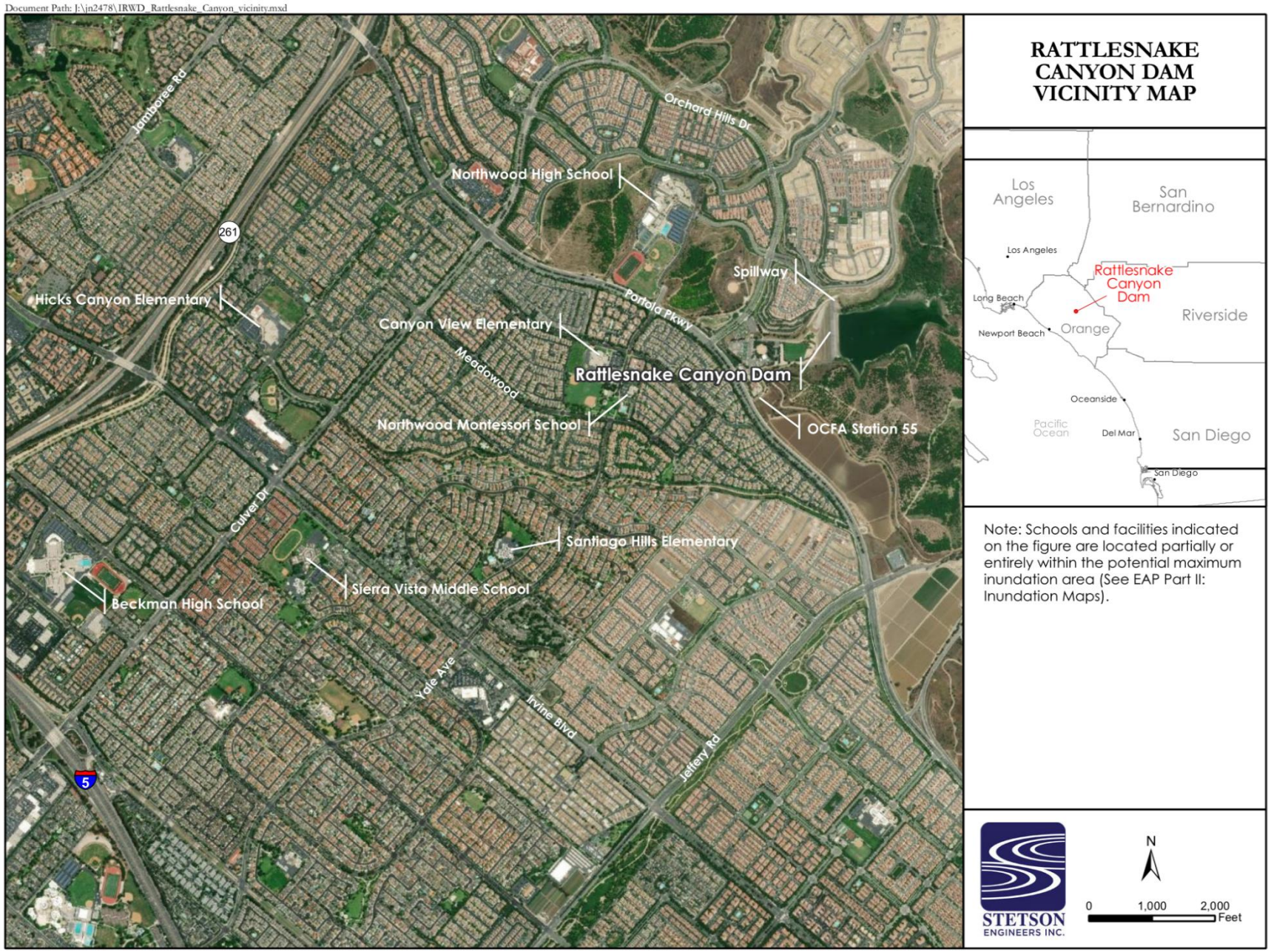


Figure 1-2 Rattlesnake Canyon Dam Vicinity Map

1.2 Purpose

A dam safety incident is an impending or actual sudden uncontrolled release or excessive controlled release of water from an impounding structure. The release may be caused by damage to or failure of the structure, flood conditions unrelated to failure, or any condition that may affect the safe operation of the dam. The release of water may or may not endanger human life, downstream property, or the operation of the structure. When people live in an area that could be affected by the operation or failure of a dam, there is the potential for an emergency related to a dam safety incident. The National Incident Management System (NIMS) defines an emergency as "any incident, whether natural or manmade, that requires responsive action to protect life or property."[2]

The purpose of this EAP is to detect actual or potential emergency situations associated with Rattlesnake Canyon Dam, facilitate notification of affected parties, assign roles and responsibilities to involved agencies, and take mitigating actions in time to minimize loss of human life or injury and property damage. These situations include, but are not limited to dam instability, sizable earthquakes, extreme storm events, major spillway releases, overtopping of the dam, outlet system failure, abnormal instrument readings, vandalism or sabotage, spillway or gate failures, and failure of the dam.

Emergency management authorities will use the information in this EAP to facilitate the implementation of their responsibilities. Local, county, and state authorities have coordinating plans in place to address local emergency operations and/or warnings and evacuations. Those plans are not reprinted in the EAP but are maintained by the responsible agencies.

DSOD has rated the Rattlesnake Canyon Dam as "Extremely High" based on the downstream hazard classification. Because of its hazard classification, IRWD developed this EAP in accordance with the requirements listed in California Water Code Sections 6160 and 6161 and Government Code Section 8589.5, following the Federal Emergency Management Agency (FEMA) Federal Guidelines for Dam Safety: Emergency Action Planning for Dams (FEMA-64/July 2013).

1.3 Planning Team

During the initial EAP preparation in 2019, the EAP was sent to the following affected agencies below for comment during an extended local agency review period. The same agencies were contacted during the annual EAP update process to verify and update their respective information, most recently in February 2024 as part of a joint notification drill for four of IRWD's jurisdictional dams.

- Irvine Ranch Water District
- City of Irvine Police Department
- Orange County Fire Authority (OCFA)[3]

[2] From FEMA Federal Guidelines for Dam Safety, Emergency Action Planning for Dams, July 2013. (FEMA 64)
[3] OCFA provides fire service to both the City of Irvine and the City of Tustin

- City of Tustin Police Department
- City of Newport Beach Police Department
- City of Newport Beach Fire Department
- Orange County Sheriff's Department (OCSD), Emergency Management Division (EMD)
- Orange County Public Works (OCPW)
- Orange County Parks
- California Highway Patrol (CHP), Santa Ana Office
- California Department of Transportation (Caltrans) District 12 Office
- Downstream schools (Irvine Unified School District, Tustin Unified School District, Northwood Montessori)

The following agencies provided comments on the draft EAP or participated in consultations:

- Irvine Ranch Water District
- City of Irvine Police Department
- Orange County Fire Authority
- City of Tustin Police Department
- City of Newport Beach Police Department
- City of Newport Beach Fire Department
- Orange County Sheriff's Department, Emergency Management Division
- Orange County Parks
- Caltrans District 12 Office
- Irvine Unified School District
- Tustin Unified School District

Outreach was completed for all jurisdictions potentially affected by a dam failure at Rattlesnake Canyon Dam. The City of Irvine Police Department is the primary Public Safety Answering Point (PSAP) for this EAP. Though the dam may affect multiple jurisdictions, the impacts are primarily within the City of Irvine. During the outreach process for this EAP, the City of Irvine Police Department and OCSD were consulted and agreed that Irvine Police Department should be the PSAP.

Staff from Irvine Police Department reviewed and approved the notification flowcharts presented in Section 3. The planning team for this EAP was similar to the planning team for Syphon Canyon Dam, which is a jurisdictional dam also owned by IRWD, located about 1.4 miles south-southeast of Rattlesnake Canyon Dam.

Emergency planning for the City of Irvine is coordinated through the Irvine Police Department[4]. The Emergency Management Administrator from the Irvine Police Department reviewed the EAP, approved the notification flowcharts presented in Section 3, and provided feedback on jurisdictional responsibilities. Orange County Fire Authority (OCFA) serves the City of Irvine as part of the OCFA Division 2 service area. The OCFA Division 2 chief reviewed the EAP and provided updated contact information for OCFA staff.

[4] The City of Irvine, City of Tustin, and City of Newport Beach do not have offices of emergency services that are separate from their police departments.

Emergency planning for the City of Tustin is coordinated through the Tustin Police Department[3]. A representative from the City of Tustin Police Department reviewed the EAP and provided updated phone numbers. OCFA also provides fire service to the City of Tustin as part of the OCFA Division 4 service area. The OCFA Division 4 chief was provided a copy of the EAP and was added as a plan holder, per discussion with the Division 2 chief.

The Newport Beach Police Department received a copy of the EAP and provided updated contact information. The Newport Beach Fire Department received a copy of the plan and did not have comments. Outreach was completed to DSOD to clarify responsibilities listed in this EAP. Additional coordination was conducted with the National Weather Service (NWS), CHP, Caltrans, and the Department of Water Resources (DWR) Flood Operations Center.

Three schools in close proximity to the dam were provided copies of the EAP and were added to the notification charts for a potential or imminent failure. The schools provided 24-hour contact phone numbers for administrators.

For more information about the outreach process, please contact the EAP Coordinator:

Steve Choi, Director of Safety and Security

Phone numbers and email addresses have been removed from this publicly posted copy of this Emergency Action Plan. That information is available from Irvine Ranch Water District's district secretary: Phone 949-453-5300, Email Comments@IRWD.com

Section 2: Summary of EAP Responsibilities

2.1 Irvine Ranch Water District Responsibilities (Dam Owner)

IRWD, as the dam owner, is responsible for detecting and evaluating dam safety incidents, classifying the incident, notifying emergency management authorities, taking appropriate response actions, terminating the EAP, and follow-up tasks related to the dam incident.

General EAP responsibilities for IRWD are to:

- Detect, verify and assess emergency conditions
- Respond to emergencies at the dam site
- Activate and implement the Rattlesnake Canyon Dam EAP, including determining the appropriate emergency level
- Notify other participating emergency management agencies of emergency conditions, emergency level, EAP activation, and other critical information
- Utilize IRWD Emergency Operations Plan (EOP) for internal emergency response coordination
- Take corrective action at the dam/reservoir
- Terminate the EAP
- Facilitate an after-action evaluation and report
- Update EAP on at least an annual basis
- Communicate with the public and the media

More detailed responsibilities, including duties by staff member, are given in Section 6.1 and *Table 6-1 Dam Owner Responsibilities by Role.*

2.2 Impacted Jurisdictions'/Public Safety Agencies' Responsibilities

A dam safety incident at Rattlesnake Canyon Dam has the potential to impact unincorporated areas of Orange County, the City of Irvine, the City of Tustin, and the City of Newport Beach. The involvement of potential impacted jurisdictions is crucial to the successful implementation of the EAP. Copies of the EAP were sent to impacted jurisdictions and public safety agencies as part of a local agency coordination effort to gather feedback and input to the emergency response process laid out in this EAP (see discussion in Section 1.3). Where applicable, comments from these agencies informed the responsibilities detailed below.

2.2.1 Field Level Incident Management

A dam safety incident is reported through a 911 or direct phone call to the Irvine Police Department (see Section 3). The emergency response through the public safety agencies can be assisted by the OCSD "Control One," which is the central point of contact for interoperable

communications between all law enforcement, fire, and public works agencies responding to a dam safety emergency at the Rattlesnake Canyon Dam.

Once the incident is reported, an incident command post (ICP) may be established by the City of Irvine. The incident commander (IC) is a field level position that falls to the Irvine Police Department and/or the OCFA supervisor. For Potential Failure or Imminent Failure dam safety incidents, the City of Irvine Police Department and OCFA may establish a Unified Command to jointly perform the IC duties for a dam safety incident at the Rattlesnake Canyon Dam. The Unified Command, which would include IRWD, City of Irvine Police Department, OCFA, and possibly City of Tustin Police Department, may be required in order to share incident management responsibilities.

Unified Command/IC responsibilities consist of establishing the ICP, protecting life and property, controlling personnel and equipment resources, maintaining accountability for responder and public safety, and establishing and maintaining an effective liaison with outside agencies and organizations. The Unified Command/IC is responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources.

The Unified Command/IC has overall authority and responsibility for conducting incident operations, while IRWD is responsible for monitoring and remedial actions at the dam site (see Section 5). IRWD remedial actions will be coordinated through the IRWD operations center. IRWD will coordinate with external emergency response agencies through the ICP, the City of Irvine EOC, and the County and OA EOC, if activated. IRWD prepared a map depicting potential locations where an ICP may be established in the event of an emergency at Rattlesnake Canyon Dam, Syphon Canyon Dam, or Sand Canyon Dam. The map is included in Appendix K to this EAP. The locations shown are for planning purposes only; in the event of a dam emergency, determination of the final ICP location is the responsibility of the Unified Command/IC.

Unified Command/IC duties may include the following:

- Establishing command.
- Ensuring responder safety.
- Assessing incident priorities.
- Determining operational objectives.
- Developing an appropriate organizational structure.
- Maintaining a manageable span of control.
- Coordinating overall emergency activities.
- Coordinating the activities of outside agencies.
- Authorizing the release of information to the media.
- Terminating the emergency response.[5]
- Participating in an annual review and update of the EAP.

[5] The Unified Command/IC has the authority to terminate the emergency response. IRWD, as the dam owner, will terminate the EAP.

2.2.2 City of Irvine (Irvine Police Department and OCFA)

The City of Irvine Emergency Management Plan addresses the City of Irvine's planned response to emergencies associated with natural and man-made disasters.[6] It provides an overview of operational concepts, identifies components of the City's emergency management organization within the Standardized Emergency Management System (SEMS), and describes the overall responsibilities of the federal, state and county entities and the City for protecting life and property, and assuring the overall well-being of the population.

In the event of a dam emergency at the Rattlesnake Canyon Dam, the City of Irvine will be the lead agency for executing and coordinating emergency response activities. Depending on the severity of the emergency, a Local Emergency may be proclaimed, the City of Irvine EOC may be activated, and Orange County Operational Area (OA) will be advised.

The City's Emergency Operations Plan calls for an IC for a dam failure incident. As discussed in Section 2.2.1, a Unified Command is anticipated for potential or imminent failure situations. Depending on the situation, the Unified Command could include representatives from the City of Tustin.

The City of Irvine maintains responsibility for the evacuation of the inundation areas within the city limits, based on the threat and situation. Evacuation responsibilities would be directed by the Unified Command and carried out by the Irvine Police Department and OCFA.

Irvine Police Department and OCFA responsibilities include:

- Advising threatened populations of the emergency and apprising them of safety measures to be implemented.
- Advising the Orange County OA of the emergency.
- Identifying the need for mutual aid and requesting such through the Orange County OA.
- Proclamation of a Local Emergency by local authorities.
- Dissemination of accurate and timely emergency public information and warning to the public.
- Evacuation and rescue operations.
- Establishing evacuation routes and road closures.
- Facilitating return of evacuated individuals
- Medical care operations.
- Care and shelter operations, including establishing shelters.
- Access and perimeter control.
- Public health operations.
- Restoration of vital services and utilities.
- Participating in an after-action evaluation.

[6] City of Irvine Emergency Management Plan available at: https://legacy.cityofirvine.org/civica/filebank/blobdload.asp?BlobID=19676

2.2.3 City of Tustin (Tustin Police Department and OCFA)

The City of Tustin maintains responsibility for emergency preparedness and response within the city limits. Emergency planning for the City of Tustin is coordinated through the Tustin Police Department. The inundation area of a dam failure at Rattlesnake Canyon Dam includes areas of the City of Tustin (Map Panels 6, 7, and 8 of the maps in Part II of this EAP). Any emergency preparedness and response will be coordinated with the Unified Command/IC, as required.

The City of Tustin's emergency response will be carried out by the Tustin Police Department and OCFA, which provides fire service to the City of Tustin. Field level response will be coordinated with the Unified Command/IC. Tustin Police Department and OCFA responsibilities include:

- Advise threatened populations of the emergency, and apprising them of safety measures to be implemented
- Implement public warning and notification
- Evacuation and rescue operations
- Establish evacuation routes and road closures
- Medical care operations
- Care and shelter operations, including establishing shelters
- Facilitate of return of evacuated individuals
- Access and perimeter control
- Public health operations
- Restoration of vital services and utilities
- Participate in an after-action evaluation

2.2.4 City of Newport Beach

The City of Newport Beach maintains responsibility for emergency preparedness and response within the city limits. Emergency planning for the City of Newport Beach is coordinated through the Newport Beach Police Department. Since the inundation area of a dam failure at Rattlesnake Canyon Dam includes areas of the City of Newport Beach (Map Panels 12, 13, and 14 of the Main Dam Failure Maps in Part II of this EAP), any emergency preparedness and response will be coordinated with the Unified Command/IC. The inundation area for a sudden and total failure of the dam within the City limits is confined to the San Diego Creek channel, and no overtopping of major cross roads is predicted within the City of Newport Beach. Any field level response within the City of Newport Beach would be carried out by the Newport Beach Police Department and Newport Beach Fire Department. However, flooding is not likely within Newport Beach city limits.

The modeling that was conducted for the creation of the inundation map showed the impacts and risk of inundation are minimal once the flood wave reaches Newport Bay, west of Jamboree Road. Model results showed significant attenuation of the flood wave peak upon arrival in Newport Bay.

2.2.5 Orange County Sheriff's Department, Emergency Management Division

Thirty-four incorporated cities in the county are responsible for emergency planning within their jurisdictions. The County of Orange (County) is responsible for the emergency planning of 205 square miles of unincorporated area and all county-owned facilities and properties.

The County provides support to OA jurisdictions or local governments by identifying and coordinating resources and communicating with regional and state authorities. During disasters, OA jurisdictions are required to coordinate emergency operations with the OA and, in some instances, other local governments.

The County of Orange and Operational Area Emergency Operations Plan (County and OA EOP) provides guidance and procedures for the County to prepare for and respond to significant or catastrophic natural, technological or conflict-related incidents that produce situations requiring a coordinated response. It further provides guidance regarding management concepts, identifies organizational structures and relationships and describes responsibilities and functions of the emergency organization to protect life and property. OCSD EMD is responsible for developing, maintaining and distributing the County and OA EOP.

There are two roles within the OA discussed in this EAP: County and OA EOC Manager and the Operational Area Coordinator (OAC).

County and OA EOC Manager. The OCSD EMD Director serves as the County and OA EOC Manager. The County and OA EOC Manager is the 24-hour point of contact for the County, Operational Area, State, Federal entities and agencies, and Mutual Aid Coordinators.

Responsibilities of the County and OA EOC Manager may include:

- Establish and maintain contact with the affected dam and reservoir owner or operators.
- Request current situational status of the affected dam and reservoir.
- Ensure the OAC, Board of Supervisors and Policy Group are notified and kept apprised of emergency conditions occurring due to a dam and reservoir failure event.
- Coordinate with the OAC to establish activation level of the County and OA EOC.
- Direct EMD staff to notify appropriate key personnel to report to the County and OA EOC, based on the activation level established.
- Establish and maintain communication with all impacted jurisdictions to ensure coordination of response activities and situational information.
- Ensure situational information is provided to OA jurisdictions, County departments and California Governor's Office of Emergency Services (Cal OES), and updated on a regular basis.
- Activate the County and OA's alert and warning program to provide public notification of protective actions to take before, during, and after threats or emergencies and to disseminate other kinds of messages to community member opt-ins.
- Assist with the coordination of the County's reentry and recovery efforts.

Operational Area Coordinator. When an emergency impacts an OA jurisdiction, the Orange County Operational Area Agreement designates the OAC as being responsible for direction, coordination and communication of policy decisions, and coordinating resource needs and priorities between OA jurisdictions and the State throughout the emergency. In cases of dam and reservoir failure, the County and OA Emergency Operational Plan, Dam and Reservoir Failure Annex designates Orange County Public Works (OCPW) as the OAC.

Responsibilities of the OAC may include:

- Serve as a key decision maker in the County and OA EOC, providing direction and coordination necessary to accomplish the purposes of the Operational Area Agreement and responsibilities of the Operational Area Lead as specified in Title 19 California Code of Regulations Section 2409 (e).
- Coordinate with OA jurisdictions during emergency response.
- Maintain contact with the dam and reservoir owner/operator to receive regular updates on water releases and situation status.
- Represent the Operational Area in all dealings with the public or private agencies on matters pertaining to emergencies.
- Appoint a Public Information Manager (PIM) to coordinate dissemination of all emergency information.
- In coordination with the PIM, prepare and approve dam and reservoir failure information statement and instructions for the public to be released via: media, Emergency Alert Systems, NWS, and AlertOC.
- Activate the County and OA EOC to the appropriate level of organization and staffing to support operations.
- Participate in conference calls.
- Initiate discussion with the Policy Group on the necessity to proclaim a Local Emergency and/or Operational Area Proclamation of Emergency.

A dam and reservoir failure may require multi-jurisdiction, multi-agency and multi-discipline coordination at all levels, including first responders. The Dam and Reservoir Failure Annex delineates the specific organization and assignment of responsibilities within the County and OA EOC. The appropriate Standardized Emergency Management System (SEMS) and NIMS functions will be activated, based on the failure threat or situation. Activation of the County and OA EOC is required by SEMS, Title 19 California Code of Regulations Section 2409 (f), under the following conditions:

- On Request - A local government within the OA has activated its EOC and requested activation of the County and OA EOC to support its emergency operations. Jurisdiction(s) determine that additional response resources beyond that which would normally be covered by mutual aid are required and assistance from the OA may be necessary.
- Two City Local Emergency - Two or more cities within the OA have proclaimed a Local Emergency.
- County and City Local Emergency - The County and one or more cities have proclaimed a Local Emergency.

- Request for Governor's Proclamation - A city, city and County, or County has requested a Governor's proclamation of a State of Emergency, as defined in Government Code 8558(b).
- State of Emergency - A State of Emergency is proclaimed by the Governor of the State for the County or two or more cities within the OA.
- Request for Outside Resources - The OA is requesting resources from outside its boundaries, except those resources used in normal day-to-day operations which are obtained through existing agreements providing for the exchange or furnishing of certain types of facilities and services on a reimbursable, exchange, or other basis as provided for under the Master Mutual Aid Agreement.
- Request for OA Resources - The OA has received resource requests from outside its boundaries, except those resources used in normal day-to-day operations which are obtained through existing agreements providing for the exchange or furnishing of certain types of facilities and services on a reimbursable, exchange, or other basis as provided for under the Master Mutual Aid Agreement.

2.2.6 California Governor's Office of Emergency Services (Cal OES) and Cal OES Warning Center

Cal OES plays dual roles in managing an emergency; one at the regional level and the other at the state level. The regions include Inland Region, Coastal Region, and Southern Region, while the state level constitutes the executives and brokers resources between the regions. The state level also interfaces with the National Response Framework, and informs the governor, legislature, and state emergency management stakeholders. Cal OES also implements state-level media policy and provides the primary coordination with SEMS and NIMS at the federal level. Cal OES Southern Region will participate in the reviews of and updates to the EAP.

The Dam Safety Planning Division is responsible for reviewing and approving dam owners' EAP. This process includes division outreach and technical assistance to dam owners and local emergency management personnel. The Cal OES Dam Safety Planning Division may also provide guidance to local public safety agencies with regard to incorporating EAPs into their existing all-hazards key response and mitigation plans. The division will also participate in the annual review and update of the EAP.

