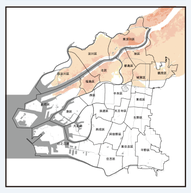
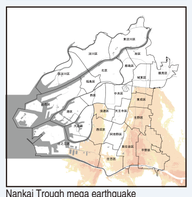
Inundation hazard map for Osaka City

River Flooding (in case of levee breach)

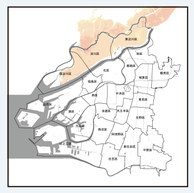
① Yodogawa River



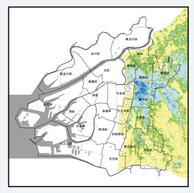
② Yamato River,Higashiyoke and Nishiyoke Rivers, Ishikawa River



③ Kanzaki River, Tenjiku River, Taka River, Ai River

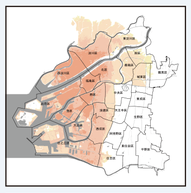


④ Neyagawa, Daini-Neyagawa,and Hirano Rivers, Hiranogawa-bunsuiro Channel,Furukawa River



High tide

⑤ High tide

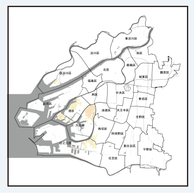


Nankai Trough mega earthquake and tsunami

⑥ Inland flooding

Tsunami Inundation

⑦ Tonankai and Nankai earthquake and tsunami



⑧ Nankai Trough mega earthquake and tsunami

①～③,⑤,⑦,⑧Flood depth
0.5m less than / 0.5～3.0m to less than / 3.0～5.0m to less than / 5.0m higher

④ Flood depth
0.5m less than / 0.5～1.0m to less than / 1.0～2.0m to less than / 2.0～3.0m to less than / 3.0～4.0 less than / 4.0～5.0m to less than / 5.0m higher

⑥ Flood depth
0.1～0.3m to less than / 0.3～0.5m to less than / 0.5～1.0m to less than / 1.0～3.0m to less than / 3.0～5.0m to less than

Calculation Conditions for Rain and Tsunami Scenariosv

Disaster		River	Scenario conditions		Released	Contact Information	Telephone number
River flooding	①	Yodogawa River	24-hour total rainfall: 360 mm/hour	Probable maximum precipitation (Likelihood: about 1/1,000 years)	Jun. 2017	Yodogawa River Office, Kinki Regional Development Bureau, MLIT	072-843-2861
	②	Yamato River	12-hour total rainfall: 316 mm/hour	Probable maximum precipitation (Likelihood: about 1/1,000 years)	May 2016	Yamatogawa River Office, Kinki Regional Development Bureau, MLIT	072-971-1381
		Higashiyoke and Nishiyoke Rivers	24-hour total rainfall: 904.1 mm/hour Maximum rainfall: 102.5 mm/hour	Probable maximum precipitation (Likelihood: 1/more than 1,000 years)	Nov. 2019	Tondabayashi Civil Engineering Office, Osaka Prefecture	0721-25-1131
		Ishikawa River	24-hour total rainfall: 724 mm/hour Maximum rainfall: 195.5 mm/hour	Probable maximum precipitation (Likelihood: 1/more than 1,000 years)	Jan. 2021		
	③	Kanzaki River	24-hour total rainfall: 737 mm/hour Maximum rainfall: 81.1 mm/hour	Probable maximum precipitation (Likelihood: 1/more than 1,000 years)	Jan. 2020	Nishi Osaka Flood Control Office, Osaka Prefecture	06-6541-7771
		Tenjiku River	24-hour total rainfall: 1,150 mm/hour Maximum rainfall: 142.6 mm/hour	Probable maximum precipitation (Likelihood: 1/more than 1,000 years)	Jan. 2020	Ikeda Civil Engineering Office, Osaka Prefecture	072-752-4111
		Taka River	24-hour total rainfall: 1,150 mm/hour Maximum rainfall: 145.4 mm/hour	Probable maximum precipitation (Likelihood: 1/more than 1,000 years)	Jan. 2020	Ikeda Civil Engineering Office, Osaka Prefecture Ibaraki Civil Engineering Office, Osaka Prefecture	072-752-4111 072-627-1121
		Ai River	24-hour total rainfall: 776 mm/hour Maximum rainfall: 189 mm/hour	Probable maximum precipitation (Likelihood: 1/more than 1,000 years)	Mar. 2020	Ibaraki Civil Engineering Office, Osaka Prefecture	072-627-1121
	④	Neyagawa, Daini-Neyagawa,and Hirano Rivers, Hiranogawa-bunsuiro Channel, Furukawa River	24-hour total rainfall: 683 mm/hour Maximum rainfall: 138.1 mm/hour	Probable maximum precipitation (Likelihood: 1/more than 1,000 years)	Mar. 2019	Neyagawa River Basin Flood Control Office, Osaka Prefecture	06-6962-7661
High tide	⑤	High tide	Scenario in which the central pressure is 910 hPa (Muroto Typhoon level), radius of maximum cyclostrophic wind speed is 75 km (Isewan Typhoon level), traveling speed is 73 km/h, and the path is the same as that of Muroto Typhoon		Aug. 2020	Person in charge of emergency management, Port & Harbor Bureau, Osaka City	0725-21-7246
Inland flooding	⑥	Inland flooding	24-hour total rainfall: 549 mm/hour Maximum rainfall: 147 mm/hour	Probable maximum precipitation (Likelihood: about 1/1,000 years)	Mar. 2021	Coordination Section, Sewer Department, Public Works Bureau, Osaka City	06-6615-7594
Tsunami	⑦	Tonankai and Nankai earthquake and tsunami	Scenario in which an earthquake with a magnitude of around 8.6 occurs, causing flooding due to a tsunami, and tide gates (those open at night), etc. did not close (high tide assumed)		Mar. 2004	Planning Section, Port & Harbor Bureau, Osaka City	06-6615-7782
	⑧	Nankai Trough mega earthquake and tsunami	Scenario in which an earthquake with a magnitude of around 9.1 occurs, causing flooding due to a maximum class tsunami (breakwater and opening/closing of tidal barriers taken into account) (high tide assumed)		Aug. 2013	Disaster Prevention Planning Division, Office of Emergency Management, Osaka Prefecture	06-6944-6487

