

Maintaining Your Detention Basin

for Private Owners in Laredo

A publication from the City of Laredo
Environmental Services Department



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On the cover: Embarcadero Industrial Park pond (photo by Blasita Lopez)

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Information Resources

City of Laredo Environmental Services Department: 956-794-1650 / esd.cityoflaredo.com

City of Laredo Health Department: Epidemiology 956-795-4951 / www.cityoflaredo.com/Health/Epidemiology.html

Environmental Health 956-795-4904 / www.cityoflaredo.com/Health/Environmental.html

City of Laredo Building Development Services: 956-794-1625 / www.cityoflaredo.com/Building/

City of Laredo Parks and Recreation Forestry Division: 956-795-2350 / laredoparksandrec.com/












City of Laredo Engineering Department 956-791-7437 / www.cityoflaredo.com/Engineering/

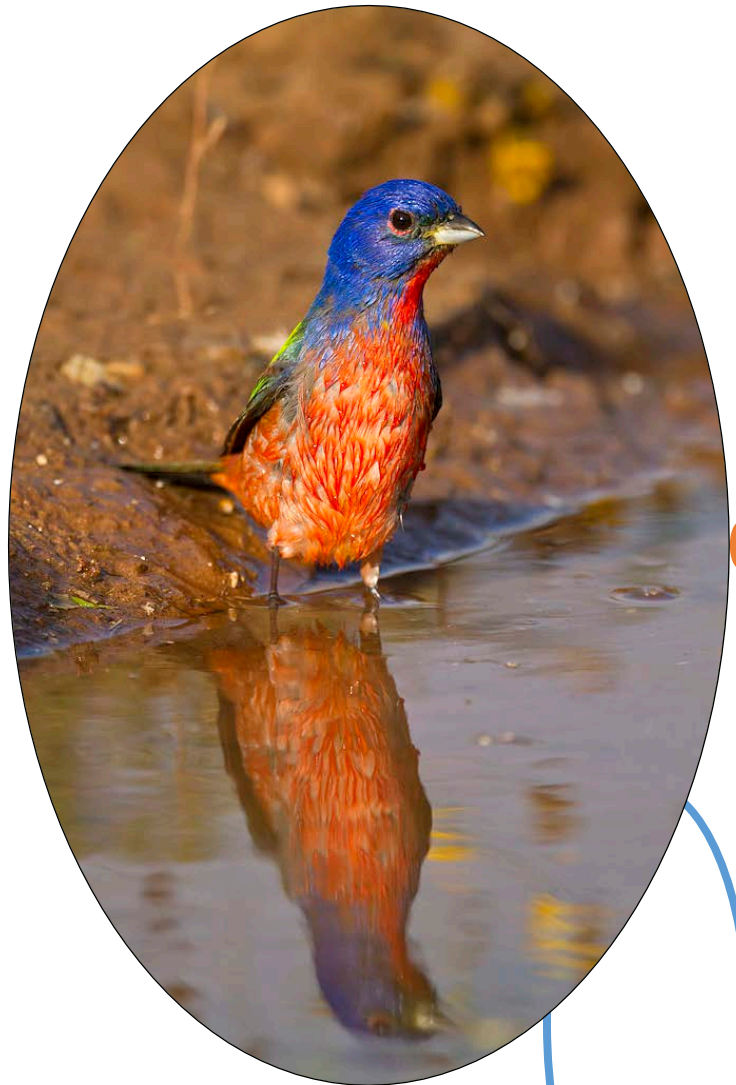
Laredo College Lamar Bruni Vergara Environmental Science Center 956-764-5701 / www.laredo.edu/

Monte Mucho Audubon Society: 956-764-0531 / montemucho.com/

Webb County Appraisal District: 956-718-4091 / www.webbcad.org/

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Water sources attract many types of wildlife like this male Painted Bunting. Photo by: D. Robert Franz, Images for Conservation Pro-Tour 2010

INTRODUCTION

Your detention basin or pond is a stormwater Best Management Practice (BMP) designed to reduce the impacts of pollutants and increased stormwater on local streams caused by development. They are an essential part of the communities' efforts to improve the quality of our streams, rivers, and lakes; however detention basins will fail prematurely if not properly maintained. Once a detention basin fails, it will no longer perform its intended function and it is often very expensive to replace. Additional information regarding detention basins and stormwater quality may be obtained from the City of Laredo Environmental Services Department at 956-794-1650 or visit esd.cityoflaredo.com.