The Cal OES Warning Center is the link for notifications between state and federal agencies for this EAP. The mission of the Cal OES Warning Center is to be a central intelligence hub for statewide emergency communications and notifications, serving as a highly reliable and accurate "onestop" resource for emergency management, law enforcement, fire, and key decision-making personnel throughout the state. The Cal OES Warning Center is staffed 24 hours a day, seven days a week watching over California to identify potential and emerging threats, provide alert notification to all levels of government as well as critical situational awareness during an emergency or disaster.

The Cal OES Warning Center has the responsibility to receive, coordinate, verify and disseminate information pertaining to events which occur within California or that could affect California. Information received by the Cal OES Warning Center is coordinated between Cal

OES and other sources to ensure that the information which is disseminated is both timely and accurate.

2.2.7 California Department of Water Resources – Division of Safety of Dams

The mission of DSOD is to protect people against the loss of life and property due to dam failure. The California Water Code entrusts this regulatory power to DWR, which delegates the responsibility to DSOD. Section 6110 of the Water Code directs the Department to immediately employ any remedial means necessary to protect life and property if either: (a) the condition of the dam is so dangerous to the safety of life or property as to not permit time for the issuance and enforcement of an order relative to maintenance or operation, or (b) passing or imminent floods threaten the safety of any dam or reservoir. Section 6111 of the Water Code states that in applying the remedial means "the department may, in emergency, do any of the following: (a) lower the reservoir; (b) completely empty the reservoir; (c) take such other steps as may be essential to safeguard life and property." In the event of an emergency at the dam, DSOD actions could include, but are not limited to:

- Advising the dam owner's/operator's representative of remedial actions to take
- Ordering the dam owner's/operator's representative of remedial actions to take
- Assuming control of the dam if necessary to safeguard life and property
- Advising the dam owner's/operator's representative of the emergency level determination
- Inspecting the dam during and after the emergency
- Design review and approval of emergency repairs
- Acting as a dam technical specialist in the State Operations Center, or other emergency operations center

Additionally, per Water Code Sections 6160 and 6161, DSOD is responsible for the review and approval of inundation maps. The California Code of Regulations, Title 23, Division 2, Chapter 1, Article 6 defines the specific requirements of the inundation maps.

IRWD communicated with DSOD staff to confirm DSOD responsibilities as described in this EAP. These DSOD responsibilities were provided to IRWD by Richard Draeger, the regional engineer, via email on December 12, 2019.

2.2.8 National Weather Service Weather Forecast Office

The NWS has a congressional mandate to issue official public warnings for all weather-related events, including dam breaches and flooding. The NWS communicates all flash flood watches and warnings based on the inundation maps provided in this EAP. The San Diego Weather Forecast Office (WFO) has a copy of the enclosed inundation map and will issue official public warnings upon notification, as appropriate.

The NWS WFO will issue a 'Flash Flood Watch' for a potential dam failure and a 'Flash Flood Warning' following the confirmation of a dam failure for downstream areas.

2.2.9 DWR Flood Operations Center

The mission of the DWR Division of Flood Management is to prevent loss of life and reduce property damage caused by floods and to assist in recovery efforts following any natural disaster. The State-Federal Flood Operations Center, located in Sacramento, California, is operated by the Division of Flood Management. The Flood Operations Center provides a facility from which DWR can centrally coordinate emergency response state-wide. Upon activation of this EAP, the DWR Flood Operations Center will be notified by the dam owner. During a potential or imminent failure scenario, the DWR Flood Operations Center would be responsible for assisting with coordination among state and local agencies. The DWR Flood Operations Center can also provide technical assistance during an incident.

2.2.10 Orange County Public Works

A copy of the EAP was sent to Orange County Public Works (OCPW), as channel facilities and infrastructure managed by OCPW may be affected by an incident at Rattlesnake Canyon Dam. OCPW is a plan holder of this EAP and may assist with response related to county-managed facilities.

2.2.11 Orange County Parks Department

A copy of the EAP was sent to the Orange County Parks Department. Peters Canyon Trail, a county-managed trail, is located within the inundation area of Rattlesnake Canyon Dam. Orange County Parks dispatch is included on the notification charts for this EAP and would carry out warnings and evacuations for the county-managed trail. Orange County Parks response would be coordinated by the Unified Command/IC.

2.2.12 California Highway Patrol, Santa Ana Office

A copy of the EAP was sent to California Highway Patrol (CHP). Areas near Interstate 5 (I-5) and State Route 261[7] would potentially be impacted by an incident at Rattlesnake Canyon Dam. CHP dispatch is included in the notification charts in this EAP. In the event of an emergency at Rattlesnake Canyon Dam, CHP would be responsible for evacuating impacted highways and controlling traffic on these roads. CHP response would be coordinated by the Unified Command/IC.

2.2.13 Caltrans

A copy of the EAP was sent to Caltrans staff at the District 12 (Orange County) office so that they could review the EAP with regard to state highway facilities. Emergency response at state highways would be coordinated by CHP through the Unified Command, but Caltrans staff may assist with response related to state-managed road facilities. Caltrans is included in the notification charts in this EAP.

[7] State route 261 is a toll road administered by the Transportation Corridor Agencies. However, Caltrans owns the toll roads and maintains them as part of the state highway system, and CHP is responsible for law enforcement on the toll roads. This EAP was provided to the Transportation Corridor Agencies for informational purposes.

2.2.14 Transportation Corridor Agencies (Orange County Toll Roads)

A copy of the EAP was sent to Transportation Corridor Agencies (TCA), who administers the Toll Roads of Orange County. Toll Road 261 could be affected by inundation from Rattlesnake Canyon Dam. The EAP was provided for their planning purposes. Caltrans owns the Toll Roads and maintains them as part of the state highway system and the California Highway Patrol is responsible for law enforcement on the Toll Roads.

2.2.15 Water Emergency Response Organization of Orange County

A copy of the EAP was sent to the Water Emergency Response Organization of Orange County (WEROC), which supports and manages countywide emergency preparedness, planning, response, and recovery efforts among Orange County water and wastewater utilities. WEROC does not have any prescribed responsibilities in this EAP, but may assist with a mutual aid emergency response to a dam safety incident at the Rattlesnake Canyon Dam.

2.2.16 Downstream Schools

Administrators from three schools in close proximity to Rattlesnake Canyon Dam were provided copies of this EAP and included on the notification charts. Schools include Hicks Canyon Elementary (Tustin Unified School District), Northwood Montessori School, and Canyon View Elementary (Irvine Unified School District). The schools are not assigned responsibilities in this EAP, but have been included in the notification charts to facilitate timely notifications.

Section 3: Notification Flowcharts

3.1 Notification Flowcharts

This section contains notification flowcharts and accompanying messages for each emergency level that could be activated at the Rattlesnake Canyon Dam: high flow, non-failure, potential failure, and imminent failure. The high flow and non-failure scenarios share a notification flow chart, as the same parties would be notified during each event, but have different notification messages. Similarly, the potential failure and imminent failure share a notification flow chart, but have different notification messages. The notification messages for all emergency levels can also be found in Appendix E of this EAP. See Section 5.1 for an explanation of emergency level determination.

IRWD and public safety agencies should reference these flowcharts to know who to contact and in what order in the event of a dam emergency. Individuals or organizations at the beginning of flowchart branches are responsible for making all calls within that branch, in the order indicated. If a party is not answering the number indicated on the flowchart, the notifying party should reference the contact table given in Section 3.2 for alternate methods of contact. In order to facilitate clear and efficient communication of emergency conditions, suggested scripts for notification are included after each flowchart. To ensure timely and efficient notifications during a rapidly developing emergency situation, the suggested scripts for verbal notifications via phone calls are short and direct, and will be followed by text and/or email confirmations containing the language in the pre-scripted messages suggested in Appendix E.

The Rattlesnake Canyon Dam has a small drainage area and is filled and drained independently of a local stream. It is therefore highly unlikely that it would be affected by a high flow situation as described in the FEMA guidelines. However, a notification flowchart and emergency message have been included for the high flow scenario to ensure complete preparedness.

The potential failure and imminent failure notification flowcharts require that the PSAP, City of Irvine Police Department, make additional calls as part of the notification process. IRWD has coordinated with the City of Irvine Police Department to ensure that they have a copy of the EAP on hand and will utilize the notification flowcharts in Section 3.1. To ensure that notifications are made in a timely manner, multiple staff members will be available to make notification calls for the City of Irvine Police Department. The City of Irvine Police Department may also use a mass notification system to communicate with all downstream public agencies at once. The City of Irvine Police Department has agreed to perform the responsibilities in the notification flowcharts and in this EAP. These instructions will be updated annually when the plan is reviewed and contacts are updated (see Section 8.1).

The notification charts in this section rely upon cellular phones and landlines as the means of communication. Alternative communication methods may be necessary during a severe emergency in which the region experiences power and cellular network outages. The PSAP, Irvine Police Department, utilizes the 800-megahertz (MHz) radio system and can communicate dispatch-to-dispatch to other local emergency management agencies (e.g., OCFA, Newport

Beach Police Department, etc.). Orange County Control One also has the ability to communicate on a designated radio channel.

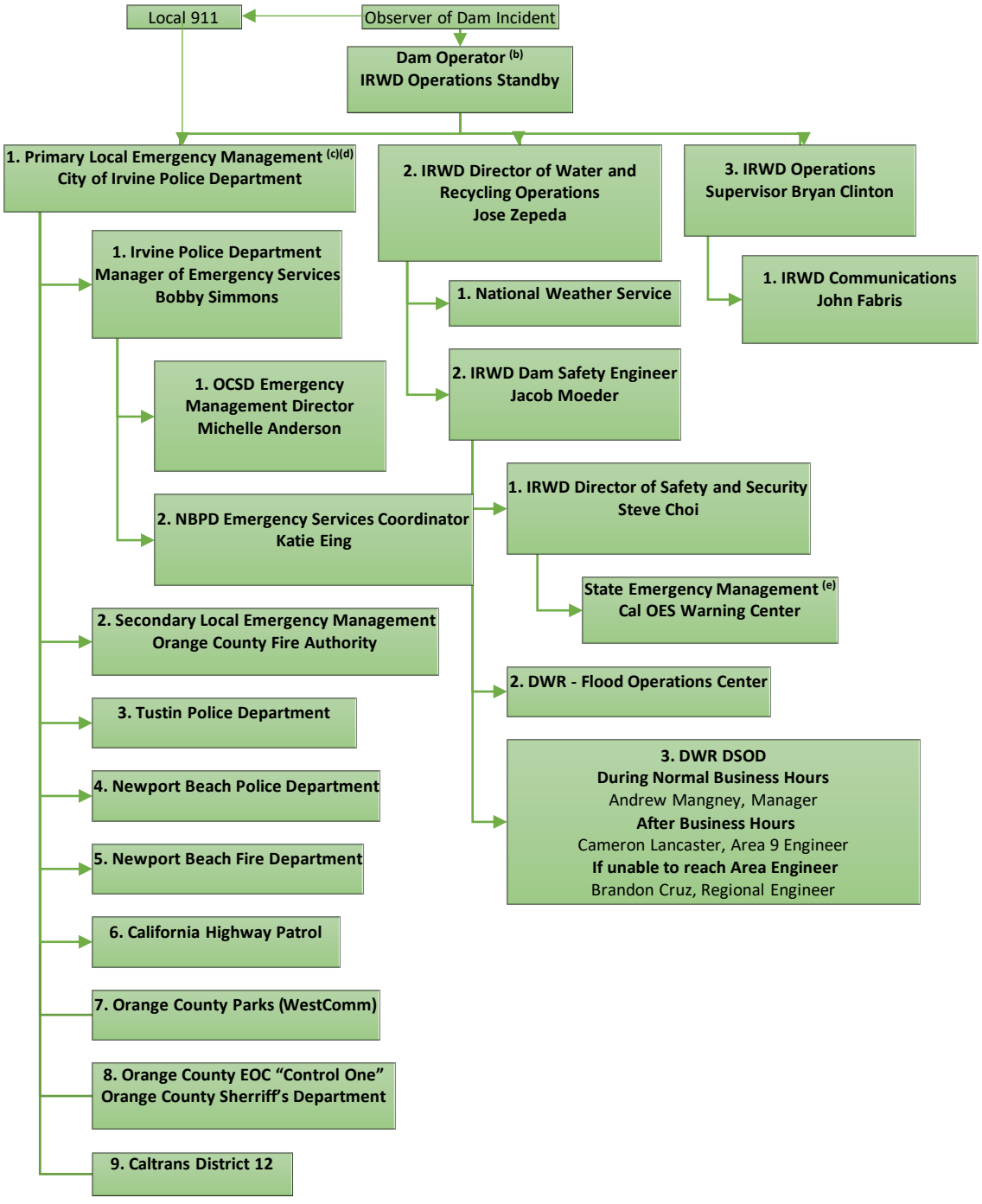
IRWD and other agencies have access to Government Emergency Telecommunications Service (GETS), which is operated by the federal government to prioritize emergency calls made over landlines and cellular lines. Users with a GETS card have priority access to telephone networks when there is congestion or other service problems. IRWD also has satellite phones that can be used for communications during a dam emergency, as well as two-way radio communications capability with WEROC.

The NWS has satellite phones which are operated to make outgoing calls if landlines or cellular service are unavailable. The NWS also uses amateur radio transmissions as a backup method for communication.

High Flow or Non-Failure Notification Flowchart [a]

Notifications to be made in order of appearance on flowchart. First number listed is primary contact number, second number listed (if applicable) is secondary contact number.

MAKE IT CLEAR THE DAM IS CURRENTLY SAFE. See suggested notification scripts in Section 3 of the EAP.



Notes:

a. Use this chart in and the Contact Log in Appendix D to document notifications.
b. After dam incident is reported to IRWD, IRWD will activate the EAP if necessary and make emergency level determination, triggering the continuation of notifications. Refer to Section 5 of the EAP for the EAP Response Process.
c. Contact the Dam Operator if 911 is notified by a non-utility observer.
d. Irvine Police Department notification calls will be made by mass notification systems.
e. Use the Cal OES Warning Center Dam Incident Report in Appendix I. Send a copy to Irvine Police Department.

Phone numbers and email addresses have been removed from this publicly posted copy of this Emergency Action Plan. That information is available from Irvine Ranch Water District's district secretary: Phone 949-453-5300, Email Comments@IRWD.com

High Flow Emergency Level Notification Script

This is _____. [your name and position]

IRWD has activated the Emergency Action Plan for Rattlesnake Canyon Dam, No. 1029.003, located in Irvine. The dam is under a **High Flow** condition but is not in danger of failing.

High flows at the dam began at _____ (time) on _____ (date).

The current flow at the dam is ___ cfs.

You have/will receive a text or email with additional details. We'll provide updates when there are any changes in flow or dam condition.

I can be contacted at _____. [preferred contact method]

If you can't reach me, please use _____. [alternate contact method]

Non-Failure Emergency Level Notification Script

This is _____. [your name and position].

IRWD has activated the Emergency Action Plan for Rattlesnake Canyon Dam, No. 1029.003, located in Irvine. The dam is under a **Non-Failure** condition and is not in danger of failing.

IRWD activated the EAP because _____ (description of condition).

You have/will receive a written notification with additional details. We'll provide updates detailing any changes in flow or dam condition.

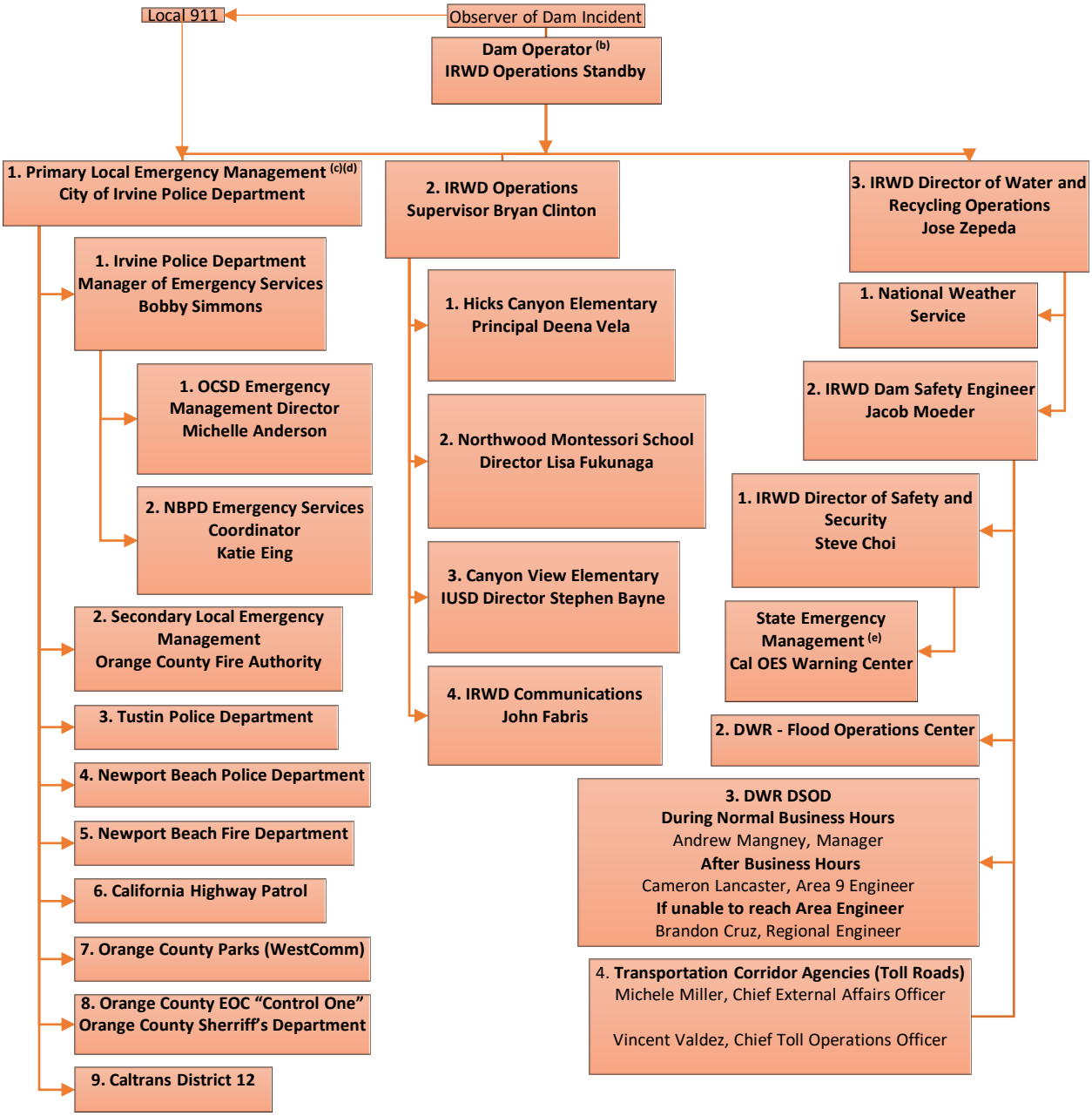
I can be contacted at _____. [preferred contact method]

If you can't reach me, please use _____. [alternate contact method]

Potential or Imminent Failure Notification Flowchart [a]

Notifications to be made in order of appearance on flowchart. First number listed is primary contact number, second number listed (if applicable) is secondary contact number.

See suggested notification scripts in Section 3 of the EAP.



Notes:

a. Use this chart in and the Contact Log in Appendix D to document notifications.
b. After dam incident is reported to IRWD, IRWD will activate the EAP if necessary and make emergency level determination, triggering the continuation of notifications. Refer to Section 5 of the EAP for the EAP Response Process.
c. Contact the Dam Operator if 911 is notified by a non-utility observer.
d. Irvine Police Department notification calls will be made by mass notification systems.
e. Use the Cal OES Warning Center Dam Incident Report in Appendix I. Send a copy to Irvine Police Department.

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Potential Failure Emergency Level Notification Script

This is _____ [your name and position].

IRWD has activated the Emergency Action Plan for Rattlesnake Canyon Dam, No. 1029.003, located in Irvine. The dam is under a **Potential Failure** condition and may be in danger of failing.

IRWD is responding to _____ [describe event] that could result in dam failure as early as _____.

If the dam fails, parts of Irvine, Tustin, and Newport Beach may be flooded from Portola Parkway to I-5.

The maps in your copy of the Emergency Action Plan show potential inundation areas.

The City of Irvine Police Department is the PSAP for this emergency.

You have/will receive a written notification with additional details. We'll provide updates detailing any changes in flow or dam condition.

I can be contacted at _____. [preferred contact method]

If you can't reach me, please use _____. [alternate contact method]

Imminent Failure Emergency Level Notification Script

This is an emergency. This is _____ [your name and position].

Rattlesnake Canyon Dam, No. 1029.003, located in Irvine, is failing. The downstream area must be evacuated immediately.

Repeat, Rattlesnake Canyon Dam, No. 1029.003, is failing; evacuate the low-lying portions of Irvine, Tustin, and Newport Beach between Portola Parkway and I-5. Portions of Portola Parkway, Irvine Boulevard, Culver Drive, and Irvine Boulevard should be closed due to potential flooding. I-5 between Culver Drive and Jamboree Road may become flooded.

Reference the inundation map in your copy of the Emergency Action Plan for specific evacuation areas.

The City of Irvine Police Department is the PSAP for this emergency.

You have/will receive a written notification with additional details for this **Imminent Failure** condition.

I can be contacted at _____. [preferred contact method]

If you can't reach me, please use _____. [alternate contact method]

The next status report will be provided in approximately 30 minutes.

Imminent Failure Emergency Level Public Message

The following pre-scripted message may be **used for emergency management authorities to communicate the Imminent Failure of the dam with the public**:

> Attention: This is an emergency message from _____ [emergency management agency]. Listen carefully. Your life may depend on immediate action.
>
> Rattlesnake Canyon Dam located in Irvine is failing. Repeat. Rattlesnake Canyon Dam located in Irvine is failing.
>
> If you are in or near this area, proceed immediately to high ground. The low-lying portions of the Northwood neighborhood, Portola Parkway, Culver Drive, and adjacent areas including Canyon View Elementary School may be flooded. Portions of Portola Parkway, Irvine Boulevard, Culver Drive, Irvine Boulevard, and I-5 may be closed due to flooding.
>
> If you are in or near this area, proceed immediately to high ground away from low lying areas.
>
> Repeat message.

3.2 Contact Information Table

The contact table below lists all parties included in the notification flowcharts, along with other key stakeholders. If unable to contact a party using the method shown on the flowcharts, refer to this table to attempt to contact through a different pathway. All contacts included in the flow charts and contact tables are confirmed to be up-to-date as part of the annual EAP review process.