Creator of this pamphlet: Office of Emergency Management, Osaka City (Tel: 06-6208-7384)
This pamphlet is also available for view on the official website of the Office of Emergency Management, Osaka City.
https://www.city.osaka.lg.jp/kikikanrishitsu/

Mar. 2021

What is My Timeline?

My Timeline provides an opportunity to prepare for wind and flood disasters, such as heavy rains and typhoons, and plan in advance how to escape using your own evacuation route while giving due consideration to the circumstances or evacuation behavior of each family member. Creating a schedule that summarizes who does what and when will help you act in an appropriate manner in the event of an emergency.

Schedule example

Family Evacuation Plan **When heavy rain could cause river flooding**

1 Evacuation place

Determine where you will evacuate to and write it down.
Determine all ① to ③ evacuation places that you will evacuate to depending on the situation.

In principle

Place for early evacuation

■ Home, relative's home, friend's home, workplace, etc. (the closest safe place that will not flood)
Evacuation place ①

■ Closest evacuation shelter (the closest safe place that will not flood)
Evacuation place ②

If you did not escape in time...

Where you can protect yourself at that place and time

■ Closest flood disaster (tsunami) evacuation building (the closest safe place that will not flood)
■ Tall building or other elevated place (the closest safe place that will not flood)
Evacuation place ③

2 Plan what to do

until you start evacuating.

Things to do

Collect information
- ☐ Check weather and evacuation information

Prepare for evacuation
- ☐ Check emergency kit and stockpile
- ☐ Buy necessary items
- ☐ Begin moving household items to 2F, etc.
- ☐ Inspect area around the house
- ☐ Put away items that may blow away
- ☐ Check window locks
- ☐ Charge mobile phone
- ☐ Check opening of evacuation shelter

Contact and call out
- ☐ Call out to neighbors
  - ☐ To evacuate ☐ To evacuate together
  - Name
  - Contact
  - ☐ To evacuate ☐ To evacuate together
  - Name
  - Contact
- ☐ Communicate with family (If you're not together)
- ☐ Contact the person who will assist your evacuation (If you cannot evacuate by yourself)

Miscellaneous
- ☐
- ☐

3 Fill in when you will start evacuating and when you will do what.

▶ Determine when you will take the actions you identified in 2.
▶ Write down when you will evacuate.

