



Endangered Species Act Programmatic Consultation Agreement

Black-Capped Vireo and Golden-Cheeked Warbler

This letter agreement provides a programmatic approach to address project effects to the Black-Capped Vireo and Golden-Cheeked Warbler under the Endangered Species Act for projects that “may affect, but are not likely to adversely affect” the species in the following TxDOT Districts: Abilene, Austin, Brownwood, Dallas, El Paso, Fort Worth, Laredo, Odessa, San Angelo, San Antonio, Waco, and Wichita Falls.



United States Department of the Interior



FISH AND WILDLIFE SERVICE

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Austin, Texas 78758

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JUL 3 1 2017

Jodi Bechtel, Natural Resources Management Section Director
Texas Department of Transportation
Environmental Affairs Division
125 East 11th Street
Austin, Texas 78701-2483

Dear Ms. Bechtel,

This responds to your request of July 27, 2017, in which the Texas Department of Transportation (TxDOT) proposes to initiate informal Programmatic Consultation to perform routine and predictably occurring activities related to transportation improvement projects in the Abilene, Austin, Brownwood, Dallas, El Paso, Fort Worth, Laredo, Odessa, San Angelo, San Antonio, Waco, and Wichita Falls Districts. These Districts include counties having known and potential habitat for black-capped vireo (*Vireo atricapilla*) and/or golden-cheeked warbler (*Setophaga chrysoparia*). TxDOT submitted documentation to the U.S. Fish and Wildlife Service (Service) requesting concurrence that the proposed routine transportation improvements may affect, but are not likely to adversely affect the black-capped vireo (BCV) and the golden-cheeked warbler (GCW), species listed pursuant to the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et seq.).

Section 7 of the Act requires that all Federal agencies consult with the Service to ensure that the actions authorized, funded, or carried out by such agencies do not jeopardize the continued existence of any threatened or endangered species or adversely modify or destroy designated critical habitat of such species. In a Memorandum of Understanding dated December 16, 2014, (23 U.S.C. 327) the Federal Highway Administration (FHWA) assigned responsibility for compliance with the National Environmental Policy Act (NEPA) and all federal resource agency consultations, including section 7 of the Act, to TxDOT. As such, TxDOT is the Federal Agency associated with this project.

Since 2013, TxDOT has initiated informal consultations with the Service on 17 transportation projects within the current range of the BCV and GCW. Typical projects included the

modernization of roads, including; resurfacing, seal coats, restoration, rehabilitation, reconstruction, adding shoulders or auxiliary lanes; highway safety improvements such as adding safety end treatments, bridge rails, or traffics signs; and the maintenance or construction of locally-sponsored trail projects funded under the FHWA Recreational Trails Program. A summary of these consultations was provided as Table 1 in your request for consultation.

TxDOT proposed to conduct recurring activities for the necessary and routine improvement of transportation infrastructure in Texas counties within the ranges of the BCV and GCW. Project activities included under this programmatic consultation will meet each of the following eligibility criteria:

1. Be located in, or within 300-foot proximity to, known or potential BCV or GCW habitat, as determined by a qualified biologist;
2. Be confined to existing right-of-way (ROW) or on Recreational Trails Program properties;
3. Be of transient, short-duration, and/or convoy-type in kind of operation;
4. Having either no impacts to habitat; or having impacts that do not occur during the breeding and nesting season(s), as described below in Voluntary Conservation Measures (VCM), and those impacts are limited to those described herein.

These project activities consist of a subset of routine improvement projects which are listed and described in "Attachment 1. Definition of Activities" included with TxDOT's request for programmatic consultation dated July 27, 2017. The projects authorized under this Programmatic Consultation are similar to the types of projects that have been previously consulted on. The schedule for carrying out activities proposed through this programmatic consultation would vary, and depend on multiple factors including purpose, safety, and available funding.

The specific project activities that may affect habitat for the BCV and GCW and create noise disturbance include the following: maintenance of travel information centers, rest areas, and roadside parks; maintenance of picnic areas; maintenance of vehicle pullouts and parking areas; maintenance of access to historical markers and sites; maintenance of entrances to TxDOT ROW; hazardous material cleanup; maintenance of ditches; reshaping of ditches; repair and stabilization of slopes; maintenance of culverts and storm drains; repair and installation of riprap; removal of beaver dams; installation and maintenance of storm water pollution protection plan (SW3P); adding a shoulder/minor widening; adding handicap ramps; adding and repairing sidewalks; and adding turnouts.

Additional project activities that may create noise disturbance but are not expected to affect habitat for the BCV and GCW, including: maintenance of storm water pump stations; inspecting utilities; removal and replacement of base and/or sub-grade material; in place repair of base and/or sub-grade material; leveling or overlaying of flexible surfaces; sealing cracks in flexible surfaces; applying a seal coat to flexible surfaces; applying strip or spot seal coat to flexible surfaces; applying fog seal to flexible surfaces; microsurfacing flexible surfaces; pothole repair in flexible surfaces; slab stabilization/jacking of rigid surfaces; cleaning and sealing joints and cracks in rigid surfaces; repair of blowouts and stress relief in rigid surfaces; repair spalling in rigid surfaces; full depth removal and replacement of rigid surfaces; milling or planning of flexible

surfaces; spot milling of flexible surfaces; treating bleeding pavement; installation and maintenance of paint and bead striping; installation and maintenance of high performance striping; installation and maintenance of specialty markings; installation and maintenance of raised and reflective pavement markers; and removal of pavement markers.

Project activities covered by this Programmatic Consultation may result in the removal of small amounts of vegetation typically found in BCV or GCW habitat, thereby reducing the total amount of available potential habitat. All vegetation clearing activities would take place outside of the breeding season of the BCV and GCW. Also, noise produced by project activities may negatively impact birds utilizing habitat near roadways by: inflicting hearing damage, inducing stress, masking communications within and among species, or otherwise affecting the behavior of individual birds. Noise and construction related disturbances may disrupt the normal nesting, breeding, or foraging patterns of individual birds. However additional noise associated with the proposed maintenance activities, above and beyond existing routine roadway use, is expected to be limited in spatial extent and be of short-duration (typically less than a few days). In conclusion, TxDOT believes that all activities proposed in this programmatic consultation would have no effect, or would have effects that are discountable, insignificant, or wholly beneficial to BCV or GCW and their habitat. This determination is based on the following:

- Although some projects may require trimming or removal of individual trees or shrubs or narrow linear strips of woody vegetation that have encroached into the ROW and along fence lines, culverts, or unmaintained road cuts, these areas already represent *de facto* edge habitat and no additional edge is expected to be created, thus... these effects [are not likely to rise to the level of significance].
- New or rehabilitated recreational trails projects requiring vegetation management in or near potential habitat would be limited to narrow, linear strips that would not create woodland canopy gaps greater than 16-feet (Texas Parks and Wildlife Department, 2003) and would not significantly diminish the quality of the woodland habitat, thus these effects [are not likely to rise to the level of significance].
- Any removal of woody vegetation in, or within 300-feet of, potential habitat will be identified and phased such that it occurs outside of breeding season (i.e., between September 15 and March 1) to minimize effects to individual birds. Because these effects would take place while the birds are not using the habitat, these effects [are not likely to rise to the level of significance].
- The amount of woody vegetation removed in any single location along an existing ROW or recreational trail would be smaller than an individual BCV or GCW territory and would not significantly decrease the total amount of potential habitat available in the vicinity of the project action area. For the purposes of this consultation only, a BCV territory is considered to be a minimum 2.5-acres and a GCW territory is considered to be a minimum of 7.5-acres. However, actual territory size can vary considerably across the breeding range, and over time given responses of individual birds to annual climatic

variability and other factors. Given the relatively small scale of these effects, they [are not likely to be rise to the level of significance].

- In the event that any project requires the removal of cumulative total of 8 or more acres of potential habitat over the entire length of the project or 2 or more acres in any single patch, the project would be reviewed by the Service to determine eligibility under this Programmatic Consultation.

TxDOT proposed the following VCMs to avoid and minimize direct and indirect effects to the BCV and GCW resulting from the activities described in the Programmatic Consultation:

1. Follow all Best Management Practices (BMPs) as outlined in the Best Management Practice Summary Report, Texas Department of Transportation Maintenance Program dated April 2011 (<https://ftp.dot.state.tx.us/pub/txdot-info/env/mnt-bmp.pdf>). Several identified BMPs will reduce the potential for any adverse environmental impacts resulting from projects covered under this programmatic consultation.
2. Any known potential habitat for BCV and GCW will be presumed occupied, and as such, presence/absence surveys will not be required. BCV and GCW nesting and survey seasons are between March 1 and September 15. Projects that will involve clearing or trimming of individual trees or shrubs in or immediately adjacent to potential habitat would be phased such that any clearing activities will occur outside the breeding season to minimize impacts to BCV and GCW.
3. If project-specific locations are required outside of the project area but within TxDOT ROW, they will be placed such that no potential habitat or woody vegetation immediately adjacent to potential habitat would be removed.
4. New location recreational trails will not create new woodland canopy gaps greater than 16-feet wide and will not remove trees with \geq 12-inch diameter-at-breast-height.

By June 30 of each year, TxDOT will provide the Service with a list of projects completed under this BCV and GCW Programmatic Consultation. The list will include the project name with description of activities, project location in a shapefile or similar format, and confirmation that all VCMs were implemented, including a discussion of relevant BMPs. TxDOT and the Service will meet on an annual basis, or as needed, to discuss the project activities covered during the previous year, evaluate and discuss the effectiveness of the Programmatic Consultation, and update consultation procedures or conservation measures, as necessary. This consultation is subject to review and renewal after five years from the date of this concurrence letter.

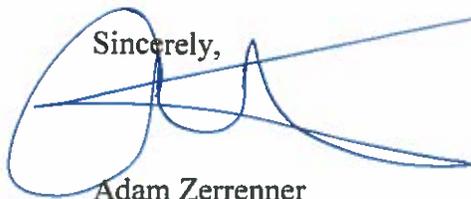
Based on the information provided and proper implementation of the above stated VCMs, the Service concurs with TxDOT's conclusion that the projects associated with this BCV and GCW programmatic consultation may affect, but are not likely to adversely affect, the BCV and GCW pursuant to section 7 of the Act. No further endangered species consultation will be required

unless: 1) the identified action is subsequently modified in a manner that causes an adverse effect on any listed species or designated critical habitat; 2) new information reveals the identified action may affect federally protected species or designated critical habitat in a manner or to an extent not previously considered; 3) a new species is listed or a critical habitat is designated under the Act that may be affected by the identified action; 4) additional federally protected species are identified in the project area or, 5) the project is not completed within three years of the date of this consultation.

If new effects are identified in the future, the project proposal should be resubmitted to our office for further consideration.

We appreciate your efforts to conserve these sensitive species. If you have any questions or comments, please contact Kevin Maurice at 512-334-8402) or at Kevin.Maurice@fws.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Adam Zerrenner', with a long horizontal flourish extending to the right.

Adam Zerrenner
Field Supervisor

E-fax: john.maresh@txdot.gov



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Dear Ms. Bechtel,

This responds to your request of September 27, 2017, in which the Texas Department of Transportation (TxDOT) proposes to use the July 27, 2017, black-capped vireo (*Vireo atricapilla*) and golden-cheeked warbler (*Setophaga chrysoparia*) informal Programmatic Consultation for the Heritage Oaks Trail project (proposed action). The proposed action is sponsored by the City of Killeen. The informal Programmatic Consultation includes new location trail projects although it specifically identifies "locally-sponsored trail projects funded under the Federal Highway Administration (FHWA) Recreational Trails Program." The proposed action is a new location trail project that is receiving federal funds from the Transportation Alternatives Program (TAP) of the Fixing America's Surface Transportation (FAST) Act.

The informal Programmatic Consultation's specific identification of the FHWA Recreational Trails Program as the sole funding source for trails development is now amended to include other funding sources for locally-sponsored trail projects provided they are sited, constructed and maintained within the specific parameters described in the July 27, 2017, informal Programmatic Consultation. This amendment allows the proposed action to be covered under the informal Programmatic Consultation.

We appreciate your efforts to conserve these sensitive species. If you have any questions or comments, please contact Kevin Maurice at 512-334-8402) or at Kevin.Maurice@fws.gov.



Sincerely,

Adam Zerrenner
Field Supervisor

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June 6, 2017

Mr. Adam Zerrenner
Field Supervisor
U.S. Fish and Wildlife Service
Ecological Services
10711 Burnet Road, Suite, 200
Austin, Texas 78758

Re: Informal Programmatic Consultation for Black-capped Vireo and Golden-cheeked Warbler
TxDOT Abilene, Austin, Brownwood, Dallas, El Paso, Fort Worth, Laredo, Odessa, San Angelo,
San Antonio, Waco and Wichita Falls Districts

Dear Mr. Zerrenner:

The Texas Department of Transportation (TxDOT) wishes to initiate informal Programmatic Consultation to perform routine transportation improvement activities that have a federal nexus and are located in counties with potential habitat for Black-capped Vireo (*Vireo atricapilla*; BCV) and/or Golden-cheeked Warbler (*Setophaga chrysoparia*; GCW). Based on the information summarized in this Programmatic Consultation package, TxDOT has determined that these activities may affect, but are not likely to adversely affect BCV or GCW.

Section 7 of the Endangered Species Act requires that all Federal agencies consult with the U.S. Fish and Wildlife Service (Service) to ensure that the actions authorized, funded, or carried out by such agencies do not jeopardize the continued existence of any Federally Threatened or Endangered species or adversely modify or destroy designated Critical Habitat of such species. TxDOT's initiation of informal Section 7 consultation is made pursuant to the 2014 Federal Highway Administration (FHWA) – TxDOT Memorandum of Understanding¹ and seeks Service concurrence with our findings.

Project Activities Authorized Under the Programmatic Consultation

TxDOT constructs and maintains a wide variety of transportation infrastructure projects throughout Texas. Transportation projects are identified and scheduled via a variety of state-, regional-, county-, and/or municipal-level master plans. Project priorities and time schedules within these plans vary depending on many factors (e.g., purpose, safety, funding). The trends in types of projects being proposed and constructed each year can be difficult to assess due to these factors. However, some recurring activity types are predictable for the necessary and routine improvement of transportation

¹ The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by TxDOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated December 16, 2014, and executed by FHWA and TxDOT.

