



Environmental Protection Department

Our Mission is to protect, monitor, restore, and regulate Morongo's natural resources, honoring and protecting all life, land, and traditions and enhancing tribal sovereignty. We will promote environmental awareness and environmentally considerate actions by exemplifying environmental stewards, fostering collaborative relationships, expanding education and outreach activities, and continuing to enrich and develop our programs.

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Preventing Raven Conflicts

Written by: Kimberly Miller, Environmental Specialist II

While ravens are native birds to the area, their population around urban areas has increased so much that they can create a variety of issues for people. These smart birds are very good at taking advantage of the food, water, and shelter that people provide. Although ravens do not pose a significant threat to human safety, they can cause quite a mess.

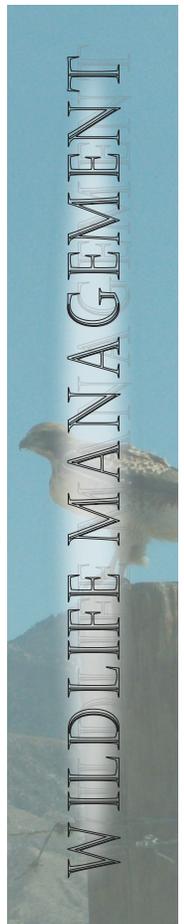
The raven is a highly intelligent bird that can work in groups and learn to adapt and problem solve. Ravens are both scavengers and hunters, eating plants, small mammals, insects, roadkill, and even trash. They can prey on threatened and endangered species like desert tortoises or burrowing owls. Ravens live in a variety of habitats including forests, sagebrush, deserts, and developed areas. Ravens can become a problem if trash is left out for them, since they will eat what they can and scatter the rest. In winter months, ravens can roost on artificial surfaces for the heat that can be provided. This can impede operations when it includes buildings and machinery. Raven feces can be a human health hazard.

Ravens are classified as a migratory bird species and are protected by federal laws. Exclusion, dispersal, and non-lethal management should be all be considered to prevent damage from ravens. Prevention is key to keep animals wild and to protect the public.

References: *The Living Desert*—<https://www.livingdesert.org/learn/in-the-community/healthy-desert-education-project/ravenous-ravens/>; *USDA APHIS—Wildlife Damage Management Technical Series*; https://www.aphis.usda.gov/wildlife_damage/reports/Wildlife%20Damage%20Management%20Technical%20Series/Common%20Ravens_WDM%20Technical%20Series_February%202020.pdf

What You Can Do

REMOVE all food and water sources	AVOID letting nests become established
<ul style="list-style-type: none"> Keep pet food and water indoors. Secure your trash, making sure lids are completely closed, and cover any compost piles. Remove bird feeders from problem areas. Cover gardens with bird nets. Make sure there is not unnecessary water runoff in the area. 	<ul style="list-style-type: none"> Put bird deterrents like dura-spikes on roofing Place realistic models of dead ravens (effigies) and reflective moving surfaces (like metallic streamers or spinning aluminum) Remove or secure any abandoned or little-used structures, like sheds. If you spot ravens building a nest, take it down before any eggs are laid.



Backyard Composting

Written by: Jessica Southard, Environmental Specialist I

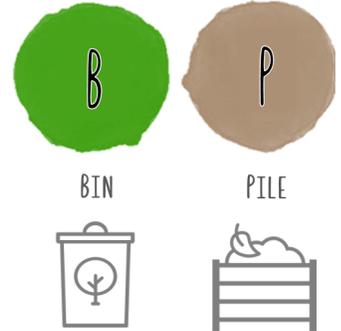


Composting is nature’s way of recycling. It’s the controlled decomposition of organic material such as leaves, twigs, grass clippings, and vegetable food waste. Compost is the soil product that results from proper composting. It helps keep organic material out of landfills, and reduces the cost of hauling garbage and operating landfills. Composting turns waste material into a useful product that is great for gardens and landscaping, while saving money by not having to buy soil conditioners, mulch, and fertilizer.

There are different processes, but traditional backyard composting can be done by most people with an unpaved outdoor space. First you’ll need to choose whether to use a compost bin or pile:

- Piles—should be between 3’x3’x3’ to 5’x5’x5’, and can be open
- Bins—can be built using store-bought compost bins or homemade, to contain the compost material

The location will need to be selected based on the amount of space available, accommodating for approximately double the size of the bin or pile for tending to it. It is also recommended that it not be on concrete, and be placed away from the home.