Organization	Name (Title)	Primary Phone #	Secondary Phone #	Email Address	**Written Emergency Notification Method**
Cal OES	California State Warning Center				Email
Caltrans (District 12)	24-hour Notification Number				None
Caltrans (District 12)	Bala Nanjappa (D-12 Maintenance Engineering)				Text + email
Caltrans (District 12)	Skead Patton (D-12 Maintenance Manager)				Text + email
Canyon View Elementary School[(a)]	Main phone number				Email
CHP	24-Hour Dispatch in Santa Ana				None
CHP	Valerie Cardenas (Public Safety Dispatch Supervisor)				Email
CHP	State Dispatch number				None
CHP	Sgt. Jeff Beam				Email
CHP	Capt. Mike Salinas				Email
CHP	Lt. Nicole Pacheco				Email
CHP	Lt. Hope Maxson				Email
DWR DSOD	Andrew Mangney (Field Engineering Branch Manager)				Email
DWR DSOD	Brandon Cruz (Southern Regional Engineer)				Text + email

Phone numbers and email addresses have been removed from this publicly posted copy of this Emergency Action Plan. That information is available from Irvine Ranch Water District's district secretary: Phone 949-453-5300, Email Comments@IRWD.com

Organization	Name (Title)	Primary Phone #	Secondary Phone #	Email Address	**Written Emergency Notification Method**
DWR DSOD	Cameron Lancaster (Area 9 Engineer)				Text + email
Hicks Canyon Elementary School[(a)]	Main Office				None
Hicks Canyon Elementary School[(a)]	Deena Vela (Principal)				Email
Hicks Canyon Elementary School[(a)]	Connor Drake (Assistant Principal)				Email
Irvine Police Department	Robert Simmons (Manager of Emergency Services)				Text + email
Irvine Police Department	24-Hour Dispatch				None
IRWD	Paul Cook, P.E. (General Manager)				Email
IRWD	David Paulson (Operations Supervisor)				Text + email
IRWD	Jose Zepeda (Director of Water and Recycling Operations)				Text + email
IRWD	Bryan Clinton (Operations Supervisor)				Text + email
IRWD	Steve Choi (Director of Safety and Security)				Text + email
IRWD	John Fabris (Communications)				Text + email
IRWD	Operations Standby/Customer Service				None

Phone numbers and email addresses have been removed from this publicly posted copy of this Emergency Action Plan. That information is available from Irvine Ranch Water District's district secretary: Phone 949-453-5300, Email Comments@IRWD.com

Organization	Name (Title)	Primary Phone #	Secondary Phone #	Email Address	**Written Emergency Notification Method**
IRWD	Jacob Moeder (Engineering Manager/Dam Safety Engineer)				Text + email
Irvine Unified School District	Stephen Bayne (Director of Risk Management and Insurance)				Email
Newport Beach Fire Department	24-Hour Dispatch (Metro Net)				None
Newport Beach Fire Department	Jeff Boyles (Fire Chief)				Text + email
Newport Beach Police Department	24-Hour Dispatch				None
Newport Beach Police Department	Katie Eing (Emergency Services Coordinator)				Text + email
Newport Beach Utilities Department	Steffen Catron (Water Operations Superintendent)				Text + email
Newport Beach Utilities Department	Casey Parks (Utilities Superintendent)				Text + email
Northwood Montessori School[(a)]	Lisa Fukunaga (Director)				Text + email
Northwood Montessori School[(a)]	Richard Ruszat (Owner)				Text + email
Northwood Montessori School[(a)]	Rayann Palazzolo (Associate Director)				Text + email

Phone numbers and email addresses have been removed from this publicly posted copy of this Emergency Action Plan. That information is available from Irvine Ranch Water District's district secretary: Phone 949-453-5300, Email Comments@IRWD.com

Organization	Name (Title)	Primary Phone #	Secondary Phone #	Email Address	**Written Emergency Notification Method**
Northwood Montessori School[(a)]	Lily Reyes (Assistant Director)				Text + email
Northwood Montessori School[(a)]	Thomas Montano (Facilities Manager)				Text + email
NWS	National Weather Service				None
NWS	Alexander Tardy (Warning Coordination Meteorologist)				Text + email
OCFA	Nick Freeman (Division 2 Chief)				Email
OCFA	Scott Wiedensohler (Division 4 Chief)				Email
OCFA	Non-Emergency Dispatch				None
Orange County Parks	24-Hour Dispatch (WestComm)				None
Orange County Parks	Eric Rubery (Operations Support Manager)				Text + email
OCPW	Trevor Richardson (Assistant Emergency Manager)				Email
OCSD	Emergency Operations Center "Control One"				None
OCSD	24-Hour Dispatch				None
OCSD	Michelle Anderson (Emergency Management Director)				Text + email
OCSD	Kevin McArthur (Assistant Emergency Manager)				Text + email

Phone numbers and email addresses have been removed from this publicly posted copy of this Emergency Action Plan. That information is available from Irvine Ranch Water District's district secretary: Phone 949-453-5300, Email Comments@IRWD.com

Organization	Name (Title)	Primary Phone #	Secondary Phone #	Email Address	**Written Emergency Notification Method**
OCSD	Mayra Wheeler (Senior Emergency Management Program Coordinator)				Text + email
TCA (Toll Roads)	Michele Miller (Chief External Affairs Officer)				Text + email
TCA (Toll Roads)	Vincent Valdez (Chief Toll Operations Officer)				Text + email
Tustin Police Department	Stu Greenberg (Chief of Police)				Text + email
Tustin Police Department	Lt. Luis Garcia				Text + email
Tustin Police Department	Pat Hurtado (Primary Emergency Operations Coordinator)				Text + email
Tustin Police Department	Stephen Foster (Secondary Emergency Operations Coordinator)				Email
Tustin Police Department	Non-Emergency Dispatch				None
WEROC	Vicki Osborn (Director of Emergency Management)				None

Notes: (a) Canyon View Elementary School, Hicks Canyon Elementary School, and Northwood Montessori School are all located in close proximity to the dam and have been added to the tables in order to facilitate timely notifications.

Phone numbers and email addresses have been removed from this publicly posted copy of this Emergency Action Plan. That information is available from Irvine Ranch Water District's district secretary: Phone 949-453-5300, Email Comments@IRWD.com

Section 4: Project Description

Rattlesnake Canyon Dam was constructed in 1959. DSOD has given the dam a hazard classification of "Extremely High". The dam impounds Rattlesnake Reservoir, which stores recycled water for use in the IRWD service area. The dam is a compacted earth fill embankment. It has a crest length of 980 feet. The barrier height is 73 feet, as measured from the maximum water surface at the spillway crest elevation of 414.4 feet[8] to the estimated downstream toe at an elevation of 341.4 feet. The upstream face of the dam has slopes with 3:1 ratios, and the downstream face of the dam is sloped at a 2.5:1 ratio.

DSOD has not identified any CAS for Rattlesnake Canyon Dam. Figure 4-1 is a schematic of the reservoir, showing the dam, spillway, and outlet works. A location map, including downstream jurisdictions, was previously provided in Figure 1-1. There are no upstream or downstream jurisdictional dams which would impact, or be impacted by, an incident at Rattlesnake Canyon Dam. Syphon Canyon Dam, also owned by IRWD, is located approximately 1.4 miles south-southeast of Rattlesnake Canyon Dam; however, Syphon Canyon Dam is not inside the inundation area of Rattlesnake Canyon Dam.

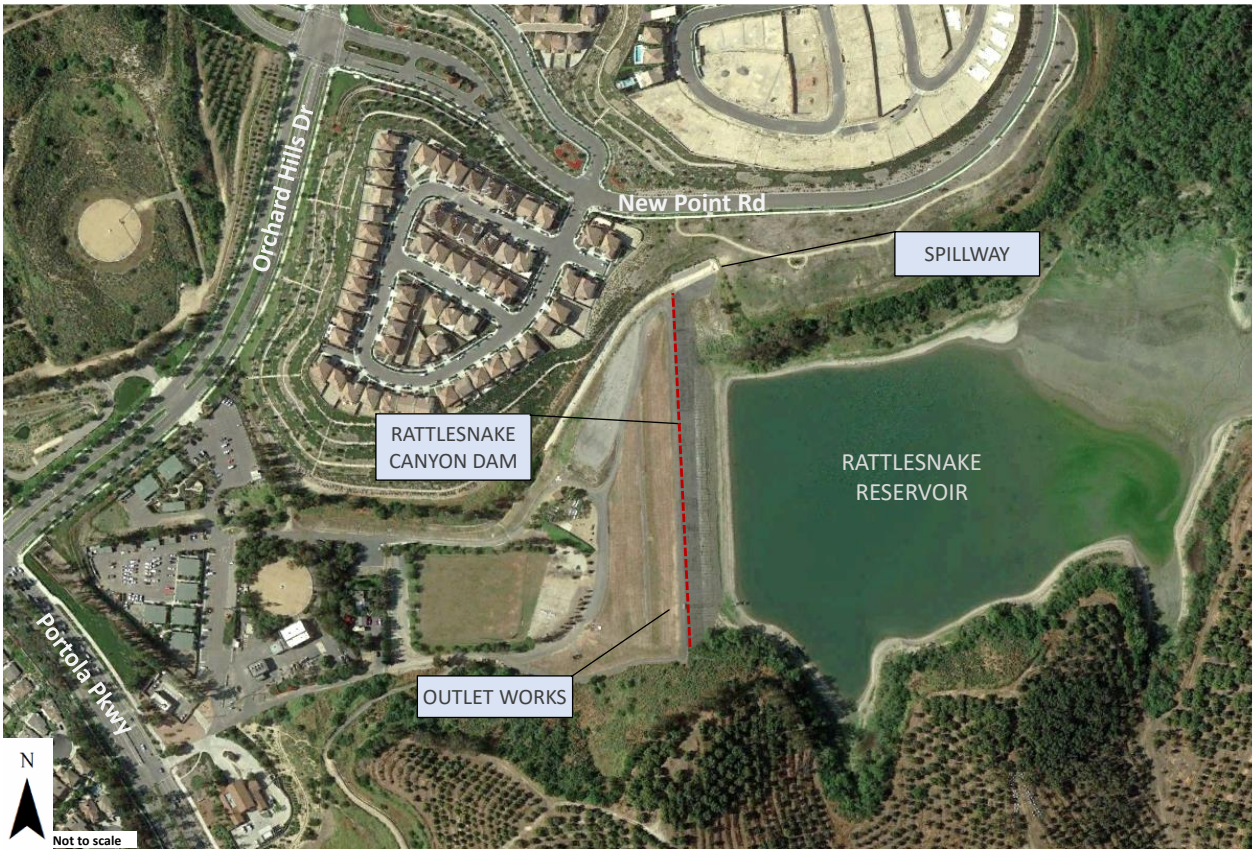
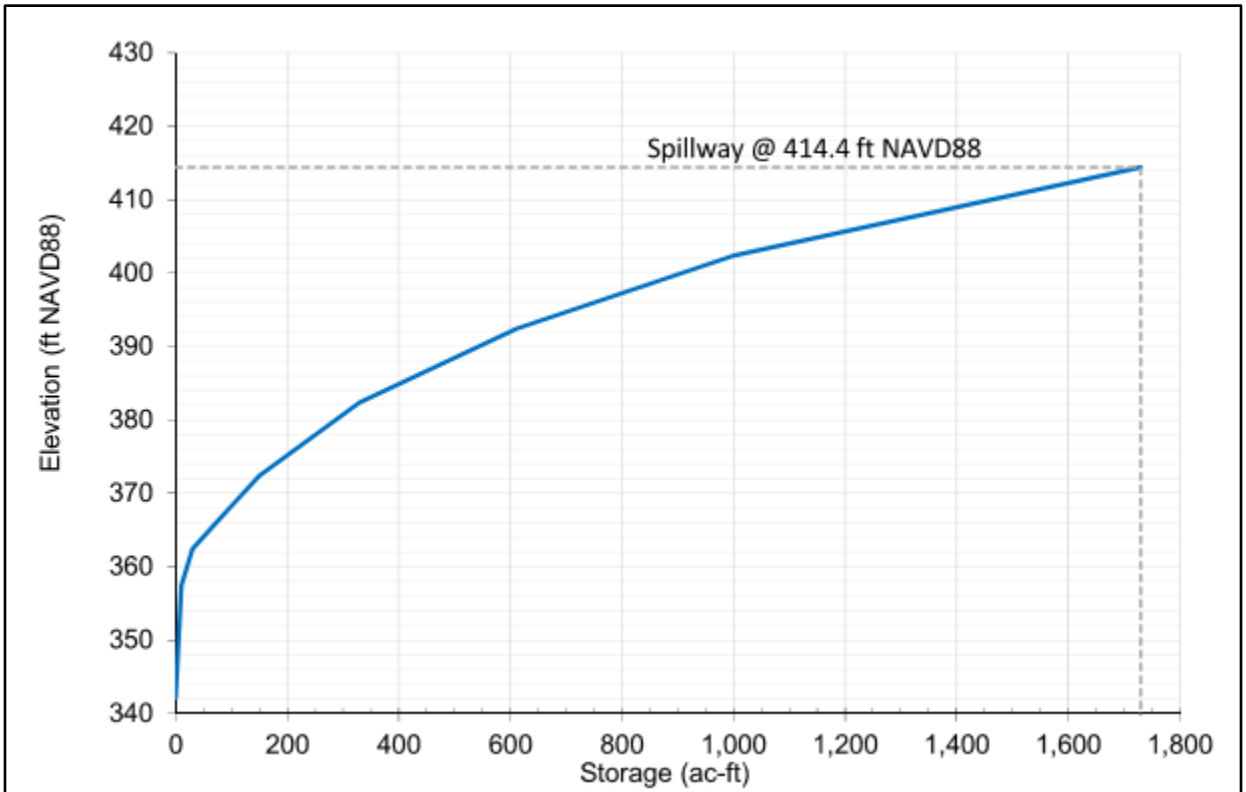


Figure 4-1 Schematic of Rattlesnake Canyon Dam

[8] All elevations discussed in this plan are referenced to the in the North American Vertical Datum of 1988 (NAVD88).

The capacity of the reservoir behind Rattlesnake Canyon Dam, based on DSOD records, is 1,480 acre-feet, However, as-built drawings indicate that capacity at the spillway crest elevation of 414.4 feet may have been up to 1,730 acre-feet. The dam has an upstream toe elevation ranging from 355 to 357 feet. The modeling and inundation areas associated with failure at the Rattlesnake Canyon Dam were completed using the full 1,730 acre-feet indicated in the as-built conditions. Although some of the capacity may be taken up by accumulated sediment, DWR regulations require that any accumulated sediment be modeled as water. Figure 4-2 is the storage-capacity curve.



Note: graph shows maximum possible reservoir capacity at the spillway crest; the current operating level is restricted by DSOD to six feet below the spillway crest.

Figure 4-2 Reservoir Storage Capacity Curve

The drainage area upstream of Rattlesnake Canyon Dam is 2 square miles. The reservoir collects natural runoff during the rainy season from this area. It also stores recycled water from IRWD's MWRP, which is located about seven miles southwest of Rattlesnake Canyon Dam. Recycled water is conveyed from the MWRP directly to Rattlesnake Canyon Reservoir. The reservoir has a 24-inch outlet pipe, which has four upstream slide gates and two downstream valves. The outlet pipe conveys water either into the recycled water distribution system, or to a drain, depending on valve positions.

Rattlesnake Canyon Dam has a concrete spillway which discharges into a gunite-lined channel. The spillway has a crest elevation of 414.4 feet. The bottom of the spillway channel is about 15 feet wide. The spillway channel discharges into a stilling basin before transitioning into a vegetated channel. A spillway capacity curve is not available for Rattlesnake Canyon Dam, and

creation of one was outside the scope of this plan. The capacity of the spillway channel is not known, but its capacity would be greatly exceeded by a dam failure flood wave.

Downstream of Rattlesnake Canyon Dam, water from a dam failure would flow through streets, overland flow areas, storm drain structures, and into Rattlesnake Canyon Wash. A dam failure flood wave at this location is expected to greatly exceed the capacity of these structures and channels. Channel capacity of Rattlesnake Canyon Wash is estimated to be on the order of 700 cfs.[9] Inundation modeling completed for the maps in Part II shows that the capacity of this wash would be greatly exceeded by a dam failure flood wave.

The dam failure flood wave would also inundate Peters Canyon Wash. OCPW has historically measured flows on Peters Canyon Wash.[10] In the channel, flows are typically less than 10 cfs; however, daily discharge after storm events can be as high as 1,000 to 3,000 cfs. Inundation modeling completed for the maps in Part II of this plan shows that a dam failure flood wave could exceed the capacity of Peters Canyon Wash and flood the channel and surrounding areas (see Panel 2 and Panels 4 through 8 in Part II). No extremely high flow or emergency flow conditions are known to have occurred at Rattlesnake Reservoir.

The water level in the reservoir is controlled through input valves, and if a potential or developing dam safety incident requires the lowering of the reservoir level, this must be done in accordance with the standard operating procedures described in IRWD's emergency plan. All actions associated with controlling flow into or out of the reservoir must be coordinated with the IRWD's water operations staff or a representative designated by IRWD.

Discharge curves for the outlet pipe have not been prepared; however, the typical discharge flowrate through the 24-inch outlet pipe is 15 to 25 cfs. At these typical discharge rates, the estimated time to drain the full reservoir would be 30 to 60 days.

No extreme high flow or emergency events have ever occurred at the Rattlesnake Canyon Dam which affected the surrounding community or downstream areas. If the dam were to fail, the low-lying portions of the Northwood neighborhood, Portola Parkway, Culver Drive, and adjacent areas including Canyon View Elementary School, Northwood Montessori School, and Hicks Canyon Elementary School could be inundated. Portions of I-5 between Jamboree Road/261 and Culver Drive could be impacted by an incident at Rattlesnake Canyon Dam. Portions of Portola Parkway, Irvine Boulevard, Culver Drive, and Irvine Boulevard would potentially be closed due to potential inundation. Interstate 405 (I-405) would not be impacted by an incident at Rattlesnake Canyon Dam: at that location, the flood would be confined to San Diego Creek and would not overtop I-405.

There are no dams upstream or downstream of Rattlesnake Canyon Dam which would contribute to or be affected by an emergency event at Rattlesnake Canyon Dam. Syphon Canyon Dam, a jurisdictional dam also owned by IRWD, is located about 1.2 miles south-southeast from

[9] Estimated from USGS Streamstats, on Rattlesnake Canyon Wash at latitude 33.73151, longitude -117.75870; 100-year peak flood used as estimate of channel capacity; measured channel dimensions and capacity are not known. https://streamstats.usgs.gov/ss/

[10] Daily discharge data from Orange County Public Works for Station PCW, Peters Canyon Wash at Barranca Parkway.

Rattlesnake Canyon Dam. The two dams are on separate stream tributaries, and a failure at Rattlesnake Canyon Dam would not affect Syphon Canyon Dam.

Section 5: EAP Response Process

There are four steps that should be followed when an unusual or emergency incident is detected at the dam. These steps constitute the EAP Response Process. The steps are:

- Step 1: Incident detection, evaluation and emergency level determination
- Step 2: Notification and communication
- Step 3: Emergency actions
- Step 4: Termination and follow up

Early detection and evaluation of the condition(s) or triggering event(s) that initiate or require an emergency response action are crucial. Timely determination of an emergency level ensures that the appropriate response actions are taken based on the urgency of the situation. Procedures for early notification are provided in Section 3 that allow all entities involved with plan implementation to respond appropriately. Preventive or mitigating actions must be taken to attempt to address conditions at the dam. Eventually, a determination will need to be made concerning termination of the incident. After the incident is over, follow-up activities may be required. All of these steps make up the general EAP response process and are discussed in the following sections.

5.1 Step 1: Incident Detection, Evaluation, and Emergency Level Determination

Step 1 involves emergency detection, evaluation, and incident classification. Regular surveillance at the site is the normal method of detecting potential emergency situations. For conditions beyond the normal range of operations, contact DSOD for assistance with evaluation.

5.1.1 Monitoring, Detection, and Early Warning

This EAP establishes the procedures to be employed by IRWD personnel to ensure the safety of life and property at and downstream of Rattlesnake Canyon Dam. There is a dam keeper on site who is generally there on nights and weekends. The dam is unattended during business days, but the water level in the reservoir is remotely monitored and IRWD water operations staff conduct daily visual inspections of the dam and appurtenances. IRWD has a dam safety program which regularly monitors and inspects features of the dam to detect problems. This program includes:

- Monitoring of reservoir data in a SCADA system with alarms/alerts.
- Routine visual inspection of the dam.
- Annual surveys of survey monuments. Measurements are compared to historical data to assess trends and detect anomalies.
- Measurement of water levels on a monthly basis. Measurements are compared to historical data to assess trends and detect anomalies.
- Measurement of subdrain flows on a monthly basis. Subdrain flow data are compared to historical data to assess trends and detect anomalies.

- Annual inspections by DSOD.
- Periodic dam safety reviews that consider potential failure modes and risk analysis.

The Irvine Ranch Conservancy has facilities immediately downstream of the dam. Any anomalies that are not detected by IRWD operations and maintenance staff, may be observed and reported by members the general public at the Conservancy. There are also several homes situated near Rattlesnake Canyon Dam near New Point Road. These two areas – the Conversancy and nearby homes – are where members of the public would be able to observe the dam and report any anomalies.

Section 7 of this EAP contains more details about how monitoring and detection instrumentation are used by IRWD for incident preparedness.

5.1.2 Emergency Level Determination

After identification of a dam threatening condition, the dam operator or a qualified engineer will determine if there is sufficient time for additional investigation before declaring an emergency situation. Prior to activating the EAP, the IRWD Director of Water and Recycling Operations, in conjunction with the Dam Safety Engineer and EAP Coordinator, will determine the emergency level.

An emergency level determination may be re-evaluated at times during a dam emergency as it may not be readily apparent whether a complete breach will occur or how long it may take. IRWD, in conjunction with DSOD engineers, will be appropriately conservative in evaluating the emergency level determination and will provide emergency management authorities with the most complete information possible so that decisions regarding public safety and evacuations may be made quickly and effectively.

There are four dam safety emergency level categories for the Rattlesnake Canyon Dam. The sections below describe how each emergency level applies to the dam, *Table 5-1 Emergency Level* is provided for different incidents that pose dam safety hazards.

High Flow – High Flows in System, No Threat to Dam

The High Flow emergency level indicates that flooding is occurring on the river system, but there is no apparent threat to the integrity of the dam. The High Flow emergency level is used by the dam owner to convey to outside agencies that downstream areas may be affected by the dam's release. Although the amount of flooding may be beyond the control of the dam owner, information on the timing and amount of release from the dam may be helpful to authorities in making decisions regarding warnings and evacuations.

The Rattlesnake Canyon Dam has a small drainage area and is filled and drained independently of the local. It is therefore highly unlikely that it would be affected by a high flow situation as described in the FEMA guidelines. However, the high flow scenario has been included in this EAP to ensure complete preparedness. In some cases, flow over spillways could cause unexpected flooding downstream, but the dam is not endangered. In cases of spillway releases,

downstream residents may need to be notified if flooding threatens life or property, but it should be made clear that the dam is safe.

Non-Failure – Unusual, Slowly Developing Event

The Non-Failure emergency level is appropriate for an event at a dam that will not, by itself, lead to a failure, but requires investigation and notification of internal and/or external personnel. This classification indicates a situation is developing; however, the dam is not in danger of failing. In many cases, these unusual events are remedied with no further action required. Examples of Non-Failure events are (1) new seepage or leakage on the downstream side of the dam, (2) presence of unauthorized personnel at the dam, and (3) malfunction of an inlet valve in the open position creating the potential for high flow downstream of the dam or excessive erosion in the vicinity of the outlet works.

Potential Failure – Potential Dam Failure, Rapidly Developing

This classification indicates that a situation is rapidly developing that could cause the dam to fail. A reasonable amount of time is available for analysis before deciding whether to evacuate residents. Emergency responders in affected areas will be alerted that an unsafe situation is developing. The Potential Failure emergency level indicates that conditions are developing at the dam that could lead to a dam failure. Examples of Potential Failure events are (1) rising reservoir levels that are approaching the top of the non-overflow section of the dam, (2) transverse cracking of an embankment, and (3) a verified bomb threat. Declaration of a Potential Failure should convey that time is available for analyses, decisions, and actions before the dam could fail. A failure may occur, but predetermined response actions may moderate or alleviate failure.