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infrastructure. A number of these activities are regularly conducted in Texas counties with known or potential habitat for BCV and GCW. Since 2013, TxDOT has initiated informal consultations with the Service on 17 transportation projects within the current range of BCV or GCW (Table 1). These projects were primarily associated with: (1) modernization of highways such as resurfacing/seal coating, restoration, rehabilitation, reconstruction, adding shoulders, or auxiliary lanes (including parking, weaving, turning, and climbing lanes); (2) highway safety/traffic operation improvement projects such as safety end treatments, bridge rails, or traffic signals, or, (3) locally-sponsored trail projects funded under the FHWA Recreational Trails Program. TxDOT has identified a suite of activities that are generally expected to have no effect on BCV and GCW or may effect, but are not likely to adversely affect these species.

See Attachment 1. Definition of Activities for a list and description of specific activities to which this Programmatic Consultation may apply if they meet the following criteria:

1. In known or potential BCV or GCW habitat;
2. Confined to existing right-of-way (ROW) or require small amounts of new ROW adjacent to existing ROW or on Recreational Trails Program properties;
3. Transient, short-duration, and/or convoy-type operations;
4. Either has no impacts to habitat; or if having impacts to habitat, those impacts do not occur during the breeding and nesting season(s) as described below in Voluntary Conservation Measures.

Project areas may also harbor potential habitat for other listed species in addition to BCV or GCW. Those species will be considered separately from this Programmatic Consultation and will be individually consulted as appropriate.

Project Action Area

The current range of BCV and GCW includes portions of several TxDOT Districts including: Abilene (Callahan, Nolan, Shackelford, and Taylor counties), Austin (Blanco, Burnet, Gillespie, Hays, Llano, Mason, Travis, and Williamson counties), Brownwood (Brown, Coleman, Comanche, Eastland, Lampasas, McCulloch, Mills, San Saba, and Stephens counties), Dallas (Dallas County), El Paso (Brewster and Jeff Davis counties), Fort Worth (Erath, Hood, Jack, Johnson, Palo Pinto, Parker, Somervell, and Wise counties), Laredo (Kinney and Val Verde counties) Odessa (Pecos, Terrell, and Upton counties), San Antonio (Bandera, Bexar, Comal, Kendall, Kerr, Medina, and Uvalde counties), San Angelo (Coke, Concho, Crockett, Edwards, Irion, Kimble, Menard, Reagan, Real, Runnels, Schleicher, Sutton, and Tom Green counties), Waco (Bell, Bosque, Coryell, Hamilton, Hill, and McLennan counties), and Wichita Falls (Cooke, Montague, and Young counties) (Figure 1). TxDOT is seeking coverage under this Programmatic Consultation for the previously described routine transportation projects within the current range of BCV and GCW.

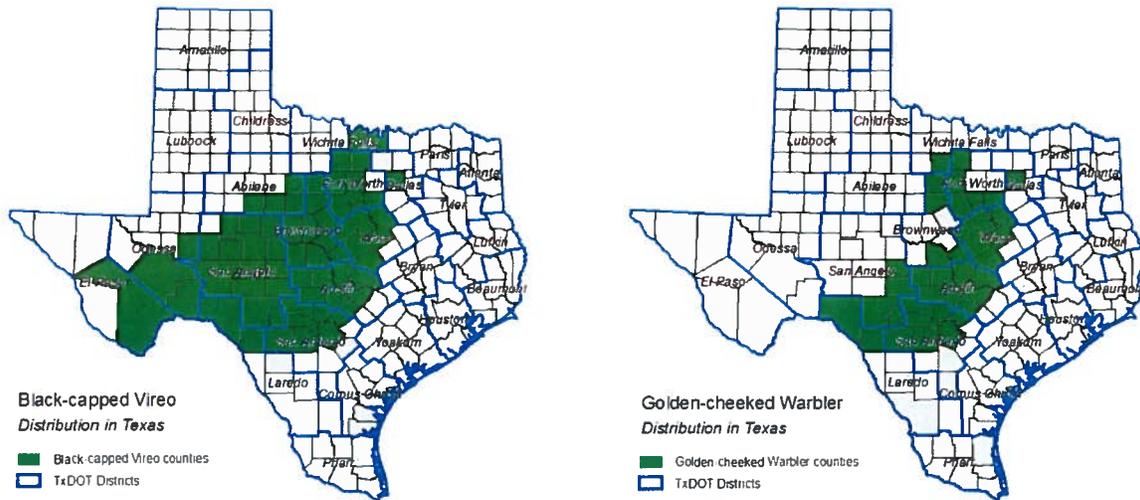


Figure 1. Current range of BCV and GCW (developed from USFWS county lists).

Species Information

Black-capped Vireo

The BCV is a small, active songbird that breeds in a relatively narrow area of the south-central United States and north-central Mexico and winters in southwest Mexico. The breeding range includes portions of west, central, and north-central Texas where it occurs between mid- to late-March until mid-September (Grzybowski 1995). The breeding habitat occurs in deciduous or mixed deciduous-evergreen shrubland with clumps or thickets of woody vegetation of irregular height and distribution. Woody species composition in BCV breeding habitat is variable across the range but almost always exhibits vegetative cover to ground level. Habitat loss is credited to development, over-browsing and suppression of fire. Nest parasitism by the Brown-headed Cowbird (*Molothrus ater*; BHCO) has also been credited with the reduction of BCV in many areas. The BCV was listed Endangered in October 1987 (USFWS 1991).

Critical Habitat

There is no Critical Habitat designated for BCV in Texas.

Golden-cheeked Warbler

The GCW is the only endemic breeding species of the over 600 bird species known to occur in Texas. It breeds only in the mature juniper-oak woodlands of central Texas where it arrives from late-February to early-March when its clear, buzzy song marks the beginning of spring. The GCW becomes scarce by mid-summer and is generally gone by late-July or August, having departed for wintering grounds in the mixed evergreen-oak woodlands in the mountains of southern Mexico and northern Central America (Ladd and Gass 1999). The GCW was listed Endangered in February 1991 due to accelerating habitat loss due to urban and suburban development in the Texas breeding range as well as loss of highland pine-oak woodlands in Mexico and Central America. Nest parasitism by BHCO is also a contributing factor to their decline (USFWS 1992).

Critical Habitat

There is no Critical Habitat designated for GCW in Texas.

Direct Effects of the Action

The types of projects covered by this Programmatic Consultation may result in the removal or fragmentation of small amounts of vegetation typically found in BCV or GCW habitat, thereby reducing the total amount of available potential habitat.

Noise can negatively impact birds utilizing habitat near roadways by inflicting hearing damage, inducing stress, and masking intra- and interspecific communications (Long, et al. 2015). There is a possibility that noise from some of the proposed construction activities could disturb BCV and GCW during nesting season. Noise and other construction-related disturbances may disrupt the normal nesting, roosting, or foraging patterns of individual birds.

No Critical Habitat has been designated for BCV or GCW in Texas at this time. Therefore, no Critical Habitat will be impacted by this Programmatic Consultation.

Indirect Effects of the Action

The roadway project activities covered by this Programmatic Consultation will not increase capacity and are not expected to increase traffic volume. For new or rehabilitated recreational trails, we cannot estimate the specific numbers of individuals utilizing the trails, when they would be present, or specific noise exposure or disturbance as a result of pedestrian use. However, it is expected that their presence would be of short duration and not significantly above ambient noise level. Noise impacts and disturbance as a result of trail use are expected to be insignificant and discountable. As a result, indirect effects of all covered activities would likely be insignificant and discountable.

Justification that Potential Impacts are Insignificant and Discountable

Most activities proposed for inclusion in this Programmatic Consultation would have no impact to potential habitat. Some projects may require trimming or removal of individual trees or shrubs or linear strips of woody vegetation that have encroached into the right-of-way from larger potential habitat blocks along fence lines and at culverts or unmaintained road cuts; or, from narrow strips of new ROW immediately adjacent to existing ROW. New or rehabilitated recreational trails projects requiring vegetation management in or near potential habitat would also be narrow, linear strips that

would not break the woodland canopy. All clearing of potential habitat or woody vegetation immediately adjacent to potential habitat would be phased to occur outside of breeding season (i.e., will take place between September 15 and March 1). The amount of woody vegetation removed in any location along existing or new ROW or recreational trails would be smaller than an individual BCV or GCW territory and would not significantly decrease the total amount of potential habitat available on the wider landscape.

Previous TxDOT research has shown that noise impacts to BCV and GCW from construction activities to be minimal (e.g. TxDOT 1996, TxDOT 2012). While TxDOT cannot estimate specific noise exposure for any given project activity, noise from proposed activities would likely be localized and of short-duration, consisting of from a few minutes to a few consecutive or non-consecutive days of noise levels above normal daily vehicular activity. Noise impacts are expected to be insignificant and discountable.

Qualified biologists would determine if vegetation in project areas meet the criteria for potential BCV or GCW habitat as defined in Campbell 2003. If potential habitat is present, potential impacts would be assessed to determine if this Programmatic Consultation is applicable or if a project-specific consultation is warranted. In the case that a project requires the removal of a cumulative total of > 8 acres of potential habitat over the entire length of the project or > 2 acres in any one patch, that project would be reviewed by the Service to determine eligibility for coverage under this Programmatic Consultation. These acreages are based on TxDOT's history of past consultations on BCV and GCW (see Table 1) and take into account the birds' territorial requirements.

Voluntary Conservation Measures

TxDOT proposes the following Voluntary Conservation Measures (VCMs) to avoid and minimize direct and indirect effects to BCV and GCW resulting from the activities described in this Programmatic Consultation:

- Follow all Best Management Practices (BMPs) as outlined in: *Best Management Practice Summary Report, Texas Department of Transportation Maintenance Program, April 2011* (<https://ftp.dot.state.tx.us/pub/txdot-info/env/mnt-bmp.pdf>). Several BMPs have been identified that when implemented reduce the potential for any adverse environmental impacts resulting from specified activities.
- Because any known or potential BCV or GCW habitat present will be presumed to be occupied, presence/absence surveys for BCV and GCW will not be conducted. BCV and GCW nesting seasons are between March 1 and September 15. Projects that would involve clearing or trimming of individual trees or shrubs in or immediately adjacent to potential habitat would be phased such that any clearing activities would occur outside the breeding season to minimize impacts to BCV and GCW.
- If project-specific locations (PSLs) are required outside of the project area but within TxDOT ROW, they will be placed such that no potential habitat or woody vegetation immediately adjacent to potential habitat would be removed.
- New location recreational trails would not break woodland canopy and would not remove any trees with \geq 12-inch diameter-at-breast-height.

- Requirements and commitments as designated in this Programmatic Consultation, once implemented, would be incorporated into the construction plans and VCMs would be listed on the Environmental Permits, Issues and Commitments (EPIC) plan sheet. At the project's pre-construction meeting, the conservation measures would be discussed with the contractor and the TxDOT construction personnel who would oversee the project.

Reporting

By June 30 of each year, TxDOT will provide to the Service Transportation Liaison a list of projects completed under this Programmatic Consultation. The list will include the following information:

- Project name and description of activities
- Project location (county and TxDOT Districts)
- Confirmation of Voluntary Conservation Measures followed

TxDOT staff would be available to meet on an annual basis, or as needed, for the following purposes:

- Discuss list of projects provided to the Service
- Evaluate and discuss the continued effectiveness of the programmatic consultation for BCV and GCW, and
- Update procedures and voluntary conservation measures, if necessary.

Determination of Effects

This Programmatic Consultation applies to TxDOT projects that are located within counties with potential habitat for BCV and GCW and would allow for limited removal of vegetation as described in preceding sections. TxDOT has determined that by following these procedures and incorporating these Voluntary Conservation Measures, the project activities covered by this Programmatic Consultation may affect but are not likely to adversely affect BCV or GCW. TxDOT requests the Service concur and approve this Programmatic Consultation.

If you have any questions or require additional information, please contact John Maresh at (512) 416-2582.

Sincerely,



Jodi Bechtel
Natural Resources Management Section Director
Environmental Affairs Division

Attachment

cc: Tanya Sommer, USFWS

References

Campbell, Linda. 2003. Endangered and Threatened Animals of Texas, Their Life History and Management. Texas Parks and Wildlife Department. Wildlife Division. Austin, TX.

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Texas Department of Transportation. 2012. Study of the Potential Impacts of Highway Construction on Selected Birds with Emphasis on the Golden-cheeked Warbler: Final Report 2008-2011.

USFWS. 1991. Black-capped Vireo (*Vireo atricapillus*) Recovery Plan. Austin, TX. Pp. vi +74.

USFWS. 1992. Golden-cheeked Warbler (*Dendroica chrysoparia*) Recovery Plan. Albuquerque, NM. 88 pp.

Table 1. TxDOT – Service BCV/GCW Consultations since 2013.

Service Consultation No.	Service Consultation Date	CSJ	TxDOT District	County	Facility	Species	Activity	Impacts
02ETAU000-2013-I-0198	6/7/13	0035-05-055	SJT	Menard	US 83	BCV	Add 3-1.5 mile passing lanes between Concho Co. line and US 190, a distance of about 10.7 miles. All work confined to existing ROW.	Construction noise.
02ETAR00-2014-I-0084	2/24/14	1333-03-018	FTW	Jack	FM 1191	BCV; GCW	Add 3-ft shoulders widening road by 6 feet for 7 miles; extended culverts and add safety end treatments; vegetation removal within ROW.	Construction noise; removal of up to 11.465 acres of potential habitat.
02ETAR00-2014-I-0178	4/3/14	2638-01-001	BWD	Eastland	SH 206	BCV	Widen pavement by 4 feet for 4.1 miles; extend culverts and add safety end treatments; vegetation removal within ROW.	Construction noise; removal of 0 – 5 trees.
02ETAU00-2014-I-0243	7/16/14	0231-14-017	BWD	San Saba	FM 580	BCV; GCW	Widen pavement by 6 feet for 14.2 miles; extend culverts and add safety end treatments; vegetation removal within ROW.	Construction noise; removal of 0 – 10 trees.
02ETAU00-2014-I-0381	9/9/14	0792-04-045	SAT	Bandera	FM 470	GCW	Install advanced warning signs, metal beam guard fence and inverted profile pavement markings and flatten side slopes to improve sight distances; vegetation removal within ROW.	Construction noise; removal of up to 0.2 acres of potential habitat.