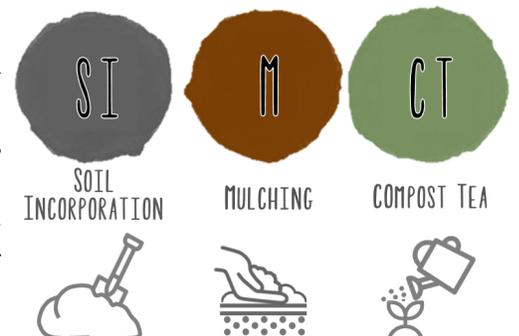
These are the six basic ingredients needed to produce compost:

- Brown Material (Carbon)—dried materials like leaves, twigs, cardboard, newspaper, napkins, sawdust, & dryer lint
- Green Material (Nitrogen)—fresh materials like grass, flowers, manure, food waste, & coffee grounds
- Air (Oxygen)—added to compost bins to help reach temperatures between 130-140°F, by turning & mixing about once a week, for 3-4 weeks
- Water—keep pile damp as a wrung-out sponge
- Helpers (microorganisms and macroorganisms)—
 - Microorganisms—need a microscope to see them, like actinomycetes, bacteria, & fungi
 - Macroorganisms are insects that can be seen with the eye, like worms, snails, sow bugs, fruit beetles, slugs, & springtail
- Labor—in addition to the weekly turning process, the pile will need to be harvested when finished



Finished compost should be ready to harvest in about 10-12 weeks. It can be used in the following ways:

- Soil incorporation—adding the compost to the soil and digging it into the earth
- Mulching—placing the compost on top of the ground, layering compost 2-4” deep
- Compost Tea—steeping finished compost in a bucket of water for a day, and spraying on or drenching plants.



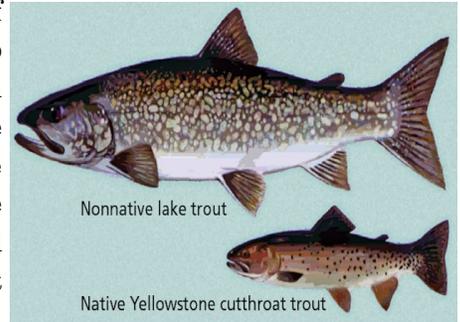
References: Riverside County Waste Resources—Composting www.rcwaste.org/composting/how; CalRecycle—Organic Materials Management calrecycle.ca.gov/organics/

POLLUTION PREVENTION PROGRAM

Problems With Invasive Species

Written by: Nicholas Baccari, Environmental Intern

The impact of invasive species is a serious problem throughout all of California. Numerous invasive species ranging from vegetation to animals impact our ecosystem. Native plants and animals are vital in maintaining a healthy ecosystem. Over 1,700 invasive species have the potential to become a threat to California. This includes invasive species that could be introduced as well as those that have become naturalized and currently continue to overwhelm our native plants and animals in California. Many problems occur when our native plants get destroyed and compete for habitat by invasive species; for instance, they quickly spread, cause fire hazards, water erosion, and decrease ecosystem biodiversity.



Invasive species are any living organisms harmful to an ecosystem since they are not natural. What makes them invasive is the ability to grow and reproduce rapidly, spread aggressively, and pose a threat to all other native species. However, invasive species do not need to originate from another country. For example, lake trout from the Great Lakes are native to their region but have been introduced into Yellowstone Lake and fight the native Yellowstone cutthroat trout for resources.

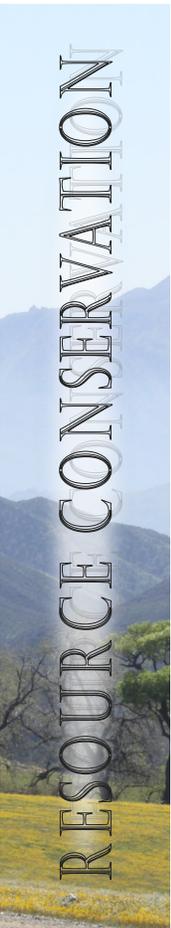


Most spreading of invasive species is through human activity and overseas exports. Distributing is sometimes unintentional, such as bringing firewood to go camping, but planting beautiful gardens with invasive species and bringing exotic pets that manage to escape is intentional. Unfortunately, these activities bring invasive species into our ecosystems, and when they escape, they cause harm to the native habitats and ecosystems.