Imminent Failure – Dam Failure Appears Imminent or In-Progress

The Imminent Failure emergency level indicates that time has run out, and the dam has failed, is failing, or is about to fail. Imminent Failure typically involves a continuing and progressive loss of material from the dam. It is not usually possible to determine how long a complete breach of a dam will take. Therefore, once a decision is made that there is no time to prevent failure, the Imminent Failure warning must be issued. For purposes of evacuation, emergency management authorities may assume the worst-case condition that failure has already occurred.

Decision criteria to assist the dam owner/operator in determining the appropriate emergency level is provided in Table 5-1. The guidance provided in Table 5-1 is intended to function as a framework for IRWD to use to determine when the EAP should be activated but is not prescriptive and each situation will be evaluated on a case-by-case basis.

Table 5-1- Emergency Level Determination

Event	Example Situation	Emergency Level
Erosion of Spillway	Spillway flowing with active erosion gullies	Potential Failure
	Spillway flowing with significant erosion and head cutting advancing rapidly toward reservoir	Imminent Failure
Embankment Overtopping	Reservoir level reaches higher than 414.4 feet NAVD88 and is increasing (i.e. water level is above spillway crest and is increasing).	Potential failure
	Water from the reservoir is flowing over the top of the dam	Imminent Failure
Seepage	New seepage areas in or near dam	Non-Failure
	New seepage areas with cloudy discharge or increasing flow rate	Potential Failure
	Seepage with increasing and significant flow rate	Imminent Failure
Sinkholes	Observation of new sinkhole in reservoir area or on embankment	Potential failure
	Rapidly enlarging sinkhole	Imminent failure
Embankment Cracking or Settlement	New cracks in embankment greater than 1/4-inch-wide without seepage	Non-Failure
	Cracks in the embankment with seepage	Potential Failure
Embankment Movement	Visual shallow slippage	Non-Failure
	Visual deep-seated movement/slippage of embankment	Potential Failure
	Sudden or rapidly proceeding slides of embankment slope	Imminent Failure
Earthquakes	Measurable earthquake reported within 50 miles of the dam	Non-Failure
	Earthquake resulting in visible damage to dam or appurtenances	Potential Failure
	Earthquake resulting in uncontrolled release of water over dam or rapidly developing flow through cracks or rapidly developing erosion through increased seepage	Imminent Failure
Fire	Significant fire in the area that affects access to the dam	Non-Failure
Instruments	Instrumentation readings beyond predetermined values	Non-Failure
Outlet System Failure	Releases causing erosion around outlet works	Non-Failure
	Uncontrolled releases through the outlet but the dam's structural integrity is still maintained	Potential Failure
	Uncontrolled releases through the outlet with dam failure imminent	Imminent Failure
Security Threat	Verified bomb threat that, if carried out, could result in damage to the dam	Potential failure
	Detonated bomb that has resulted in damage to the dam or appurtenances	Imminent failure
Sabotage/ Vandalism	Damage that could adversely impact the functioning of the dam	Non-failure
	Damage that has resulted in seepage flow	Potential failure
	Damage that has resulted in uncontrolled water release	Imminent failure

5.2 Step 2: Notification and Communication

After the emergency level at the dam has been determined, notifications are made in accordance with the appropriate notification flowcharts in Section 3. The notification flowcharts were prepared to assist EAP response personnel during an emergency. Each chart identifies who is responsible for notifying representatives and/or emergency management officials; the prioritized order in which individuals are to be notified; and who is to be notified. A contact list for the flowchart contacts, as well as other affected parties is found in Section 3.2.

During a dam safety incident, the observer of the dam incident will call 911 and/or the dam operator. If local 911 (primary local emergency management) is called first, they will then notify the dam operator. If the dam operator is notified first, they will ensure that primary local emergency management is also aware of the situation. Once the appropriate emergency level has been determined, the flowchart corresponding to that level will be used to inform affected parties of the situation as it progresses. Parties at the start of each branch are responsible for making all calls within that branch, in the order indicated. Positive contact is required. If it is not possible to contact a particular party based on the information given in the flowchart, the notifying party should refer to the contact table provided in Section 3.2.

The notification flowcharts (Section 3.1) require that the primary local emergency management agency, City of Irvine Police Department, make additional calls as part of the notification process. To ensure that notifications are made in a timely manner, multiple staff members will be available to make notification calls for the City of Irvine Police Department. City of Irvine Police Department has agreed to perform the responsibilities in the notification flowcharts and in this EAP. These instructions will be updated annually when the plan is reviewed and contacts are updated (see Section 8.1).

When performing notification and communication activities, it is important that people speak in clear, non-technical terms to ensure that those being notified understand what is happening at the dam, what the current emergency level is, and which actions to take. To assist in this step, pre-scripted messages are available in Appendix E. To ensure timely and efficient notifications during a rapidly developing emergency situation, verbal notifications via phone calls will be short and direct, followed by email confirmations containing the language in the pre-scripted messages (Appendix E). Additionally, fill out the Cal OES Warning Center Dam Incident Report (Appendix I) and use it for initial notifications.

Use the Contact Log (Appendix D) to track required notifications that are attempted or made. The contact information on each notification flowcharts must be updated annually by the dam owner’s/operator’s representative.

In the event of an emergency, IRWD will coordinate closely with emergency management authorities. Communication between IRWD and emergency management authorities may be facilitated by the County and OA Joint Information System (JIS) as described in the County and OA EOP. All parties must understand that the formal declaration of public emergency by emergency management authorities can be a very difficult decision. During this step, IRWD will

provide any information that will assist in that decision. An early decision and declaration are critical to maximizing available response time.

5.3 Step 3: Emergency Actions

After the initial notifications have been made, IRWD will act to save the dam and minimize impacts to life, property, and the environment. Depending on the nature of the incident, a unified command may be established by the Irvine Police Department and the OCFA, and an ICP may be established to coordinate emergency response and/or evacuations. During this step, there is a continuous process of taking actions, assessing the status of the situation, and keeping others informed through communication channels established during the initial notifications. Additional resources may be requested through the ICP, City of Irvine EOC, or County and OA EOC if requirements exceed the IRWD internal maintenance, construction, and contracting capabilities.

Table 5-2 Possible Remedial Actions provides the dam owner/operator with a set of actions to take for different events. The actions listed are not all inclusive of those that may need to be taken during an emergency. Use the Emergency Incident Log (Appendix F) to document the emergency event.

Table 5-2 - Possible Remedial Actions

Condition	Description of Condition	Action to be Taken
Large Spillway Release/High Water Level	Reservoir level reaches elevation 414.4 ft NAVD88 (spillway begins to discharge).	1. Cease filling operations unless overfilling and spillway discharge is planned. Close inlet valves.
		2. If inlet valves have malfunctioned and cannot be closed, contact maintenance crews for immediate repair. Determine if inlet flowrate exceeds the spillway discharge capacity. If not, monitor spillway for signs of excessive erosion, and determine whether a high flow condition may exist downstream. Make notifications as appropriate.
Seepage	Localized new seepage or boils observed along downstream face / toe of earthen embankment with muddy discharge and increasing but controllable discharge of water	1. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos if camera is available. Document location on a site plan and in inspection report.
		2. Place a ring of sand bags with a weir at the top towards the natural drainage path to monitor flow rate. If boil becomes too large to sand bag, place a blanket filter over the area using non-woven filter fabric and pea gravel. Attempt to contain flow in such a manner (without performing any excavations) that flow rates can be measured. Stockpile gravel and sand fill for later use, if necessary.
		3. Inspect the dam and collect piezometer, water level and seepage flow data daily unless otherwise instructed by engineer. Record any changes of conditions. Carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement.
		4. Contact geotechnical engineer and provide all data collected.
		5. Maintain continuous monitoring of feature. Record measured flow rate and any changes of condition, including presence or absence of muddy discharge.

Condition	Description of Condition	Action to be Taken
Seepage (cont.)	Localized new seepage or boils (cont.)	6. Review information collected by field inspection and provide additional instructions / actions as required. Recommend remedial seepage and stability measures.
		7. Make notifications if condition worsens such that failure is imminent.
Sabotage and Miscellaneous Other Issues	Criminal action with significant damage to embankment or structures where significant repairs are required and the **integrity of the facility is compromised – condition appears stable with time.**	1. Contact law enforcement authorities and restrict all access (except emergency responders) to dam. Restrict traffic on dam crest to essential emergency operations only.
		2. Assess extent of damage and visually inspect entire dam for additional less obvious damage. Based on inspection results, confirm if extent of damage to various components of the dam warrants revised emergency level and additional notifications.
		3. Perform additional tasks as directed by the Engineering Supervisor or designee.
		4. Make notifications if conditions worsen.
Earthquakes	Report of an earthquake epicenter within 50 miles	Inspect dam and evaluate the damage sustained and the potential danger of failure. Check for seepage, cracks, displacements, and settlement. Inspect outlet works and spillways. Evaluate instrumentation.
Erosion of Spillway	Erosion or undermining of concrete spillway	Provide temporary protection at the point of erosion by placing sandbags, riprap materials, or plastic sheets weighted with sandbags. Consider pumps and siphons to help reduce the water level in the reservoir. When inflow subsides, lower the water level in the reservoir to a safe level; continue operating at a lower water level to minimize spillway flow.
Fire		Implement fire procedures (if applicable).

Condition	Description of Condition	Action to be Taken
Abnormal Instrumentation Reading	Piezometers, monuments, and seepage measurements are outside of established dam safety parameters.	Conduct daily inspections of the dam. Check and record reservoir elevation, rate at which reservoir is rising, weather conditions (past, current, forecasted), discharge conditions of creeks/rivers downstream, and new or changed conditions associated with this event. Evaluate accuracy of instrumentation.
Outlet System Failure	Failure of the outlet system piping at a point inside the dam foundation.	Implement temporary measures to protect the damaged structure, such as closing the inlet. Lower the water level in the reservoir to a safe elevation, possibly by using pumps or siphons. Consider the severity of flow through outlet, risk to the dam foundation/liner and increased flows in determining emergency level.
Embankment Deformation	**Cracks:** New longitudinal (along the embankment) or transverse (across the embankment) cracks more than 6 inches deep or more than 3 inches wide or increasing with time. New concave cracks on or near the embankment crest associated with slope movement.	1. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos if camera is available. Document location on a site plan and in inspection report.
		2. Restrict traffic on dam crest to essential emergency operations only.
		3. Contact geotechnical engineer and provide all data collected.
		4. Place buttress fill (min 3 ft. high, 15 ft. wide) against base of slope immediately below surface feature and extending 20 ft. beyond visible feature limits (parallel to the embankment). Stock pile additional fill.
		5. Place sand bags as necessary around crack area to divert any storm water runoff from flowing into crack(s).
		6. Inspect the dam; collect piezometer and water level data twice daily unless otherwise instructed by engineer; and record any changes of condition. Carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement.
		7. Review information collected by field inspectors and provide additional instructions / actions as required. Consider survey monitoring.
		8. Make notifications if conditions worsen such that failure is imminent.

Condition	Description of Condition	Action to be Taken
Embankment Deformation (cont.)	**Slides / Erosion:** Deep slide / erosion (greater than 2 feet deep) on the embankment that may also extend beyond the embankment toe but does not encroach onto the embankment crest and appears stable with time.	1. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos if camera is available. Document location on a site plan and in inspection report.
		2. Restrict traffic on dam crest to essential emergency operations only.
		3. Contact geotechnical engineer and provide all data collected.
		4. Re-establish embankment fill slope. Place 5 ft. high buttress fill against base of slope at the slide location that extends at least 15 ft. beyond the furthest downstream limits (perpendicular to the embankment) and extending 20 ft. beyond visible feature limits at either end (parallel to the embankment).
		5. Place sand bags as necessary around slide area to divert any storm water runoff from flowing into slide(s).
		6. Inspect the dam; collect piezometer and water level data daily unless otherwise instructed by engineer; and record any changes of condition. Carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement.
		7. Review information collected by field inspectors and provide additional instructions / actions as required. Consider survey monitoring.
		8. Make notifications if conditions worsen such that failure is imminent.
	Sinkholes: Small depression observed on the embankment or within 50 feet of the embankment toe that is less than 5 feet deep and 30 feet wide or which is increasing with time.	1. Lower reservoir elevation.
		2. Measure and record feature dimensions, approximate flow rate, and relative location to existing surface features. Take photos if camera is available. Document location on a site plan and in inspection report.
		3. Restrict traffic on dam crest to essential emergency operations only.
		4. Contact geotechnical engineer and provide all data collected.

Condition	Description of Condition	Action to be Taken
Embankment Deformation (cont.)	**Sinkholes (cont.):**	5. Backfill the depression with relatively clean earth fill (free of organic materials) generally even with surrounding grade and slightly mounded (6 to 12 inches higher) in the center in order to shed storm water away from the depression. Stock pile additional fill.
		6. Inspect the dam; collect piezometer and water level data daily unless otherwise instructed by engineer; and record any changes of condition. Carefully observe dam for signs of depressions, seepage, sinkholes, cracking or movement.
		7. Review information collected by field inspectors and provide additional instructions / actions as required. Consider remedial construction such as grouting.
		8. Make notifications if conditions worsen such that failure is imminent.

5.4 Step 4: Termination and Follow-up

Once conditions indicate that there is no longer an emergency at the dam site, EAP operations are terminated and follow-up actions are completed. Generally, IRWD or a designated safety expert will be responsible for notifying the Unified Command/IC that the condition of the dam has been stabilized.

The IRWD General Manager, in consultation with the IRWD operations and engineering staff members, dam safety experts, and response personnel, is responsible for determining when the dam safety situation has stabilized. The General Manager will terminate the EAP, which signifies that the dam incident has been resolved at the dam site.

The IRWD Director of Water and Recycling Operations, or designee, will follow the notification flowchart to alert all contacts of the EAP's termination. All contacts will be notified of the EAP termination in the same order as they were notified of its activation, using the notification flowchart. The Director of Water and Recycling Operations will complete the Termination Log (Appendix G).

The Unified Command/IC is responsible for terminating the field level emergency response and relaying this decision to appropriate individuals and agencies. Prior to the termination of an Imminent Failure event that has not caused actual dam failure, DSOD will inspect the dam to determine whether any damage has occurred that could potentially result in loss of life, injury, or property damage.

Post incident, the EAP Coordinator will set up and facilitate a meeting to review the incident and EAP implementation activities. The dam personnel involved with the plan implementation, as well as the responding agencies should be present at the meeting. The following topics will be discussed and evaluated in an after-action review:

- Events or conditions leading up to, during, and following the incident
- Significant actions taken by each participant and improvements for future emergencies
- All strengths and deficiencies found in the incident management process, materials, equipment, staffing levels, and leadership
- Corrective actions identified and a planned course of action to implement recommendations

IRWD's EAP Coordinator will prepare an after-action report (Appendix H), which analyzes what happened, why it happened, and how it can be prevented in the future from a dam safety and/or EAP perspective. The City of Irvine Police Department, OCFA, City of Tustin Police Department, City of Newport Beach Police Department, and the County and OA EOC Manager may prepare a separate after-action reports focused on localized emergency response and evacuation. Outside agencies will be invited to contribute to the after-action report, and findings of the report will be used to improve the EAP.

Section 6: General Responsibilities

6.1 Irvine Ranch Water District Responsibilities (Dam Owner)

Overall IRWD dam owner responsibilities include:

- Detect, verify and assess emergency conditions.
- Respond to emergencies at the dam site.
- Activate and implement the Rattlesnake Canyon Dam EAP, including determining the appropriate emergency level.
- Notify other participating emergency management agencies of emergency conditions, emergency level, EAP activation, and other critical information.
- Utilize IRWD Emergency Operations Plan for internal emergency response coordination.Take corrective action at the dam/reservoir.
- Terminate the EAP.
- Facilitate an after-action evaluation and report.
- Update EAP on at least an annual basis.
- Communicate with the public and the media.

The above responsibilities are to be executed in coordination with emergency management authorities. Dam owner responsibilities by role are outlined in *Table 6-1 Summary of Dam Owner's Responsibilities*. Responsibilities are listed for key personnel including the Operations Manager, Dam Operator, Executive Director of Operations, General Manager, Communications, Dam Safety Engineer, and EAP Coordinator.

IRWD, as the dam owner and operator, is responsible for developing and maintaining the EAP. This includes updating the EAP on at least an annual basis, including updating contact information and notification charts in Section 3. The dam owner is responsible for regular monitoring and inspections of the dam and for responding to emergencies at the dam.

As the dam owner, IRWD will carry out notifications as outlined in Section 6.2, including to the primary local emergency management, state emergency management, and the NWS. Notification charts and procedures are given in Section 3. IRWD's Public Affairs office will communicate with the public and the media. If needed, IRWD will procure outside equipment and materials to aid with a dam incident or emergency.

Table 6-1 Dam Owner Responsibilities by Role

Role	Responsibilities
Director of Water and Recycling Operations, or designee	1. Detect incident from alarms / SCADA / visual inspections, or other monitoring data. 2. As soon as an emergency event is observed or reported, determine the emergency level as detailed in Section 5. 3. Utilize the emergency notification flowcharts in Section 3 to notify the appropriate response personnel and record notifications in the contact log in Appendix D. 4. If no one is onsite, determine emergency level and dispatch operator to the site 5. Coordinate directly with the Unified Command/IC or first responders at the dam site. 6. Coordinate directly with the ICP, City of Irvine EOC, or County and OA EOC, if established. 7. Coordinate with Dam Operator on gate, valve operations and emergency procedures 8. Dispatch construction and maintenance crews as necessary 9. Procure outside equipment and materials as necessary 10. Participate in periodic status report conference calls initiated by the Executive Director of Operations. 11. Upon termination of EAP by General Manager, notify all entities on notification charts 12. Upon termination of EAP by General Manager, fill out a Dam Emergency Termination Log (Appendix G) 13. Participate in the creation of an After-Action Report (Appendix H) to be used in the EAP review process.
Dam Operator/ On-site Monitor	1. Detect/confirm incident at dam 2. Make calls on notification charts 3. Implement gate and valve operations and other emergency procedures 4. Assess need for construction and maintenance crews and/or outside equipment and materials 5. Coordinate dam site security during incident
Executive Director of Operations	1. Initiate periodic status report conference calls with the Director of Water and Recycling Operations, General Manager, Communications, Dam Safety Engineer, and Director of Safety and Security. 2. Provide regular status reports to ICP, City of Irvine EOC, or County and OA EOC, if established through the IRWD Agency Representative or Communications. 3. Coordinate with Communications office
General Manager	1. Participate in periodic status report conference calls initiated by the Executive Director of Operations. 2. Terminate the EAP. 3. Coordinate with Communications office

Role	Responsibilities
Communications	1. Mobilize to Irvine EOC, or County and OA EOC, if established. 2. Participate in periodic status report conference calls initiated by the Executive Director of Operations 3. Provide input to staff on emergency communications 4. Represent IRWD to media 5. Develop non-technical description of dam emergency situation and IRWD remedial actions to inform emergency management authorities and the public 6. Utilize Crisis Communications Plan to communicate with impacted areas.
Dam Safety Engineer	1. Make calls on notification charts 2. Initiate periodic status report conference calls with DSOD. 3. Participate in periodic status report conference calls initiated by the Executive Director of Operations 4. Coordinate with Dam Operator/On-site Monitor. 5. Monitor and review data relevant to dam emergency situation. 6. Notify government authorities when the dam condition has been stabilized. 7. Coordinate with dam safety experts. 8. Maintain and update inundation maps. 9. Manage and implement dam safety program.
EAP Coordinator/ Director of Safety and Security	1. Make calls on notification charts 2. Initiate periodic status report conference calls with State Emergency Management. 3. Participate in periodic status report conference calls initiated by the Executive Director of Operations 4. Notify government authorities when the dam condition has been stabilized. 5. Update EAP at least annually 6. Distribute EAP copies/updates to other plan holders 7. Facilitate the creation of an After-Action Report (Appendix H) 8. Coordinate with WEROC *(see Section 6.5 for additional information)*

6.2 Notification and Communication Responsibilities

IRWD, as the dam owner/operator will determine the appropriate emergency level in accordance with Section 5, and then notify the appropriate emergency management authorities in accordance with Section 3. The dam operator or IRWD operations center will maintain the contact log (Appendix D) to document notifications for the appropriate emergency level.

IRWD's Director of Water and Recycling Operations will notify the NWS of an emergency at Rattlesnake Canyon Dam. Flood warnings and watches will be issued by the San Diego Weather Forecast Office of the NWS (see notification charts in Section 3.1).

IRWD's Dam Safety Engineer will notify DSOD and the DWR Flood Operations Center. IRWD's Director of Safety and Security will notify the CalOES Warning Center (see notification charts in Section 3.1).

IRWD's Communications office will be responsible for communication with the media. IRWD has prepared a Crisis Communications Plan to facilitate providing timely and accurate information and instructions to minimize injuries, impacts on people and property, and potential damage to the environment. The plan outlines how IRWD will provide timely, accurate, wide-reaching, and easy-to-understand information to the media and the public, as well as to IRWD employees, contractors, board members and other stakeholders.

If time allows, onsite personnel may be able to seek internal advice and assistance. However, under an Imminent Failure condition, the responsibility and authority for notification is delegated to the dam operator or local official. Notification protocols are determined by the classification level of the incident and are pre-determined in the notification flowcharts found in Section 3.

IRWD is designated as the lead agency for notification and coordination with the City of Irvine to initiate required response actions including the appropriate notifications to impacted community members. The Irvine Police Department may establish a Unified Command in order to coordinate between multiple jurisdictions and/or agencies, as required. Once notified of an incident at the dam, the City of Irvine EOC may be activated to serve as the center for response, warning, and evacuation activities. In most cases, the County and OA EOC is not expected to be activated for an emergency at Rattlesnake Canyon Dam. However, since no emergency response situation is completely predictable, there may be situations where the County and OA EOC may be activated and staffed based on the situation.

Emergency management authorities with statutory obligations are responsible for warning and evacuation within the affected areas (see Part II Inundation Maps).

Emergency incident logs should be used to document incident related events and should be maintained at command centers and at the dam site or dam operations center. Appendix F contains an example emergency incident log.

6.3 Evacuation Responsibilities

Inundation maps developed by IRWD and approved by DSOD are included in Part II of this EAP and have been distributed to the emergency management authorities listed in the notification flowcharts in Section 3. The EAP distribution list may be found in Appendix C. The inundation maps inform the development and refinement of warning and evacuation plans, and are based on the worst-case scenario of a complete and sudden failure of the dam when it is filled to the spillway crest elevation during a "sunny day" failure, without additional storm flows in Peters Canyon Wash or San Diego Creek. Water levels in the Rattlesnake Reservoir fluctuate considerably throughout the year.

Inundation maps are based on conservative breach parameters and a situation where the reservoir is storing the maximum capacity of water. Therefore, the inundation maps included in Part II of this EAP should be considered a worst-case scenario. Emergency planners and response personnel should consider the specifics of each situation when making response decisions during a dam emergency. The Unified Command/IC will facilitate coordination among agencies and disciplines for evacuations within the affected area.

The City of Irvine and City of Tustin maintain the evacuation plans within their respective city limits for a dam safety emergency at Rattlesnake Canyon Dam. The City of Irvine Police Department would lead evacuations in the City of Irvine. Similarly, the City of Tustin Police Department would lead evacuations in the City of Tustin. Both police departments may request assistance with evacuations from OCFA, which provides fire services to both cities. Public safety agencies will implement emergency response plans as required and at the direction of the Unified Command/IC.

