PART 1

Regional Program Elements

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Part 1
Regional Program Elements
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There are ten program elements in the Regional Road Maintenance ESA Program. Those agencies seeking coverage under the 4(d) Rule must comply with each of these program elements:

Element 1. **Regional Forum:** A Regional Forum has been created from participating agencies. The Regional Forum provides a regional meeting for program discussion, coordination, and adaptive management.

Element 2. **Program Review and Approval:** The program review and approval process will require that each agency participating in the Regional Program comply with the ten program elements. The Washington State Department of Transportation (WSDOT) Highways and Local Programs (H&LP), Olympia Service Center, or Regional Forum will review each agency's Part 3 Application to determine whether or not it includes all program elements. **The Services will issue approval for each agency to receive a 4(d) take limit (NMFS), special 4(d) rule, and/or a take exemption (USFWS) to receive a reduction or elimination of the prohibition on take of threatened species (USFWS).**

Element 3. **Training:** Courses will include the topics of basic ESA, design, biological review, permit activities, maintenance BMPs, and monitoring work activities. The WSDOT Technology Transfer (T2) Center, UW Transpeed, or WSDOT Operations & Maintenance Program in conjunction with the Regional Forum, will develop a curriculum for training maintenance employees in the implementation of the Regional Program. The curriculum may be taught by T2 instructors, WSDOT trainers or other trainers.

Element 4. **Compliance Monitoring:** Compliance monitoring will take place at several levels: local agency supervisory staff, local agency permitting authorities and state, and federal permitting authorities evaluating BMPs for use and implementation. Each local agency will establish a formal compliance monitoring program for monitoring BMP implementation and any monitoring that is part of various research projects.

Element 5. **Scientific Research:** Case studies in the field, as well as literature research done by others, are included in this program element. The scientific research element will serve to verify effectiveness of BMPs and update BMPs based on the latest technologies.

Element 6. **Adaptive Management:** The adaptive management philosophy will apply to all ten elements of the Regional Program. The training, research, biological data collection, and program monitoring elements are the basis for adaptive management.

Element 7. **Emergency Response:** This element provides a framework under which agencies can operate during emergencies.

Element 8. **Biological Data Collection:** This element includes habitat location information within the ROW and development of a process to train and alert staff where the *Guidelines* need to be utilized.

Element 9. **Biennial Reports:** The Regional Forum will provide biennial (every two years) reports to the Services. Biennial Reports will include a review of the ten program elements, updates on research, recommended BMP changes, and recommended updates on each program element.

Element 10. **Best Management Practices (BMPs) and Conservation Outcomes:** Under the Regional Program, BMPs and desired conservation outcomes have been developed for road maintenance activities. The Regional Forum will annually review and update the BMPs. Local agencies and the Services will review the changes the Regional Forum recommends for adoption.

Program Element 1:
REGIONAL FORUM

The Regional Forum will provide a regional meeting in which information and experiences can be shared to improve the Regional Road Maintenance ESA Program. Each agency seeking a limit, reduction, or elimination of the take prohibition by means of this Regional Program, will participate in the Regional Forum.

The role of the Regional Forum is the sharing of information. Participating agencies will report to the Regional Forum experiences in program implementation, including, but not limited to, the following:

- Hands-on crew experiences with various BMPs under various conditions.
- Discovery of new products or BMP inventions and applications.
- Results of scientific research and case studies.
- Feedback on training.

REGIONAL FORUM MEMBERS

Regional Forum members shall have road maintenance knowledge and technical expertise to address Regional Road Maintenance ESA Program issues, as well as the authority to implement program changes. It is understood that program expansions or new program initiatives will have to go through each agency's budget approval process as well as review and approval by the Services. Using the adaptive management process, the Regional Forum will recommend program changes. Program modifications that could affect an individual agency's policies, budget, or level of road maintenance service will be taken back to the agency's policy makers for review and approval. To ensure that policy and budget issues are adequately addressed in individual agencies, Regional Forum members must occupy positions in their own road maintenance organizations with the authority to formally request budget or policy initiatives within their respective agency.

For overall changes to the Regional Program, the Regional Forum's function is advisory. The final approval authority for individual agency budget changes resides with the executive and legislative branches of participating local governments. The Services will have final approval authority for changes to the Regional Program. If the Services raise no objections to program changes, the limit, reduction, or elimination of the take prohibition would then apply to the revised program.