Many invasive kinds of grass are annuals known to crowd out other plants. When these invasive grasses die out, it increases the fuel for fires and is one reason we have more frequent and extensive fires here in California. Water erosion is another problem caused by invasive plants because invasive species tend to have shallow roots that don't retain soil efficiently.



When invasive species come and take over a biodiverse ecosystem, it destroys the local habitat. For example, when certain trees or shrubs die due to invasive competition, the animals that live and eat these native plants will start to die out and disrupt the natural food cycle. Ecosystems are highly sensitive to invasive species and need our help. Some things you can do to stop or slow the spread of invasive species is to double check what you are planting, transporting, and throwing away. These steps will help protect and reduce the introduction of invasive species.



References: University Of California —*Invasive Grass Fuels Increased Fire Activity* <https://www.universityofcalifornia.edu/news/invasive-grass-fuels-increased-fire-activity>; *Sporting Classic Daily—Trout Troubles* <https://sportingclassicsdaily.com/trout-troubles/>; *Natural History Journal—What Makes California California: Biodiversity.*” <http://natural-history-journal.blogspot.com/2020/05/what-makes-california-california.html>; *California Invasive Species Advisory Committee—The California Invasive Species List* <http://www.iscc.ca.gov/docs/CaliforniaInvasiveSpeciesList.pdf>

What Does the Tribal Water Program Monitor?

Written by: Kimberly Miller, Environmental Specialist II

The Tribal Water Program exists to monitor surface water on the Morongo Reservation, assist in preventing water pollution, identify potential or existing contaminant sources, and provide outreach/resources to encourage conservation and responsible management of water. The Tribal Water Program monitors several different things to assess water quality of the surface waters of the Morongo Reservation.

Four times a year, we conduct field monitoring with a probe we place directly in the water. This provides live measurements that we record. Barometric pressure determines the amount of atmospheric gases that can be dissolved in water. Dissolved oxygen is how much air is mixed into the

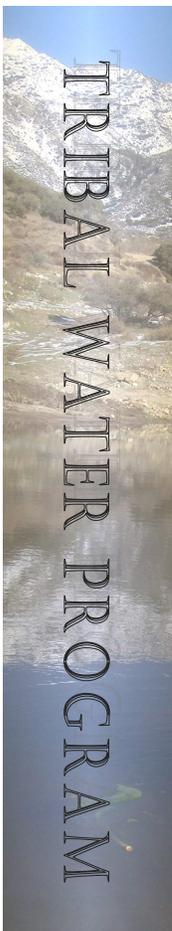


water. Some types of aquatic life are very sensitive to oxygen levels. A solution's pH is a measure of how acidic or basic it is, and can affect the chemical and biological processes occurring in the water. Most aquatic animals prefer a neutral pH of 6.5 – 8.5 and can only tolerate small changes in pH. Specific conductivity measures the ability of a material to carry an electrical current. Higher conductivity indicates a higher concentration of dissolved solids such as salts or ions. Temperature can impact the amount of oxygen in the water and the types of aquatic life that can live in the waterbody. Total dissolved solids are a measurement of the amount of material or particles dissolved in water. High dissolved solids can carry toxics into the stream or reduce water clarity. Turbidity is a measurement of the clarity of a waterbody.

Two times a year, we conduct laboratory sampling. We collect samples of the water and send it to the laboratory for them to do analysis on a broader range of parameters. Metals like arsenic, cadmium, chromium, copper, iron, lead, mercury, and selenium can be a by-product of some agricultural/industrial activities or naturally occurring and can be toxic to both people and animals. Nutrients like nitrogen and phosphorus are necessary, but excessive levels can cause an overstimulation in plant and algae growth, leading to a decrease in dissolved oxygen.

Once per year, we sample for bacteria and benthic macroinvertebrates. *Escherichia coli* (*E. coli*) is the bacterial indicator most closely associated with human health risks. This comes from the digestive systems of mammals. Benthic macroinvertebrates are the small organisms living in the bottom of lakes, rivers, and streams. The types and amounts of organisms can be used to compare the health of the waterbody with what would exist under undisturbed conditions. This adds information over the lifetime of the organism and adds to the chemical analysis. When sampling benthic macroinvertebrates, we also collect habitat information that adds to the information on the physical health of the stream.