Family Evacuation Plan

Urgency: High

- Heavy rain is forecasted — Warning Level 1 — Early advisory information
- Warning Level 2 — Flood advisory, Heavy rain advisory
- Warning Level 3 — Evacuation of the elderly from a dangerous area
- Warning Level 4 — Evacuation of all people from a dangerous area
- Warning Level 5 — Ensuring safety during an emergency

Fill in When will you evacuate? When will you do what?

Ex: Double check emergency grab-and-go bag (mom)

Ex: Double check evacuation shelter (everyone)

Ex: Grandma and mom evacuate to a relative's house by car
Likely evacuation place at this stage
Evacuation place ①,②

Ex: Evacuate to XX Elementary School (dad and children)
Likely evacuation place at this stage
Evacuation place ①,②

Likely evacuation place at this stage
Evacuation place ③

* Depending on the situation of the disaster, information may not necessarily be released in this order. It is important to respond flexibly to the situation.

After evacuating

After evacuating, inform your family and other important people that you have evacuated safely

Contact method

Family meeting place

It is extremely dangerous to leave or relocate from your evacuation place before the evacuation information is lifted.

Joto Ward Save

Protect Yourself from Flooding and Tsunami!

大阪市 Osaka City Flood Hazard Map English

How to Use this Hazard Map

How to Use 1 Check the disaster risks for your neighborhood

Use this hazard map to check risks, including which river will cause flooding and whether you will be affected by high tide in times of heavy rain or typhoon, and whether your area is subject to tsunami damage following an earthquake.

How to Use 2 Determine when and where to evacuate to for each type of disaster

Your evacuation actions to protect yourself will be different depending on the situation of the disaster and the situation you are in.
Determine when and where you will evacuate to for protecting yourself from each type of disaster: heavy rain; typhoon; and tsunami.

How to Use 3 Check your daily preparedness by making use of the information in here and My Timeline to protect yourself

A variety of information is released in times of disaster. Take daily preparedness measures by making use of the information in here which will facilitate immediate actions in an emergency, as well as My Timeline which you can fill out.

Evacuation and meeting place

Determine and write down the evacuation and meeting places by type of disaster.

Heavy rain Flooding	Evacuation and meeting place Contact
Typhoon Flooding / High Tide	Evacuation and meeting place Contact
Tsunami	Evacuation and meeting places Contact

What kinds of natural disasters happen in Osaka?

In Osaka, inundation is assumed by river administrators (Kinki Regional Development Bureau, Osaka Prefecture, and Osaka City) in the event of heavy rains or when a tsunami occurs because of an earthquake. Specifically, river flooding, inland flooding, tsunami inundation, and a high tide are assumed to occur.

River Flooding

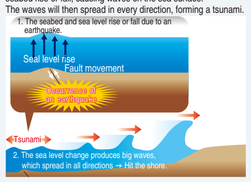
Long-duration heavy rainfall events can lead to levee breaks and inundation due to increased river water.

Inland Flooding

If it rains heavily and the river level rises beyond the drainage capacity of a waterway or a sewer system, rainwater will overflow, submerging housing areas and roads.

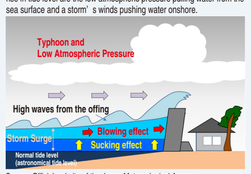
Tsunami Inundation

Seismogenic faulting that has occurred in the seabed makes the seabed rise or fall, causing waves on the sea surface.
The waves will then spread in every direction, forming a tsunami.



High tide

A storm surge is a phenomenon where the sea level (tide level) becomes higher than the normal tide level due to the approach of a typhoon or low atmospheric pressure. The main causes of the abnormal rise in tide level are the low atmospheric pressure pulling water from the sea surface and a storm's winds pushing water onshore.



Source: Official website of the Japan Meteorological Agency

Emergency contact information

Joto Ward Office	06-6930-9045	Road (Nakahama Construction and Maintenance Office)	06-6969-2656
Joto Ward Public Health and Welfare Center	06-6930-9045	Electricity (common to all branches of Kansai Electric Power)	0800-777-8810
Police Station	110	Gas leak (Osaka Gas)	0120-0-19424
Fire Department	119	Telephone trouble (NTT)	113
Sewer (Nakahama Sewer System Maintenance Center)	06-6969-5843	When using a fiber optic telephone or mobile phone	0120-444113
Water Service (Eastern Water Service Center)	06-6927-8771		

Transmission of information

Receiving Information

Bosai Information Mail — Circulates the city's disaster measures information and information needed in times of disaster to your registered mobile phone or PC e-mail address

Must preregister ▶ E-mail touroku@osaka-bousai.net
Send a blank e-mail to the e-mail address above to register. The e-mail address can also be read from the 2D code on the right.