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Service Consultation No.	Service Consultation Date	CSJ	TxDOT District	County	Facility		Activity	Impacts
02ETAU00-2015-I-0067	12/12/14	2222-15-001	AUS	Travis	Westcave Preserve - Recreational Trails Program	GCW	Grade and widen existing trail; construct 1,200 feet of new trail; upgrade trail steps and handrails; conduct minor repairs on restroom and waiting facilities.	Removal of a few limbs and branches overhanging trail.
02ETAU00-2016-I-0153	1/26/15	2222-15-027	AUS	Burnet Llano	City of Horseshoe Bay - Recreational Trails Program	BCV GCW	Construct 2 miles of natural-surfaced trail and 1,000 feet of decomposed granite trail and install benches and foot bridges.	Removal of up to 1.61 acres of potential habitat.
02ETAU00-2013-I-0276-R	7/7/15	2230-02-004 0915-12-459	SAT	Bexar	SS 53	GCW; <i>Cicurina madla</i> ; <i>C. vespera</i> ; <i>Rhadine exilis</i> ; <i>R. infernalis</i>	Add sidewalk extensions, driveway modifications, steps and handicap ramp, and, rock filter dam.	Construction noise; excavation in karst zones.
02ETAR00-2016-I-0377	3/24/16	0918-47-097 1047-03-066 1047-03-068 1047-03-070	DAL	Dallas	FM 1382 and Cedar Hill State Park	BCV GCW	Install 1.32 mile long, 12-foot wide trail including culverts, retaining walls, railing, landscaping and a pedestrian overlook; widen entrance to Spine Road (entrance to state park) by 19 feet for .27 miles and extend culverts and add retaining wall; add 11-foot wide eastbound auxiliary lane on FM 1382 and extend westbound auxiliary lane; install traffic at FM 1382 - Spine Road intersection;	Construction noise; removal of 0.41 acres of potential habitat; fragmentation of an additional 0.15 acres of potential habitat.

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							widen FM 1382 for .54 miles.	
02ETAU00-2016-I-0512	8/8/16	0036-07-036 1730-01-040 1730-02-020 0792-04-047	SAT	Bandera Medina Uvalde	US 83 FM 1283 FM 470	GCW	Install advanced warning signals/signs/chevrons, inverted profile pavement markings, and, safety treatment of fixed objects.	Construction noise.
02ETAU00-2016-I-0616	8/25/16	0036-07-037 0420-06-019 0470-01-027	SAT	Bandera Comal Uvalde	US 83 SH 173 FM 1863	GCW	Apply seal coat overlays on 9.29 miles of US 83, 10.45 of SH 173, and, 11.32 miles of FM 1863.	Construction noise.
02ETAR00-2017-I-0154	11/21/16	2222-16-014	DAL	Dallas	Mountain Creek Community Church - Recreational Trails Program	BCV GCW	Improve 1.5 miles of existing hike and bike trail and construct 3 50-foot long bridges; construct pre-fabricated pavilion and restroom facilities.	Construction noise. Removal of limbs and branches overhanging trail. Removal of 1 mature Ashe juniper tree at pavilion site.
02ETAU00-2017-I-0213	11/29/16	2222-16-008	DAL	Dallas	Dogwood Canyon Audubon Center at Cedar Hill - Recreational Trails Program	BCV GCW	Construct 1 mile of natural surfaced trail.	Construction noise. Removal of up to 1.21 acres of potential habitat.
AU-2016-I-0152-R01	4/21/2016	0035-06-032 0035-07-043	SJT	Kimble Menard	US 83	BCV GCW <i>Sclerocactus brevihamatus tobuschii</i>	Resurface 25.9 miles of US 83 and widen 3-1.5 mile sections by 12 feet	Construction noise. Removal of up to 5.81 acres of potential habitat.
Under consultation		0252-02-054	AUS	Burnet	US 281	BCV	Widen pavement by 24 feet for 2.21 miles, extend culverts and add safety end treatments, and, replace bridge structure; vegetation removal within ROW.	Construction noise. Removal of up to 1.1 acres of potential habitat.
Under consultation		1753-01-017	AUS	Mason	RM 1871	BCV	Remove and replace bridge structure at	Construction noise. Removal of

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							Llano River and rehabilitate and adjust approach alignments.	up to 2.4 acres of potential habitat.
Under consultation		0150-05-047	AUS	Burnet	SH 29	BCV	Install center turn lane and widen roadway by up 20 feet for 0.5 miles and install 455 foot retaining wall.	Construction noise. Removal of up to 0.13 acres of potential habitat.

Attachment 1. Definition of Activities

The proposed **Programmatic Consultation** between TxDOT and the Service would apply to a subset of projects which are necessary and routine for the maintenance and improvement of transportation infrastructure. Projects with activities that meet the following criteria would be included under this proposed **Programmatic Consultation**:

1. In known or potential BCV or GCW habitat;
2. Confined to existing right-of-way (ROW) or require small amounts of new ROW adjacent to existing ROW or on Recreational Trails Program properties;
3. Transient, short-duration, and/or convoy-type operations;
4. No impacts to habitat or have impacts to habitat which occur outside of nesting season(s).

Table 1 lists all activities that may be part of projects included in the PA and indicates whether activity has a potential to impact habitat or create noise disturbance. Any given project may include multiple activities from Table 1 and activities may be performed concurrently.

Included activity	Potential habitat impact	Potential noise disturbance
Maintenance of Travel Information Centers, Rest Areas, and Roadside Parks	Yes	Yes
Maintenance of Picnic Areas	Yes	Yes
Maintenance of Vehicle Pull Outs and Parking Areas	Yes	Yes
Maintenance of access to Historical Markers and Sites	Yes	Yes
Maintenance of entrances to TxDOT ROW	Yes	Yes
Patrolling for debris	No	No
Spot litter pick-up and disposal	No	No
Removal and disposal of litter	No	No
Hand sweeping	No	No
Street sweeping	No	Yes
Sweeping ice rock	No	Yes
Illegal dumpsite removal and disposal	No	Yes
Removal of illegal signs on ROW	No	No
Removal of encroachments	No	No
Hazardous material cleanup	Yes	Yes
Maintenance of ditches	Yes	Yes
Reshaping of ditches	Yes	Yes
Repair and stabilization of slopes	Yes	Yes
Maintenance of culverts and storm drains	Yes	Yes
Repair and installation of riprap	Yes	Yes
Maintenance of storm water pump stations	No	Yes
Removal of beaver dams	Yes	Yes
Installation and maintenance of Storm Water Pollution Protection Plan (SW3P)	Yes	Yes
Adding a shoulder/Minor widening	Yes	Yes
Adding handicap ramps	Yes	Yes
Adding and repairing sidewalks	Yes	Yes
Adding turnouts	Yes	Yes
Inspecting utilities	No	Yes

Included activity	Potential habitat impact	Potential noise disturbance
Maintenance of landscapes	Yes	Yes
Maintenance of boat ramps	Yes	Yes
Removal and replacement of base and/or sub-grade material	No	Yes
In place repair of base and/or sub-grade material	No	Yes
Installation and maintenance of underdrains	Yes	Yes
Maintenance of unpaved roads	Yes	Yes
Leveling or overlaying of flexible surfaces	No	Yes
Sealing cracks in flexible surfaces	No	Yes
Applying a seal coat to flexible surfaces	No	Yes
Applying strip or spot seal coat to flexible surfaces	No	Yes
Applying fog seal to flexible surfaces	No	Yes
Microsurfacing flexible surfaces	No	Yes
Pothole repair in flexible surfaces	No	Yes
Slab stabilization/jacking of rigid surfaces	No	Yes
Cleaning and sealing joints and cracks in rigid surfaces	No	Yes
Repair of blowouts and stress relief in rigid surfaces	No	Yes
Repair spalling in rigid surfaces	No	Yes
Full depth removal and replacement of rigid surfaces	No	Yes
Milling or planning of flexible surfaces	No	Yes
Spot milling of flexible surfaces	No	Yes
Treating bleeding pavement	No	Yes
Installation and maintenance of concrete appurtenances	Yes	Yes
Installation and maintenance of barriers	Yes	Yes
Installation and maintenance of guardrails and end treatment systems	Yes	Yes
Installation and maintenance of mailboxes	Yes	Yes
Repair, replacement, and removal of cattle guards	Yes	Yes
Installation and maintenance of bridge rails	Yes	Yes
Bridge structural repairs	Yes	Yes
Installation and maintenance of roadway access controls	Yes	Yes
Installation and maintenance of vehicle attenuators and crash cushions	Yes	Yes
Installation and maintenance of delineators	Yes	Yes
Installation and maintenance of small and large signs	Yes	Yes
Installation and maintenance of flashing beacons	Yes	Yes
Installation and maintenance of illumination systems	Yes	Yes

Included activity	Potential habitat impact	Potential noise disturbance
Installation and maintenance of coordinated and isolated traffic signals	Yes	Yes
Installation and maintenance of traffic management systems	Yes	Yes
Installation and maintenance of paint and bead striping	No	Yes
Installation and maintenance of high performance striping	No	Yes
Installation and maintenance of specialty markings	No	Yes
Installation and maintenance of raised and reflective pavement markers	No	Yes
Removal of pavement markers	No	Yes
Installation and maintenance of non-motorized recreational trails or sidewalks and related infrastructure	Yes	Yes

Maintenance of Travel Information Centers, Rest Areas, and Roadside Parks

Maintenance activities include all necessary repairs to ensure the proper operation of information centers, rest areas, and roadside parks. Work performed consists of janitorial and grounds maintenance, including mowing, litter removal, emptying litter barrels, maintenance of plantings, cleaning restrooms, cleaning arbors, removal of graffiti, and minor painting. The program also includes practices involving the repair of items such as buildings (including vending building), arbors, picnic tables, fixtures, electrical, litter barrels, flags, flag poles, irrigation system, and playground equipment, as well as maintenance of water and wastewater treatment systems. This particular practice also includes special maintenance required to repair paved areas and pavement markings, such as sweeping, patching, full depth repairs, striping, resurfacing, and crack sealing. Other items could include repairs to sidewalks, repairs to curb and gutter, application of herbicide and fertilizer, drainage, fencing, lighting; and all restroom facility maintenance such as plumbing, painting, cleaning, and repairs made to the roof, walls, and floor of the facilities. Removal of graffiti consists of removing graffiti from steel, rock, and concrete fixtures. Work items could include chemical or mechanical removal such as applying solvents, sand blasting, water blasting, scraping, or covering the graffiti with fresh paint. Travel Information Centers also need maintenance of their wireless Internet access, security surveillance, and video theaters.

Maintenance of Picnic Areas

Maintenance work performed consists primarily of janitorial and grounds maintenance, including mowing, litter removal, emptying litter barrels, maintenance of plantings, cleaning arbors, graffiti removal, and minor painting. Picnic area maintenance includes operating, maintaining and/or repairing items such as picnic area buildings, arbors, picnic tables, fixtures, litter barrels, pavement, and pavement markings; such as sweeping, patching, full depth repairs, striping, resurfacing, and crack sealing.

Maintenance of Vehicle Pull Outs and Parking Areas

The limits of maintenance in the vehicle pull out and parking areas begin at the beginning of the ramp entering the area and end at the end of the ramp leaving the area. Work performed consists of grounds maintenance, including mowing, litter removal, emptying and repairing litter barrels, and graffiti removal. Maintenance of vehicle pull-outs and parking areas can also include special maintenance required to repair paved areas and pavement markings, such as sweeping, patching,

full depth repairs, striping, resurfacing, and crack sealing. Other items could include repairs to curb and gutter, application of herbicide, drainage, fencing, and lighting or the placement of gravel and minor grading when the pull-outs or parking areas are not paved.

Maintenance of access to Historical Markers and Sites

TxDOT District staff maintains the grounds around historical markers located within the TxDOT ROW. Historical markers are used to interpret, promote, and protect historic and cultural resources. TxDOT strives to cooperate with the Texas Historical Commission's (THC) historical marker program by creating accessible locations for the markers to be placed, such as roadside parks, existing turnouts, or at a specially prepared turnout. Access to these areas is maintained to allow the public a safe area to view the historical marker or site. If the historical marker is located within an existing rest area, picnic area, pull-out or parking area, the maintenance would be the same as previously discussed for these areas. However, TxDOT is not responsible to maintain or repair the historical marker itself if it is damaged or vandalized. The THC is responsible for the coordination for cleaning, repair, or providing a new replacement marker if necessary. TxDOT should contact the THC if maintenance or replacement is needed. THC then works directly with the local county historical commission, who is responsible for cleaning or replacing the marker.

Maintenance of entrances to TxDOT ROW

TxDOT has established regulations to govern the construction and maintenance of private, public, and commercial driveways to state highways. Driveway accesses to state highways are located to provide maximum safety for highway traffic and for users of the access driveways. Driveway accesses to state highways are maintained to allow the traveling public to safely access these driveways. Work could include pavement repairs, vegetation removal, and maintaining transitions to driveways. All work occurs within the TxDOT ROW. Maintenance beyond the ROW line is the responsibility of the owner of the entrance/access.

Adopt-a-Highway Program

TxDOT provides the personnel and equipment used for the Adopt-a-Highway Program. Activities associated with supporting Adopt-a-Highway groups include installing and maintaining signs, providing materials for litter collection and removal of debris and litter bags collected by Adopt-a-Highway groups, meeting with existing Adopt-a Highway groups or recruiting new groups.

Patrolling for debris

Patrolling for debris includes routine patrolling and inspection of TxDOT rights-of-way to identify, collect and dispose of debris that has been deposited on the ROW.

Spot litter pick-up and disposal

Spot litter pick-up and disposal includes the spot removal and disposal of litter, including dead animals, from the ROW. This consists of litter removal and disposal from specific or isolated sites and litter barrels not in picnic or rest areas within the ROW. This practice consists of clearance, removal, and/or disposal of items such as trees, ladders, lumber, tire tread, personal property, etc. from the ROW. Remains of animals are also removed as soon as possible from the roadway and disposed of in a proper location. If a dead animal is located in a rural area, they are sometimes buried on the roadside within the ROW away from any homes or development. If the animal is large (such as a cow or horse), a by-products or rendering company is sometimes called to remove the animal for disposal. Dead animals in urban areas are taken to an approved sanitary landfill or municipal solid waste facility. If this method is not practical, the animals are moved to a rural section of ROW and disposed of properly through burial. When picking up debris on the roadway, TxDOT personnel considers their personal safety and safety of the traveling public in all situations. When conditions permit, TxDOT staff and contractors keep themselves and their equipment well

clear of open traffic lanes and position themselves to allow maximum sight distance to oncoming motorists.

Removal and disposal of litter

The practice of removing and disposing of litter consists of removing and disposing of litter from the entire ROW, excluding paved areas, as well as picnic and rest areas. Activities associated with the removal and disposal of litter from the entire ROW within a section of roadway includes driving to the work location, picking up litter, and disposing of litter items at an approved site. This function includes picking up litter from roadway drains, and from any floodplain, wetland or surface water located within TxDOT ROW. All litter within the ROW is removed as soon as possible.