Monitoring results are analyzed every year and a Water Quality Assessment Report is published each December. This report is available on the Tribal Water Program website <https://morongonation.org/environmental/tribal-water/>.



New Interactive AirNow.gov Map

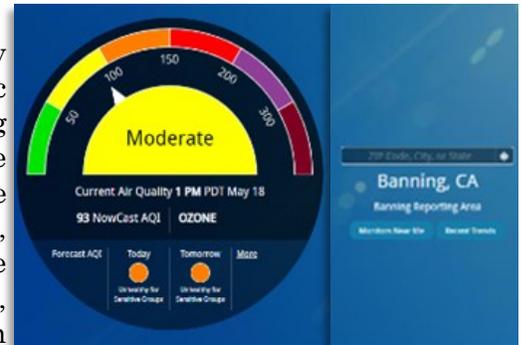
Written by: Pamela Atcitty, Environmental Specialist II

What's new with AirNow.gov?

The EPA and the U.S. Forest Service have released a new version of their Fire and Smoke Map on AirNow.gov. This new version includes a combination of data from PurpleAir's low-cost sensors and data from official government monitoring devices, all in a single map. The objective of this addition is to provide the public with a central website that provides information they can use to help make decisions and better communicate their air quality to the public, especially during wildfire season. A benefits of utilizing PurpleAir PM2.5 low-cost sensors in the Fire and Smoke Map is there is an abundance of these sensors already in our communities, and this data helps fill in the gaps were government monitors do not exist. Data made available from PurpleAir's sensors is gathered from the general public who install them outside throughout their neighborhood such as in schools, patios and parks.

Why were these changes necessary?

In the past, the AirNow website has crashed during extremely poor air quality days because the site could not handle the public rushing online to see how badly their air quality was impacting them. The data generated in the past was slow in calculating the current air quality conditions, leaving the public uncertain. The website's failure sent the public flocking to PurpleAir's interactive, crowdsourced website, where the data is more localized and more current than AirNow data. With the addition of PurpleAir sensors, AirNow has the ability to present their data in real-time, an option that was not previous available using government managed monitors.



AirNow Dial displaying AQI corresponding color, number and category, forecast

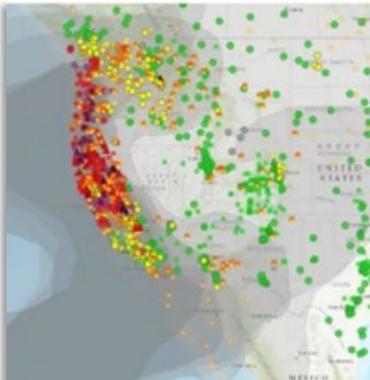
How can you use AirNow.gov?

EPA's AirNow website now provides the public with easy access to national ambient air quality information, using a health effects based scale called the Air Quality Index (AQI), to make assessment of your air quality on a daily basis or during extreme events, like wildfires. Upon entering the AirNow.gov page and entering your location, an array of air quality information is available on the home-page. The Dial, which is the main feature, displays the current AQI, its corresponding color, number and category, along with definitions and links to more information. If one is interested in the AQI forecast or recent trends, that information can quickly be displayed in graphs

The most impressive changes to the AirNow website are the interactive maps. Here you can view forecasted, current or archived data displayed on maps from different locations. This map also has a "loop" option that shows the last 24 hours of AQI color data change.

When accessing the Fire and Smoke map you can quickly zoom in or out to see your area's (local, regional, or national) air quality by the color indicated by the monitor's symbol that corresponds to the AQI. This interactive map allows you to choose from a variety of layers that can be turned on or off, such as which type of sensor data will be displayed, low-cost or permanent government monitors. In conjunction with the AQI display, locations of active fires and the extent of its smoke plume are also available as a map layer. This type of graphical information is very useful when determining any outdoor activities, traveling, or protecting the health of your family members.