Emergency Warning E-mail — Emergency information will be sent to mobile phones that support emergency alert emails.

Check in advance to see if you can receive it ▶ You may need to change your settings. Please ask your mobile phone provider for more information.

Yahoo! disaster prevention bulletin app — It provides evacuation and earthquake information via push notifications.

When setting the region, enter XX Ward, Osaka City. Then you can receive information for the entire area of Osaka City.

How information is communicated

Evacuation information / Water level/ river information / Earthquake/ tsunami information / Weather (rain, etc.) information

TV, radio, etc. / Website Osaka Disaster Prevention Net / Emergency Warning E-mail Tweets from Office of Emergency Management / Outdoor emergency speaker / Sound truck, etc.

City residents — Collect information proactively!

Efforts to diversify disaster information communication means

URL https://www.city.osaka.lg.jp/kikikanrishitsu/page/0000509398.html

Finding Information

- If outdoor emergency speaker broadcasts could not be heard: call the Government Disaster Wireless Telephone Service (06-6210-3899), charges apply.
- In times of disaster, switch your TV to NHK and press the "d" button for data broadcasting to view evacuation advisories, if evacuation shelters are open, and other information.

Osaka Disaster Prevention Net ▶ Evacuation information
URL http://www.osaka-bousai.net/pref/index.html

Disaster Information for River (Ministry of Land, Infrastructure, Transport and Tourism) ▶ River level information
URL https://www.river.go.jp/

River Disaster Management Information (River Office, Osaka Prefecture) ▶ River level information
URL http://www.osaka-kasen-portal.net/sabou/

Japan Meteorological Agency ▶ Weather information, tsunami information, etc.
URL https://www.jma.go.jp/

Osaka City Rainfall Information ▶ Weather information, etc.
URL http://www.ame.city.osaka.lg.jp/pweb/

Osaka Safe Travels ▶ Weather information, etc.
URL https://www.osakasafetravels.com/

Emergency Siren Patterns(Outdoor emergency speaker)

Type of emergency	Siren (alarm) pattern
Major tsunami warning	Sounds for 3 sec. / Stops for 2 sec. / Sounds for 3 sec. / Stops for 2 sec. / Sounds for 3 sec.
Tsunami warning	Sounds for 5 sec. / Stops for 6 sec. / Sounds for 5 sec. / Stops for 6 sec. / Sounds for 5 sec.
Warning Level 5	Sounds for 20 sec. / Stops for 10 sec. / Sounds for 20 sec. / Stops for 10 sec. / Sounds for 20 sec.
Warning Level 4	Sounds for 10 sec. / Stops for 10 sec. / Sounds for 10 sec. / Stops for 10 sec. / Sounds for 10 sec.
Earthquake early warning*1 (Seismic intensity of 5-lower or more)	Chime sound of earthquake early warning

More information ▼

Website of Office of Emergency Management, Osaka City

Safety Confirmation Message Services

Disaster Emergency Message Dial 171 — You can record or play messages in times of disaster.

Call 1 7 1
- Press 1 — To leave message (recording method) — Phone number of your home, yourself, or family member (in affected area) — Dial from the area code — Listen to message
- Press 2 — To listen to message (confirmation method) — Phone number of the person you want to contact (in affected area) — Dial from the area code — Leave message

Dates you can try out the services

1st and 15th of every month (24 hours), Jan. 1 to 3 (24 hours)
Disaster Preparedness and Volunteer Week (Jan. 15, 9 am to Jan. 21, 5 pm)
Disaster Preparedness Week (Aug. 30, 9 am to Sep. 5, 5 pm)

Disaster Emergency Message Board — It can be accessed if internet connection is available in times of disaster.