Hand sweeping

Hand sweeping includes using hand brooms or blowers to clean riprap, islands, medians, curb and gutter, driveways, etc. Activities could include hand-loosening of dirt in curb and gutter sections except when performed in conjunction with routine street sweeping.

Street sweeping

The practice of street sweeping consists of sweeping the road surfaces with a rotary broom or street sweeper to remove loose aggregate and debris on the roadway surface, sweeping along median barriers, sweeping along concrete bridge rails, and sweeping curb and gutters. The frequency of street sweeping depends on the type of roadway. Toll roads are swept weekly, major roads like interstates every two weeks, while other major roads are swept once a month. Street sweeping is generally performed at night. Materials collected during sweeping are disposed of at approved landfills.

Sweeping ice rock

The practice of sweeping ice rock includes the removal of ice rock from bridge decks and/or intersections after treatment for a winter storm event. Aggregate used for snow and ice control creates an undesirable condition on the roadways after a storm event due to decreased traction and dust; therefore, use of aggregate is kept to a minimum. Aggregate used for a winter storm event is removed as soon as practical. Sweepers are utilized continuously by TxDOT or contractors, until cleanup is complete.

Illegal dumpsite removal and disposal

This practice includes the removal and disposal of debris discarded or deposited in an unauthorized area in the ROW such as under a bridge, overpass, culvert, etc. This does not include the removal of abandoned hazardous materials.

Removal of illegal signs on ROW

Removal of illegal signs on the ROW includes the disposal and written notice to the owners of the sign. Activities associated with the removal and disposal of permanent or temporary signs include the time involved to inspect the ROW, driving to the location of the sign, using equipment to remove the sign, disposing of the sign, storing the sign for the owner to pick up, and all costs associated with the notification of the owner of the sign.

Removal of encroachments

This practice includes the removal of illegal encroachments (other than signs) on the ROW, including disposal and written notice to owners. This includes encroachments such as roadside vendors, dumpsters, and vehicles. Activities associated with this function include driving to the location, notifying the owner, and removing, storing or disposing of the encroachment.

Hazardous material cleanup

Activities for hazardous material cleanup for spills, abandoned materials, and leaking storage tanks include investigations, testing, cleanup, removal, disposal and restoration work associated with hazardous materials spill, abandoned hazardous materials of unknown ownership, or leaking storage tanks located on TxDOT property. This function requires coordination with the district hazardous materials coordinator and must comply with departmental policy and district guidelines.

Maintenance of ditches

Maintaining ditches includes removal of materials in order to restore the ditch to its original design and restore drainage capacity. Work items could include using a motor grader to roll out dirt to be hauled, using a loader to load trucks, using trucks to haul and dispose of removed material, and the final reshaping of the ditch that was cleaned. Maintenance ditch cleaning is only done in areas where the ditch's function is impaired. The ditch length, width, and height are dredged back to its original dimensions. Mowing drainage ditches to control vegetation, rather than mechanically cleaning ditches with heavy equipment, causes less erosion of exposed soil and can result in improved water quality. In general, ditches are cleaned and repaired only during periods of low water flow and not during intense rainfall events. All efforts are made to retain existing vegetation, especially along the ditch slopes to maintain slope stability. Excavating only the first three quarters of the ditch and retaining vegetation in the remaining quarter also reduces the amount of pollutants traveling in the water.

Reshaping of ditches

Reshaping ditches involves using a maintainer and/or gradall, etc., but does not include work at culverts or bridges. This practice is used for activities that restore ditches to their original design and capacity, which is intended for ditch maintenance activities that involve the entire ditch area and could include unpaved shoulders. This practice also includes blading fire guards. Work items could include using a motor grader, gradall, backhoe, loader, drag blade, or tractor mounted blade to reshape the ditch.

Repair and stabilization of slopes

The practice of repairing or stabilizing slopes consists of reshaping or repairing eroded areas on slopes, which includes all activities involved with the stabilization of slopes that could be subject to erosion, the repair of slopes that have failed due to erosion, or along a slip plane. Work items could also include removal of loose rock from the face and bench area of rock cuts. This practice is intended for use in mechanical repair and stabilization projects. Work items could include the reshaping of eroded areas on slopes, rebuilding slopes that have failed, installing geo-grid materials to stabilize soils, adding stabilizing materials such as cement, lime, etc., installing baffle dams, installing vertical pilings and columns, and final reshaping of the slope. Where feasible and appropriate, existing ditch slopes are evaluated and modified to trap sediments and support development of vegetation. Completing necessary slope repairs can reduce erosion and the amount of sediment and debris traveling to surface water resources during periods of inclement weather. Material is removed above the bank line, while avoiding any waterway or wetland. Materials removed from the ditch are then taken to an approved site. In general, debris removed from slope repair or stabilization is stockpiled and later used to fill in other areas where it is needed and feasible.

Maintenance of culverts and storm drains

The practice of maintaining culverts and storm drains includes the installation, repair, and maintenance of culverts up to bridge classification (twenty feet measured along the centerline of the roadway). This work includes silt and debris removal from inlets, storm drains, retention ponds, and

culverts, as well as all activities associated with the installation and maintenance of culverts, including safety end treatments. This practice should also include all items associated with the installation and maintenance of storm drains. Work items could include cleaning culvert ends with a backhoe, loader or gradall, repairing bent culvert ends to restore drainage, installing or repairing sloped safety ends, installing new culverts, setting forms and pouring concrete headwalls, replacing or repairing grates on slope ends or drop inlets, removing silt and debris from culvert pipe or storm drain, repairing pavement cuts for new culvert installations, and cleaning of easements.

Repair and installation of riprap

Riprap installation and repair includes the installation and maintenance of ditch liners, retards, down drains, riprap, flumes, concrete mowing strips, gabions, retaining walls, and other erosion protection. Riprap is placed during in-water work periods (compliant with seasonal habitat restrictions) in non-emergency situations. TxDOT environmental staff and/or other regulating agencies are coordinated with when riprap is placed, in addition to existing conditions, and with the two-year floodplain of Waters of the State.

Maintenance of storm water pump stations

Maintaining storm water pump stations include repairing and maintaining motors, pumps, generators, wet wells, dry wells, debris screening baskets, etc., including costs of utility services. This work also includes building maintenance, cleaning in and around the pump station, testing system operations, and hauling fuel to pump station site.

Removal of beaver dams

During routine inspections, if a beaver dam is noted or if a landowner reports a beaver dam that needs to be removed, a contracted trapper is notified. In general, the removal process consists of breaking down the beaver dam and setting traps for beavers that are present.

Adding a shoulder/Minor widening

Repairs can include the construction of new shoulders up to four feet in width where shoulders did not previously exist. Adding shoulders or making pavement edge repairs are accomplished by one of two accepted methods. One method is to raise the surface of the shoulder or area located adjacent to the edge of the travel lane pavement, by bringing the existing natural material from the shoulder and/or the embankment up to the same level as the travel lane pavement surface. The second method involves placing new asphalt or other material beside the edge of the pavement to remove the drop-off. Work items could include preparation of sub-grade, constructing base courses, and the first course of surfacing.

Adding handicap ramps

Adding handicap ramps involves the new construction of a handicap ramp where none had previously existed or replacing handicap ramps where they do not meet current codes. Work items could include preparation of sub-grade, constructing base courses, and pavement of the new ramp as well as repairing or replacing adjoining sidewalks.

Adding and repairing sidewalks

The practice of adding or repairing sidewalks consists of constructing a new sidewalk where none had previously existed, or repair or replacement of existing sidewalks after the roadway has already been constructed. Work items could include preparation of the sub-grade, adding base courses, constructing concrete forms, pouring and finishing concrete, removing forms, and work site clean-up.

Adding turnouts

Adding a turnout includes all activities associated with the installation of a new roadside turnout where none had previously existed. The work items could include subgrade and base preparation for new installations. These new turnouts may be paved or unpaved. Work items are typically limited to the area within the actual side road turnout and usually do not extend into the adjoining pavement.

Maintenance of landscapes

The practice of maintaining landscapes consists of the installation or maintenance of landscape plantings and their facilities including planter walls, borders, sprinkler systems, etc. (excluding picnic and rest areas). This practice includes all activities that establish or maintain plants and their containers. Work items include the planting, maintenance and replacement of plant material, as well as constructing, maintaining, and replacing plant containers such as walls, borders, and watering systems. These activities would normally take place in areas such as landscaped medians and/or islands.

Maintenance of boat ramps

Maintaining boat ramps includes mowing and removing litter; removing existing ramp planks; replacing damaged precast concrete launch ramp planks; adding required footing ballast to ensure proper base and slope; applying crushed rock, ballast, and/or riprap to ensure proper protection from erosion; removing silt and river gravels from a ramp and in the vicinity of the ramp (dredging) (except in TPWD operated facilities); using cabled together precast concrete blocks for erosion protection where riprap or ballast rock are not effective; repairing cracks/ crack sealing; resealing/seal coating; and maintaining boat ramp signage outside TPWD parks. Work activities for TPWD operated boat ramp facilities within TxDOT ROW could include providing vegetation management, mowing, and trimming; providing litter pick-up and disposal; providing appropriate directional and regulatory signs; maintaining paved surfaces; maintaining unpaved surfaces by blading as necessary; performing periodic inspections of facilities; and submitting to TPWD an annual report of the list of ramps that require major rehabilitation. These practices are only done when requested by TPWD.

Removal and replacement of base and/or sub-grade material

Activity includes the removal of base and/or sub-grade materials from distressed or failed areas and replacing it with suitable materials. This activity includes using a backhoe or gradall to remove the existing surfacing, base and sub-base material; using lime, concrete, or fly ash to stabilize base and sub-base material; using a loader, motor grader or other equipment to place new material in excavated area; watering, compacting, and the application of the surface course.

In place repair of base and/or sub-grade material

In place repair is the repair of base and/or subgrade material, including resurfacing, and may or may not include additional stabilizing materials. This activity is associated with the repair of pavement failures when existing materials are reused rather than discarded. For example, a reclaimer machine would pulverize the existing surface and the material would be placed back on the road bed. This can also include the addition of materials such as lime, cement, asphalt or fly ash as a stabilizer. Work items could include using a reclaimer, roto-tiller, scarifiers or other equipment to recycle existing pavement, base and sub-base material; using a loader, motor grader or other equipment to place recycled material, water, shape and compact the base courses, and apply the surface. Recyclers cut into existing bituminous surface to a 12-in. depth, pulverizing it with the sub-grade, mixing cement into the soil, and providing a homogeneous material. Recyclers are often used to correct base failures.

Installation and maintenance of underdrains

Underdrains can be anything that allows water to pass through and drain to a predetermined area. This could include trenching, the placement of pipe and filter material, and backfilling the excavation.

Maintenance of unpaved roads

Include the repair of gravel or dirt roads, including blading, addition of base, etc. This includes only repair of gravel or dirt roadways within State Parks that are being maintained by TxDOT. TxDOT does not have unpaved roadways on the state system.

Leveling or overlaying of flexible surfaces

Includes is the application of asphaltic tack coat and placing of asphaltic concrete materials to improve the ride qualities or level up low spots of the roadway. Work items associated with leveling or overlaying of pavement could include the application of a tack coat; adding hot mix; hot mix cold laid to the repair area; placement and leveling with a laydown machine, maintainer, dragbox, or by hand; and rolling the repaired area. Leveling by hand only is done on project that is less than 500 square yards and is used as a bridge from pothole repair to overlay.

Sealing cracks in flexible surfaces

Include the cleaning, filling, and sealing cracks in the pavement using asphaltic rubber or other sealants. This includes all types of cracks. Work items include routing cracks; using compressed air to remove debris from cracks to be sealed; sandblasting cracks; applying sealant material; and squeegee the repaired crack to smooth out excess sealant. The material used to seal the cracks could include crumb rubber sealant, cold pour, emulsions modified with latex rubber additive, and various commercially prepared crack and joint sealing materials.

Applying a seal coat to flexible surfaces

Activity includes the application of a single layer of asphaltic material followed by the application of a single layer of aggregate over the full width of the lane or a shoulder (greater than 6 ft. in width) for a minimum of 1,000 continuous feet. TxDOT's goal is to apply seal coats every seven years. This activity consists of a full width seal coat and work items include sweeping immediately prior to application of asphalt or emulsion; application of asphalt or emulsion using an asphalt distributor (truck or trailer mounted); application of aggregate using a chip spreader (tail gate or self-propelled); laying paper for joints; rolling the finished mat; and first sweeping of excess aggregate from the new surface.

Applying strip or spot seal coat to flexible surfaces

Activity includes the application of a single layer of asphaltic material followed by the application of a single layer of aggregate over areas less than the full width of the lane or shoulder (6 ft. or less in width), or the full width of the lane or shoulder but less than 1,000 feet in length. Work items include the same as when applying a seal coat to the full width of the lane or shoulder as described above. When applying a strip or spot seal coat there is no limit on the length as long as the area sealed is less than the full width of the lane or shoulder.

Applying fog seal to flexible surfaces

Activity consists of retaining aggregate; enlivening surface and/or sealing hairline cracks by the application of a thin layer of asphaltic material. Actions under this activity are for full width or spot fog sealing. Fog seal is typically used to retain aggregate on seal coat projects that continue to lose surface aggregate; to temporarily seal hairline cracks until a more permanent solution can be made; and to rejuvenate dry, oxidized hot mix pavements. This activity could also include applying a narrow strip or ribbon of raw emulsion to pavement edges

Microsurfacing flexible surfaces

Microsurfacing is the application of a polymer modified high performance emulsion coupled with fine graded aggregate, mineral fillers and special additives in a slurry, to fill ruts or to provide a new wearing surface. This is not used to seal cracked pavements.

Pothole repair in to flexible surfaces

Potholes can be repaired using a semi-permanent repair or a square cut permanent repair. A square cut permanent repair of a pothole consists of permanently repairing a hole with an area of less than or equal to one square yard and squaring the sides. Work items could include using an axe or pavement saw to square cut the hole; using hand tools to remove loose pavement; sweeping debris from the hole; applying a tack coat; backfilling the hole with patching material, using hand tools to level the patch; and using hand tools or power equipment to compact the patch. A semi-permanent repair is a temporary corrective measure and consists of repairing a hole with an area less than or equal to one square yard. Work items associated with this activity include using hand tools to remove loose pavement from the hole; sweeping debris from the hole; applying a tack coat; backfilling the hole with patching material; using hand tools to level the patch and using hand tools or power equipment to compact the patch.