Formal revisions to the Regional Program will be suggested on an as-needed basis, based upon review of adaptive management information. At a minimum, the overall program will be reviewed every two years. (See Program Element 9, Biennial Reports.)

Once the Regional Program has been fully implemented in a particular agency, changes to the program will not necessarily (or even likely) result in changes to that agency's policies or costs. The program is outcome based, allowing individual agencies to select from a menu of options to achieve the desired outcome. (See Program Element 10, BMPs and Conservation Outcomes.)

ROLES AND RESPONSIBILITIES

The primary role of the Regional Forum is to share information, review, evaluate, and modify the Regional Program. The Regional Forum will engage in adaptive management to provide for ongoing review and to evaluate recommended program changes. The Regional Forum will meet on a quarterly basis, with additional meetings scheduled to address specific issues as needed. In the quarterly meetings, Adaptive Management reports from each agency will be reviewed and discussed. The Regional Forum will make recommendations on program revisions and changes to the BMPs.

To assist Regional Forum members in the adaptive management process, agency environmental and engineering staff, as well as consultants, will be called upon as needed. Agency environmental staff, as well as consultants, will be used to evaluate data relating to this program (in particular BMPs and case studies). Technical staff will make recommendations that will be folded into the adaptive management process.

The Regional Forum will produce a quarterly newsletter to be distributed to local agencies that participate in the Regional Forum, as well as the Services. The newsletter will also be made available to others and will serve the following functions:

- Share information gathered from scientific research and case studies.
- Troubleshoot BMPs based on a variety of field conditions.
- Notify agencies of BMP training programs.
- Notify agencies of future meetings.
- Notify agencies of changes to the Regional Program.

COMMITTEES

Technical committees will be (or have been) formed as needed to develop and implement detailed work programs for specific Regional Program elements. The committees will be formed from the members of the Regional Forum, or their appointees, and will be under the direction of the Regional Forum. The following committees have been formed:

1. Program Review and Approval.
2. Regional Program Training. (This committee has an aggressive work program for developing and implementing a statewide training program.)
3. Compliance Monitoring.
4. Scientific Research and Case Studies.
5. Interdisciplinary 4(d) Coordination.
6. Part 3 Framework.
7. Stormwater.
8. Biological Review.
9. Interagency.

The committees will identify key decision points in each program. They will schedule Regional Forum briefings and committee meetings as needed. The Services will be notified and given a comment and approval period prior to any program changes.

Program Element 2:
PROGRAM REVIEW AND APPROVAL

Agencies seeking a take limit from NMFS, a special 4(d) rule and/or a Section 7 exemption to receive a reduction or elimination of the prohibition on take of threatened species from USFWS must comply with the ten Regional Program elements. The ten program elements provide the basic umbrella for a Regional Road Maintenance ESA Program. Each agency will implement its own Part 3 Application within the framework of the Regional Program, according to its own organizational structure, resources, and labor contracts.

PROCEDURES FOR PART 3 APPLICATION BY LOCAL AGENCIES

Each agency desiring a limit, reduction, or elimination of the take prohibition on threatened species for its routine road maintenance activities prepares a Part 3 Application. The Part 3 Application is the plug-and-play component of the Regional Program and allows an agency to "plug" into the Services-approved Parts 1 and 2 of the Regional Program. The Part 3 Application is therefore a commitment that an agency will implement Parts 1 and 2 of the program. The Part 3 Application is presented in Part 3 of the *Guidelines*. The application contains the following four sections:

- ***Section 1***: *Letter of Commitment.* This section is a letter of commitment requesting the Services to approve plug-and-play for an agency to use Parts 1 and 2 of the Regional Program to receive a take limit under the NMFS Salmon and Steelhead 4(d) rule, special 4(d) rule, and/or section 7 take exemption (provided through the incidental take statement of a biological opinion) through the USFWS.
- ***Section 2***: *Compliance with Part 1 and Part 2.* This section contains the ten program elements in the Regional Program. Agencies must commit to complying with all Regional Program elements at both the regional and local levels to obtain a take limit under the NMFS Salmon and Steelhead 4(d) rule, special 4(d) rule, and/or section 7 take exemption (provided through the incidental take statement of a biological opinion) through the USFWS.
- ***Section 3***: *General Procedures.* This section contains the general procedures of an agency. It outlines organizational structure and agency processes for maintenance selection, BMP selection and implementation, checklists, and adaptive management.
- ***Section 4***: *Exceptions from Regional Program.* This section contains any exceptions from the Regional Program including the following:

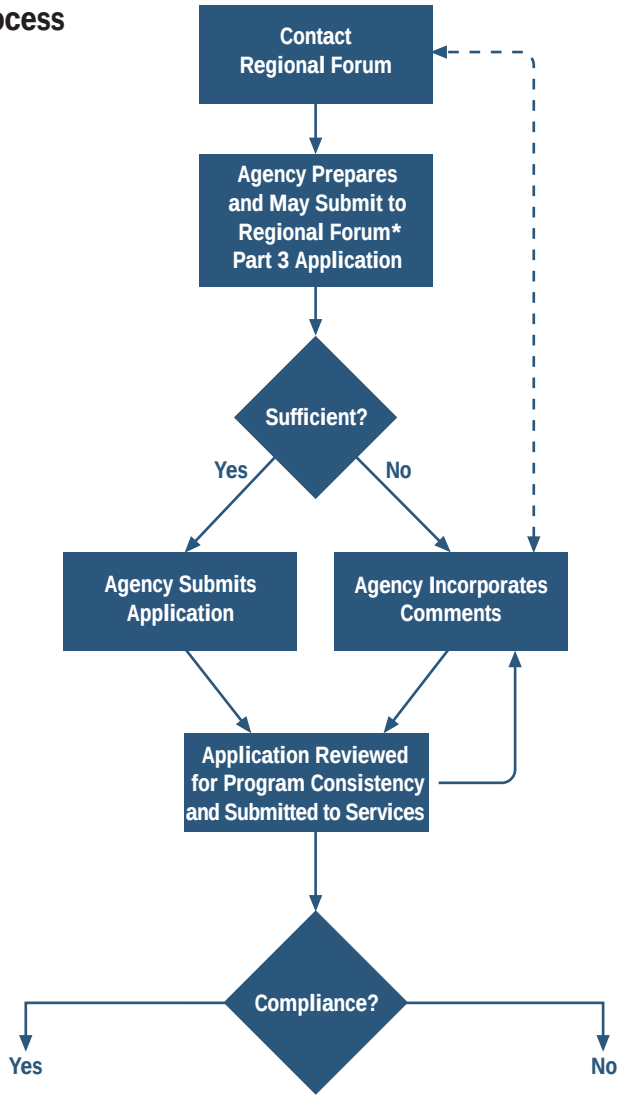
- Any agency programs **not** included in the Regional Program.
- Any deviations.
- Any additional maintenance categories not listed in Part 1 of the *Guidelines.*
- Checklist process(es) if they differ from those in the *Guidelines.*
- Any additions or changes outside of the *Guidelines*.

The Regional Forum has developed a Program Review and Approval Committee to help agencies through the Part 3 Application process. The Services determine final approval of the Part 3 Application. Regional Forum and WSDOT HL&P review are advisory only. The final approval authority for an individual agency resides with the executive and legislative branches of participating local governments. Figure 8 shows the steps that an agency will need to follow to submit their Part 3 Application under the Regional Program. As an agency prepares its Part 3 Application, the agency may seek advice and assistance from the Regional Forum. The agency may also submit its Part 3 Application to the Review and Approval Committee for preliminary review. The agency's Part 3 Application will be referred to H&LP or the Regional Forum to review it for consistency with the Regional Program. If the Part 3 Application complies with the Regional Program, H&LP or the Regional Forum submits the Part 3 Application to the Services for final approval of the program. The flowchart on the following page (Figure 8) shows the requirement that exceptions contained in Section 4 of the Part 3 Application will be evaluated by the Services to determine if a separate, agency-specific biological review is required.

The Regional Program provides a framework for development, review, and submittal processes for Part 3 Application. Agencies should contact the Regional Forum for assistance reviewing the Regional Program and understanding it before starting their Part 3 Application process. (A training course, "ESA 100 Briefing for Decision Makers," includes this program review.)