Web171(NTT) URL https://www.web171.jp
NTT docomo URL http://dengon.docomo.ne.jp
SoftBank / Y!mobile URL http://dengon.softbank.ne.jp
au(KDDI) URL http://dengon.ezweb.ne.jp

J-anpi for one-stop searches of all safety status information

It enables the one-stop search of all safety status information posted on the disaster message boards of communication carriers.
URL https://anpi.jp/

* Disaster Emergency Message Boards become available when a major disaster occurs. For service details, please see the explanation provided by NTT and the respective mobile phone companies.

When a record typhoon is approaching(High tide)

Disaster Information(Warning Level)	Actions to Protect Yourself
Typhoon forms	Issued by JMA Possibility of storm warning-class disaster Early call for evacuation from Osaka City in collaboration with the Message to Osaka Prefectural Residents from the Governor of Osaka Prefecture
Warning Level 3	Issued by the city Out of a dangerous area The elderly, etc. should evacuate Equivalent to Warning Level 3 Issued by MLIT, JMA, and the prefecture Flood alert information, Flood warning, etc. Issued by JMA High tide special warning
Warning Level 4	Issued by city Out of a dangerous area Everyone must evacuate! Equivalent to Warning Level 4 Issued by MLIT, JMA, and the prefecture Flood danger information, etc. Issued by the prefecture High tide flood danger information
Disaster has occurred or urgent situation	
Warning Level 5	Issued by the city to the extent possible Ensuring safety during an emergency Equivalent to Warning Level 5 Issued by MLIT, JMA, and the prefecture Flood inundation information, Heavy rain emergency warning, etc.

Actions to Protect Yourself
Be on heightened alert, check evacuation actions, prepare for evacuation For example: ⚙ Stay alert of weather information ⚙ Find an evacuation place on the hazard map Begin evacuating to places that will not flood For example: ⚙ To a relative's home, friend's home, workplace, etc., including those not in Osaka City
Evacuate people requiring time to evacuate e.g., the elderly For example: ⚙ To a safer place that will not flood (incl. 3F or higher), e.g., a relative's home, friend's home, workplace ⚙ To your closest evacuation shelter ⚙ Double check your emergency grab-and-go bag in preparation for Warning Level 4 (evacuate everyone)
Evacuate quickly to an evacuation site For example: ⚙ To a safer place that will not flood (incl. 3F or higher), e.g., a relative's home, friend's home, workplace ⚙ To your closest evacuation shelter
! If you feel you are in danger on your way to an evacuation site, go to the nearest safe place For example: ⚙ To your closest evacuation shelter ⚙ To your closest evacuation shelter (to a flood/tsunami evacuation building) ⚙ To a tall building or other elevated place
! It is very dangerous to evacuate in a flood. Your life is in danger. Immediately secure your safety! For example: ⚙ To your closest evacuation shelter ⚙ To your closest evacuation shelter (to a flood/tsunami evacuation building) ⚙ To a tall building or other elevated place

How Will You Evacuate?

If you can stay at home due to shallow flooding, etc.

Do not go outside if it is unwise

Depending on the wind and rain situation, it may be safer to stay at home.
Evacuate to a safe place in your home that will not flood.

If you cannot stay at home due to deep flooding, etc.

Evacuate early

If evacuating to an evacuation shelter, check if it is open

Evacuate early to a place that is unlikely to flood. Your options may include evacuating to a relative's home, a friend's home, or workplace, incl. outside Osaka City.

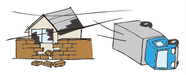
Evacuation Precautions

Go to a place higher than flood level

Higher than flood level

Driving or evacuating in strong wind is dangerous

The strength of the wind affects evacuation. When strong wind gusts are blowing due to a typhoon, etc., a traveling truck may flip over, or block walls and houses may begin to collapse.



* Depending on the situation of the river(s) and the disaster, information may not necessarily be released in this order. It is necessary to respond flexibly to the situation.

When a tsunami strikes

How Will You Evacuate?

Move to an inundation-free place as soon as possible.

Upon feeling earthquake tremors or receiving a tsunami warning, evacuate to an inundation-free place as soon as possible.

◎Outside the assumed flood inundation zone
◎Safe, inundation-free floors of the nearest tsunami evacuation building
◎Safe, inundation-free floors of the nearest tall building or on high places

Tsunami (higher than 1 m) caused by a massive Nankai Trough earthquake is expected to reach Osaka City within 110 minutes after the occurrence of the earthquake.