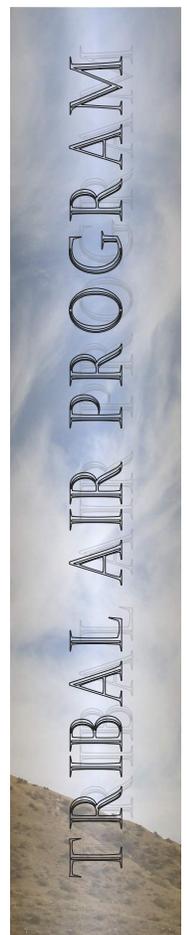
For more information about your air quality conditions visit: AirNow.gov



AirNow Fire and Smoke Map



AirNow Air Quality Map



California Wildfires Over Time

Written by: Sujaya Tranquebar, Environmental Specialist I

California is notorious for having many wildfires from late spring to early fall season. Despite having various different climates with their own unique weather conditions, a large portion of the state (especially Southern California) is known for being hot and dry. These parts of the state gets hot temperatures, low relative humidity, and high winds during these seasons. These weather conditions help not only wildfires to spark and start, but also spread at a rapid rate and grow to large distances. As climate change has been affecting the Earth more and more every year, California weather conditions are also being impacted. Climate change is increasing the severity of the hot temperatures, low humidity, and high winds which as a result is worsening the wildfire season.

Global warming has had a large effect on California's temperatures causing hotter and hotter temperatures every year. Annual mean temperatures for California have increased by about 1.8 degrees Fahrenheit since 1895 to the present day. Additionally, 11 of the 20 warmest years in the state have been after the year 2000. Along with that, California has also been experiencing severe drought conditions. Although the state is already prone to droughts, climate change has only increased the severity and length of the droughts in California.

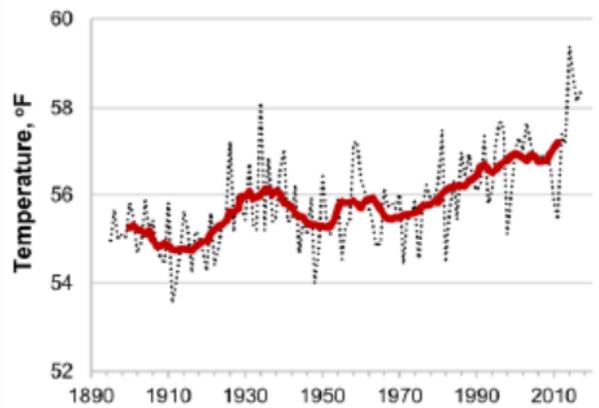
With these weather conditions increasing, the wildfire season has also been impacted. While already prone to wildfires due to its climate, the wildfires California has been experiencing has only gotten stronger: burning larger areas, becoming more frequent, and causing more damage to people, property and the Earth. In the past century 14 of the Top 20 Largest California Wildfires took place after 2010 (based on data until 1/13/2022). Wildfires can be sparked by a variety of ways including through something like a lightning strike or through human activity. Once started, weather conditions exacerbated by climate change only help a sparked wildfire spread rapidly and extensively.

The destruction from wildfires can include damage to property, humans, and wildlife. They can also have detrimental impacts on the air quality of the environment: large amounts of smoke are released into the atmosphere during wildfires. This smoke is comprised of gases, microscopic particulates (also called particulate matter or PM), and water vapor. Once in the atmosphere, smoke mixes with the air and can travel from close to the site of the wildfire to much farther areas with the flow of the wind. When this polluted air is inhaled, it can cause a variety of health problems to humans. Smoke can irritate our eyes and noses and even impact our respiratory and cardiac systems. Those with respiratory and/or cardiac issues, children, and the elderly are most impacted by inhaling smoke and the most prone to aggravating existing health problems or developing new ones.

As wildfire season begins to kick off, keeping track of wildfires near you and being cautious about your exposure to wildfires is helpful in protecting yourself. A great website to check is www.fire.ca.gov for up to date wildfires in California including their location, how large they are, and their current status. Morongo Environmental Protection Department also posts smoke advisories, heat advisories, and other relevant air advisories issued by the South Coast Air Quality Management District that are forecasted to affect the Morongo region. You can also visit airnow.gov and morongoair.com for current air quality levels.