Part 3 Application Process

Figure 8



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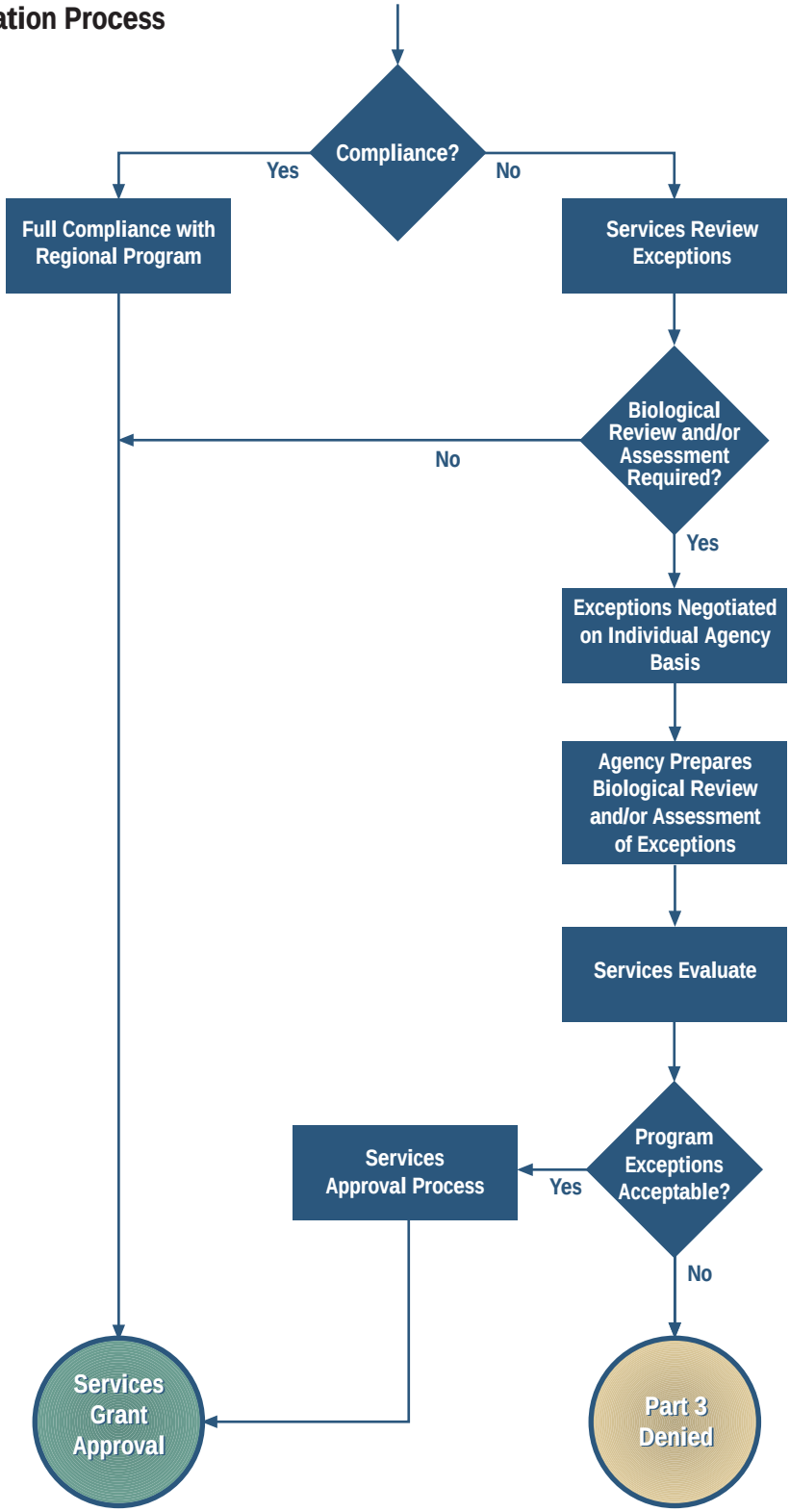
Part 3 Application Process

Figure 8 continued



The Review and Approval Committee can assist agencies in developing their Part 3 Application. The Committee will review a Part 3 Application and answer agency questions about the Part 3 framework. The Part 3 Application, when completed by the agency, may be reviewed by the Regional Forum or the WSDOT Highways and Local Program (H&LP) review process.

WSDOT will review the Part 3 Application to ensure it is complete and includes all four sections. If the application is in compliance, WSDOT will pass it on to the Services with a letter of compliance. For more detail on WSDOT H&LP's role in screening Part 3 Applications see Appendix B.

DISPUTE RESOLUTION

Dispute resolution is available for applications that are incomplete or inconsistent with the framework for Part 3. WSDOT H&LP will return the application to the agency with a letter of deficiencies for correction. While an agency may elect to pass the application onto the Services, the letter of deficiencies must be included for the Services' review and approval. The Services determine final approval of the application. The Regional Forum and H&LP review are advisory only. The final approval authority for an individual agency resides with the executive and legislative branches of participating local governments.