Because the flood wave for a failure of Rattlesnake Canyon Dam would be entirely confined to the San Diego Creek Channel by the time it reached the city limits of Newport Beach, it is not anticipated that Newport Beach would assume any evacuation responsibilities. If it were determined that evacuation within city limits were required, the Newport Beach Police Department and Fire Department would retain the overall responsibility to provide an effective emergency response in compliance with existing city evacuation plans and direction from the Unified Command/IC.

OCSD, which is not part of the Unified Command, may be called upon by the Unified Command to assist with evacuations, if necessary.

6.4 Monitoring, Security, Termination, and Follow-up Responsibilities

The dam operator or an appointed representative will be designated as the onsite monitor from the beginning of a dam safety incident until the emergency has been terminated. This person will provide status updates to the IRWD Director of Water and Recycling Operations, who will provide regular status reports to senior management and local authorities.

During a dam safety incident, the IRWD onsite monitor will oversee security at the dam site. Access to the dam site will be strictly controlled by IRWD. Only those required to respond to the emergency or execute remedial actions will be granted access to the site.

Termination of a dam safety emergency is twofold. The IRWD General Manager, in consultation with IRWD operations and engineering staff members, dam safety experts, and response personnel, is responsible for determining when the dam safety situation has stabilized. The IRWD General Manager will officially terminate the EAP. The Unified Command/IC is responsible for termination of the emergency response activities, including termination of an evacuation.

The dam owner and emergency response authorities should coordinate closely while making decisions to terminate both the dam safety event and the response efforts. Upon termination of the EAP, IRWD’s Director of Water and Recycling Operations, or a designee will notify all flowchart entities which were activated at the start of the emergency incident, and complete an Emergency Termination Log (Appendix G) for submission to DSOD and the Cal OES Warning Center (if notified).

Recovery activities will continue on different levels for all involved in the dam safety incident after the emergency has been terminated. IRWD will coordinate a follow-up evaluation after any emergency and prepare an after-action report. All participants in the dam safety incident should be involved in the evaluation and should keep logs during the incident. An example emergency incident log is provided in Appendix F, although emergency response agencies may maintain alternate documentation methods according to their established internal procedures.

IRWD's EAP Coordinator will prepare an after-action report (Appendix H), which analyzes what happened, why it happened, and how it can be prevented in the future from a dam safety and/or EAP perspective. OCFA, the City of Irvine EOC Manager and the County and OA EOC Manager may prepare a separate after-action report focused on the emergency response and evacuation. Outside agencies will be invited to contribute to the after-action report, and findings of the report will be used to improve the EAP.

6.5 EAP Coordinator Responsibilities

IRWD has designated the IRWD Director of Safety and Security as the EAP Coordinator. The EAP coordinator is responsible for overall EAP related activities, including the following:

- Provide leadership to ensure the EAP is reviewed and updated annually.
- Coordinate annual EAP exercises (see Section 7.2.2 for exercise schedule).
- Summarize the annual EAP exercise for posting to the IRWD website.
- Prepare revisions to the EAP after annual exercise and review.
- Verify and update agency contact information.
- Distribute copies of the revised EAP to all parties who received copies of the original EAP.
- Establish training seminars for IRWD personnel and primary emergency management authorities.
- Coordinate emergency outreach programs with residents and businesses in close proximity to the reservoir.
- After a dam safety incident, hold a meeting to review the incident and EAP implementation activities.
- Facilitate the creation of an After Action Report (Appendix H) after a dam incident by gathering incident information from authorities.
- Utilize any After Action Reports during EAP review process.

The EAP Coordinator is the main point of contact for any questions or comments regarding this EAP. The current EAP Coordinator for IRWD is Steve Choi, who can be reached at:

Steve Choi, Director of Safety and Security
Irvine Ranch Water District
3512 Michelson Drive
Irvine, CA 92612-1799

Phone numbers and email addresses have been removed from this publicly posted copy of this Emergency Action Plan. That information is available from Irvine Ranch Water District's district secretary: Phone 949-453-5300, Email Comments@IRWD.com

Section 7: Preparedness

7.1 Surveillance and Monitoring

The Rattlesnake Canyon Dam EAP establishes the procedures to be employed by IRWD personnel to ensure the safety of life and property at and downstream of Rattlesnake Canyon Dam. The Water Operations Manager is responsible for the day-to-day operation of the reservoir and the dam surveillance and monitoring program. Operations are supported by IRWD maintenance activities. IRWD maintains a surveillance and inspection program for the Rattlesnake Canyon Dam. Monitoring and surveillance data is reviewed by an independent consultant and annual reports are prepared and maintained on file with IRWD. Schematic drawings of the dam which show the surveillance and monitoring instrumentation are included as Figures 7-1 and 7-2.

7.1.1 SCADA

IRWD has a supervisory control and data acquisition (SCADA) system that allows staff to remotely monitor water levels and alarms at Rattlesnake Canyon Dam. Operations staff remotely monitor conditions at the reservoir.

7.1.2 Survey Monuments

Annual surveys are conducted at several survey monuments at Rattlesnake Canyon Dam. A cumulative settlement plot is maintained that indicates any movement of the monuments over time. Lateral or vertical shifting of the monuments is indicative of a potential dam safety issue and requires further investigation.

7.1.3 Piezometers

A piezometer is a small-diameter well used mainly to measure water levels. The water levels in the piezometers at Rattlesnake Canyon Dam are measured by IRWD personnel on a monthly basis. Water levels in the piezometers are compared to reservoir surface water elevations and evaluated against data collected over a 10-year historical period. Anomalies in the piezometer data may be an indication of adverse conditions in the dam embankment or abutments.

7.1.4 Observation Wells

There are several observation wells located near the dam. Water levels in the wells are compared to reservoir surface water elevations and evaluated against data collected over a 10-year historical period. Anomalies in the water level data may be an indication of adverse conditions in the dam embankment or abutments.

7.1.5 Subdrains

The flow from the eight subdrains, which discharge into a drain junction vault and then flow out through an underground pipe at the left downstream toe of the dam, are measured by District personnel on a monthly basis. The flows are observed for clarity to check for the presence of any suspended solids that might indicate a potential piping condition. Blockages in the subdrain piping may cause seepage areas to appear upstream of the vault. Increased flows or anomalies based on historical data are investigated.

7.1.6 Visual Surveillance and Monitoring

Visual inspections are conducted daily by the dam operator that consist of monitoring the water surface elevation, inspecting visible appurtenances, inspecting the access roadway and spillway for cracking, inspecting the downstream toe for seepage, and inspecting the slopes and crest parapet wall for any visible displacement. Any visible cracking, seepage, or signs of settlement or instability are reported and trigger further investigation of the piezometers and monuments or engineering analysis. All of the outlet gates and blow off valves are exercised at least annually to confirm operability. DSOD requires the outlet valves and blow-off valves be exercised once every three years in the presence of a DSOD representative.

Maintenance is conducted as required to remove excessive vegetation at or near the spillway or on the dam face and to control rodent activity on the dam face.

7.1.7 IRWD and DSOD Inspections

IRWD conducts semi-annual inspections. DSOD inspections are conducted annually. Visual inspections of the dam, spillway, outlet, and seepage are conducted, along with a review of monitoring and surveillance data. Annual inspections are documented and maintained on file at both IRWD and with DSOD.

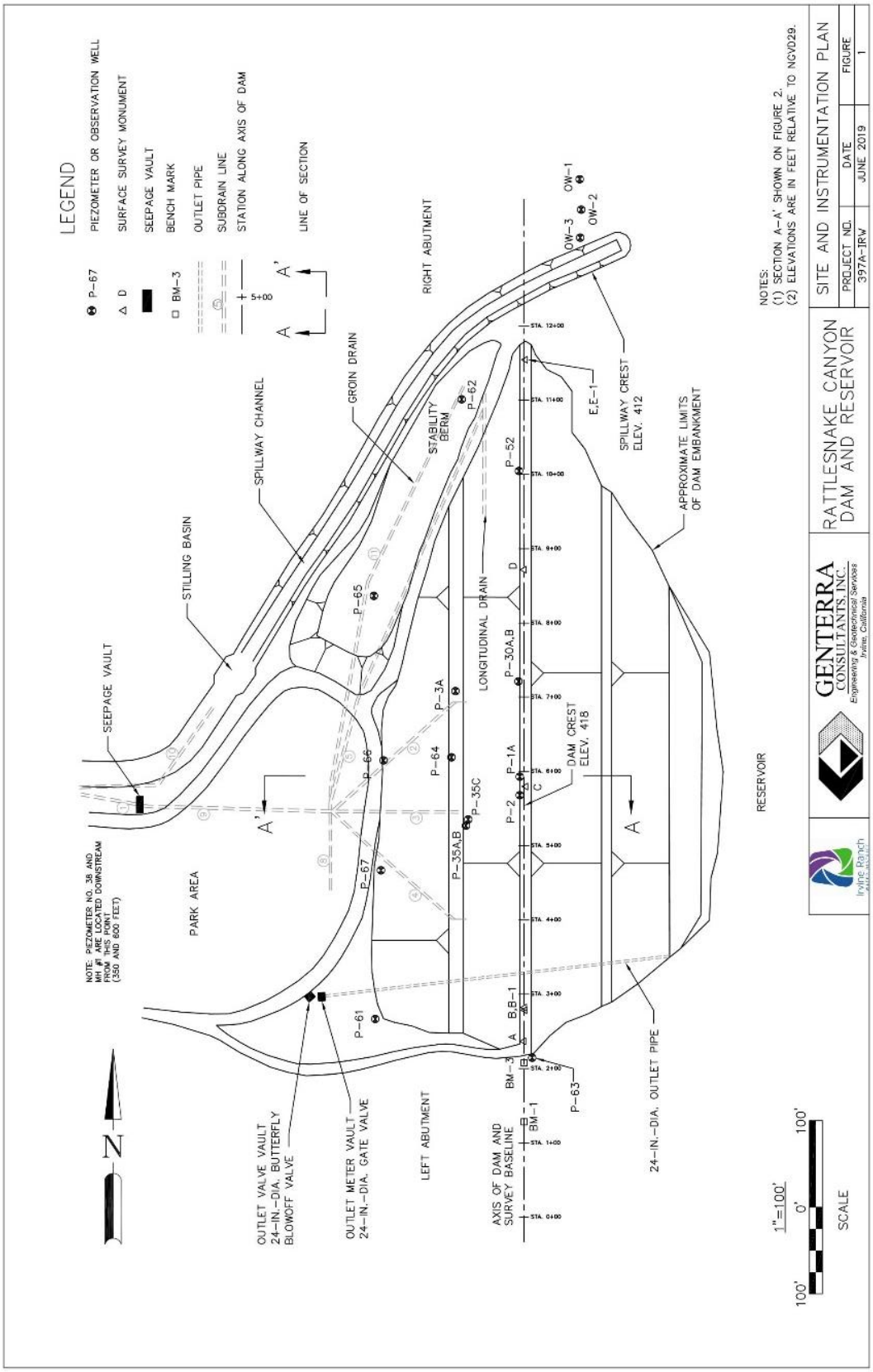


Figure 7-1 Dam Surveillance and Monitoring Locations

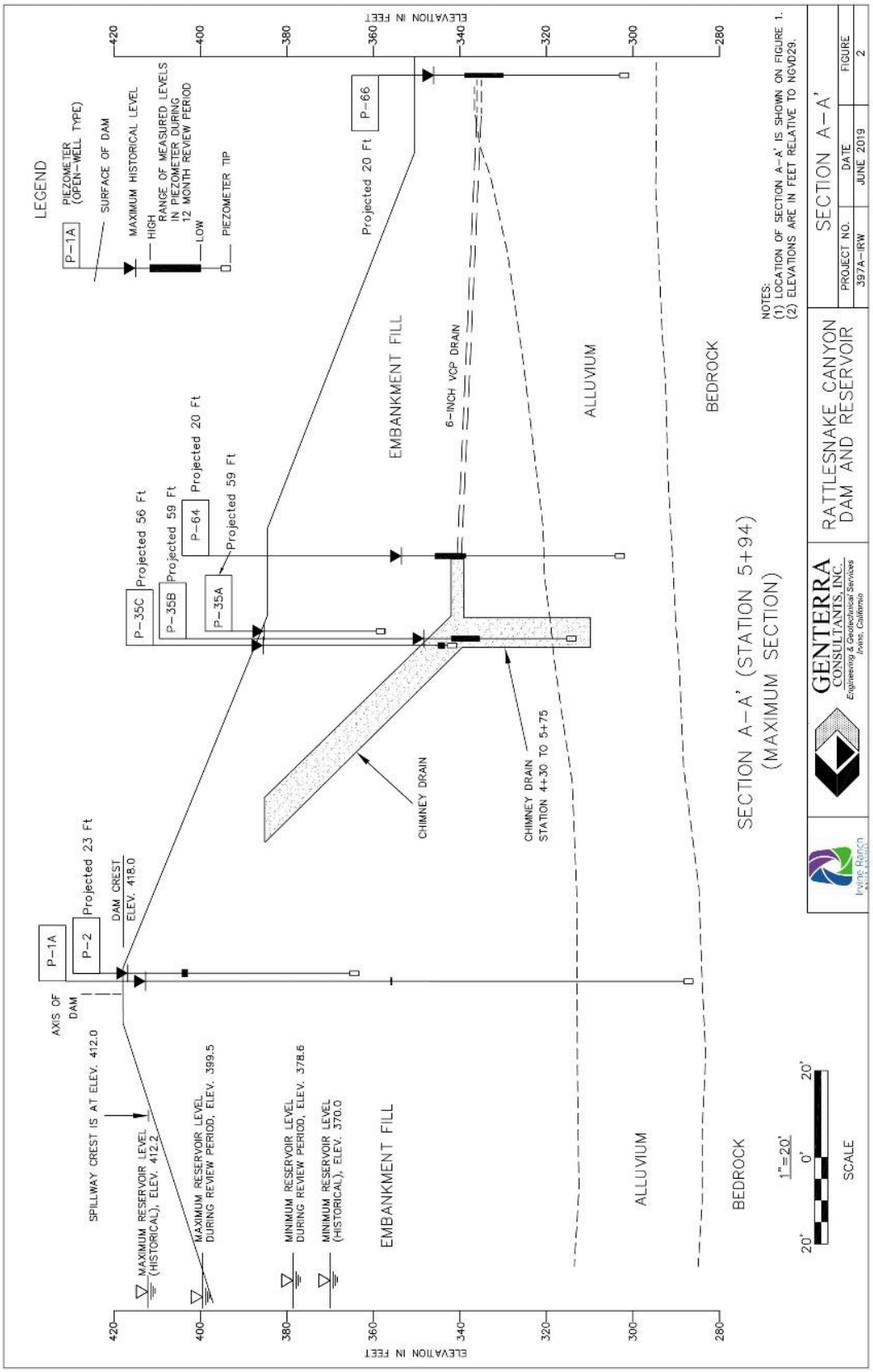


Figure 7-2 Dam Surveillance and Monitoring Profile

7.2 Evaluation of Detection and Response Timing

Timely implementation of the EAP and coordination and communication with emergency management authorities are crucial elements in the effectiveness of the emergency response effort. Total EAP implementation time from the initiation of an actual incident to determination of an emergency situation and notification of appropriate entities involved with implementation is evaluated through annual exercises and training. The time from the initial detection of an incident through the determination of the emergency level and execution of the notifications to the appropriate entities should take no more than 20 minutes. The initial detection and notification time will be evaluated during IRWD's annual review and exercises (see Section 7.2.2), and may be updated in subsequent EAP revisions.

7.2.1 Training

All personnel involved in the EAP should be familiar with the elements of the plan, their responsibilities and duties outlined in the plan and, if applicable, the types and availability of equipment during an emergency. Personnel should be familiar with problem detection and evaluation, and appropriate remediation actions, as detailed in this EAP.

7.2.2 Annual Review and Exercises

IRWD will review and, if needed, update the EAP at least once annually leading up to the emergency action plan notification exercise described below. This review includes contacting all parties listed in this EAP to verify that contact names, phone numbers, addresses and other information is current. One of the most important tasks is to verify and update the contacts listed in the Emergency Notification Flowcharts in Section 3. Making updates to locally available resources along with the other information in the EAP is also important so that accurate information is readily available during an emergency.

In accordance with California Government Code Section 8589.5(c), at least once annually, IRWD will conduct an emergency action plan notification exercise with local public safety agencies, to the extent that a local public safety agency wishes to participate. This annual exercise is to ensure that emergency communications plans and processes are current and implemented effectively.

Exercises will follow the types of exercises defined in the Homeland Security Exercise and Evaluation Program (HSEEP), beginning with simple exercises and advancing to more complex exercises. Sufficient time should be provided between each exercise to learn and improve from the experiences of the previous exercise. IRWD, as the dam owner/operator, will coordinate with the City of Irvine, OCFA and the OCSD EMD in order to exercise the EAP. Exercises promote prevention, preparedness, and response to incidents and emergencies. Exercises may also be extended to include recovery operations. Periodic exercises result in an improved EAP as lessons learned are incorporated into the updated EAP document. The frequency and level of exercise will be determined in coordination with the City of Irvine, OCFA, the OCSD EMD and other local emergency response organizations.

The following are recommended frequencies for the exercise types described in the HSEEP:

- Seminars with primary emergency management authorities as part of the annual emergency action plan notification exercise – annually.
- Drills to test the notification flowcharts in Section 3 and emergency equipment/procedures (emergency action plan notification exercise) – annually.
- Tabletop exercise – every 3 to 4 years or before functional exercises.
- Functional exercise – every 5 years.
- Full scale exercise – as required to evaluate actual field movement and deployment. At least one functional exercise should be conducted before conducting a full-scale exercise.

Functional and full-scale exercises should be coordinated with other scheduled exercises, whenever possible, to share emergency management resources and reduce costs.

7.3 Access to the Site

Access to the Rattlesnake Canyon Dam can be coordinated with the dam operator at the numbers provided in the notification flowcharts in Section 3. Depending on the dam safety incident, IRWD may establish an operations center to coordinate dam safety response activities and provide information to other emergency response personnel.

The dam is located near the intersection of Portola Parkway and Orchard Hills in Irvine, CA 92620. The main access road is located at 4955 Portola Parkway, Irvine, CA 92620. All vehicle access points (via the Portola Parkway and Conservancy access roads) are gated and locked. Portions of the property are fenced, but not all. Figures 1-1 and 4-1 provide additional site information.

In the event of a failure, the main access point from Portola Parkway could be inundated. A secondary access point is located along New Point Road and is not within the inundation area. If Portola Parkway near the dam is inundated, access the dam from the north: from the intersection of Portola Parkway and Culver Drive, take Culver Drive northeast and follow for 1.5 miles. Turn left (east) onto New Point Road. Drive about 1,000 ft until reaching an access path on the south side of New Point Road (Latitude 33.730211, Longitude -117.742208).

7.4 Response During Periods of Darkness

IRWD maintains a 24-hour emergency response staff to respond to various utility outages and emergency maintenance requirements. Because of this emergency response staff and the presence of a dam keeper on site at Rattlesnake Canyon Dam, the response during darkness is expected to be the same as during the day time (20 minutes). Phone numbers in the notification charts are 24-hour contact numbers, so notification procedures during periods of darkness are the same as on weekdays.

Any dam safety incident that requires response actions during periods of darkness may require additional lighting such as portable floodlights. IRWD maintenance and construction personnel can have rental lighting moved to the site in order to respond during times of darkness. Rental

lighting equipment is located within 25 miles of the dam and could be moved to the dam site within 2 hours. Additional lighting may also be required by the dam operator in order to perform visual surveillance of a potential or developing situation. Additional lighting options are also available through the IRWD purchasing and contracting department from locally available sources.

7.5 Response During Weekends and Holidays

IRWD staff are available for recall during emergencies. The dam keeper is generally on-site during weekends and holidays. The dam is not attended by the dam keeper during normal work-day hours, from 6 am to 4:30 pm on Monday through Thursday. For slowly developing situations, staff may be recalled and a 24-hour operations center may be established in order to have resources readily available should the situation deteriorate. A rapidly developing situation occurring after hours or during weekends and holidays may require the recall of engineering, maintenance, or other response personnel, and response may be delayed during the recall and mobilization of the IRWD staff. During weekends and holidays, IRWD staff could be onsite to assess a rapidly-developing emergency within 60 minutes. This means that the daytime response time of 20 minutes could be extended by 60 minutes, for a weekend/holiday response time of about 90 minutes.

7.6 Response During Adverse Weather

Periods of adverse weather that have the ability to impact dam safety may require additional staff to be on-call or prepared to execute response actions. The IRWD Director of Water and Recycling Operations, in collaboration with the dam operator will make staffing recommendations to IRWD leadership during times of predicted adverse weather. Response time to an emergency situation may be lengthened by 30 minutes during periods of adverse weather. If the primary access to the site along Portola Rd is affected by a dam failure or adverse weather, vehicle access is possible from the residential neighborhood road directly north of the dam (see Section 7.3 for access points and directions).

7.7 Alternative Sources of Power

IRWD maintains emergency backup generators for use in the district. At Rattlesnake Canyon Dam, the reservoir's outflow, strainers and compressors require power, but have a backup power source on-site. Other reservoir operations do not require power and may be operated manually. Additional generators may be brought to the site to power lighting if needed to evaluate the dam in periods of darkness. Generators are located at the MWRP at 3512 Michelson Drive, Irvine, California, 92612. Generators may be brought to the dam site within 45 minutes.

In the event of an electrical outage, cellular phones may be used for communications in lieu of a telephone land line or computer.

7.8 Emergency Supplies and Information

IRWD maintains emergency supplies and response equipment for many potential response actions. IRWD's supplies are centrally located at the MWRP, located about seven miles southwest of Rattlesnake Canyon Dam. See list of materials in Section 7.9. In the event that the IRWD internal response capabilities are exceeded, *Table 7-1 Locally Available Resources* is provided to aid in securing additional response materials and equipment. The suppliers listed in Table 7-1 are typically open from 7am-5pm Monday through Friday; outside these hours, a dispatcher is typically available to handle after-hours requests. Secondary phone numbers have been listed where available.

Table 7-1 Locally Available Resources

	Heavy Equipment Service and Rental	Sand and Gravel Supply	Ready-Mix Concrete Supply
Company	Herc Rentals	PTI Sand and Gravel	National Ready Mix Concrete
Address	3040 E Miraloma Ave Anaheim, CA 92806	14925 River Rd Corona, CA 92676	16282 Construction Dr Ctr Irvine, CA 92606
Phone Numbers	(877) 690-8365*	800-634-7625*	(949) 552-5566
Contact Person	Jordan Terrio	Mark Tyo	Mike Savicky

*Daytime and after-hours number: calling the main number after hours will route to an on-call employee.

7.9 Stockpiling Materials and Equipment

No equipment is stockpiled at Rattlesnake Canyon Dam. Because IRWD owns several dams, as well as other water facilities, IRWD centralizes its emergency supplies stockpile at the MWRP at 3512 Michelson Drive, Irvine, California, 92612. The stockpile at MWRP is located about seven miles southwest of Rattlesnake Canyon Dam. Supplies and equipment stockpiled centrally at MWRP are ready for deployment for use anywhere within the District's boundary. Equipment and supplies stored at MWRP include generators; diesel fuel; construction equipment such as backhoes and excavators; vacuum trucks; compressors; tools; traffic control equipment; non-woven filter fabric; and excavation and backfill materials including sand, crushed rock, pea gravel, and road base material. Equipment at MWRP can generally be moved to the dam site within 45 minutes. Equipment, materials, and supplies required that exceed the IRWD capabilities are locally accessible at the locations in *Table 7-1 Locally Available Resources*. Equipment obtained from third parties listed in Table 7-1 could be obtained within about 2 hours during regular business hours.