Whether you are an individual property owner, a representative of a homeowners association, or a residential/ commercial property manager, this publication is intended to answer many of these questions and provide you with guidance. There are also step-by-step instructions for maintenance activities. Routine maintenance will prolong the life of your detention pond, improve its appearance, prevent flooding and property damage, and enhance local streams and rivers. This guide is not a set of rules and regulations on how to design or build a detention basin, it is a resource document to assist you in maintaining an amenity that adds quality of life & property value to your development.

FAQS:

- What are detention basins and why are they important?
- Do you have a detention basin near your property?
- Are there different types of detention basins?
- Are you responsible for maintenance?
- Maintenance? Why is it necessary?
- What maintenance tasks should be considered?
- How can you enhance the appearance and function of your detention basin?
- What does it mean to naturalize your detention basin?
- Wildflower buffers? Bird Boxes? Wildlife enhancements?

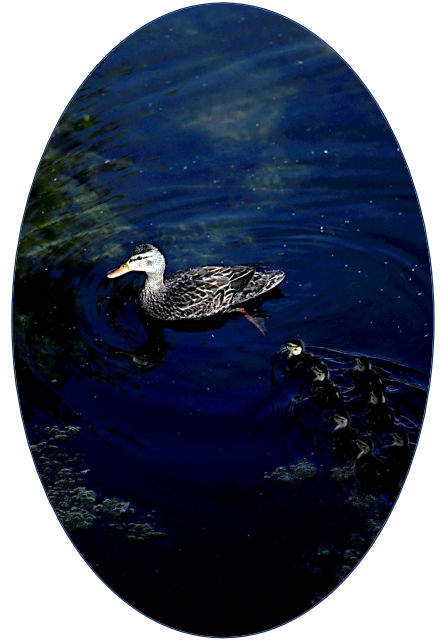
WHAT ARE DETENTION PONDS AND WHY ARE THEY IMPORTANT?

When land is altered to build homes and other developments, the natural system of trees and plants over relatively spongy soil is replaced with harder surfaces like sidewalks, streets, decks, roofs, driveways, and even lawns over compacted soils. As a result, less rainwater is soaked up and more rainwater/stormwater flows off the land at a faster rate. This can lead to streambank erosion within the local streams and possible downstream flooding.

Additionally, there are increased concentrations of pollutants in stormwater/drain water (called nonpoint source pollution). These pollutants include sediment, phosphorus and nitrogen from fertilizers, salts, and oil/ grease from roads and parking surfaces, and bacteria from pet waste. These pollutants, which are a direct result of a variety of common outdoor human and animal activities in the neighborhood, degrade water quality and limit the habitat for wildlife in the stream. Every stormwater detention basin located in Laredo plays an important role in improving and protecting water quality.

Your detention basin (along with others in the area) helps to slow the rate of runoff from the neighborhood and improve the quality of the storm water leaving the detention pond. They are important in protecting public and private properties. They preserve the public's health and safety and water quality. The basin collects and traps sediment from stormwater that would otherwise end up clogging our rivers and streams and degrading the environment for fish, birds, and other wildlife.

The establishment of wetland vegetation within your basin, as well as the creation of vegetated buffers or no-mow zones around the basin will help to improve water quality by filtering pollutants in stormwater. This, in turn, helps to reduce algae growth within the basin and in downstream rivers, lakes, and streams. Reducing pollutants that may get to the basins is important in protecting water quality. Excess nutrients, including nitrogen and phosphorus, encourage algae growth. If fertilization of private property is necessary, then only use the low-phosphorus, slow-release varieties. If you have a detention basin or other BMP, you are not alone. A variety of laws, including the federal Clean Water Act, encourage or require the control of urban pollutants. As such, maintaining your BMP is an important part of Laredo's environmental protection efforts.





DO YOU HAVE A DETENTION BASIN NEAR YOUR PROPERTY?

If your development was built after the late 1990s, you may have a detention basin that manages stormwater runoff. If you live in a residential community, your association bylaws or master deed may indicate the location of any detention basins. If you are unsure, then contact the Environmental Services department.