If upon review of an individual agency's Part 3 Application, H&LP determines an application is not in compliance with the *Guidelines*. H&LP will provide a detailed description of Part 3 Application deficiencies to the applicant agency. If the applicant agency is unable to resolve the deficiencies to the satisfaction of H&LP, the agency has two options:

1. The applicant agency may elect **not** to submit a Part 3 Application to the Services. In such case, H&LP will not forward the Part 3 Application to the Services and will return all documentation to the applicant.
2. The applicant agency can request that H&LP submit the Part 3 Application to the Services. Any such submittal shall contain a detailed description of deficiencies as identified by H&LP, as well as a cover letter from the applicant agency stating their case. The final decision to approve an individual agency's Part 3 Application rests with the Services.

Program Element 3: TRAINING

Training is one of the most critical elements of the Regional Program. Training will initially focus on the BMPs to ensure crews, supervisors, engineers, and environmental staff are appropriately trained to effectively implement BMPs. New employees who have a role in implementing the Regional Program will be trained in areas for which they are responsible.

The two primary goals of training are to ensure staff 1) understand the Regional Road Maintenance ESA Program, and 2) are aware of their roles and responsibilities for field work, technical support, permits, and implementation. Training will be conducted with an adaptive management philosophy. That means future needs are addressed as questions and issues arise during program implementation.

WSDOT H&LP administers a statewide transportation management, engineering, operations, and road maintenance training program. Regional Program training will be folded into the existing WSDOT Technology Transfer (T2) Center, UW Transpeed, or WSDOT Training Program in conjunction with the Regional Forum Training Program. A Regional Program Training Committee has been formed and reached agreement with T2 staff on roles and responsibilities.

Training will be accomplished with both classroom and "train-the-trainer" sessions. The sessions will be developed and presented by either T2 Center instructors, WSDOT Trainers or agency staff (who have received the appropriate train-the-trainer training). Training will often be customized for the target audience and take advantage of course materials developed for this program.

PURPOSE

The following is the purpose the Regional Program training:

- Provide training to key road maintenance personnel involved with making decisions, designing, constructing, or maintaining facilities impacted by ESA.
- Develop and provide a consistent, comprehensive training curriculum.

GOALS

The following are the goals of the Regional Program training:

- Meet various regional members training needs.
- Provide "train-the-trainer" training.
- Provide training that will adapt to changing technologies, training methods, and feedback from trainees.
- Include oversight techniques to evaluate the effectiveness of the training program.
- Make training available to private contractors through T2.

TRAINING WORK PLAN

The Regional Program Training Committee is working with T2 to develop training consistent with the *Guidelines*. The committee has been tasked with the following:

- Develop detailed work program (purpose, goals, schedule, key points for Regional Forum review).
- Develop training curriculum (to be approved by Regional Forum).
- Develop agreement outlining T2 and Regional Program Training Committee roles and responsibilities (to be approved by the Regional Forum).
- Project estimated number of participants (by work classification) expected to attend the various training sessions.
- Identify topics by course, staff classification and frequency.
- Brief Regional Forum and obtain approval at key decision points. These briefings should also highlight program challenges and successes.
- Assign leadership for specific subject areas to specific agencies (subject to Regional Forum approval).

TRAINING CURRICULUM

Four tracks are provided in the Regional Program curriculum. Each agency's training program will require key staff to attend the appropriate courses as outlined in Figure 9 on the following page:

FOUR ESA TRAINING TRACKS

The ESA Training Plan has been grouped into four separate tracks: (1) Briefing for decision makers; (2) a training course addressing maintenance design and technical staff procedures involved in roadway maintenance activities; (3) a training course addressing field crew practices involved in roadway maintenance activities; and (4) a course to train agency level trainers in training skills applicable to the ESA training program. These trainers are selected by their agencies for this training after completion of track 2 and 3. WSDOT's training program is a separate program that has combined the ESA training elements into its existing training..

Track 1: Briefing for Decision Makers

An overview of the ESA program for regional level management and administration. This is a stand-alone training class and not part of the required training program and is offered by members of the Regional Road Maintenance Forum.

Track 2: Introduction, Design and BMPs, and Environmental Roles for Technical and Scientific Staff

2 days. This course is a combination of the various procedures for technical, professional and environmental staff, supervisors and leads involved in maintenance activities. The track is an overview addressing: introduction to the Guidelines, design, habitat, ten program elements and maintenance BMPs to meet RRMP requirements.