Slab stabilization/jacking of rigid surfaces

Activity consists of leveling concrete pavement through the use of hydraulically placed material. This includes repairing concrete slabs by pumping material (usually flow-able concrete backfill material) under settled areas to raise the slab back to its original elevation by drilling or jack hammering an opening in the slab and pressure injection of backfill material.

Cleaning and sealing joints and crack in rigid surfaces

Activity includes the cleaning, filling, and sealing of joints and cracks in concrete pavement. This is accomplished by using compressed air to blow loose dirt and debris from joints; routing or sandblasting joints; installing backer rod; filling joints with sealant; and then removing excess sealant.

Repair of blowouts and stress relief in rigid surfaces

Activity consists of repairing blowouts and cutting pavement to relieve stress and reduce further pavement damage from additional blowouts.

Repair spalling in rigid surfaces

Activity consists of cleaning and repairing spalled areas of concrete pavement (not to the full depth of the concrete slab). Work items could include removal of loose material and cleaning and patching the defect using materials designed for shallow repairs on concrete. This could also include activities to expose the top reinforcing bar to ensure adequate bonding.

Full depth removal and replacement of rigid surfaces

Activity consists of the removal and replacement of failed areas for the full depth of the concrete slab. This could include saw cutting the full depth of the concrete slab to remove the failed area; removal and replacement of reinforcing bar; pouring concrete into repair area; and finishing the new concrete and applying curing compound. This also includes the removal and replacement of base, sub-grade, or other foundation materials under the concrete pavement.

Milling or planning of flexible surfaces

Activity includes the process where the old existing road surface is removed by machine to expose the road base. The old material is ground into small chunks by the machine and stockpiled to be

used later at various locations. This material is used when needed as road base material. This activity also includes using special cutting edges to add texture to the pavement surface to restore skid resistance on flushed pavement. Work items include the operation of the milling or texturing equipment; trucks hauling reclaimed asphalt pavement; sweeping; and other support items directly related to the milling operation.

Spot milling of flexible surfaces

Activity includes the removal of the pavement surface by milling using a small milling machine (4 ft. or less drum width), such as a bobcat. Work items for this activity are the same as the activities described under the milling and planing above, but with a small milling machine.

Treating bleeding pavement

Activity involves removing excess asphalt on the pavement surface. This could include spreading aggregate or aggregate screenings; rolling aggregate into affected area; or applying lime slurry to the affected area.

Installation and maintenance of concrete appurtenances

Activity includes maintaining, installing, repairing, or removing curbs and/or gutters, raised medians, sidewalks, and sound barriers. Work items could include sawing and removing sections of curb and gutter, replacing damaged sidewalks, or installing new raised medians. This also includes the base and sub-grade preparation for the installation of the new appurtenances. In response to the demand of the public living adjacent to highways, the use of sound walls has increased significantly in recent years. The maintenance requirements include repairs and replacement due to damage by vehicles, atmospheric action, and vandalism. Sometimes a separate concrete barrier is placed in front of the sound wall to protect motorists and to improve maintainability.

Installation and maintenance of barriers

Activity includes the installation and maintenance of high tension cable median barrier systems, including the cable, posts, and end treatments. Work items could include the installation of posts, cable, or end treatments, and any repair or maintenance item on the wire rope barrier system such as the removal and replacement of damaged posts. Maintaining concrete barriers consist of the installation, removal, and maintenance of permanent concrete barrier, including attached headlight barrier fence. Work items could include the forming and pouring of concrete barrier in-place, installing pre-cast concrete barrier, installing headlight barrier fence, and any repair or maintenance item on the concrete barrier or headlight fence.

Installation and maintenance of guardrails and end treatment systems

Activity includes the installation, removal, and maintenance of metal beam guard fence (MBGF), including attached headlight barrier, and guardrail end treatment systems (GETS). Work items could include the installation of posts, MBGF, terminal anchors, headlight barrier fence, and any repair or maintenance item on the guard fence or headlight barrier fence such as the removal and replacement of damaged sections. Work items also include installation, removal, or any repair on the GETS.

Installation and maintenance of mailboxes

Activity consists of the installation and maintenance of USPS approved mailboxes (provided by the postal patron) placed on single or multiple supports provided by TxDOT, or the removal of non-approved supports placed illegally on the ROW. Work items could include setting the post or support including the object marker or reflective tape and installing all necessary hardware to attach the mailbox.

Repair, replacement, and removal of cattle guards

Activity includes the repair, installation, and removal of cattle guards within TxDOT ROW. Cattle guard maintenance occurs when a problem is identified through routine inspection by TxDOT or when reported by a landowner. If the cattle guard is still needed, TxDOT will either repair or replace it. If the cattle guard is on property no longer being used for ranching, the cattle guard will be removed and the space filled in with concrete.

Installation and maintenance of bridge rails

Activity consists of the maintenance of bridge rail, posts, and post connections to the deck of the bridge. Work is limited to the metal beam or concrete bridge rail that is directly over the bridge deck. Work items could include removing and replacing damaged sections of metal beam bridge rail and damaged bridge rail posts; repairing post support hardware such as base plates; repairing or replacing anchor points for posts, removing damaged sections of concrete bridge rail; setting concrete bridge rail forms; replacing corroded reinforcing steel; and pouring/finishing concrete bridge rail.

Bridge structural repairs

Structural repairs include maintenance of the concrete components of the bridge superstructure, including bearings, concrete diaphragms, and beams. Structural repairs also include fixing steel components of the bridge superstructure, maintenance of the steel or timber components of the bridge substructure, and repairs to steel diaphragms and beams. Structural repairs also include patching or replacing pitted concrete components of the bridge substructure, including caps, columns, abutments, wing walls, pilings, etc.

Installation and maintenance of roadway access controls

Activity includes the installation of barriers designed to control access on highways, including post and cable fences, and ROW fences. These types of barriers are provided to keep people and animals out of the highway ROW. Maintenance includes repairs or replacement because of damage by vehicular accidents, deterioration, vandalism, livestock, erosion, rockslides, and heavy snow loads.

Installation and maintenance of vehicle attenuators and crash cushions

Installation and maintenance of vehicle attenuators and crash cushions is done in places where hazardous fixed objects such as bridge abutments or piers, bridge rails, sign posts, and bridge ramp gore areas cannot be avoided. This does not include the end treatment devices on guardrails. TxDOT has developed a low-maintenance attenuator. It is durable and can be easily and quickly brought back to its original condition and position with inexpensive and available replacement parts. It is mainly made of rubber and, following a collision, can be pulled back out and re-anchored to its original position. The major maintenance requirement is quick repair or replacement after a collision. Work items could include pouring concrete slabs and footings, installing attenuators, installing crash cushions, and replacing broken, missing, or damaged components. In addition, attenuators must be cleaned of debris regularly in order to ensure that they will function properly in the event of a crash.

Installation and maintenance of delineators

Activity includes the cleaning, repair, and replacement due to damage by vehicles, snowplows, vandalism, and atmospheric conditions. Work items could include removing damaged posts and bases, straightening bent or leaning posts, installing new bases, installing new posts, installing or reinstalling reflectors, installing object markers, cleaning reflectors, and installing reflective tape on posts. Delineators are used to enhance visibility of a feature of the highway system.

Installation and maintenance of small and large signs

Activity includes maintaining breakaway features of sign supports to ensure they function as designed (no silt or debris at the slip base, no signs attached below hinge points); assuring that the sign message is clearly visible at all times (clear of vegetation or other obstructions); reporting damaged signs; replacing signs and posts as needed; straightening posts and sign assemblies; completing records of all sign installations (stop signs and regulation); cleaning as necessary; tightening sign fasteners; proper torqueing of slip base plate and fuse plate connecting bolts or breakaway sign posts; tightening anchor bolt nuts on overhead sign supports; and performance of scheduled inspections by trained personnel. Vandalism, especially graffiti in urban areas and bullet holes in rural areas, is a serious problem and demands a significant maintenance effort. Routine sign maintenance includes graffiti removal, power washing, bleaching, and scrubbing. Signs are designed to yield on impact, thereby preventing sudden vehicle decelerations and occupant injuries. Small signs typically yield by bending or fracturing, while larger ones give way through a slip-base and hinge combination. Cantilevered and overhead signs, which cannot be redesigned to enhance safety, are usually shielded. Breakaway posts can be easily repaired or replaced and causes less damage to vehicles.

Installation and maintenance of flashing beacons

Activity consists of installation and maintenance of overhead flashing beacons, pedestal or sign mounted flashing beacons, etc. Work items could include trenching, placing electrical conduit, pulling wire, terminating electrical connections, pouring concrete base, setting signal pole and mast arm, installing signal head, installing and programming signal controllers and monitors, trouble-shooting signal malfunctions, replacing controller components, replacing bulbs, installing guy wires, and site restoration and cleanup.

Installation and maintenance of illumination systems

Installation and maintenance of illumination systems, including continuous lighting, safety lighting, and sign illumination, consists of trenching, placing electrical conduit, pulling electric wire, terminating electrical connections, pouring concrete base, setting pole and mast arm, installing lighting head, installing controller, replacing bulbs, trouble-shooting illumination system malfunctions, and site restoration and cleanup.

Installation and maintenance of coordinated and isolated traffic signals

Installation and maintenance of coordinated and isolated traffic signals involves the installation, maintenance, and operation of all isolated or coordinated traffic signals. This includes diamond interchange signals, closed loop-type systems, centrally controlled, hardwired interconnect, and time based coordinated systems and all associated equipment. Work items could include trenching, placing electrical conduit, pulling electric wire, terminating electrical connections, sawing pavement to install vehicle detection loops, pouring concrete base, setting signal pole and mast arm, installing signal head, installing and programming signal controllers and monitors, trouble-shooting signal malfunctions, replacing controller components, replacing bulbs, installing guy wires, and site restoration and cleanup. Traffic signal malfunctions are repaired as soon as possible and only trained maintenance personnel perform traffic signal maintenance. However, all department personnel immediately report any malfunctioning traffic signal and notify law enforcement if traffic control is needed until the signal is repaired. Traffic signals are maintained in their originally built condition.

Installation and maintenance of traffic management systems

Activity includes the maintenance and operation of systems on freeways or non-freeways, entrance/exit ramps, motorist information (e.g. changeable message signs, highway advisory radio, etc.), bridge warning systems, and surveillance and related communications equipment.

Installation and maintenance of traffic control plans

Installation and maintenance of traffic control plans includes the placement, maintenance, and removal of barricades, signs, cones, lights, and other such devices used to handle traffic maintenance operations. This also includes flaggers. Work items may include placing or removing barricades, signs, traffic control devices, flagging, and shadow vehicles (truck mounted attenuators and arrow boards, pilot car operations, detour set-up).

Installation and maintenance of paint and bead striping

Installation and maintenance of paint and bead striping consists of striping or re-striping lane lines, centerlines and edge lines using paint and beads. Work items could include removal of old stripe, preparing and operating striping equipment and support vehicles such as the supply truck and shadow vehicle, if the shadow truck is also serving as a supply truck. This activity also includes using paint and beads at spot locations such as level-up, spot seal coat, etc.

Installation and maintenance of high performance striping

High performance striping maintenance includes striping or re-striping lane lines, centerlines and edge lines using thermoplastic or other high performance materials. Work items might include removal of old stripe and installation of sealer. Work items will also include inspection of contract striping work.

Installation and maintenance of specialty markings

Maintenance of specialty markings consists of maintaining medians, islands and other pavement markings not covered under the other activities (including make-ready operations for all stripe alignment, such as spotting tabs, temporary tape, etc.) This activity includes placing specialty pavement markings on medians, turn lanes, crosswalks, railroad crossings, make-ready operations, etc. This also includes the removal of the temporary markings and the installation of rumble strips.

Installation and maintenance of raised and reflective pavement markers

Maintaining raised and reflective pavement markers includes the installation, maintenance and removal of raised pavement markers. Work items could include cleaning and/or priming pavement surface, applying adhesive, placing raised pavement markers (RPMs), placing and removing protective covers during seal coat operations, mechanically removing existing raised pavement markers and repairing the pavement after RPMs have been removed.

Removal of pavement markers

Removal of pavement markers includes the removal or obliteration of pavement stripes when the stripe is not going to be replaced. Work items could include grinding, burning, scraping or covering existing pavement stripes by applying an asphaltic material. Existing markings should be removed if they are: too thick, losing adhesion to the pavement surface, of an incompatible material, or if the marking layout must be reconfigured.

Installation and maintenance of non-motorized recreational trails or sidewalks and related infrastructure

Activity includes construction of new or rehabilitation of existing recreational facilities including natural- or paved-surface non-motorized trails and sidewalks, pedestrian bridges, signage, kiosks, restrooms and related infrastructure. Activity may include the use of hand tools, power equipment and light- or heavy-machinery.

Attachment 2 – Best Management Practice Summary Report – Maintenance Program

BEST MANAGEMENT PRACTICE SUMMARY REPORT



MAINTENANCE PROGRAM

APRIL 2011

1.0 Introduction

Pursuant to 43 TAC, Part 1, Chapter 2, Subchapter A, § 218(b), the Texas Department of Transportation (TxDOT) Maintenance Division (MNT) undertook an environmental review of TxDOT's nine Maintenance Programs: 1) Bridge; 2) Customer Service; 3) Debris and Spills; 4) Drainage; 5) Ferries; 6) Enhancement; 7) Pavement; 8) Roadside Appurtenances; and 9) Traffic Pavements and Markings. The Maintenance Programs help TxDOT to provide a safe and functional roadway system, ensure clean and aesthetically pleasing highways and facilities, and improve the value and prolong the functional lifespan of TxDOT infrastructure.

Organizationally, TxDOT is comprised of 25 districts, 21 divisions, six offices and four regions. Each district is responsible for Maintenance Program activities conducted within its jurisdictional area. Generally speaking, maintenance needs vary from district to district. Needs and corresponding practices vary due to differing environments, traffic levels, and the availability of resources.

Part of the environmental review process involved the identification of Best Management Practices (BMPs) intended to reduce adverse environmental impacts associated with Maintenance Program activities. Several BMPs were identified during the environmental review process that when implemented avoid, minimize or compensate for any adverse environmental impacts resulting from TxDOT Maintenance Program activities.

This report is organized around a variety of environmental resources and identifies the BMPs that are applicable for reducing adverse impacts to each resource resulting from Maintenance Program activities. **Table 1-1** summarizes the BMPs by Maintenance Program so that maintenance personnel can quickly and easily identify BMPs that apply to the Maintenance Program activities that they may be conducting. As the BMPs continue to be implemented, adapted to site-specific conditions, evaluated for effectiveness, and refined TxDOT will continue to further reduce any adverse environmental effects associated with its Maintenance Programs.