ARE THERE DIFFERENT TYPES OF DETENTION BASINS?

Yes, there are. Some detention ponds are dry and have mowed turfgrass at the bottom of them. These basins are referred to as dry basins. Some detention basins are primarily dry but have a narrow concrete channel for water flow from the inlet to the outlet. Newer detention ponds are designed to have a permanent pool of water and are commonly called wet ponds. These wet ponds store water throughout the year, but also filled with stormwater after rain events, then allow the water to exit to a neighboring storm sewer or creek through an outlet structure. If a detention pond does not have an outlet, then it is called a retention basin. Water that collects in retention basins must infiltrate into the ground or evaporate.

The advantages of a wet pond over a dry pond are higher pollutant removal efficiencies and less chance that pollutants will be re-suspended during a storm. Wet ponds can also serve as an aesthetic or recreational amenity as well as a habitat for some wildlife.

All detention basins will collect and fill with rainwater or stormwater runoff during and after rain events. Because there are several categories of detention basins, understanding the type of detention basin you have will help to better plan for its maintenance needs. Contact the Environmental Services Department for more information regarding your specific detention basin.

ARE YOU RESPONSIBLE FOR DETENTION BASIN MAINTENANCE?

We are all responsible for protecting water quality. Responsibility for maintenance varies and depends on the development. However, if your homeowner's association or business is subject to a maintenance agreement, most likely you are the responsible party. It is important to check your maintenance agreement to identify your specific legal obligations. If you are not sure who is responsible for maintenance, contact the City of Laredo Environmental Services Department.

In the following sections, we will focus on describing the maintenance tasks required for proper basin function as well as the frequency of various tasks. The following categories of maintenance tasks are further described in this publication:

- Storm sewer system and structural components;
- Vegetation management; wildlife and insects;
- Property management activities that benefit your pond.

It's important to keep records of all inspections, maintenance activities, repairs and associated costs. A sample table has been provided at the back of this guide for your use to assist in documentation. *Finally, before starting any maintenance activities, check with your local authority to determine what, if any, permits are necessary.* Maintenance or repairs that involve heavy machinery or construction will require a permit from the Building Services Department; they can be reached at (956) 794-1625 or online at www.cityoflaredo.com/Building. You may also consult with the City of Laredo Engineering Department at (956) 791-7347 or online at www.cityoflaredo.com/Engineering/. If you are unsure what all the maintenance tasks will entail, consult with an Environmental Specialist at (956) 794-1650.



What maintenance tasks should be considered?

A consistent maintenance program is the best way to ensure that a detention basin will continue to perform its water quality and flood control functions. The first step in a maintenance program is to obtain a copy of the detention basin plan from your local City of Laredo authorities to determine how your basin was designed to function. In general, a maintenance program should contain the following components:

- Regular inspections;
- Review by a licensed Professional Civil Engineer;
- Vegetation management;
- Embankment and outlet stabilization;
- Debris and litter control; and
- Sediment and pollution removal.

There are consequences for ignoring these tasks that could lead up to a citation and fine from your local authority. The City of Laredo Community Development Department has a code enforcement division tasked with reviewing a private property and have been known to issue citations for high weeds nuisance violations. Such a violation will be adjudicated in Municipal Court.

MAINTENANCE TASKS: Storm Sewer System

The storm sewer system includes pipes, catch basins, and the outlet structures that enter and exit the detention basin. In order to ensure that stormwater is flowing in and out of the pond as structurally intended, it is important to maintain and regularly inspect the structural elements (inlet/outlet pipes and animal grates) of your detention basin. Debris and sediment commonly clog detention basins and reduce the pond's overall effectiveness.