Sources: <https://oehha.ca.gov/epic/changes-climate/annual-air-temperature#:~:text=The%20graph%20below%20on%20the%20left%20shows%20that,on%20record%2C%20followed%20by%202015%2C%202017%20and%202016;> https://www.fire.ca.gov/media/4jandlhh/top20_acres.pdf; <https://www.frontlinewildfire.com/wildfire-news-and-resources/california-wildfires-history-statistics/>

Statewide annual average temperatures



— 11-year running average
(each year is calculated for the 11-year period that starts 5 years before that year)

Source: Western Regional Climate Center 2018

Limiting Waste at the Beach

Written by: Natalie Cruz, Environmental Intern

We love going to the beach with our families in the summer! It's always nice to come together and bring food, play around, and take a nice, cold swim. Unfortunately, during these fun times, we can produce a lot of waste, and this waste can end up in bodies of water. Think about it— the coolers that we bring to the beach contain soda cans, plastic water bottles, plastic zip-top bags, chip bags, and more. If we don't dispose of these items properly, we can cause harm to aquatic life. Thankfully, there are many ways we can enjoy the beach just as much while reducing the amount of waste we produce. Here are a few examples:



- Avoid plastic at all costs! Why shouldn't we bring plastic to the beach? Plastic is one of the biggest threats to aquatic animals. Every year, about 8 million tons of plastic ends up in our oceans. Unfortunately, this plastic ends up killing more than 100,000 sea turtles and marine mammals, including dolphins, seals, and whales. It is estimated that by 2050, there will be more plastic than fish in the ocean.

- Instead of bringing plastic water bottles, encourage your family to bring reusable water bottles. That way, we limit the amount of plastic we are using. Reusable water bottles can also keep water cooler for longer!



- A good replacement for disposable zip-top bags is reusable bags. They are easy to find in stores, and can be used over and over. There is no need to buy plastic zip-top bags anymore, and we will be protecting the environment at the same time.

- Replacing a plastic or Styrofoam cooler with an eco-friendly one is a great idea. Several manufacturers, such as Igloo, sell coolers made out of biodegradable materials.



- Instead of bringing soda cans, bottles, etc., make a refreshing drink, such as lemonade, at home and put it in a jar with a screw top. That way, you don't bring any plastic to the beach, and everyone gets to try some nice, cold lemonade!

- Kids love to play with toys, especially at the beach. Replace those plastic, highly breakable toys with more eco-friendly ones, such as frisbees made from recycled nylon (fishnet pieces found in the ocean), or an eco-beach toy set, which includes a bamboo fiber bucket, scoop, and trowel. This can be beneficial because if a child loses the toys, it will completely decompose.



- Sunscreens are full of harsh chemicals for our skin and for the ocean. To make things worse, they almost always come in plastic bottles. Aim for sunscreens that are reef safe, which means that they are made with minerals, or buy sunscreens that come in stick form or reusable jars. This will help prevent more chemicals and plastics from getting into the ocean.

These are just a few things that can make a big difference when it comes to pollution prevention at the beach. There are other small things we can do to protect beaches, such as picking up after your animals, avoiding dunes, and more. If we can all implement some sort of zero-waste lifestyles, we can help keep the beaches clean, and keep them beautiful.

References: *Four Simple Ways to Reduce Plastic Waste on Your Next Beach Trip: planetforward.org/idea/reduce-plastic-beach-trip?msclkid=568c85f4cd9011ec9972240500095288*



Upcoming Events



Household Hazardous Wastes Drop-Off

**Saturday
July 23, 2022
9am to 12pm
Behind Public Works**

Staff available on-site to collect, sort, and store materials. Wear a mask.
Open to Morongo Residents & Tribal Members Only

- Cleaning Products
- Sharps & Medication
- Paints
- Batteries
- Pesticides
- Electronics
- Oil & Antifreeze
- Bulbs



Morongo Reuse Center

**Saturday
July 23, 2022
9am to 12pm
Behind Public Works**

Donate usable household items or take what you need. Wear a mask.
Open to Morongo Residents & Tribal Members Only

- Cleaning Products
- Lawn Care
- Paints
- Vehicle Care
- Electronics
- Pool Care

September is Vehicle Removal Month!

Vehicle Removal & Recycling



Email epd@morongo-nsn.gov or call 951-755-5128 to schedule the safe & secure removal of your vehicle.

Open to Morongo residents only

If you would like to receive electronic versions of the Morongo Environmental Protection Department's Quarterly Newsletter and information on other Environmental Events, sign up at www.morongonation.org/content/environmental-newsletter-email-signup or email epd@morongo-nsn.gov and request to be added to the list! Prefer a copy mailed to you, no problem! You can sign up at www.morongonation.org/content/newsletter or email us at epd@morongo-nsn.gov

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