Track 3: Introduction and Outcome-based Road Maintenance

1 day. This course is a combination of the various procedures for field crews and leads involved in maintenance activities. The track is an overview addressing: introduction to the Guidelines, design, habitat, environmental roles, ten program elements and implementation of maintenance BMPs to meet RRMP requirements.

Track 4: Train-the-Trainer for The Regional Road Maintenance Program

2 days. For agency-selected ESA trainers. This is the training track to train skills and techniques, evaluate, prepare, and certify candidates to teach the RRMP classroom (Tracks 2 and 3) and field demonstrations for BMP installations.

Program Element 4: COMPLIANCE MONITORING

Under the Regional Program, the basic components of the umbrella compliance monitoring program include planning, performance assessments, outcome assessments, and daily inspections. Crews, supervisors, environmental staff, and regulatory agencies may perform inspections. A combination of maintenance and environmental staff will do compliance monitoring in each agency. Each local agency will establish a compliance program for monitoring BMP outcomes and monitoring that takes place as part of various research projects (see Program Element 5, Scientific Research).

PLANNING

Roadway maintenance personnel (managers, supervisors and crew leads) will meet regularly with their respective environmental personnel to identify upcoming maintenance activities. Permits, BMPs, in-water work windows, and environmental issues will be discussed at this meeting. Activities will also be identified for which the environmental personnel will work with maintenance personnel at a job site to assess the extent and effectiveness with which BMPs are implemented. These meetings will serve as a baseline upon which maintenance and environmental personnel communicate more routinely on environmental issues throughout the year.

PERFORMANCE ASSESSMENTS

To help assess the adequacy of BMPs, environmental staff will accompany maintenance personnel in the field during selected maintenance activities. Activities for which environmental performance will be assessed will be selected during the planning meetings referenced above. Selected activities will be those that have the highest level of risk for adversely impacting fish or aquatic habitat. Examples of such activities include in-water work, stream bank stabilization, and bridge pier scour repair. A BMP/Outcome Categories matrix has been developed for specific maintenance activities and circumstances in which BMPs should be implemented. (See Figure 13 or Appendix C for the BMP Outcome Category matrix.)

Sample checklists have been provided in Part 1 and Appendix D of the *Guidelines* to assist in selecting and implementing BMPs. Agencies may elect to tailor checklists to meet their specific protocols. Any modifications to the checklists will be included in the agency's Part 3 Application submitted to WSDOT under Program Element 2, Program Review and Approval. (See

Figures 14 through 16 or Appendix D for the checklists.)

In the event a problem occurs in BMP use, corrective actions appropriate to the circumstances will be implemented. Corrective actions may include additional training, providing improved information to maintenance personnel, and modification of BMPs. BMPs will be modified according to the agency's adaptive management process as described in Program Element 6, Adaptive Management.

Periodically, the Services may evaluate an approved program for its effectiveness in maintaining and achieving program implementation that provides for the conservation of the listed salmonids. Whenever warranted, the Services will identify to an agency ways in which the program needs to be altered or strengthened. If any agency does not change to respond adequately to the new information in the shortest amount of time feasible, but not longer than one year, the Services will publish notification in the Federal Register, announcing their intention to withdraw the take limit (NMFS), special 4(d) rule and/or Section 7 take exemption, to remove the reduction or elimination of the take prohibition (USFWS). In this case the take prohibitions would then apply. Such announcement will provide for a comment period of no less than 30 days after which the Services will make a final determination whether to subject the activities to the ESA Section 9 prohibitions.

OUTCOME ASSESSMENTS

The outcomes or results from BMP practices, as they relate to the BMPs in Parts 1 or 2 of the Regional Program, will continue to be measured as part of road maintenance assessment efforts. Water quality will be monitored as needed for maintenance activities, where such outcome measurements are needed, to assure that aquatic habitat is not being adversely impacted.

COORDINATION WITH RESOURCE AGENCIES

Communication with the appropriate government resource agencies (i.e. NMFS, USFWS, WDFW) is an integral part of the Regional Program. Some permits (such as Hydraulic Project Approval [HPA] permits) require various types of communication between roadway maintenance and the appropriate resource agency regarding compliance with permit conditions. Examples include project-specific notifications, project-specific consultation prior to the commencement of permitted work, as well as day-to-day interagency

coordination and communication. This type of communication has been, and will continue to be, an integral component of roadway maintenance efforts to meet our responsibilities in a proactive manner.