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TABLE 1-1: BMPS AND ASSOCIATED MAINTENANCE PROGRAMS

Best Management Practice (BMP)	Maintenance Programs								
	Bridge	Customer Service	Debris and Spills	Drainage	Ferry	Maintenance Enhancement	Pavement Maintenance	Roadside Appurtenances	Traffic Pavement Markings
	<ul style="list-style-type: none"> Deck Sweeping Joint & Bearing Cleaning Paint Removal & Application Debris Removal & Channel Clearing Power Washing & Sand Blasting Channel Stabilization Pest Control Structural & Other Repairs 	<ul style="list-style-type: none"> Driveway entrances within the ROW Sewer treatment plants & storm water systems at rest areas Rest & picnic areas Roadside parks Access to historical markers & sites Vehicle pull outs & parking areas Restrooms at ferry landings Adopt-a-Highway Program Providing traffic assistance 	<ul style="list-style-type: none"> Patrols for debris Conducts spot litter pick-up & disposal Removes & disposes of litter Conducts hand & street sweeping Sweeps ice rock Removes & disposes of illegal dumpsites Removes illegal signs on ROW Removes encroachments Manages hazardous material cleanup 	<ul style="list-style-type: none"> Maintains ditches Reshapes ditches Repairs or stabilizes slopes Maintains culverts & storm drains Maintains storm water pump stations Repair & installs riprap Maintains or implements storm water pollution protection plans (SW3P) 	<ul style="list-style-type: none"> Dredging Oil & fuel storage & repair Re-fueling Other chemical storage Grey water disposal Maintain public area Deck sweeping Minor routine ship maintenance Maintain facility equipment Contracted maintenance 	<ul style="list-style-type: none"> Adding a shoulder Adding handicap ramps Adding sidewalks after construction Adding turnouts Inspecting driveways Inspecting utilities Maintaining landscapes Maintaining boat ramps 	<ul style="list-style-type: none"> Maintains base and sub-grade of travel lanes & shoulders Maintains flexible (asphaltic) surfaces of travel lanes & shoulders Maintains rigid (concrete) pavement of travel lanes & shoulders Stores pavement materials Cleans up work site & maintenance equipment 	<ul style="list-style-type: none"> Barriers & concrete appurtenances Guardrails & end treatment systems Mailboxes Cattle guards Bridge rails Access controls Delineators Vehicle attenuators Small & large signs Flashing beacons Illumination system Coordinated & isolated traffic signals Traffic management systems Traffic control plans 	<ul style="list-style-type: none"> Paint & Bead Striping High Performance Striping Specialty Markings Raised & Reflective Pavement Markers Removal of Pavement Markers
Limit the operation of heavy machinery used for Maintenance Program activities to paved areas, areas free of native vegetation, and to areas with slopes that are less than 33 percent consisting of stable soils.	X	X	X	X	X	X	X	X	X
Avoid using machinery in wet and/or inundated areas to prevent rutting and/or turbidity.	X	X	X	X	X	X	X	X	X
Properly maintain all equipment used for Maintenance Program activities to optimize fuel and operating efficiency and to ensure worker safety.	X	X	X	X	X	X	X	X	X
Coordinate with TxDOT biologists or local fish and wildlife experts for assistance in scheduling activities to avoid aquatic impacts.	X	X	X	X	X	X	X	X	X
When federally listed species or critical habitat is observed at or near a maintenance activity, coordinate with the District Environmental Coordinator to determine if further coordination with United States Fish and Wildlife Service (USFWS) or National Marine Fishery Services (NMFS) under the Endangered Species Act (ESA) is required.	X	X	X	X	X	X	X	X	X
Adhere to the TxDOT's Standard Plans and Specifications when work is scheduled.	X	X	X	X	X	X	X	X	X
 Periodically review the list of all eligible (historic) and non-eligible resources and provide in-house and contracted maintenance personnel responsible for implementing Maintenance Program activities with the list of eligible resources in their respective District so that proper methods are used. Resources can include bridges, historical markers, landscapes, buildings, rest and picnic areas, Depression-Era structures, etc.	X	X		X		X	X	X	
Inspect all historical markers within TxDOT right-of-way (ROW) once every year to determine if repairs or cleaning are needed.		X							
Replace damaged elements (bronze plaques, seals, wreaths, stars) or those missing from granite centennial markers with replacement parts ordered from Texas Historical Commission (THC). District environmental coordinators or ENV can provide maintenance personnel with the appropriate order forms.		X							

	Maintenance Programs								
	Bridge	Customer Service	Debris and Spills	Drainage	Ferry	Maintenance Enhancement	Pavement Maintenance	Roadside Appurtenances	Traffic Pavement Markings
Best Management Practice (BMP)	<ul style="list-style-type: none"> Deck Sweeping Joint & Bearing Cleaning Paint Removal & Application Debris Removal & Channel Clearing Power Washing & Sand Blasting Channel Stabilization Pest Control Structural & Other Repairs 	<ul style="list-style-type: none"> Driveway entrances within the ROW Sewer treatment plants & storm water systems at rest areas Rest & picnic areas Roadside parks Access to historical markers & sites Vehicle pull outs & parking areas Restrooms at ferry landings Adopt-a-Highway Program Providing traffic assistance 	<ul style="list-style-type: none"> Patrols for debris Conducts spot litter pick-up & disposal Removes & disposes of litter Conducts hand & street sweeping Sweeps ice rock Removes & disposes of illegal dumpsites Removes illegal signs on ROW Removes encroachments Manages hazardous material cleanup 	<ul style="list-style-type: none"> Maintains ditches Reshapes ditches Repairs or stabilizes slopes Maintains culverts & storm drains Maintains storm water pump stations Repair & installs riprap Maintains or implements storm water pollution protection plans (SW3P) 	<ul style="list-style-type: none"> Dredging Oil & fuel storage & repair Re-fueling Other chemical storage Grey water disposal Maintain public area Deck sweeping Minor routine ship maintenance Maintain facility equipment Contracted maintenance 	<ul style="list-style-type: none"> Adding a shoulder Adding handicap ramps Adding sidewalks after construction Adding turnouts Inspecting driveways Inspecting utilities Maintaining landscapes Maintaining boat ramps 	<ul style="list-style-type: none"> Maintains base and sub-grade of travel lanes & shoulders Maintains flexible (asphaltic) surfaces of travel lanes & shoulders Maintains rigid (concrete) pavement of travel lanes & shoulders Stores pavement materials Cleans up work site & maintenance equipment 	<ul style="list-style-type: none"> Barriers & concrete appurtenances Guardrails & end treatment systems Mailboxes Cattle guards Bridge rails Access controls Delineators Vehicle attenuators Small & large signs Flashing beacons Illumination system Coordinated & isolated traffic signals Traffic management systems Traffic control plans 	<ul style="list-style-type: none"> Paint & Bead Striping High Performance Striping Specialty Markings Raised & Reflective Pavement Markers Removal of Pavement Markers
 <p>Use the least aggressive methods that prove effective for cleaning historic resources. Request guidance for appropriate methods for each type of resource from TxDOT's Environmental Affairs Division (ENV) (guidance sheets are available regarding aluminum state historical markers, older stone and concrete markers and stone and concrete picnic fixtures).</p>		X							
Repair rather than remove historic features whenever possible.		X							
Follow rules set forth in the Memorandum of Understanding (MOU) with the Texas Parks and Wildlife Department (TPWD) Texas Administrative Code (TAC) 43(1)(2)(B)(22.2) and memoranda of agreements (MOAs).	X	X	X	X	X	X	X	X	X
<p>Observe triggers of the MOU with TPWD. These include:</p> <ul style="list-style-type: none"> More than 1.0 acre of new ROW within floodplains or creek drainages in rural or undeveloped urban areas; Channel modifications to streams, rivers or water bodies; Channel re-alignment requiring the creation of new drainage ways or other excavation impacting more than 1.0 acre of mature woody vegetation; Excavation (scraping, clearing, or other surface disturbance) of the existing channel outside of TxDOT's existing ROW, or of the channel inside the ROW which is not routinely maintained and exhibits native vegetation; Affects to mature woody vegetation or dense mature brush, including any significant remnant native vegetation (e.g., undisturbed native prairie or bottomland hardwood, etc.); Within the range and in suitable habitat of any state or federally listed threatened or endangered species; Mitigation plans or otherwise involve proposals to redress project impacts on fish, wildlife, or plant resources; Previous environmental clearance, i.e., three years have passed without major action(s) and/or TPWD review, but now meets any of the above listed criteria; or Three years passed since environmental clearance with major actions (i.e., the TPWD may have or may not have reviewed, but the project meets any of the above listed criteria). <p>If a specific MNT activity involves any of the above listed criteria then coordination with TPWD per the MOU is required.</p>	X	X	X	X	X	X	X	X	X

Best Management Practice (BMP)	Maintenance Programs								
	Bridge	Customer Service	Debris and Spills	Drainage	Ferry	Maintenance Enhancement	Pavement Maintenance	Roadside Appurtenances	Traffic Pavement Markings
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Coordinate major rehabilitation efforts on historic resources with the district environmental personnel and ENV's Historical Studies Branch. When extensive repair and/or replacement are required, use similar materials and design elements to prevent the loss of the feature's integrity.	X	X		X		X			
Exercise caution when performing maintenance activities near historical markers, whether they are themselves are historic resources, or more recent commemorative markers.	X	X	X	X	X	X	X	X	X
 <p>Consult ENV staff for plans and guidance associated with Americans with Disabilities Act (ADA)-compliant alterations to historic picnic areas.</p>		X							
Do not close a historic picnic area due to economic or maintenance concerns without conferring with the district environmental coordinator and cultural resources staff in ENV. A six-step process including public involvement is required.		X							
Coordinate with the appropriate county historical commission chairperson and receive approval from THC before removing or relocating any historical markers in TxDOT ROW. Most marker relocations that retain a marker in close vicinity to its original location are approved.	X	X		X		X	X		
Cease work in the immediate area in the event that evidence of archeological deposits are encountered during Maintenance Program activities and notify the District environmental coordinator who can contact the appropriate individuals to initiate post-review discovery procedures under the provisions of the Programmatic Agreement (PA) and MOU.	X	X	X	X	X	X	X	X	
Train maintenance personnel to identify protected species and species of concern, cultural resources, and inform them of all applicable safety and legal requirements.	X	X	X	X	X	X	X	X	X
Confirm the presence of listed species at or near the project site through pre-maintenance surveys or assume they are present and implement appropriate protection measures.	X	X	X	X	X	X	X	X	X
Minimize impacts to listed species and their habitats by limiting grading or topsoil removal to areas where this activity is absolutely necessary for maintenance activities.	X	X	X	X	X	X	X	X	X
Schedule the most effective amount of personnel and equipment to complete maintenance activities to reduce the time of disturbance to listed species.	X	X	X	X	X	X	X	X	X

Best Management Practice (BMP)	Maintenance Programs								
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Review temporary roadside material storage locations and notify contractors of the areas with potential to support habitat for rare, threatened, and endangered species and of the conservation need to avoid these areas.	X	X	X	X	X	X	X	X	X
Identify problematic ROWs that could benefit from alternative ecological approaches to maintenance activities to reduce erosion or other maintenance program impacts.	X	X	X	X	X	X	X	X	X
Prioritize projects occurring in designated critical habitat, other critical habitat, significant remnant native vegetation, and sensitive managed areas for invasive species removal/revegetation activities.	X	X	X	X	X	X	X	X	X
Before filling depressions at culvert inlets, check for native mussel species and notify TxDOT Environmental Affairs Division (ENV) before proceeding, if native mussels are found.				X					
Develop procedures for relocating mussels found stranded in these puddles back into flowing stream reaches, in accordance with TPWD Proclamation §57.157 regulating mussels and clams.				X					
Avoid use of the 145 non-native invasive plant species identified on http://www.texasinvasives.org/ , in addition to the Federal and State of Texas noxious weed species.	X	X		X		X			
Sterilize equipment for tree trimming between trees in areas affected by surface transferable bacterial, viral, and fungal diseases. Large cuts across roots and cut surfaces remaining on tree trunks or roots.		X				X			
Identify any sensitive habitat areas, including watercourses, streams, and lakes found within the work area prior to beginning Maintenance Program activities and take precautions to avoid impacts to such resources.	X	X	X	X	X	X	X	X	X
									
Do not disturb, destroy, or remove active nests during the nesting season.	X	X		X					
Avoid the removal of unoccupied, inactive nests, as practicable.	X	X		X		X	X		
Prevent the establishment of active nests during the nesting season on TxDOT owned and operated facilities and structures.	X	X		X		X			
Do not collect, capture, relocate, or transport birds, eggs, young, or active nests without a permit.	X	X		X		X			
Limit the use of machinery in habitat that may support ground-nesting birds during the spring and early summer months.	X	X	X	X		X	X	X	X

Best Management Practice (BMP)	Maintenance Programs								
	Bridge	Customer Service	Debris and Spills	Drainage	Ferry	Maintenance Enhancement	Pavement Maintenance	Roadside Appurtenances	Traffic Pavement Markings
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Schedule and conduct maintenance work during off-peak traffic hours when practicable.	X	X	X	X		X	X	X	X
Generate a list of all programmed maintenance work for the Fiscal year (FY) so that it can be reviewed and coordinated with the appropriate resource agencies.	X	X	X	X	X	X	X	X	X
 <p>Use non-attractive vegetation for plantings in the ROW.</p>	X	X		X		X			
Use prefabricated bridge elements and systems to reduce the amount of heavy equipment required and the amount of time required on-site for heavy equipment, causing less disruption to sensitive environments, increasing maintenance personnel safety, and reducing traffic delays.	X								
Avoid the removal of bird nests and casts attached to bridge structures during the nesting season.	X								
Avoid conducting Bridge Program Maintenance activities when nesting birds or bats are present.	X								
Modify timing of maintenance activities to protect bats in bridges, including postponing tree trimming and/or bridge maintenance work until outside of bat season.	X								
Schedule Bridge Maintenance Program activities to avoid egg incubation, juvenile rearing and downstream migration periods of fish.	X								
Properly collect, store, and dispose of all wastes generated during Bridge Program Maintenance activities in approved landfills.	X								
Contain all chemical substances used for bridge maintenance, including paints, sealants, lubricants and epoxies. Use collection mats, such as drop cloths, filter mats, and containment curtains to prevent chemical substances from entering the environment.	X								
Create an inventory of bridges that have lead or asbestos containing paints, so as to identify and ultimately abate these materials from TxDOT's infrastructure.	X								