7.10 Coordination of Information

In the event of an emergency at Rattlesnake Canyon Dam, IRWD will notify the NWS so that they can issue appropriate flood watches and warnings. Contact numbers and notification procedures for NWS are outlined in Sections 3.1 and 3.2. No extremely high flow, overflow, or emergency flow incidents are known to have occurred at Rattlesnake Canyon Dam.

The Rattlesnake Reservoir stores recycled water and natural flows collected from the surrounding watershed. If a potential or developing dam safety incident requires the lowering of the reservoir level, this must be done in accordance with the standard operating procedures maintained by the MWRP. All actions associated with controlling flow into or out of the reservoir must be coordinated with the dam operator or a representative designated by IRWD.

There are no dams upstream or downstream of Rattlesnake Canyon Dam which would contribute to or be affected by an emergency event at Rattlesnake Canyon Dam, so no coordination is required with other dams.

IRWD will work with emergency personnel to keep them up to date on any situation involving the Rattlesnake Canyon Dam. Communication between IRWD and emergency management authorities may be facilitated by the County and OA JIS as described in the County and OA EOP. The Water Operations Manager may designate staff members to act as liaisons at the ICP, a Unified Command, or at various EOCs, as required.

7.11 Training and Exercise

IRWD operations and maintenance staff receive training to ensure that they are thoroughly familiar with the elements of the EAP and potential response actions. The operations, engineering staff, and appropriate MWRP personnel are trained in the incident management process, including detection, evaluation, notification, and appropriate response actions during all emergency level determinations. IRWD duty staff are trained in notification requirements for dam safety incidents to ensure that the appropriate recall actions are initiated after working hours.

In accordance with California Government Code Section 8589.5(c), at least once annually, IRWD will conduct an emergency action plan notification exercise with local public safety agencies, to the extent that a local public safety agency wishes to participate. This annual exercise is to ensure that emergency communications plans and processes are current and implemented effectively. All contact information in the notification charts will be updated and verified; next, a notification exercise will be conducted to simulate the phone calls required in the notification charts. The timing and procedures in the notification exercise will be noted, and the EAP will be updated based on feedback from the participants.

Because Rattlesnake Canyon Dam is categorized as an extremely high-risk dam, local emergency management authorities may develop evacuation and shelter-in-place training materials for people who would be affected by a dam failure in their jurisdiction. These requirements and materials will be determined and developed through the review and exercise process described in Section 8.1.

7.12 Alternative Systems of Communication

In the event of a dam safety emergency, the Unified Command/IC and emergency response personnel have access to various forms of alternative communication ranging from social media, radio broadcasts, wireless emergency alerts, and opt-in email and cellphone lists.

IRWD maintains an operations communication architecture for internal communications. At the dam site, the dam keeper has access to a cellular phone, land line telephone, and a computer connected to internet.

7.13 Public Awareness and Communication

IRWD will utilize already established communication protocols and channels to publish and promote established inter-agency emergency procedures within the affected area. In addition, information on the location of reservoir as well as related emergency procedures will be available on the IRWD website (https://www.irwd.com/).

In order to further prepare the public for a dam safety incident IRWD will implement the following measures:

- Educate customers about established IRWD emergency notification systems, which include the ability to text, call or email customers in the event of an emergency such as a dam safety incident.
- Promote the emergency preparedness section on the IRWD website and through various communications channels including the monthly customers billing insert and social media channels.
- Coordinate emergency outreach programs with residents and businesses in close proximity to the reservoir through cities, fire and police departments and the County of Orange.
- Post a map of the inundation area on the IRWD website so that members of the public may see if they live within possible impacted areas.
- Post a summary of the annual EAP exercise on the IRWD website each year.
- Update existing information on dam safety and emergency-preparedness on the IRWD website within one month of the approval of the EAP. After each annual review, updates will be made to the website as necessary.
- Complete outreach to customers through existing outreach channels within 4 months of completion of the EAP.

The timing and frequency of additional outreach measures will be evaluated and updated as part of the annual EAP review.

Section 8: Plan Maintenance

8.1 Plan Review

The EAP Coordinator will review and update the EAP at least once annually leading up to the emergency action plan notification exercise described below. This review includes updating contact information listed to verify that contact names, phone numbers, addresses and other information is current. One of the most important tasks is to update the contacts listed in the Emergency Notification Flowcharts in Section 3. Making updates to locally available resources along with the other information in the EAP is also important so that accurate information is readily available during an emergency.

In accordance with California Government Code Section 8589.5(c), at least once annually, IRWD will conduct an emergency action plan notification exercise with local public safety agencies, to the extent that a local public safety agency wishes to participate. This annual exercise is to ensure that emergency communications plans and processes are current and implemented effectively.

In accordance with California Water Code section 6161(e), IRWD will update the EAP, including the inundation maps, no less frequently than every 10 years, and sooner under conditions that include: (1) a significant modification to the dam or a critical appurtenant structure and (2) a significant change to downstream development that involves people and property. The inundation maps for this EAP are dated November 7, 2018, and require updating by November 7, 2028.

8.2 Distribution

A status report will be prepared annually that documents the plan review and any exercises that occurred. The EAP will be revised, as required, to incorporate updated information or lessons learned during exercises/event after action reports. Changes will be documented in the revision log in Appendix B, Record of EAP Revisions.

Electronic copies of the EAP Status Report (Appendix A) and revised EAP will be distributed to the EAP Plan Holders annually via email (Appendix C). The EAP Plan Holders include all parties on the notification flowcharts.

To request a copy of the Emergency Action Plan for Rattlesnake Canyon Dam, please contact the EAP Coordinator:

Steve Choi, Director of Safety and Security
Irvine Ranch Water District
3512 Michelson Drive
Irvine, CA 92612-1799

PART II: Inundation Maps

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY

GAVIN NEWSOM, *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

FEB 06 2019

Mr. Paul Cook, General Manager
Irvine Ranch Water District
Post Office Box 57000
Irvine, California 92619-7000

Rattlesnake Canyon Dam, No. 1029-3
Orange County

Dear Mr. Cook:

We have reviewed the inundation map submitted for Rattlesnake Canyon Dam. We have determined that the dam has no critical appurtenant structures and the map listed below is in substantial compliance with the requirements of Title 23, Division 2, Chapter 1, Article 6 of the California Code of Regulations. Therefore, the following inundation map is approved:

1. Main Dam (sunny day failure scenario) map dated November 7, 2018

The approved map will be made publicly available as required by section 6161(c) of the California Water Code. An emergency action plan (EAP) based on the approved inundation map must now be submitted to the California Governor's Office of Emergency Services (Cal OES) for their review and approval. Upon Cal OES approval, please submit to us an electronic copy of the approved EAP with a hard copy of a transmittal letter.

Based on our evaluation of the downstream hazard, we have revised the hazard classification of Rattlesnake Canyon Dam from "High" to "Extremely High". If the downstream hazard classification is updated in the future, we will notify you.

Pursuant to section 6161(e) of the CA Water Code, the EAP and inundation maps must be updated no less frequently than every 10 years, and sooner under conditions that include, but are not limited to, the following: (1) a significant modification to the dam or a critical appurtenant structure as determined by the department, or (2) a significant change to downstream development that involves people and property. Based on the requirement, the approved map will expire on November 7, 2028. Please submit the updated map at least six months prior to the expiration date for our review and approval.

If you have any questions or need additional information, you may contact Project Engineer Y-Nhi Enzler at (916) 736-2307 or Re-evaluation Engineering Branch Chief Ariya Balakrishnan at (916) 227-6742.

Sincerely,

David Hayslett for SKT

Sharon K. Tapia, Chief
Division of Safety of Dams

cc: (See Attached List)

cc: Mr. José Lara, Chief
Dam Safety Planning Division
California Governor's Office of Emergency Services
3650 Schriever Avenue
Mather, California 95655

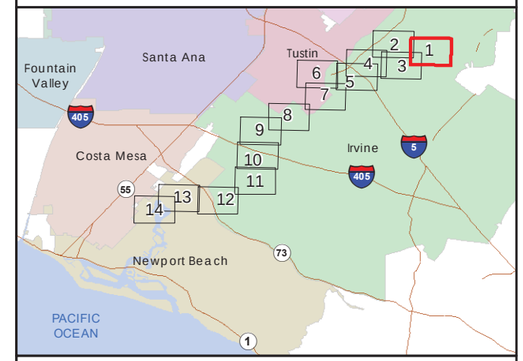
Main Dam Failure – Maximum Depth and Arrival Time

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Fire Station
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth

- 1 - 5 ft
- 5 - 10 ft
- 10 - 15 ft
- 15 - 20 ft
- 20 - 25 ft
- 25 - 30 ft
- 30 - 35 ft
- 35 - 40 ft

NOTES:
1. The information shown is approximate and should be used as a guideline for emergency preparation and response.
2. The North American Vertical Datum of 1988 was used for inundation modeling and mapping.
3. Grid lines show latitude and longitude at 30 arc-second spacing in the WGS84 horizontal datum.

REGISTERED PROFESSIONAL ENGINEER
MOLLY R. PALMER
C 71788
EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

STETSON ENGINEERS INC.

PANEL 1 of 14

Scale 1:6,000

N

0 250 500 750 Feet
0 100 200 Meters

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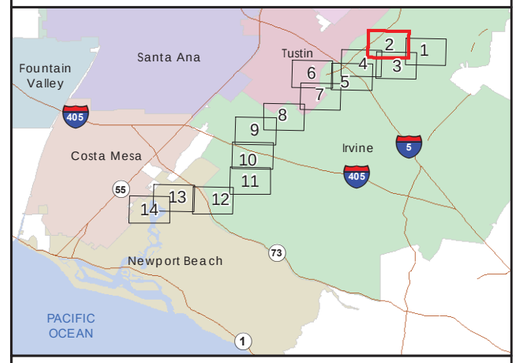
RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth
- 1 - 5 ft
- 5 - 10 ft
- 10 - 15 ft
- 15 - 20 ft
- 20 - 25 ft

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Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

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STETSON ENGINEERS INC.

PANEL 2 of 14

Scale 1:6,000

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0 250 500 750 Feet
0 100 200 Meters

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RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
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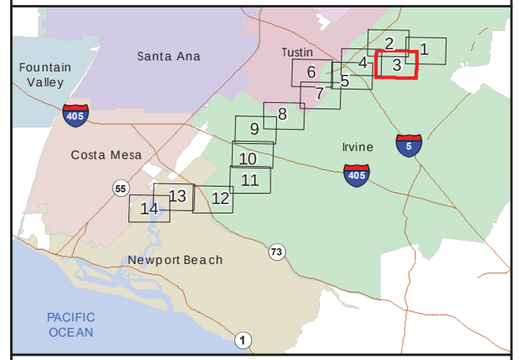
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth
- 1 - 5 ft
- 5 - 10 ft
- 10 - 15 ft
- 15 - 20 ft

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CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 3 of 14

Scale 1:6,000

N

0 250 500 750 Feet

0 100 200 Meters

Irvine Blvd
Arrival Time = 15 min

Sierra Vista Middle School

Brywood Elementary School

Santiago Hills Elementary School

Panel 1

Panel 2

Panel 4

9 min
12 min
15 min
18 min
21 min
24 min
27 min
30 min
0.6 hr
0.7 hr

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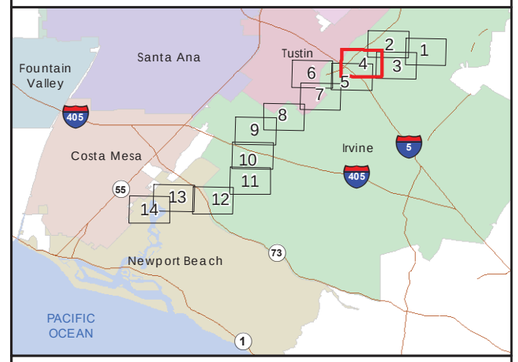
RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth
- 1 - 5 ft
- 5 - 10 ft
- 10 - 15 ft
- 15 - 20 ft
- 20 - 25 ft

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STATE OF CALIFORNIA

Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

STETSON ENGINEERS INC.

PANEL 4 of 14

Scale 1:6,000

N

0 250 500 750 Feet
0 100 200 Meters

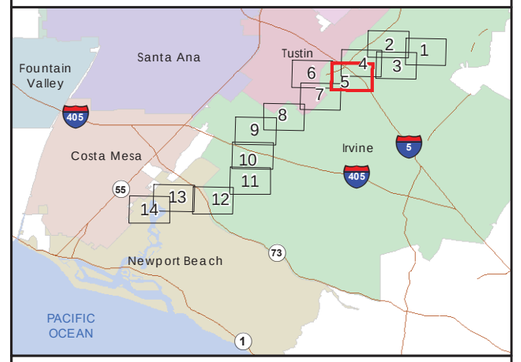
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_ArrivalTime_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth

- 1 - 5 ft
- 5 - 10 ft
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REGISTERED PROFESSIONAL ENGINEER
MOLLY R. PALMER
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EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

STETSON ENGINEERS INC.

PANEL 5 of 14

Scale 1:6,000

N

0 250 500 750 Feet
0 100 200 Meters

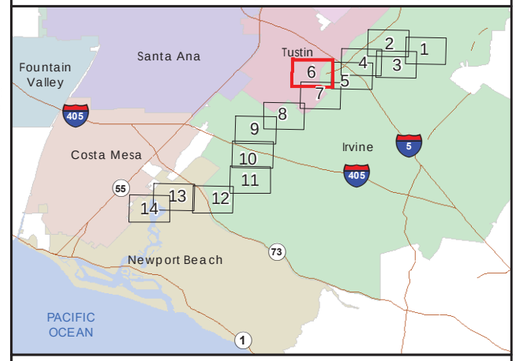
Document Path: J:\jn\24781IRWD_Rattlesnake_Canyon_MainDam_ArrivalTime_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth

- 1 - 5 ft
- 5 - 10 ft
- 10 - 15 ft
- 15 - 20 ft
- 20 - 25 ft

NOTES:
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REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA

Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

STETSON ENGINEERS INC.

PANEL 6 of 14

Scale 1:6,000

N

0 250 500 750 Feet

0 100 200 Meters

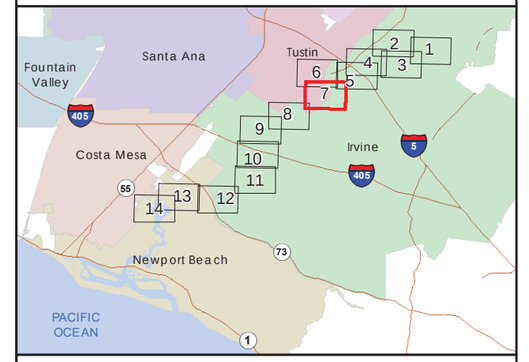
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_ArrivalTime_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth

- 1 - 5 ft
- 5 - 10 ft
- 10 - 15 ft
- 15 - 20 ft
- 20 - 25 ft

NOTES:
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2. The North American Vertical Datum of 1988 was used for inundation modeling and mapping.
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Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

REGISTERED PROFESSIONAL ENGINEER
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EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 7 of 14

Scale 1:6,000

N

0 250 500 750 Feet

0 100 200 Meters

Peters Canyon Wash at Edinger Ave
Arrival Time = 0.6 hr

Harvard Park
Arrival Time = 0.6 hr

Panel 6
Panel 5
Panel 8

0.8 hr
0.9 hr
1 hr
1.1 hr
1.2 hr
30 min
0.7 hr
0.6 hr
0.8 hr
1 hr
1.1 hr
1.2 hr
1.3 hr
0.7 hr

PARK AVE
EDINGER AVE
JAMBOREE RD
MOFFETT AVE
WINDWALKER WY
HOLMES PL
EVELYN PL
CRAPE MYRTLE PL
DOWNS RD
BARNES RD
PRIVATE ST
Irvine
Tustin
KENSINGTON PARK
KINGS CANYON
HYDE PARK
SAINT JAMES
CARAVAN
SEAHORSE LN
JET STREAM
LANDMARK
LIBERTY ST
HARVARD RD
LOOKOUT LN
KITTY HAWK
WINDY LA
SKY TRAIL
ZEPHYR RUN
TUSTIN FIELD DR
FLYERS LN
AVIATOR LN
BLUE SKY DR
NIMBUS
CIRRUS LN
HUDSON DR
ODYSSEY PASS
S AVIATOR LN
DRAKE PASS
SUNDIAL DR
HALLEY DR
ORION RD
LORAN WAY
POLARIS DR
MAGELLAN PASS
MERIDIAN WAY
AQUILA PASS
GALILEO WAY
CLARK WAY
VOYAGER DR
MOFFETT DR
IRVINE CENTER DR
RIVERSTONE
ALLEY
GLADSTONE
MILLSTONE
CAPSTONE
DEERFIELD
EDGESTONE
FLAGSTONE
CULVER DR
SUNDOWN PASS
BUTTERFIELD
POINSETTIA
WOODRUSH
WINTERGREEN
HEARTHSTONE
PASEO WESTPARK
BENAVENTE
SAN GARIN
PIENZA
FIGARO
CAMILIA AVE
HONEY BEE ST
JASPER ST
RISHMOSS ST
BRENTHAM ST
SONORA ST
FERNWOOD DR
MOSSCREEK ST
CRESCENT WAY
SAGE ST
LAVIANA ST
BAYBERRY RD
ORCHID AVE
CARDAMON WAY
Panel 18
ATHERTON AVE
NUTMEG
MYRTLE ST
PINE ST
SEQUOIA ST
SEGO ST
REDWOOD ST
BIRCH ST
POPLAR ST
SAWLEAF AVE
ALMOND ST
OAK AVE
BEECH AVE
ELM AVE
MAYTEN AVE
YUCCA AVE
SUMAC AVE
BALSA ST
BANYAN ST
BLACKTHORN ST
CEDRON ST
LOTUS ST
SERON AVE
EBOE ST
PECAN ST
LINDEN AVE
THE MALL
LARCH AVE
CHAPARRAL AVE
EIR AVE
College Park Elementary School
261
2.1
2.2
2.3
2.4
2.5
2.6
2.7
2.8
2.9
3
3.1
3.2
3.3
117° 48' 30" W
117° 48' 0" W
33° 42' 30" N
33° 42' 0" N
33° 41' 30" N
33° 41' 0" N

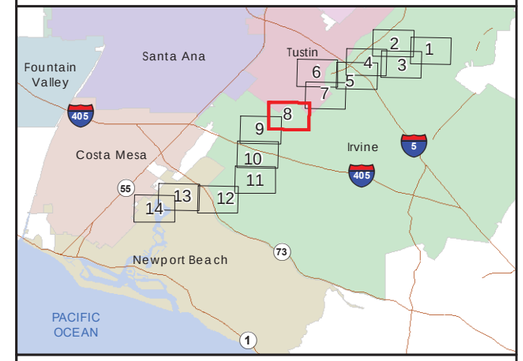
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_ArrivalTime_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Fire Station
- Police Station
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth
- 1 - 5 ft
- 5 - 10 ft
- 10 - 15 ft
- 15 - 20 ft
- 20 - 25 ft

NOTES:
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2. The North American Vertical Datum of 1988 was used for inundation modeling and mapping.
3. Grid lines show latitude and longitude at 30 arc-second spacing in the WGS84 horizontal datum.

REGISTERED PROFESSIONAL ENGINEER
MOLLY R. PALMER
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EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

STETSON ENGINEERS INC.

PANEL 8 of 14

Scale 1:6,000

N

0 250 500 750 Feet
0 100 200 Meters

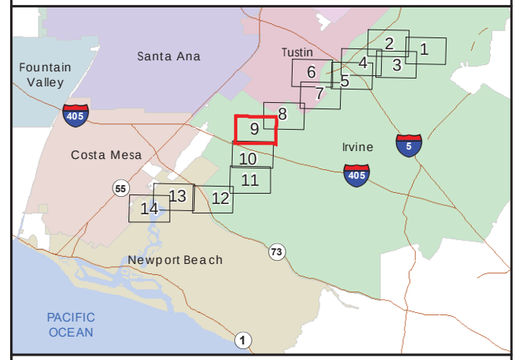
Document Path: J:\jn\2478\IRWD_Rattlesnake_Canyon_MainDam_ArrivalTime_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Police Station
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth
- 1 - 5 ft
- 5 - 10 ft
- 10 - 15 ft
- 15 - 20 ft

NOTES:
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REGISTERED PROFESSIONAL ENGINEER
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STATE OF CALIFORNIA

Molly Palmer,
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Expiration Date December 31, 20

STETSON ENGINEERS INC.