The following maintenance and inspection tasks should be included for the structural basin components: *(also see 'Sample Maintenance Schedule' located at the end of this guide.)*

MONTHLY & AFTER MAJOR RAIN EVENTS

- Conduct routine inspections for trash or other debris that may be blocking the inlet or outlet pipes or emergency spillway. Remove all trash and debris from the basin. Improperly maintained ponds can harbor breeding area for mosquitos and reduce the storage volume of the pond

ANNUAL/SEMIANNUAL & AFTER MAJOR RAIN EVENTS

- Inspect the inlet pipes and outlet pipes for structural integrity. Check inlet/ outlet pipes for structural integrity to ensure they aren't crumbling or broken.
- Inspect riprap at the inlet pipes. Replace when the riprap is clogged with sediment and debris.
- Inspect for sediment accumulation in the inlet pipes. It's important to clean out sediment that might be restricting water flow. Remove accumulated sediment with a shovel and wheelbarrow if it is blocking water flow. Small amounts of removed sediment can be spread evenly on upland areas and seeded with natural vegetation.
- Inspect the stone around the riser/standpipe (outlet pipe). If stone has accumulated sediment, vegetation and/or debris to an extent that water is not flowing through the stone and out of the pond as originally designed, then the stone should be replaced with a clean 3" diameter stone choked with clean 6A stone, as a suggestion. Implement what is best for the circumstances of your terrain and surrounding storm water infrastructure.
- Inspect for excess sediment accumulation in the pond. Remove when the sediment accumulation is more than 6-12".
- Have a Professional Civil Engineer inspect the pond to ensure it is functioning properly. Compare existing conditions to as-built engineering plans.

EVERY (5) FIVE YEARS OR AS NEEDED

- Inspect and clean the storm sewer system and catch basins upstream from the detention basin.

MAINTENANCE TASKS: Vegetation Management

Many detention basins rely on vegetation to filter sediment from stormwater before it reaches the outlet of the basin and to prevent erosion of the banks and the bottom of the basin. Turfgrass is the most common ground cover – although many BMPs use woody vegetation (rain gardens) and wetland plants (wet ponds) to increase pollutant removal efficiencies. In the spring and fall, inspect the vegetation along the side slopes/banks and in the basin. In the spring, dead cattails and other decomposing vegetation in the basin should be removed if they are clogging pipe openings. Eroded areas should also be repaired to minimize sediment entering the basin.

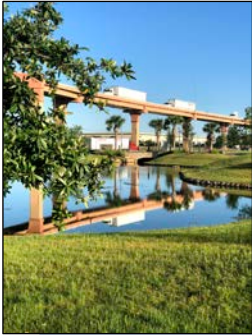
A variety of wetland vegetation species that may be growing or that you may plant in your detention basin will enhance the overall aesthetic appeal and reduce algae growth. The creation of a vegetated “no-mow” zone (15’ to 25’) around the basin will also help reduce the number of nutrients such as nitrogen and phosphorus entering the basin, and ultimately reduce algae growth in the pond. According to the Texas A&M Agrilife Extension Rangeland Watershed Management for Texans, people may see plants as aesthetically pleasing or important to wildlife, but one of their most important roles is in determining where rainfall flows. Furthermore, choosing deep-rooted perennial grasses is best; these create a more stable environment than do short grasses. Without good litter cover on the soil, the soil surface is exposed to full sunlight, higher temperatures, and higher soil water evaporation rates. Fewer plants can compete in such an environment. The result is an abundance of weeds or annual plants and little else.

Grass species recommended by the Texas Parks and Wildlife for south Texas include:

- Sideoats grama
- Inland sea-oats
- Slender grama
- Plains lovegrass
- Buffalograss
- Little bluestem



Vegetation Management continued



The following maintenance and inspection tasks should be performed annually for proper vegetation management: *(also see 'Sample Maintenance Schedule' located at the end of this guide)*