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 <p>Take special care to ensure debris and dirt is not blown off of the bridge into watercourses, wetlands, floodplains or on to vehicular traffic when cleaning deck and bridge surfaces.</p>	X								
Filter runoff and rinse water prior to discharge when using high pressure water for cleaning.	X	X	X	X	X	X	X	X	X
Use cloth, netting or other materials to catch any debris (i.e. concrete, epoxy, grease, paints, etc.) generated during maintenance practices.	X	X		X		X	X		
Coordinate with ENV and the District Environmental Coordinators prior to grading and blading activities for wildfire management and control.		X							
Train maintenance crews on how to handle hazardous chemicals if used, and encourage them to use them sparingly and only when absolutely necessary.	X	X	X	X	X	X	X	X	X
Ventilate facilities and use fans to create a cross draft when paints, cleaners, etc. are being used.		X							
Wear personal protective equipment whenever handling a hazardous chemical to reduce exposure, which could cause acute or chronic effects.	X	X	X	X	X	X	X	X	X
Limit the use of bleaches and chemical cleaners and ensure toxic substances are not placed in toilets.	X	X	X	X	X	X	X	X	X
Minimize use of salt by reducing salt-to-sand ratio.			X						
Prioritize sand clean-up in areas without sediment collection systems.			X						
Store de-icing agents in covered areas on impermeable surfaces to prevent leaching of these agents into underlying soils and groundwater and to prevent agents from entering surface waters via runoff.			X						
Plow snow in areas that allow vegetation to filter and contain sand.			X						
Treat sand clean-up as part of the emergency: remove sand as a priority in order to remove sediments.			X						
Prioritize sand clean-up efforts to aquatic habitat areas to minimize impacts.			X						

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Contain all chemical substances used for customer service maintenance, including paints, sealants, cleaners, de-icing agents, and sand until such substances are needed.		X							
Remove the bulk of snow and ice prior to the application of de-icing agents, as it reduces the need for salt application.			X						
Develop a salt management plan to minimize salt usage and salt entry into the environment surrounding roads and maintenance facilities.			X						
Minimize the release of salty snowmelt waters from snow storage piles to soils and groundwater by directing runoff to areas less sensitive to impact.			X						
Recycle sweeping materials as practicable and appropriate.			X						
 <p>Undertake work at rest and picnic areas during periods of dry weather as this allows easier control of sediment, and is typically a less sensitive period for fish and wildlife. If the work must be performed during rain, sediment controls must be installed to prevent release of sediment or hazardous substances.</p>		X							
<p>Use only substances approved for use in or near aquatic environments when working near such environments. Consider the following when conducting product procurement for Customer Service Maintenance Program activities (i.e., cleaners for restroom facilities, graffiti removal chemicals, paints, etc.):</p> <ul style="list-style-type: none"> Minimizes exposure to concentrates No ozone depleting substances Recyclable packaging Recycled-content in packaging Reduced bioconcentration factor Reduced flammability Reduced or no added dyes, except when added for safety purposes Reduced or no added fragrances Reduced or no skin irritants Reduced or no volatile organic compounds (VOCs) Reduced packaging 		X							

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 <p>Ensure equipment is operating properly so salt is applied accurately to road surfaces and prevents over-spray.</p>			X						
Store/dispose of removal materials at an appropriate site in an appropriate manner as part of the local material disposal plan. Removed material may be temporarily stored in stable locations to prevent the material from entering wetlands or waterways.	X	X	X	X	X	X	X	X	
Where feasible, schedule sweeping during damp weather, to minimize dust production.			X						
Free clogged scuppers using a steel rod, then sweep material away. A scupper is an opening in the side walls or parapet of a bridge, for purposes of draining water. They are usually placed at or near ground level, and allow rain or liquids to flow off of the side of the bridge, instead of pooling on the deck.			X						
			X						
Use water (as needed) to reduce dust during sweeping.			X						
Sweep and vacuum to removing de-icing abrasives, material from small slides, litter and debris. Sweeping and vacuuming may be implemented anywhere sediment is tracked from off-road maintenance activity sites onto public or private paved roads typically at the points of egress.			X						
Compost sweeper loads full of fallen leaves and other organic materials rather than use classic waste disposal techniques when possible.			X						
Do not load hoppers with street sweepings beyond their capacity.			X						
Where feasible, coordinate crews to follow sweeping/flushing with bridge drainage cleaning.	X		X						

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 <p>Where appropriate and practical, place sediment barriers in site-specific locations along stream routes or direct drainage routes, route sweeping material away from watercourses.</p>			X						
Do not sweep up any unknown substance that may be potentially hazardous. If a substance is known to be hazardous, suspected of being hazardous or cannot be identified, notify the District Maintenance HazMat Manager immediately.			X						
Notify the immediate supervisor and the District Stormwater Coordinator if an illegally dumped substance within the TxDOT ROW has the potential of entering a municipal drain system so that the downstream municipality can be contacted.			X						
Adjust brooms to maximize the efficiency of sweeping operations.			X						
Dispose of waste to a landfill or approved site in accordance with local regulations and solid waste management best management practices. "Clean" materials should be reincorporated back into the program for future reuse.	X	X	X	X	X	X	X	X	
Where possible, recycle abrasives for use in roadside berms instead of putting them into landfills.			X						
Screen regular sweepings, disposing trash and litter only at Texas Commission on Environmental Quality (TCEQ)-permitted landfills.			X		X				
Store materials such that rainfall will not cause any runoff (contaminated runoff could impact other areas on site, wetlands, or surface waters.) Store sweepings to minimize the potential for site impacts from road waste contaminants. Storage on an impermeable surface with leachate collection and/or protection from rainfall is preferable. Tarps may be used for cover, or berms or retention ponds may be used to contain runoff.			X						
Collected and screen and size winter road sand for reuse. If sand washing is required to remove excess fines, minimize site impacts, collect the fine particles, and prevent runoff. (Pretreatment by settling or flocculation then permitted discharge to sanitary sewer is a sound practice).			X						

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Obtain a site-specific permit if composting over 25 tons per year.	X	X	X	X	X	X	X		
Determine if a state solid waste permit is required for storage, processing and reuse of materials other than road sand and clean fill.	X	X	X			X	X		
Screen materials collected from areas known to have low impacts from road waste contaminants for trash and reuse it as low grade fill in TxDOT-owned and controlled areas. During storage and processing, fines should not be allowed to become airborne.			X						
Sidecast minimally contaminated sweepings onto non-ditched shoulders if these roadsides are not adjacent to surface waters, wetlands, or stormwater management systems with discharge to surface waters, wetlands or the subsurface.			X						
Slow sweeper and broom speed, and change the angle of the broom to prevent sweepings from leaving the road shoulders and entering the stream if the road is parallel to a water body that is less than 25 feet from the fog line.			X						
Label all tanks and piping.			X		X				
 Secure valves on storage tanks in the closed position and/or lock dispensers when not in use.			X		X				
Post warning signs and/or operating instructions near storage tanks.			X		X				
Protect storage tanks from vehicle impact.			X		X				
Use overfill indicators and/or overfill protection on fuel tanks.			X		X				
Situate tanks on a foundation if site appropriate. It is recommended that tanks be placed on an impervious surface to minimize opportunity for subsurface contamination in the event of a spill.			X		X				
Provide secondary containment in areas where spills, leaks, or ruptures could enter nearby creeks or streams.			X		X				

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 <p>Only perform maintenance ditch cleaning in areas where ditch function is impaired. The ditch length, width, and height should be dredged back to its original dimensions.</p>				X					
In general, clean, repair or replace culverts and ditches only during periods of low water flow and not during intense rainfall events.				X					
Conduct dredging during low water periods and during dry weather, avoiding rainfall events.				X	X				
Evaluate and modify, where feasible and appropriate, existing ditch slopes to trap sediments, and support development of vegetation.				X					
Use BMPs identified in the local Integrated Vegetation Management Plan.	X	X	X	X	X	X	X	X	
Retain existing vegetation when at all possible, especially along the ditch slopes to maintain stability.	X	X	X	X	X	X	X	X	X
Consider excavating only the first three quarters of the ditch and retaining vegetation in the remainder.				X					
Dispose of removed material above the bank line and not in any waterway or wetland. Recycle excavated material when feasible.	X	X	X	X	X	X	X	X	
Have adequate siltation control measures in place before dredging operations begin. Use erosion control devices such as check dams, silt fences, and other acceptable techniques when the potential exists to have sediment or other materials enter a Water of the State. Install check dams on steep slopes, as necessary, to slow water velocity reduce erosion and sedimentation. Consult with TxDOT ENV if silt devices are inadequate to filter water prior to draining to watercourses.				X	X				
Seed and mulch cleaned ditches at the end of each work day. Monitor daily for subsequent erosion until area is stable. Repair as necessary.				X					

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Remove temporary conveyances completely as soon as the surrounding drainage area has been stabilized or at the completion of construction.				X					
Inspect the measure after every storm and repair the dike, flow channel, and outlet, as necessary. Approximately once a week inspect the measure and make repairs if needed. Damages caused by construction traffic or other activity must be repaired before the end of each working day.				X					
Check the channel lining, embankments, and bed for erosion and accumulating debris and sediment buildup. Remove debris and repair linings and embankments as required.				X					
Employ energy dissipaters if channelized flow is too strong for the surrounding environment. If vegetation or rock lined ditches reduces the ditch flow capacity, the road may be endangered.				X					
 <p>When feasible, begin dredge at fixed flow elevation points (i.e., culvert inlets/outlets, catch basin inlets, etc.).</p>				X	X				
Develop native material curbs or berms using a grader. Vegetation of these berms will enhance the durability of these constructed features. Hardened curbs such as asphalt or concrete will require a construction crew and an engineer.				X					
Do not heel or pull the ditch with a grader, except when absolutely necessary. The softest approach to developing vegetated ditches is preferred.				X					
Create properly sized roadside ditches and have adequate relief drain spacing to carry runoff from moderate storms.				X					
Establish a ditch gradient between 2 and 8 percent slopes for better performance. Slopes greater than 8 percent provide runoff waters with too much momentum and erosive force and will require more ditch relief. Slopes of less than 2 percent drain water too slowly, or not at all.				X					
Avoid changes or increases in the material profile, whenever possible.	X	X	X	X	X	X	X	X	

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<ul style="list-style-type: none"> • Deck Sweeping • Joint & Bearing Cleaning • Paint Removal & Application • Debris Removal & Channel Clearing • Power Washing & Sand Blasting • Channel Stabilization • Pest Control • Structural & Other Repairs 	<ul style="list-style-type: none"> • Driveway entrances within the ROW • Sewer treatment plants & storm water systems at rest areas • Rest & picnic areas • Roadside parks • Access to historical markers & sites • Vehicle pull outs & parking areas • Restrooms at ferry landings • Adopt-a-Highway Program • Providing traffic assistance 	<ul style="list-style-type: none"> • Patrols for debris • Conducts spot litter pick-up & disposal • Removes & disposes of litter • Conducts hand & street sweeping • Sweeps ice rock • Removes & disposes of illegal dumpsites • Removes illegal signs on ROW • Removes encroachments • Manages hazardous material cleanup 	<ul style="list-style-type: none"> • Maintains ditches • Reshapes ditches • Repairs or stabilizes slopes • Maintains culverts & storm drains • Maintains storm water pump stations • Repair & installs riprap • Maintains or implements storm water pollution protection plans (SW3P) 	<ul style="list-style-type: none"> • Dredging • Oil & fuel storage & repair • Re-fueling • Other chemical storage • Grey water disposal • Maintain public area • Deck sweeping • Minor routine ship maintenance • Maintain facility equipment • Contracted maintenance 	<ul style="list-style-type: none"> • Adding a shoulder • Adding handicap ramps • Adding sidewalks after construction • Adding turnouts • Inspecting driveways • Inspecting utilities • Maintaining landscapes • Maintaining boat ramps 	<ul style="list-style-type: none"> • Maintains base and sub-grade of travel lanes & shoulders • Maintains flexible (asphaltic) surfaces of travel lanes & shoulders • Maintains rigid (concrete) pavement of travel lanes & shoulders • Stores pavement materials • Cleans up work site & maintenance equipment 	<ul style="list-style-type: none"> • Barriers & concrete appurtenances • Guardrails & end treatment systems • Mailboxes • Cattle guards • Bridge rails • Access controls • Delineators • Vehicle attenuators • Small & large signs • Flashing beacons • Illumination system • Coordinated & isolated traffic signals • Traffic management systems • Traffic control plans 	<ul style="list-style-type: none"> • Paint & Bead Striping • High Performance Striping • Specialty Markings • Raised & Reflective Pavement Markers • Removal of Pavement Markers 	
 <p>Place riprap within in-water work periods (seasonal habitat restrictions are complied with), in non-emergency situations.</p>	X			X	X				
Investigate and utilize natural materials (wood, brush, boulders, etc.) on submerged banks, abutments and creek beds when stabilizing or rehabilitating a waterway.				X					
Evaluate existing altered drainages and modify them, when feasible and appropriate, to simulate natural drainage features (e.g., step-slope cross-section instead of trapezoidal cross-section, meander paths instead of straight runs, natural creek bed surface instead of impermeable surface materials).				X					
Avoid the use of armor (gabion blankets and sacks, concrete riprap, and steel sheet pilings) in natural waterways, wherever feasible.				X					
When using armor, always incorporate a natural material cover, such as multiple layers of sod over soil and brush blankets to stabilize the shoreline and to reestablish a vegetated bank.				X					
Consider use of bioengineering solutions where practicable. Practicable use areas include areas not shaded by bridge elements, outside of the two-year floodplain where success is probable and safety of the structural elements is assured.	X			X					
Coordinate any erosion repair activities (response to and cleanup of erosion problems, not the erosive action itself), which cause significant changes in the topography or vegetation within the riparian management area with TxDOT ENV and/or other regulating agencies. Also, coordinate when placing riprap that is in addition to existing conditions and within the two-year floodplain of Waters of the State.	X	X		X	X	X	X		
Use erosion control methods in a timely manner, including seeding and mulching specific areas with non-invasive species, installing silt fences, and installing other devices as appropriate.	X	X		X	X	X	X	X	
Take precautionary measures on erodible areas (chicken wire, chain link, rock matting) where eroding areas are identified, and where precautionary measures can be successfully and safely applied.	X	X		X	X	X	X	X	