Program Element 5:
SCIENTIFIC RESEARCH

The Regional Forum has committed to two types of scientific research program elements.

The research will serve to verify the effectiveness of the BMPs, and update the BMPs based on the latest technologies.

- **Literature Research:** The search for completed studies and existing literature will be ongoing. Information will be shared with the Regional Forum and, where applicable, recommended program changes will be tested.
- **Case Studies:** Scientific analysis of specific BMPs will be conducted at test sites throughout the region.

Rather than each agency individually conducting research and case studies, members of the Regional Forum will recommend a regional scientific research committee. The Scientific Research and Case Studies Committee will lead this program element. Each agency seeking a take limit from NMFS special 4(d) rule and/or Section 7 take exemption to receive a reduction or elimination of the take prohibition from USFWS under this Regional Program must participate in this regional effort.

The research will serve to verify the effectiveness of the BMPs, and update BMPs based on the latest technologies. Some agencies began case study work in 1999:

- King County is conducting case studies on ditch maintenance BMPs.
- Pierce County is evaluating various, non-herbicidal methods of roadside vegetation control. This is an ongoing evaluation to monitor impacts over time.
- The City of Seattle recently completed a study evaluating the effects of chip sealing on a nearby water body (Bitter Lake).

Program Element 6: ADAPTIVE MANAGEMENT

The science of salmonid recovery is evolving. Actions required under the Regional Program may need to be modified as knowledge gaps are filled over time. Adaptive management will serve as a formalized process to ensure that new information is incorporated into decisions and actions affecting salmonid recovery.

In nearly all cases, conducting maintenance activities in compliance with the Regional Program contributes to conservation of the species. The Regional Program recognizes the potential for problems to occur during the course of maintenance activities, and has an adaptive management process that will address these concerns. The adaptive management process allows for local agencies as well as the Regional Forum to learn from experience in the field and scientific research to improve the program over time. Thus, conservation outcomes are achieved and the slight risk of adverse impacts avoided or minimized.

It will be necessary to monitor and assess how well implementation of the *Guidelines* achieves the goals of the program. Adaptive management will provide a systematic process for gathering and analyzing information to develop and implement alternatives that correct unproductive BMPs. Implementing effective adaptive management will assure progress is made toward achieving regional road maintenance outcome-based goals.

The concepts, elements, and principles described in the Regional Program are designed to assist in developing effective adaptive management and monitoring programs that result in the following outcomes:

- An adaptive management philosophy is one that is clearly defined, predictable, and can be understood.
- Relevant information is gathered, using appropriate quality controls, and is coordinated to evaluate road maintenance BMP decisions and actions as it pertains to the implementation of Regional Program BMPs.
- Program review occurs on predetermined timelines to ensure continual progress toward program goals and objectives.

COMPONENTS OF ADAPTIVE MANAGEMENT

The following are the three basic components of the Adaptive Management Program Element:

- Compliance Monitoring.
- Effectiveness Monitoring.
- Changes to the Regional Program.

Compliance Monitoring

Compliance monitoring is done to ensure agencies are implementing the Regional Program. Monitoring BMPs is a key component. Implementation of BMPs and all ten program elements will also be monitored.

Effectiveness Monitoring

The focus of effectiveness monitoring is BMP implementation to determine if BMPs are accomplishing Regional Program objectives. This monitoring will be accomplished through scientific research and case studies. The effectiveness of all other Regional Program elements will be monitored as well. Effectiveness monitoring of BMPs will be conducted to measure whether specific BMPs are achieving specified objectives. The type of work most often undertaken in aquatic habitat areas will guide BMP selection.

Changes to the Regional Program

The Regional Forum will engage in adaptive management to provide for ongoing Regional Program review and will evaluate and recommend program changes to the Services.