- **Reestablish permanent native vegetation on eroded slopes.**
- **Maintain a 15–25 foot “no-mow and chemical-free” zone around the edge of the pond.**
- **Mow the “no-mow” buffer zone once a year to a minimum height of 6”.** Rake mown material off and compost or discard properly
- **Inspect basin and “no-mow” zone for invasive species such as** [Giant reed](#) - *Arundo donax*; [Salt cedar](#) - *Tamarix ramosissima*; [King Ranch bluestem](#) - *Bothriochloa ischaemum var. songarica*; [Guineagrass](#) - *Urochloa maxima*; [Water lettuce](#) - *Pistia stratiotes*; [Chinese tallow tree](#) - *Triadica sebifera*; [Brazilian peppertree](#) - *Schinus terebinthifolius*; [Popinac](#) - *Leucaena leucocephala*; [Common water hyacinth](#) - *Eichhornia crassipes*; [Buffelgrass](#) - *Pennisetum ciliare*; [Hydrilla](#) - *Hydrilla verticillata*; and [Chinaberry tree](#) - *Melia azedarac*. A special note about cattails, these are not considered invasive, but can be a nuisance and are commonly referred to as an aquatic weed. Laredo ESD recommends the removal of all invasive and weed type species.
- **Have a professional selectively remove invasive species with applications of appropriate herbicides.** If woody debris is cut, cut 4” above the ground surface and treat the stumps with herbicide immediately after cutting. Monitor for sucker growth.
- **Purple loosestrife flower heads can be clipped off to reduce seed production until plant removal may be achieved.** Pulling purple loosestrife is not an effective removal method. Pulling purple loosestrife may actually encourage plants to multiply. Herbicide application of plants is the most efficient method. If stands of loosestrife are dense, it may take several years of maintenance to eliminate the plants from the site. Apply one round of herbicide in mid-July. Reassess the site three weeks after application to ensure all plants have been treated successfully. Apply additional herbicide treatment as necessary.
- **Increase plant diversity.** Purchase native seed mix and wetland vegetation from a native plant nursery and install plantings in the early spring, February, or fall October – December. Increasing plant diversity in your basin will enhance water quality, minimize algae blooms and encourage habitat for birds, frogs & toads and other wildlife. Native vegetation and seed mixes may be purchased through a number of plant nurseries. Contact your City of Laredo Parks and Recreation Department Urban Forestry Division at (956) 795-2350 for a list of various suppliers and contractors.

MAINTENANCE TASKS: Wildlife & Insects

Detention ponds that are properly maintained will consist of a healthy, balanced animal community that may include birds, mammals, fish, and insects. Opportunities for creating habitat in and around detention basins should be evaluated in conjunction with annual maintenance activities in order to support a balanced ecosystem. Unhealthy ecosystems may occur in basins that are not maintained and can lead to unbalanced populations of nuisance animal species. Common topics relating to wildlife and insects are described as follows:

1. Wildlife Enhancements.

Installing bird boxes around basins and stocking fish in detention basins are common alternatives for enhancing wildlife and creating balanced ecosystems. One local resource for this information is the Laredo College Lamar Bruni Vergara Environmental Science Center (956) 764-5773. Bird boxes and viewing areas can be an aspect of your detention pond, and specific local advice may be obtained from the Monte Mucho Audubon Society, contact them through montemucho.com/.

2. Mosquitos and Zika Virus.

Overpopulation of mosquitos may occur in detention ponds that are not functioning properly and are not maintained. Many alternatives exist for managing mosquito populations including the use of natural predators. In addition, the local health authority has an established Zika Virus program. One local resource for mosquito and vector control is the City of Laredo Health Department Environmental Health or Epidemiology Division (956) 795-4951.

3. Nuisance Animals

Various species that have been prevalent in south Texas in and around Laredo, Webb County that have been identified by the Texas Parks and Wildlife as nuisance species including Coyotes, Javelina, Feral Hogs and White-tailed deer. These four species can be hunted typically from September through March, given that the hunters have appropriate licenses and permits from the Texas Parks and Wildlife Department. Additionally, and to the extent that local law enforcement dictates that hunting is allowed within a particular jurisdiction. Hunting is not typically allowed within City limits.

COYOTES

- Do not feed coyotes! Keep pet food and water inside. Keep garbage securely stored, especially if it has to be put on the curb for collection; use tight-locking or bungee-cord-wrapped trashcans that are not easily opened.
- Keep compost piles securely covered; correct composting never includes animal matter like bones or fat, which can draw coyotes even more quickly than decomposing vegetable matter.
- Keep pets inside, confined securely in a kennel or covered exercise yard, or within the close presence of an adult.
- Walk pets on a leash and accompany them outside, especially at night.

Continued on page 12



Coyote Photo by:
© Bill Reaves, TPWD

MAINTENANCE TASKS: Wildlife & Insects continued

JAVELINA & FERAL HOG

One of the primary reasons people have problems with Javelina is because they intentionally feed them. Soon they become accustomed to humans and may eventually become dangerous.