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<p>Inspect all culverts at least annually to assure proper functioning. Summary reports should be completed for each crossing evaluated. An annual report should be compiled for all stream crossings and submitted to the resource agencies. A less frequent reporting schedule may be agreed upon for proven stream crossings. Any stream crossing failures or deficiencies discovered should be reported in the annual cycle and corrected promptly addressed.</p>				X					
<p>Ensure timely inspection and removal of debris for culverts to continue to effectively move water, fish, sediment, and debris.</p> 			X	X					
<p>Avoid disturbing beaver dams, whenever feasible, particularly when the dam supports an offsite wetland or when the dam does not cause drainage or other issues that could create safety hazards or accelerate the deterioration of transportation infrastructure.</p>				X					
<p>Instead of replacing existing smaller culvert pipes with oversized types, consider other ways to discourage beaver colonization such as building a horseshoe shaped fence around the upstream side of the culvert to prevent the beaver from damming the culvert entrance, installing beaver baffles, Beaver Stop guards, or beaver pipes..</p>				X					
<p>When installing culverts, avoid creating a depression at the inlet. A depression that creates a "pond" at the culvert inlet may encourage beavers to expand that pond.</p>				X					
<p>Ensure TxDOT personnel and contractors use humane techniques to discourage beaver re-establishment of dams where roadway safety is an issue.</p>				X					
<p>Do not install multiple culvert pipes when installing larger pipes is required. Smaller pipes have a much greater probability of being plugged and this probability is not reduced with multiple pipes. In addition, debris collects and is trapped between multiple pipes, which may encourage beavers to expand on this debris and plug the culverts.</p>				X					
<p>After a culvert has been oversized, do not place a grate or guard in front of the culvert. This will only encourage beavers to plug the culvert's inlet. Once a culvert has been oversized, it should be observed periodically for signs of beaver plugging. If beavers attempt to plug an oversized culvert, consider integrating other techniques such as trapping, deepwater fencing, or water level control devices.</p>				X					

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Understand that altering stream characteristics is generally unrealistic for discouraging beaver presence along roadsides. Large-scale removal of vegetation may be a viable option in a limited number of situations such as where the ROW is large enough (state or interstate highways), but caution must be exercised when removing streamside vegetation because of possible detrimental effects to other wildlife species and the possibility that stream erosion may occur. If possible, regularly remove trees and shrubs preferred by the beaver to prevent vegetative regeneration.				X					
At all times, work cooperatively with landowners when resolving beaver damage problems. When working with landowners to secure permission for a trapper, the objectives for removing the beaver from the roadside area must be made very clear to the trapper. Trap at sites where beavers have a history of plugging very large culverts (inlet opening area >38 feet) or when oversizing is not an option.				X					
Trap established family groups of beavers for one or two years after oversizing a culvert to remove those with experience in culvert plugging.				X					
Make a commitment to continual maintenance in situations where a water level control device can be installed (and is desired).				X					
When impounded water from an upstream or downstream beaver dam is damaging a road, employ regulated trapping as the most efficient and cost-effective solution.				X					
 <p>At all times, observe state wildlife agency regulations concerning beaver trapping, installation of water level control devices, and beaver dam removal. Contact state wildlife offices for questions concerning conservation law.</p>				X					
Document the size of the culvert inlet, stream gradient, and percentage of open area. If money is allocated for proactive replacement of culvert pipes, rank sites based on the probability of beaver presence.				X					
When cleaning boat ramp surfaces, take special care to ensure debris and dirt is not blown off of the boat ramp into watercourses, wetlands, or floodplains.						X			

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<p>Establish adequate siltation control measures before maintenance begins. Use erosion control devices such as check dams, silt fences, and other acceptable techniques when the potential exists to have sediment or other materials enter a Water of the State. Install check dams on steep slopes, as necessary, to slow water velocity reduce erosion and sedimentation. Consult with TxDOT ENV if silt devices are inadequate to filter water prior to draining to watercourses.</p> 	X	X	X	X	X	X	X	X	
Contact environmental support staff before placing excess material to widen the shoulders or smooth out the slopes.						X	X	X	
Install check dams to protect sensitive resources, when appropriate.	X	X	X	X	X	X	X	X	
Avoid using machinery in wet and/or inundated areas to prevent rutting and/or turbidity.	X	X	X	X	X	X	X	X	X
 <p>Do not handle any unknown substance that may be potentially hazardous. If a substance is known to be hazardous, suspected of being hazardous or cannot be identified, notify the District Maintenance HazMat Manager immediately.</p>	X	X	X	X	X	X	X	X	X
Where appropriate and practical, place sediment barriers in site-specific locations along stream routes or direct drainage routes, prior to disturbing soil and route material away from watercourses.	X	X	X	X		X	X	X	
Prior to excavating soil besides the roadway, contact utility companies to avoid hitting any buried utilities within the ROW.	X	X	X	X		X	X		
Minimize adverse effects on plant and animal populations from dredging and dredged material disposal or placement by avoiding changes in water current and circulation patterns that would interfere with the movement of animals.				X	X				

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Comply with the requirements under the Texas Coastal Management Plan (CMP) when disposing of or relocating dredged material. The CMP requires that dredging and the disposal and placement of dredged material shall avoid and minimize adverse effects to coastal waters, submerged lands, critical areas, coastal shore areas, and Gulf beaches to the greatest extent practicable. Dredging and dredged material disposal and placement will not cause or contribute to violation of any applicable surface water quality standards established under the CMP.				X	X				
Comply with regulations governing water quality when performing Ferry Maintenance Program activities.					X				
Minimize adverse effects on water quality from dredging and dredged material disposal and placement by controlling the location and dimensions of the activity; by complying with applicable standards for sediment toxicity; by controlling the manner in which material is dispersed; and by adapting technology to the needs of each site.				X	X				
Select sites or manage discharges to prevent or avoid creating habitat conducive to the development of undesirable predators or species that have a competitive edge ecologically over indigenous plants or animals to minimize adverse effects.	X	X	X	X	X	X	X	X	X
Time dredging and dredged material disposal or placement activities to avoid spawning or migration seasons and other biologically critical time periods to reduce potential impacts to animal populations.				X	X				
 Implement measures to achieve additional emission reductions. Examples of measures include, but are not limited to, operating practices and measures, including application of methods to reduce ferries main engine and barge pump engine idling time; modifications to the ferries engine and support equipment, including adjustments to engine timing, early integration of new marine diesel engines or the retrofit of existing marine diesel engines; early use of regulated fuels as they are made available; and/or other maintenance measures consistent with the ferry support operations.					X				

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Retain existing vegetation whenever possible.	X	X	X	X	X	X	X	X	X
Use general good housekeeping practices and do not leave waste behind on the job site.	X	X	X	X	X	X	X	X	X
Use care to avoid spills, leaks and drips of equipment and cleaning fluids when cleaning tools, servicing equipment or doing routine maintenance.	X	X	X	X	X	X	X	X	X
Consult with NMFS regarding potential impacts of actions on Essential Fish Habitat (EFH), if activities may adversely impact EFH. TxDOT should comply with all EFH regulations.	X	X	X	X	X	X	X	X	X
Use pervious concrete whenever practical and feasible.							X		
Do not wash out concrete trucks into storm drains, open ditches, streets or streams.							X		
Do not allow slurry residue to enter storm drains or watercourses; it should be vacuumed and disposed.							X		
 <p>Maintain the lowest possible temperature of asphalt during paving application.</p>							X		
Construct temporary concrete washout facilities with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations.							X		
Use plastic lining material with a minimum of 10 mil polyethylene and make sure it is free of holes, tears or other defects that would compromise the impermeability of the material.							X		
Clean washout facilities or construct new facilities once the washout is 75% full.							X		
Contain liquid wastes in a controlled area, such as a holding pit, sediment basin, roll-off bin, or portable tank.							X		
Ensure that containment devices are structurally sound, , leak free and of sufficient quantity or volume to contain all liquid wastes.							X		

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Monitor asphalt mix temperature to ensure conformance with specifications.							X		
Minimize exposure to asphalt fumes for workers present but not directly involved with paving maintenance.							X		
Frequently check paver ventilation systems designed to remove asphalt fumes from the screed to ensure proper operation.							X		
Exhaust tail pipe and ventilation stacks above the height of the paver operator.							X		
Consider unfavorable weather conditions as a potential problem.	X	X	X	X	X	X	X	X	X
Consult with Regional Safety Representative regarding the need for personal protective equipment.	X	X	X	X	X	X	X	X	X
Evaluate safety conditions for workers with asphalt fume-related symptoms and, if necessary, contact the Regional Safety Representative regarding the need to modify operations.							X		
Use as little solvent as possible to lubricate, not clean, the surfaces and moving parts of the paver.							X		
Spray solvent on the equipment rather than pour it, during lubrication.							X		
Prevent solvent from puddling under the equipment. If puddles form, they could wash into a stream during a rainfall. Use absorbent pads to catch any excess during application.							X		
If absorbent pads are used, do not leave them on the ground beneath the paver. Allow the solvent to drip off, then pick up the pads and store them for future re-use and disposal.							X		
 <p>Carry a spill kit, Material Safety Data Sheets (MSDS) and emergency phone numbers for use in the event of a significant spill in vehicles carrying fuel and other maintenance fluids.</p>	X	X	X	X	X	X	X	X	X
Properly dispose of pads contaminated with a "listed hazardous waste solvent" as hazardous waste.							X		

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Store pads in closed containers between uses and before disposal.							X		
Train drivers of these vehicles in how to handle and report a spill.	X	X	X	X	X	X	X	X	X
At the end of the work shift, remove all the excess asphalt from the paver that you can, using pry bars and other hand tools.							X		
Execute the proper course of action with asphalt removed from the paver. Either incorporate it into the project, scarify and blend it into the stabilized shoulder if practical, or pick it up and haul it back to the plant.							X		
Do not dispose of asphalt over a hill, in a body of water, or other non-permitted disposal area.							X		
Park the paver in an area that is not near a stream or a wetland or a ditch that flows directly into a nearby stream or wetland. If you cannot park the paver away from these areas, use absorbent pads under the paver to catch drips of solvent.							X		
When cleaning tools, servicing equipment or doing routine maintenance, use care to avoid spills, leaks and drips of equipment and cleaning fluids.	X	X	X	X	X	X	X	X	X
Maintain equipment so as to prevent leaks of petroleum products.	X	X	X	X	X	X	X	X	X
Covered or clean up tack over-spray during construction.							X		
 <p>Schedule pavement marking activities for dry weather. Do not conduct painting or traffic marking activities during rain events.</p>							X		
Replace solvent-based alkyd traffic paints with waterborne paints that contain 80 percent less organic solvents and with epoxy paints that release no solvent vapors.									X

Best Management Practice (BMP)	Maintenance Programs								
	Bridge	Customer Service	Debris and Spills	Drainage	Ferry	Maintenance Enhancement	Pavement Maintenance	Roadside Appurtenances	Traffic Pavement Markings
	<ul style="list-style-type: none"> Deck Sweeping Joint & Bearing Cleaning Paint Removal & Application Debris Removal & Channel Clearing Power Washing & Sand Blasting Channel Stabilization Pest Control Structural & Other Repairs 	<ul style="list-style-type: none"> Driveway entrances within the ROW Sewer treatment plants & storm water systems at rest areas Rest & picnic areas Roadside parks Access to historical markers & sites Vehicle pull outs & parking areas Restrooms at ferry landings Adopt-a-Highway Program Providing traffic assistance 	<ul style="list-style-type: none"> Patrols for debris Conducts spot litter pick-up & disposal Removes & disposes of litter Conducts hand & street sweeping Sweeps ice rock Removes & disposes of illegal dumpsites Removes illegal signs on ROW Removes encroachments Manages hazardous material cleanup 	<ul style="list-style-type: none"> Maintains ditches Reshapes ditches Repairs or stabilizes slopes Maintains culverts & storm drains Maintains storm water pump stations Repair & installs riprap Maintains or implements storm water pollution protection plans (SW3P) 	<ul style="list-style-type: none"> Dredging Oil & fuel storage & repair Re-fueling Other chemical storage Grey water disposal Maintain public area Deck sweeping Minor routine ship maintenance Maintain facility equipment Contracted maintenance 	<ul style="list-style-type: none"> Adding a shoulder Adding handicap ramps Adding sidewalks after construction Adding turnouts Inspecting driveways Inspecting utilities Maintaining landscapes Maintaining boat ramps 	<ul style="list-style-type: none"> Maintains base and sub-grade of travel lanes & shoulders Maintains flexible (asphaltic) surfaces of travel lanes & shoulders Maintains rigid (concrete) pavement of travel lanes & shoulders Stores pavement materials Cleans up work site & maintenance equipment 	<ul style="list-style-type: none"> Barriers & concrete appurtenances Guardrails & end treatment systems Mailboxes Cattle guards Bridge rails Access controls Delineators Vehicle attenuators Small & large signs Flashing beacons Illumination system Coordinated & isolated traffic signals Traffic management systems Traffic control plans 	<ul style="list-style-type: none"> Paint & Bead Striping High Performance Striping Specialty Markings Raised & Reflective Pavement Markers Removal of Pavement Markers
Develop paint handling procedures for proper use, storage, and disposal of paints.									X
Transfer and load paint and hot thermoplastic away from storm drain inlets.									X
Provide drop cloths and drip pans in paint mixing areas.									X
Properly maintain application equipment.									X
Street sweep thermoplastic grindings. Yellow thermoplastic grindings may require special handling as they may contain lead.									X
Properly dispose of paints containing lead or tributyltin, which are considered a hazardous waste.									X
Use water based paints whenever possible. If using water based paints, clean the application equipment in a sink that is connected to the sanitary sewer.									X
Properly store leftover paints if they are to be kept for the next job, or dispose of properly.									X
Require all personnel to complete a safety training program that meets state requirements prior to removing yellow thermoplastic and yellow painted traffic stripe and pavement marking.									X
 <p>Immediately contained and collect all removed residue, including dust, where grinding or other approved methods are used to remove yellow thermoplastic and yellow painted traffic stripe and pavement marking. Sweeping equipment should not be used. Collection should be by a high efficiency particulate air (HEPA) filter equipped vacuum attachment operated concurrently with the removal operations or other equally effective approved methods.</p>									X
Store removed yellow thermoplastic and yellow painted traffic stripe and pavement marking residue in labeled covered containers, conforming to state provisions. The containers should be a type approved by the United States Dept of Transportation (DOT) for the transportation and temporary storage of the removed residue. The containers should be handled so that no spillage will occur. The containers should be stored in a secured enclosure at a location within the project limits until disposal.									X

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