PANEL 9 of 14

Scale 1:6,000

N

0 250 500 750 Feet

0 100 200 Meters

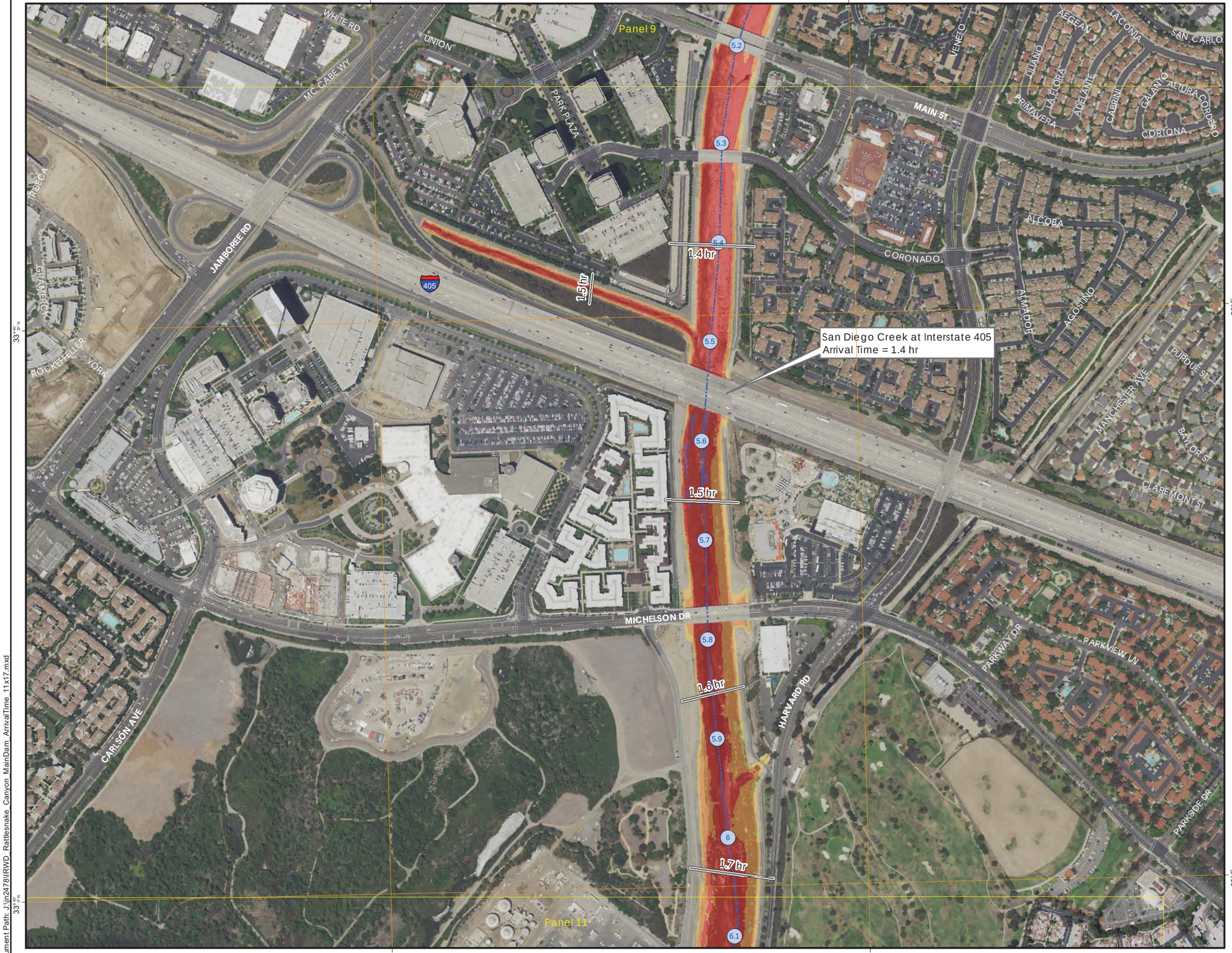
Document Path: J:\jn\2478\RWD_Rattlesnake_Canyon_MainDam_ArrivalTime_11x17.mxd

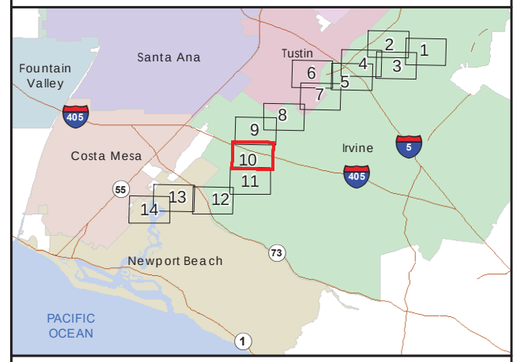
RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018





Legend

- River Mile (2.1)
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth

- 1 - 5 ft
- 5 - 10 ft
- 10 - 15 ft
- 15 - 20 ft

NOTES:
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Molly Palmer,
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REGISTERED PROFESSIONAL ENGINEER
MOLLY R. PALMER
C 71788
EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 10 of 14

Scale 1:6,000

N

0 250 500 750 Feet
0 100 200 Meters

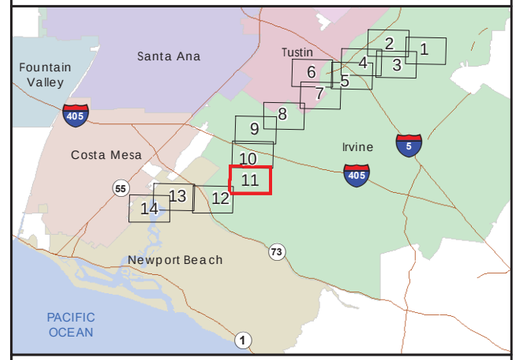
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_ArrivalTime_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth

- 1 - 5 ft
- 5 - 10 ft
- 10 - 15 ft
- 15 - 20 ft

NOTES:
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Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

REGISTERED PROFESSIONAL ENGINEER
MOLLY R. PALMER
C 71788
EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 11 of 14

Scale 1:6,000

N

0 250 500 750 Feet
0 100 200 Meters

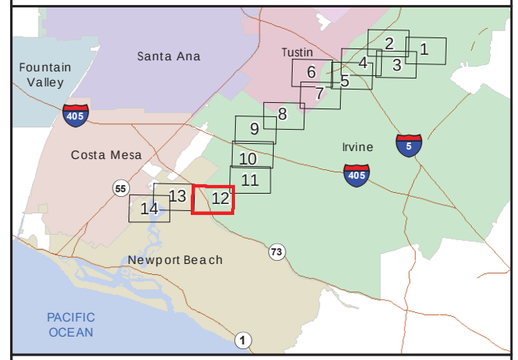
Document Path: J:\jn\2478\IRWD_Rattlesnake_Canyon_MainDam_ArrivalTime_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth

- 1 - 5 ft
- 5 - 10 ft
- 10 - 15 ft
- 15 - 20 ft

NOTES:
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Molly Palmer,
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Expiration Date December 31, 20

REGISTERED PROFESSIONAL ENGINEER
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EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 12 of 14

Scale 1:6,000

N

0 250 500 750 Feet

0 100 200 Meters

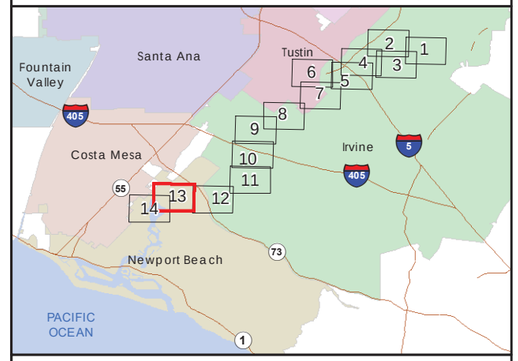
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_ArrivalTime_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Fire Station
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth
- 1 - 5 ft
- 5 - 10 ft

NOTES:
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STATE OF CALIFORNIA

Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

STETSON ENGINEERS INC.

PANEL 13 of 14

Scale 1:6,000

N

0 250 500 750 Feet
0 100 200 Meters

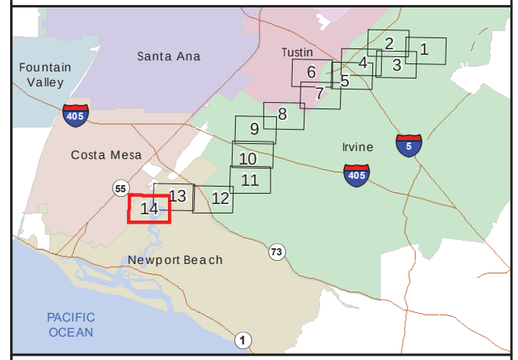
Document Path: J:\jn\24781RWD_Rattlesnake_Canyon_MainDam_ArrivalTime_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX DEPTH

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Inundation Depth

- 1 - 5 ft
- 5 - 10 ft
- 10 - 15 ft

NOTES:
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REGISTERED PROFESSIONAL ENGINEER
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CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 14 of 14

Scale 1:6,000

0 250 500 750 Feet
0 100 200 Meters

N

Document Path: J:\jn2478\RWD_Rattlesnake_Canyon_MainDam_ArrivalTime_11x17.mxd

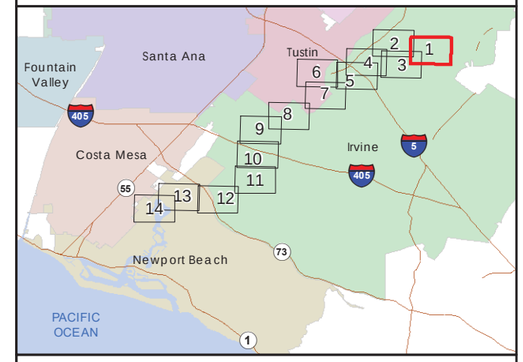
Main Dam Failure – Maximum Velocity and Arrival Time

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Fire Station (F)
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
20 - 25 ft/sec	60 - 70 ft/sec
25 - 30 ft/sec	70 - 80 ft/sec
30 - 35 ft/sec	>80 ft/sec

NOTES:
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Expiration Date December 31, 20

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C 71788
EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 1 of 14

Scale 1:6,000

0 250 500 750 Feet
0 100 200 Meters

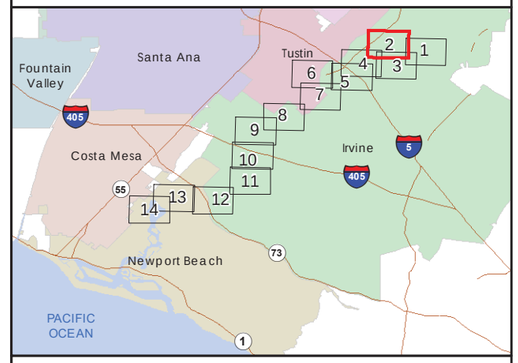
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
20 - 25 ft/sec	60 - 70 ft/sec
25 - 30 ft/sec	70 - 80 ft/sec
30 - 35 ft/sec	>80 ft/sec

NOTES:
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MOLLY R. PALMER
C 71788
EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 2 of 14

Scale 1:6,000

0 250 500 750 Feet
0 100 200 Meters

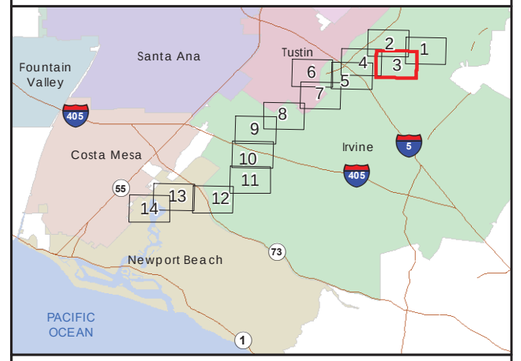
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
20 - 25 ft/sec	60 - 70 ft/sec
25 - 30 ft/sec	70 - 80 ft/sec
30 - 35 ft/sec	>80 ft/sec

NOTES:
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MOLLY R. PALMER
C 71788
EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 3 of 14

Scale 1:6,000

N

0 250 500 750 Feet

0 100 200 Meters

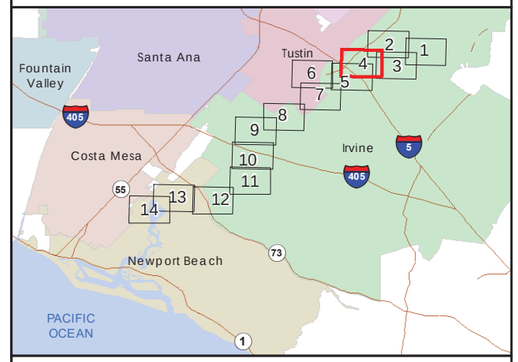
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
20 - 25 ft/sec	60 - 70 ft/sec
25 - 30 ft/sec	70 - 80 ft/sec
30 - 35 ft/sec	>80 ft/sec

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3. Grid lines show latitude and longitude at 30 arc-second spacing in the WGS84 horizontal datum.

Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

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CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 4 of 14

Scale 1:6,000

N

0 250 500 750 Feet

0 100 200 Meters

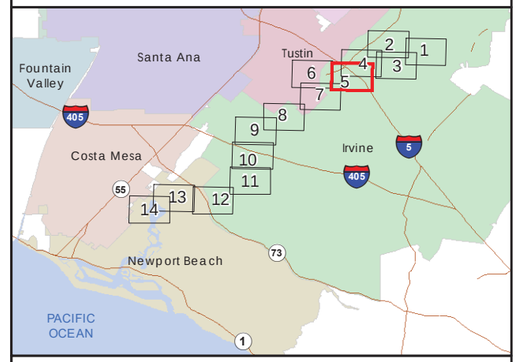
Document Path: J:\jn2478\RWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
20 - 25 ft/sec	60 - 70 ft/sec
25 - 30 ft/sec	70 - 80 ft/sec
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CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 5 of 14

Scale 1:6,000

N

0 250 500 750 Feet
0 100 200 Meters

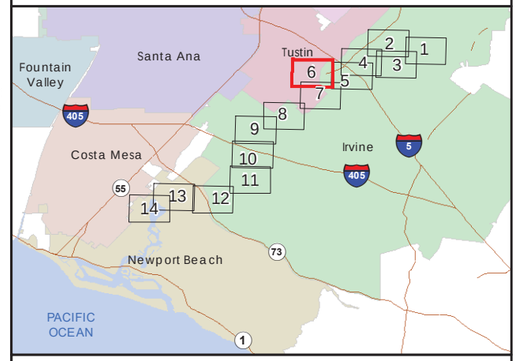
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
20 - 25 ft/sec	60 - 70 ft/sec
25 - 30 ft/sec	70 - 80 ft/sec
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CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 6 of 14

Scale 1:6,000

N

0 250 500 750 Feet
0 100 200 Meters

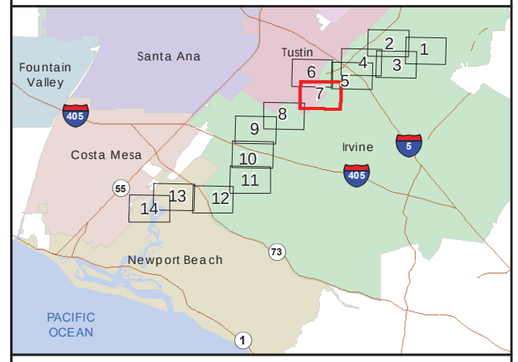
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
20 - 25 ft/sec	60 - 70 ft/sec
25 - 30 ft/sec	70 - 80 ft/sec
30 - 35 ft/sec	>80 ft/sec

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Expiration Date December 31, 20

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MOLLY R. PALMER
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EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 7 of 14

Scale 1:6,000

0 250 500 750 Feet
0 100 200 Meters

N

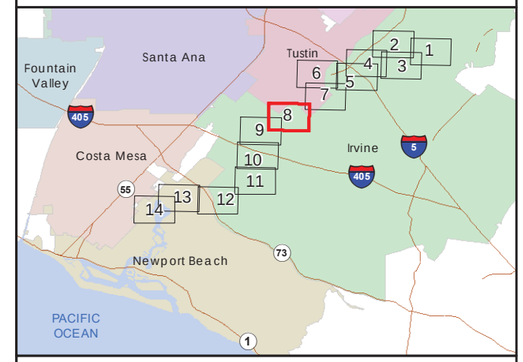
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Fire Station
- Police Station
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
20 - 25 ft/sec	60 - 70 ft/sec
25 - 30 ft/sec	70 - 80 ft/sec
30 - 35 ft/sec	>80 ft/sec

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Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

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MOLLY R. PALMER
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CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 8 of 14

Scale 1:6,000

N

0 250 500 750 Feet

0 100 200 Meters

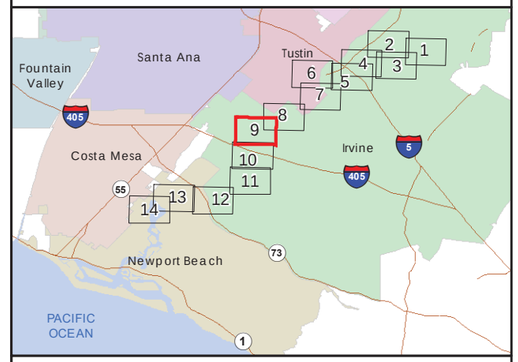
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Police Station
- School
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
20 - 25 ft/sec	60 - 70 ft/sec
25 - 30 ft/sec	70 - 80 ft/sec
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Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

REGISTERED PROFESSIONAL ENGINEER
MOLLY R. PALMER
C 71788
EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 9 of 14

Scale 1:6,000

N

0 250 500 750 Feet
0 100 200 Meters

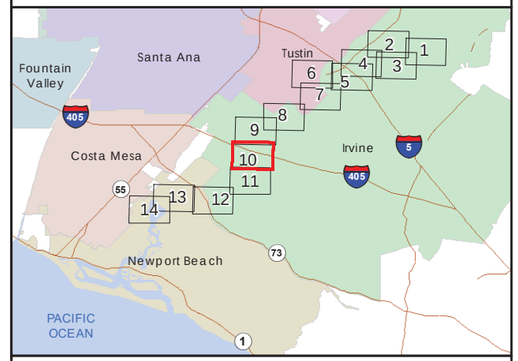
Document Path: J:\jn\24781RWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
20 - 25 ft/sec	60 - 70 ft/sec
25 - 30 ft/sec	70 - 80 ft/sec
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REGISTERED PROFESSIONAL ENGINEER
MOLLY R. PALMER
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EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

STETSON ENGINEERS INC.

PANEL 10 of 14

Scale 1:6,000

N

0 250 500 750 Feet

0 100 200 Meters

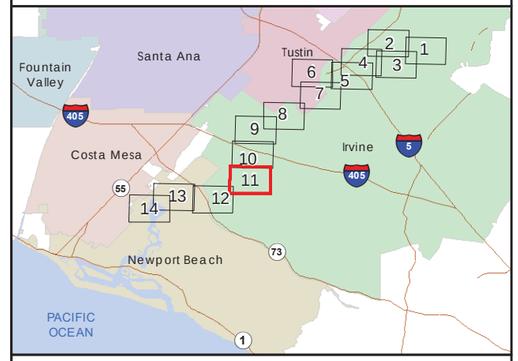
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
20 - 25 ft/sec	60 - 70 ft/sec
25 - 30 ft/sec	70 - 80 ft/sec
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EXP 12/31/19
CIVIL
STATE OF CALIFORNIA

Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

STETSON ENGINEERS INC.

PANEL 11 of 14

Scale 1:6,000

N

0 250 500 750 Feet

0 100 200 Meters

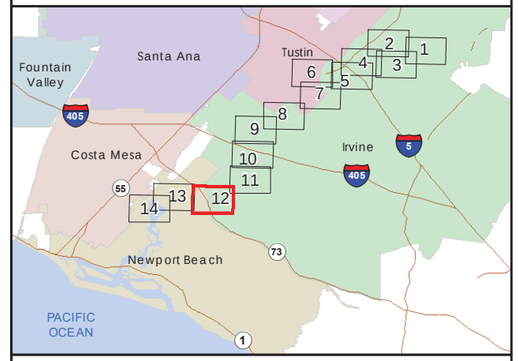
Document Path: J:\jn\2478\RWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
20 - 25 ft/sec	60 - 70 ft/sec
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STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 12 of 14

Scale 1:6,000

N

0 250 500 750 Feet

0 100 200 Meters

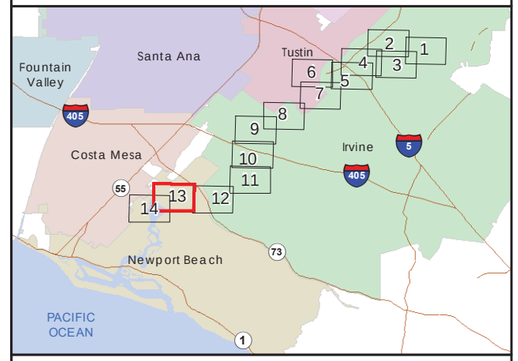
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile
- Fire Station
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
20 - 25 ft/sec	60 - 70 ft/sec
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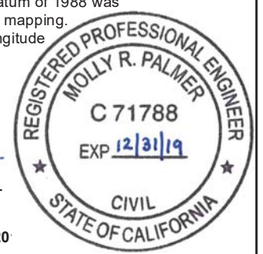


Molly Palmer,
Civil Engineer 71788
Expiration Date December 31, 20

STETSON ENGINEERS INC.

PANEL 13 of 14

Scale 1:6,000

N

0 250 500 750 Feet

0 100 200 Meters

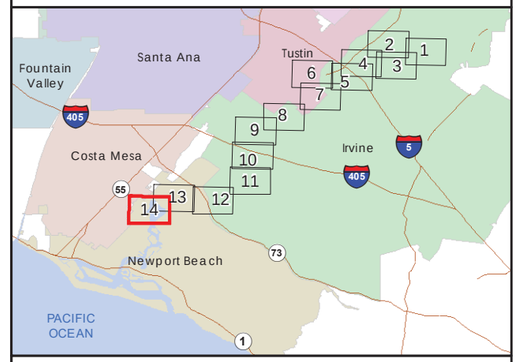
Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

RATTLESNAKE CANYON DAM
MAIN DAM SUNNY DAY FAILURE
FLOOD ARRIVAL TIME AND MAX VELOCITY

STATE DAM NO. 1029.003
NATIONAL DAM NO. CA00855
ORANGE COUNTY, CALIFORNIA

DAM OWNER
IRVINE RANCH WATER DISTRICT
PO BOX 57000
IRVINE, CA 92619-7000
(949) 453-5300

MODEL SIMULATION DATE: 9/14/2018
MAP PREPARATION DATE: 11/7/2018



Legend

- River Mile (2.1)
- Arrival Time
- Creek
- City Boundary
- Map Panel #

Maximum Velocity

0 - 5 ft/sec	35 - 40 ft/sec
5 - 10 ft/sec	40 - 45 ft/sec
10 - 15 ft/sec	45 - 50 ft/sec
15 - 20 ft/sec	50 - 60 ft/sec
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CIVIL
STATE OF CALIFORNIA

STETSON ENGINEERS INC.

PANEL 14 of 14

Scale 1:6,000

0 250 500 750 Feet
0 100 200 Meters

Document Path: J:\jn2478\IRWD_Rattlesnake_Canyon_MainDam_Velocity_11x17.mxd

PART III: Appendices

Appendix A: EAP Status Report (for Non-FERC dams)

EAP Status Report for Rattlesnake Canyon Dam, DSOD No. 1029.003

Annual EAP Review Performed:

Annual Update Sent to Plan Holders:

Annual Notification Exercise:

Prepared by:

Mail this document, or something similar, to the Cal OES Emergency Action Planning Division:

Dam Safety Planning Chief
Dam Emergency Action Planning Division
3650 Schriever Avenue
Mather, CA 95655

OR to send it electronically to the Division at eap@caloes.ca.gov.

Appendix B: Record of EAP Revisions

Revision #	Date	Sections Reviewed or Revisions Made	By Whom
1	June 4, 2019	Local Agency Review Draft	IRWD
2	January 31, 2020	Draft Submittal to CalOES	IRWD
3	June 8, 2020	EAP edited in response to CalOES Review Report #1 date April 1, 2020; notification charts updated	IRWD
4	October 21, 2020	EAP edited in response to CalOES Review Report #2 dated June 26, 2020; notification charts and contact information updated; Appendix C updated; signature page removed (not required).	IRWD
5	February 5, 2021	Document edited in response to CalOES Review Report #3 dated October 25, 2020; notification charts updated; updated Warning Center incident report (Appendix I)	IRWD
6	May 21, 2021	Added Transportation Corridor Agencies (Toll Roads) contact info to notification charts, table in section 3.2, and Appendix C. Notification charts: updated colors of charts; updated IRWD Public Affairs contact info	IRWD
7	February 22, 2022	Annual EAP Update with updated contact information; Sections revised include: Dam contact information; document date; Sections 3.1 (notification charts), 3.2, 6.5, 7.8, 8.2. Appendices B and C.	IRWD
8	March 15, 2023	Annual EAP Update with updated contact information; Sections revised include: Document date; Sections 1.3, 2.1, 2.2, 3.1 (notification charts), 3.2, 5.1, 5.2, 5.4, 6.1, 6.2, 7.1, 7.5, 7.6, 7.10. Appendices B, C, and J. Added Appendix K.	IRWD

Revision #	Date	Sections Reviewed or Revisions Made	By Whom
9	April 24, 2024	Annual EAP Update with updated contact information; Revisions include: added description of County Alert Warning Plan; referenced IRWD's public communications plan; updated language for CA State Warning Center responsibilities; added Appendix L "Anatomy of a Dam" figure to explain dam terminology; updated plan holders	IRWD (Stetson)

Appendix C: Record of Plan Holders

Copy Number	Organization	Person Receiving Copy
1	Irvine Ranch Water District	Jose Zepeda, Director of Water and Recycling Operations
2	Irvine Ranch Water District	David Paulson, Operations Supervisor
3	Irvine Ranch Water District	Jacob Moeder, P.E., Engineering Department
4	Irvine Ranch Water District	Bryan Clinton, Operations Supervisor
5	Irvine Ranch Water District	Steve Choi, Director of Safety and Security; EAP Coordinator
6	Irvine Ranch Water District	John Fabris, IRWD Communications
7	Orange County Sheriff's Department, Emergency Management Division	Michelle Anderson, Emergency Management Director Mayra Wheeler, Senior Emergency Management Program Coordinator Kevin McArthur, Assistant Emergency Manager
8	Orange County Public Works	Giatho Tran, Senior Civil Engineer Trevor Richardson, Assistant Emergency Manager
9	Orange County Parks	Eric Rubery, Operations Support Manager
10	Orange County Fire Authority	Nick Freeman, Division 2 Chief
11	Orange County Fire Authority	Scott Wiedensohler, Division 4 Chief
12	Newport Beach Fire Department	Jeff Boyles, Fire Chief
13	Irvine Police Department	Robert Simmons, Manager of Emergency Services
14	Tustin Police Department	Pat Hurtado, Primary Emergency Operations Coordinator Stephen Foster, Secondary Emergency Operations Coordinator

Phone numbers and email addresses have been removed from this publicly posted copy of this Emergency Action Plan. That information is available from Irvine Ranch Water District's district secretary: Phone 949-453-5300, Email Comments@IRWD.com

15	Newport Beach Police Department	Katie Eing, Emergency Services Coordinator
16	Cal OES	Dam Safety Planning Division
17	DSOD	Brandon Cruz, Southern Regional Engineer Cameron Lancaster, Area 9 Engineer
18	DWR Flood Operations Center	State-Federal Flood Operations Center
19	National Weather Service	Alex Tardy, Warning Coordination Meteorologist
20	California Highway Patrol, Santa Ana Office	Sgt. Jeff Beam Capt. Mike Salinas Lt. Nicole Pacheco Lt. Hope Maxson
21	Caltrans District 12 Office	Bala Nanjappa, D-12 Maintenance Engineer Skead Patton, D-12 Maintenance Manager
22	Transportation Corridor Agencies (Toll Roads)	Michele Miller, Chief External Affairs Officer
23	Water Emergency Response Organization of Orange County	Vicki Osborn, Director of Emergency Management
24	Newport Beach Utilities Department	Casey Parks, Utilities Superintendent

Phone numbers and email addresses have been removed from this publicly posted copy of this Emergency Action Plan. That information is available from Irvine Ranch Water District's district secretary: Phone 949-453-5300, Email Comments@IRWD.com

Appendix D: Contact Log

After determining the emergency level, use the contact log to document notifications made in accordance with Section 3 of the EAP.