- Never deliberately feed Javelina!
- Similarly, access to unintentional food sources such as garbage, pet food, some flowering plants, birdseed, and fruit from trees should be minimized.
- All garbage should be stored securely.
- Pets should be fed indoors or, if fed outside, the pet owner should completely remove all leftover food immediately.



Photo by: D. Robert Franz, Images for Conservation Pro-Tour 2010

WHITE-TAILED DEER

Your detention pond could attract wildlife including white-tailed deer. The species has proven to be resilient and quite adaptable, and this has resulted in deer abundance in many areas, this from the Texas Parks and Wildlife agency and the Nature Conservancy *Living with Overabundant White-tailed Deer in Texas* brochure. Laredo is like many communities in Texas where there is an overabundant deer herd that co-mingles with humans in and around various subdivisions and other recently urbanized segments of the community. Overabundant deer herds can result in concerns for the deer, for native plant communities, for urban landscapes and the health, safety and economic well being of our local communities.

- Do not feed deer.
- Work with neighbors to monitor deer numbers in your neighborhood and impacts to your landscape.
- Landscape with plants that deer do not prefer to eat.
- Consider removal of adult deer, in consultation with local authorities
- Work cooperatively with other residents and neighboring landowners in deer monitoring and management



Photo by: Jason Hahn, Images for Conservation Pro-Tour 2008

MAINTENANCE TASKS: Property Management

Property management refers to specific activities that you as a property owner can do to enhance the detention basin and minimize long-term maintenance. A number of these activities are described as follows:

1. **Do not use pesticides, herbicides, or fertilizers in your pond.** These products will leach from the pond and pollute our streams and rivers. Additionally, these chemicals are harmful to wildlife, including frogs, toads, fish, dragonflies, etc., in the pond.
2. **Do not place yard waste such as leaves, grass clippings or brush in the detention pond or the storm drains located in the streets.** These materials release excess nutrients as they decompose and will lead to more algae growth in the pond.
3. **Do not dump any materials in the storm sewer system.** Improperly disposed of materials will pollute the basin.
4. **Consider contracting with a street-sweeping company to minimize excess sediment from entering your storm sewer system and detention basin.** This can reduce the need for future pond maintenance.
5. **If you must use fertilizers, only use low-phosphorus, slow-release varieties.** Keep fertilizers on the lawn and not on paved areas.
6. **Pickup and dispose of pet waste with your weekly garbage.**
7. **Provide educational updates to the property owners.** Discuss your maintenance plan at regular meetings, provide information in newsletters, and host annual clean-up days.



Embarcadero Industrial Park pond

Sample Schedule of Maintenance

| TASK | INSPECTION FREQ | CONTRACTOR | COST | NOTES |
|--|--------------------------------|------------|------|-------|
| Detention Basin Vegetation | | | | |
| Inspect side slopes, berms & spillways for erosion | Annual & after rain events | | | |
| Reestablish native vegetation | Annual & after rain events | | | |
| Maintain "no-mow and chemical-free" zone around the edge | Annual | | | |
| Mow the "no-mow" zone | Annual (late Feb-March) | | | |
| Inspect for invasive species of plants | Annual (March) | | | |
| Qualified professional selectively applies herbicide on invasive species | Annual (April) | | | |
| Increase plant diversity | Annual (Oct-Dec) | | | |
| Property Management | | | | |
| Common Area Maintenance | Annual | | | |
| Street Sweeping | Semiannual | | | |
| Inspect basin for signs of pollutants; identify and remove | Monthly & after rain events | | | |
| Review Maintenance Plan | Annual | | | |
| Storm Sewer Systems | | | | |
| Inspect inlets & outlets | Annual | | | |
| Inspect riprap at inlets | Annual | | | |
| Inspect for debris blocking an inlet/outlet pipes and emergency spillway | Monthly & After Rain Events | | | |
| Inspect/clean storm sewer system & catch basins upstream | Every 2 years/ as needed | | | |
| Inspect for sediment and trash accumulation at inlet pipes | Semiannual & after rain events | | | |
| Inspect stone around riser/standpipe cover | Semiannual & after rain events | | | |
| Inspect & remove excess sediment accumulation in the pond | Annual | | | |
| Remove accumulated sediment at basin inlets | Semiannual & after rain events | | | |
| Civil Engineer to inspect pond and all related stormwater sewer infrastructure for proper function | Annual | | | |

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