Evacuation Precautions

Upon feeling massive or slow earthquake tremors, move away from the beach or river as soon as possible.

Remain at the safe place until the tsunami warning is canceled.

Tsunami Information

Estimated maximum tsunami height		Warning name	Your responses
Quantitative expression (indication)	Qualitative expression		
Over 10 m	Huge	Major tsunami warning (Emergency warning)	●As quickly and high as possible
10 m (5m<Height≦10m)			
5 m (3m<Height≦5m)			
3 m (1m<Height≦3m)	High	Tsunami warning	●If you did not escape in time, run and climb up a tall building or other elevated place
1 m (20cm≦Height≦1m)	N/A	Tsunami advisory	●Stay alert of tsunami information

When heavy rain could cause river flooding

Disaster Information(Warning Level)	Actions to Protect Yourself
Warning Level 1	Issued by JMA Early advisory information
Warning Level 2	Issued by JMA Flood advisory, heavy rain advisory, etc.
Warning Level 3	Issued by the city Out of a dangerous area The elderly, etc. should evacuate Equivalent to Warning Level 3 Issued by MLIT, JMA, and the prefecture Flood alert information, Flood warning, etc.
Warning Level 4	Issued by city Out of a dangerous area Everyone must evacuate! Equivalent to Warning Level 4 Issued by MLIT, JMA, and the prefecture Flood danger information, etc.
Disaster has occurred or urgent situation	
Warning Level 5	Issued by the city to the extent possible Ensuring safety during an emergency Equivalent to Warning Level 5 Issued by MLIT, JMA, and the prefecture Flood inundation information, Heavy rain emergency warning, etc.

Actions to Protect Yourself
Be on heightened alert For example: ⚙ Stay alert of weather information
Check evacuation actions For example: ⚙ Double check evacuation route on the hazard map ⚙ Stay alert of the rainfall situation in your area
Evacuate people requiringtime to evacuate e.g., the elderly For example: ⚙ To a safer place that will not flood (incl. 3F or higher), e.g., a relative's home, friend's home, workplace ⚙ To your closest evacuation shelter ⚙ Double check your emergency grab-and-go bag in preparation for Warning Level 4 (evacuate everyone)
Evacuate quickly to an evacuation site For example: ⚙ To a safer place that will not flood (incl. 3F or higher), e.g., a relative's home, friend's home, workplace ⚙ To your closest evacuation shelter
! If you feel you are in danger on your way to an evacuation site, go to the nearest safe place For example: ⚙ To your closest evacuation shelter ⚙ To your closest evacuation shelter (to a flood/tsunami evacuation building) ⚙ To a tall building or other elevated place
! It is very dangerous to evacuate in a flood. Your life is in danger. Immediately secure your safety! For example: ⚙ To your closest evacuation shelter ⚙ To your closest evacuation shelter (to a flood/tsunami evacuation building) ⚙ To a tall building or other elevated place

Evacuation Precautions

It is dangerous to go outside in torrential rain or to flooded areas

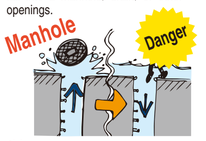
If the flood risk is high, do not go walk outside. Wait indoors.

As a rule, evacuate on foot

If you need to evacuate by car, begin evacuating earlier, e.g., the elderly and others requiring assistance.

Do not use flooded roads

The water will be muddy, and you will have a hard time seeing where you are going. It is dangerous as you can fall into a manhole, drain, or other openings.



* Depending on the situation of the river(s) and the disaster, information may not necessarily be released in this order. It is necessary to respond flexibly to the situation.

How Will You Evacuate?

If you can stay at home due to shallow flooding, low risk of house collapse, etc.

Do not go outside if it is unwise

Depending on the wind and rain situation, it may be safer to stay at home.
Evacuate to a safe place in your home that will not flood.

If you cannot stay at home due to deep flooding, high risk of house collapse, etc.

Evacuate early

If evacuating to an evacuation shelter, check if it is open

Evacuate early to a place that is unlikely to flood. Your options may include evacuating to a relative's home, a friend's home, or workplace.

About flood disaster evacuation buildings

Osaka City is working to secure flood disaster evacuation buildings, which will serve as temporary or emergency facilities for protecting people's lives from river flooding and tsunami. Know where your closest flood disaster evacuation buildings are in case of an emergency.

Image