CONTACT LOG

Dam Name: RATTLESNAKE CANYON DAM		**Date:**
NID #: CA00855	**DSOD Dam #:** 1029.003	**FERC #:** N/A
DSOD Region: SOUTH		**County:** ORANGE
Emergency Level:		**Incident/Exercise:**

After determining the emergency level, immediately contact the following agencies/entities. The person making the contact should initial and record the time of the call and who was contacted at each agency/entity.

Agency/Entity	Person Contacted	Contact Time	Contacted By

Appendix E: Pre-Scripted Messages

The following pre-scripted messages are for use during notifications at any Emergency Level applicable to Rattlesnake Canyon Dam.

High Flow Emergency Level Phone Notification Script

This is _____ [your name and position].

IRWD has activated the Emergency Action Plan for Rattlesnake Canyon Dam, No. 1029.003, located in Irvine. The dam is under a **High Flow** condition but is not in danger of failing.

High flows at the dam began at _____ (time) on _____ (date).

The current flow at the dam is ___ cfs.

You have/will receive a text or email with additional details. We'll provide updates when there are any changes in flow or dam condition.

I can be contacted at _____. [preferred contact method]

If you can't reach me, please use _____. [alternate contact method]

High Flow Emergency Level Written Notification Script

IRWD has identified an emergency condition at Rattlesnake Canyon Dam, No. 1029.003, located in Irvine.

IRWD has activated the Emergency Action Plan for this dam and are determining this to be a **High Flow** condition. The Rattlesnake Canyon Dam is *not* in danger of failing.

At _____ (time) on _____ (date), IRWD observed unusually high flows at the dam.

The high flows are the result of _____.

The current flow at the dam is ___ cfs.

Current flow from the Michelson Water Recycling Plant into the reservoir is ___ cfs.

Current flow from the reservoir to Michelson Water Recycling Plant is ___ cfs.

The current water surface elevation in the reservoir is ___ ft.

The dam is not predicted to fail because of this condition. IRWD will provide updates detailing any changes in flow or dam condition and will notify you when the high flow situation is resolved.

Please take the following actions: _____
_____
_____.

An IRWD representative can be contacted at: _____.

Non-Failure Emergency Level Phone Notification Script

This is _____. [your name and position].

IRWD has activated the Emergency Action Plan for Rattlesnake Canyon Dam, No. 1029.003, located in Irvine. The dam is under a **Non-Failure** condition and is not in danger of failing.

IRWD activated the EAP because _____.
(description of condition)

You have/will receive a written notification with additional details. We'll provide updates detailing any changes in flow or dam condition.

I can be contacted at _____. [preferred contact method]

If you can't reach me, please use _____. [alternate contact method]

Non-Failure Emergency Level Written Notification Script

IRWD has identified an emergency condition at Rattlesnake Canyon Dam, No. 1029.003, located in Irvine.

IRWD has activated the Emergency Action Plan for this dam and are determining this to be a **Non-Failure** condition. The Rattlesnake Canyon Dam is *not* in danger of failing.

At _____ on _____, IRWD observed _____.
(time) (date)

The dam is not predicted to fail because of this condition. IRWD will provide updates detailing any changes in flow or dam condition and will notify you when the situation is resolved.

Please take the following actions: _____
_____
_____.

An IRWD representative can be contacted at: _____.

Potential Failure Level Phone Notification Script

This is _____ [your name and position].

IRWD has activated the Emergency Action Plan for Rattlesnake Canyon Dam, Dam No. 1029.003, located in Irvine. The dam is under a **Potential Failure** condition and may be in danger of failing.

IRWD is responding to _____ [describe event] that could result in dam failure as early as _____.

If the dam fails. Parts of Irvine, Tustin, and Newport Beach may be flooded from Portola Parkway to I-5.

The maps in your copy of the Emergency Action Plan show potential inundation areas.

The City of Irvine Police Department is the PSAP for this emergency.

You have/will receive a written notification with additional details. We'll provide updates detailing any changes in flow or dam condition.

I can be contacted at _____. [preferred contact method]

If you can't reach me, please use _____. [alternate contact method]

Potential Failure Level Written Notification Script

IRWD has activated the Emergency Action Plan for Rattlesnake Canyon Dam, No. 1029.003, located in Irvine. The dam is under a **Potential Failure** condition and may be in danger of failing.

At _____ (time) on _____ (date), IRWD observed _____.

IRWD is implementing predetermined actions to respond to this rapidly developing situation that could result in dam failure.

The dam could potentially fail as early as_____.

Please prepare to evacuate the low-lying portions of the Northwood neighborhood, Portola Parkway, Culver Drive, and adjacent areas including Canyon View Elementary School. In the event of a failure, large areas are expected to be inundated from Portola Parkway to I-5.

Reference the inundation map in your copy of the Emergency Action Plan for detailed inundation areas.

The City of Irvine Police Department is the Primary Safety Answering Point for this emergency and will be coordinating the emergency response.

IRWD will advise you when the situation is resolved or if the situation gets worse.

An IRWD representative can be contacted at the following number: _____.

Imminent Failure Level Phone Notification Script

This is an emergency. This is _____ [your name and position].

Rattlesnake Reservoir, Dam No. 1029.003, located in Irvine, is failing. The downstream area must be evacuated immediately.

Repeat, Rattlesnake Reservoir, Dam No. 1029.003, is failing; evacuate the low-lying portions of Irvine, Tustin, and Newport Beach between Portola Parkway and I-5. Portions of Portola Parkway, Irvine Boulevard, Culver Drive, and Irvine Boulevard should be closed due to potential inundation. I-5 between Culver Drive and Jamboree Road may become inundated.

Reference the inundation map in your copy of the Emergency Action Plan for specific evacuation areas.

The City of Irvine Police Department is the PSAP for this emergency.

You have/will receive a written notification with additional details for this **Imminent Failure** condition.

I can be contacted at _____. [preferred contact method]

If you can't reach me, please use _____. [alternate contact method]

The next status report will be provided in approximately 30 minutes.

Imminent Failure Level Written Notification Script

THIS IS AN EMERGENCY.

Rattlesnake Reservoir, Dam No. 1029.003, located in Irvine, is failing.

The downstream area must be evacuated immediately.

Repeat, Rattlesnake Reservoir, Dam No. 1029.003, is failing; evacuate the low-lying portions of the Northwood neighborhood, Portola Parkway, Culver Drive, and adjacent areas including Canyon View Elementary School. Portions of Portola Parkway, Irvine Boulevard, Culver Drive, and Irvine Boulevard should be closed due to potential inundation. I-5 between Culver Drive and Jamboree Road may become inundated.

IRWD has activated the Emergency Action Plan for Rattlesnake Canyon Dam. The dam is under an **Imminent Failure** condition. The Rattlesnake Canyon Dam is failing.

At _____ (time) on _____ (date), IRWD observed _____.

Reference the inundation map in your copy of the Emergency Action Plan.

The City of Irvine Police Department is the Primary Safety Answering Point for this emergency and will be coordinating the emergency response.

IRWD will advise you when the situation is resolved or if the situation gets worse.

An IRWD representative can be contacted at the following number: _____.

The next status report will be provided in approximately 30 minutes.

Imminent Failure Level Public Message

The following pre-scripted message may be **used for emergency management authorities to communicate the Imminent Failure of the dam with the public**:

Attention: This is an emergency message from _____ [emergency management agency]. Listen carefully. Your life may depend on immediate action.

Rattlesnake Reservoir, Dam No. 1029.003, located in Irvine is failing. Repeat. Rattlesnake Reservoir, Dam No. 1029.003, located in Irvine is failing.

If you are in or near this area, proceed immediately to high ground. The low-lying portions of the Northwood neighborhood, Portola Parkway, Culver Drive, and adjacent areas including Canyon View Elementary School may be flooded. Portions of Portola Parkway, Irvine Boulevard, Culver Drive, Irvine Boulevard, and I-5 may be closed due to flooding.

If you are in or near this area, proceed immediately to high ground away from low lying areas.

Repeat message.

Appendix F: Emergency Incident Log

Name:	Job Title:
Incident Start Date:	Incident Start Time:
Incident Description:	
Initial Incident Level:	
Incident Detection:	
When did you detect or learn about the incident?	
How did you detect or learn about the incident?	

LOG ALL NOTIFICATION AND ACTIVITY IN THE TABLE BELOW

Date	Time	Action/Incident Progression	Action Taken By

Appendix G: Emergency Termination Log

Dam Name: RATTLESNAKE CANYON	County: ORANGE
Dam Location: IRVINE, CA	Stream/River: RATTLESNAKE CANYON WASH
Date/Time:	
Weather Conditions:	
General Description of Emergency Situation:	
Area(s) of Dam Affected:	
Extent of Damage to Dam and Possible Causes:	
Effect on Dam Operation:	
Initial Reservoir Elevation/Time: Maximum Reservoir Elevation/Time: Final Reservoir Elevation/Time:	
Description of Area Flooded Downstream/Damage/Loss of Life:	
Justification for Termination of Dam Safety Emergency:	
Other Data and Comments:	
Report Prepared By (Printed Name and Signature): Date:	

Appendix H: After Action Report

Background

Event Details

Type of Event:
Location:
Incident Period:
Brief Description of Event:

Response Activities

Summary of Successes

Summary of Recommended Improvements

Organizations Contributing to this Report

Appendix I: Cal OES Warning Center Dam Incident Report

DAM INCIDENT – CALIFORNIA STATE WARNING CENTER

EVENT TYPE:	○ **DRILL** ○ **ACTUAL EVENT**	
DATE:		**TIME:**

CALLER INFORMATION		
NAME/AGENCY:	**PHONE #:**	
ALTERNATE CONTACT:	**PHONE #:**	

DAM INFORMATION		
DAM NAME: Rattlesnake Canyon Dam	**DSOD DAM #:** 1029.003	**FERC:** none
DSOD HAZARD CLASSIFICATION: EXTREMELY HIGH		

LOCATION OF DAM	
DSOD REGION: ○ **NORTHERN** ○ **CENTRAL** ⊗ **SOUTHERN**	
PHYSICAL ADDRESS: 4955 Portola Parkway, Irvine, CA 92620	
LATITUDE: 33.7282	**LONGITUDE:** -117.7421
COUNTY: ORANGE	**DOWNSTREAM JURISDICTIONS:** Irvine, Tustin, Newport Beach
NEAREST CITY OR POPULATED AREA: City of Irvine	
NEAREST OR AFFECTED HIGHWAY OR CROSS ROADS: Orchard Hills Drive and Portola Parkway	
RIVER OR CREEK THAT FLOWS INTO RESERVOIR: Rattlesnake Canyon Wash	

SITUATION	
ACTIVATION OF EAP:	○ Yes ○ No
EMERGENCY LEVEL:	○ High Flow ○ Non-Failure ○ Potential Failure ○ Imminent Failure

EMERGENCY TYPE:

- ☐ Earthquake
- ☐ Embankment Cracking or Settlement
- ☐ Embankment Movement
- ☐ Erosion of Spillway
- ☐ Instrumentation Reading (Abnormal)
- ☐ Outlet System Failure
- ☐ Sabotage/Vandalism
- ☐ Sand Boils
- ☐ Security Threats
- ☐ Seepage, Springs, Piping
- ☐ Sinkholes
- ☐ Storm Event
- ☐ Other: List Below

OTHER:

RESERVOIR LEVEL:	☐ Full ☐ Partially Full ☐ Empty
	Approximate % Full (Acre-Feet):
WHEN/HOW EVENT WAS DETECTED:	
OBSERVER IN POSITION:	○ Yes ○ No
ADDITIONAL DETAILS:	

Appendix J: Acronym List

CAS ..... Critical Appurtenant Structure
Cal OES ..... California Governor's Office of Emergency Services
Caltrans ..... California Department of Transportation
cfs ..... cubic feet per second
CHP ..... California Highway Patrol
DSOD ..... Division of Safety of Dams
DWR ..... Department of Water Resources
EAP ..... Emergency Action Plan
EMD ..... Orange County Sheriff's Department, Emergency Management Division
EOC ..... Emergency Operations Center
EOP ..... Emergency Operations Plan
FEMA ..... Federal Emergency Management Agency
HSEEP ..... Homeland Security Exercise and Evaluation Program
I-5 ..... Interstate 5
I-405 ..... Interstate 405
IC ..... Incident Commander
ICP ..... Incident Command Post
IRWD ..... Irvine Ranch Water District
MWRP ..... Michelson Water Recycling Plant
NAVD88 ..... North American Vertical Datum of 1988
NID ..... National Inventory of Dams
NIMS ..... National Incident Management System
NWS ..... National Weather Service
OA ..... Operational Area
OAC ..... Operational Area Coordinator
OCFA ..... Orange County Fire Authority
OCPW ..... Orange County Public Works

OCSD ..... Orange County Sheriff's Department

PIM ..... Public Information Manager

PSAP ..... Public Safety Answering Point

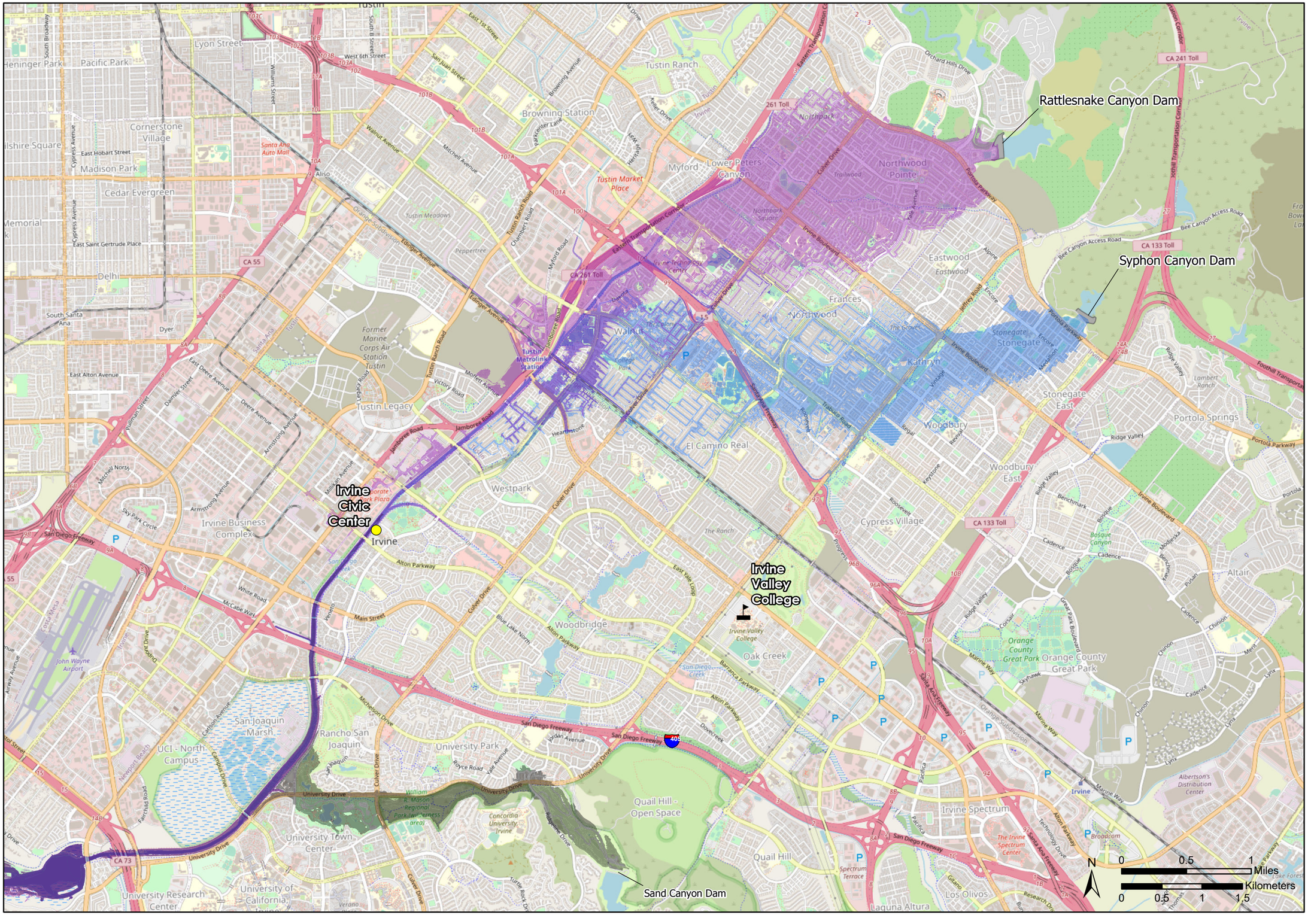
SCADA ..... supervisory control and data acquisition

SEMS ..... Standardized Emergency Management System

WEROC ..... Water Emergency Response Organization of Orange County

WFO ..... Weather Forecast Office

Appendix K: Potential ICP Locations Map



POTENTIAL ICP LOCATIONS
FOR DISCUSSION PURPOSES ONLY
ORANGE COUNTY, CALIFORNIA

Legend

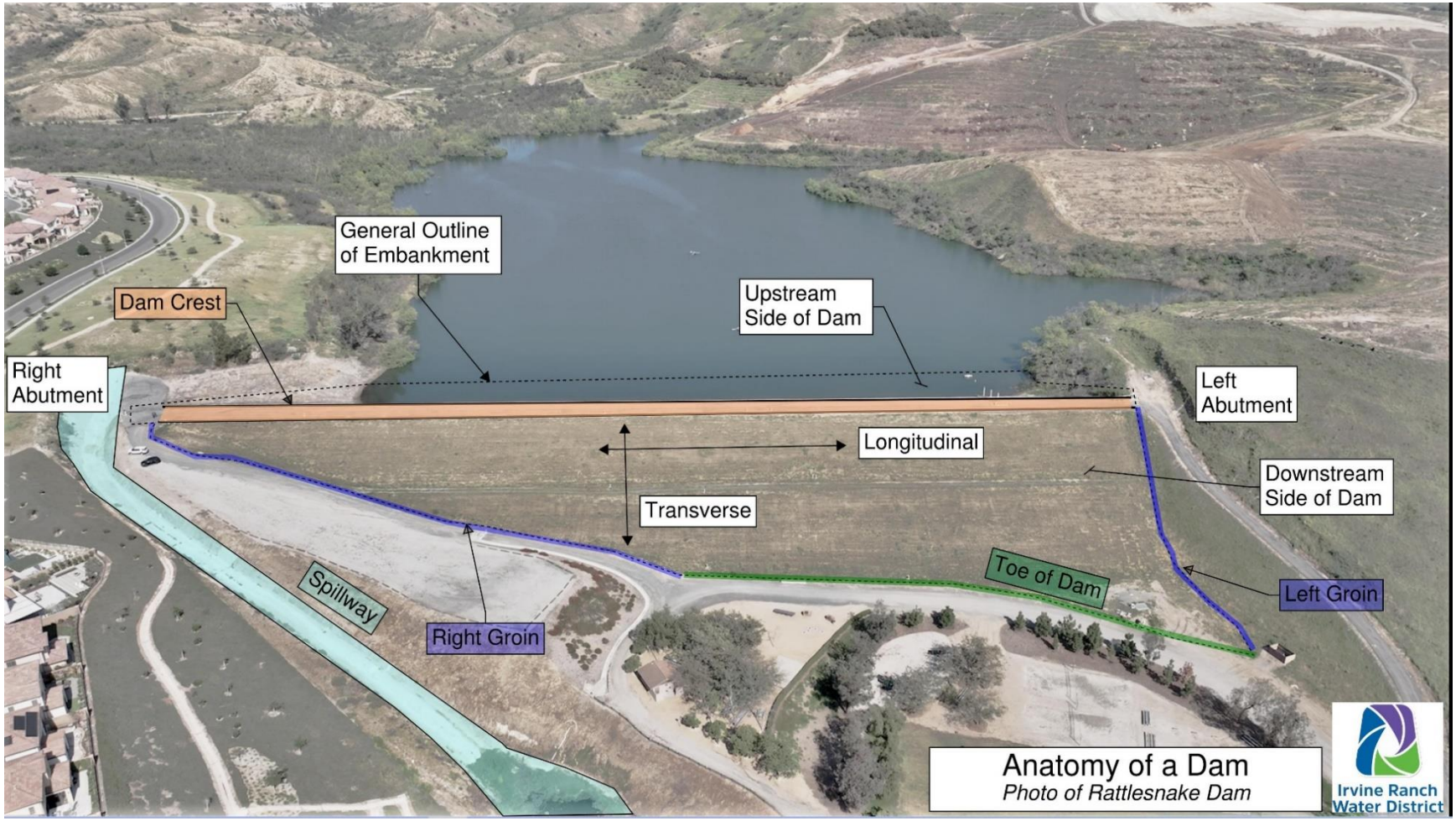
- Other
- School
- Rattlesnake Canyon Dam Failure Inundation Extent
- Sand Canyon Dam Failure Inundation Extent
- Syphon Canyon Dam Failure Inundation Extent

DRAFT
3/13/2023

STETSON ENGINEERS INC.

Document Path: J:\jn\2478\Emergency\Planning\Figures.aprx, Three Dams Emergency Locations v2

Appendix L: Anatomy of a Dam Figure


General Outline of Embankment
Dam Crest
Upstream Side of Dam
Right Abutment
Left Abutment
Longitudinal
Transverse
Downstream Side of Dam
Toe of Dam
Left Groin
Spillway
Right Groin
Anatomy of a Dam
Photo of Rattlesnake Dam
Irvine Ranch Water District