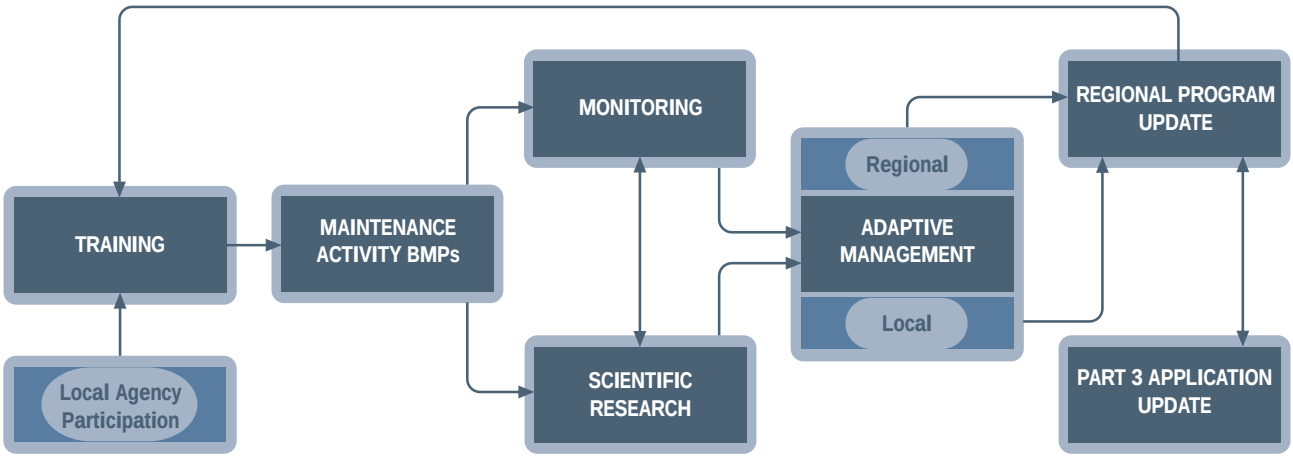
Program expansions or new program initiatives will have to go through each agency's budget approval process as well as review and approval by the Services. Using the adaptive management philosophy, the members of the Regional Forum will recommend program changes. Program modifications that could affect an individual agency's policies, budget, or level of road maintenance service will be taken back to agency policy makers for review and approval. To ensure that policy and budget issues are adequately addressed in individual agencies, Regional Forum members must occupy positions in their own road maintenance organizations with the authority to formally request budget or policy initiatives.

For overall changes to the Regional Program, the function of the Regional Forum is advisory. The final approval authority for individual agency budget changes resides with the executive and legislative branches of participating local governments. The Services will have final approval authority for changes to the Regional Program. It is assumed that, if the Services raise no objections to program changes, the take limitation (NMFS), special 4(d) rule and/or Section 7 take exemption to receive a reduction or elimination of the take prohibition (USFWS), would then apply to the revised program.

AVOIDING OR MINIMIZING ADVERSE IMPACTS

The overall impact of the Regional Program is to contribute to the conservation of listed aquatic species, while performing road maintenance activities. Although the risk of take from road maintenance is slight and likely to occur on a one-time or infrequent basis, the Regional Program recognizes that risk and has built in a method to correct for errors or failures of BMPs. This corrective action is accomplished by combining various other program elements with Program Element 10, BMPs and Conservation Outcomes. These other elements—Compliance Monitoring, Scientific Research, and Adaptive Management—all help to minimize the risk of take. As shown on Figure 10, *Avoiding or Minimizing Adverse Impacts*, these program elements form an integrated process of training, monitoring, and adaptive management that tracks the effectiveness of maintenance activity BMPs and alters that practice as needed (Figure 10):

Avoiding or Minimizing Adverse Impacts
Figure 10



Training: The first step in minimizing the risk of take is through a training program. As training becomes available, crew members and supervisors will receive appropriate training from instructors who have been through the Train-the-Trainer course (see Program Element 3, Training). With appropriate training, field personnel will recognize problems with BMPs and potential habitat risks. Training provides the means of quickly responding to problems in the field to avoid or minimize habitat impact. Training will also be given to engineering and environmental support staff to ensure that potential technical problems are dealt with in the planning stages of projects that require design or environmental support.

BMPs: In accordance with Program Element 10 (BMPs and Conservation Outcomes), and Part 2 of the *Guidelines*, BMPs will be used to achieve prescribed outcomes. The BMPs are designed to avoid or minimize adverse impacts, while achieving conservation outcomes.

Monitoring: BMPs will be monitored for effectiveness during the course of maintenance activities. In cases where BMPs are needed after maintenance work is completed, monitoring will continue for those BMPs. If problems occur, actions such as correcting or adding BMPs will be taken to ensure that outcomes are met.

Scientific Research: Scientific case studies and literature research will be conducted to ensure that BMPs achieve the desired outcomes. Based on these findings, recommendations to modify Part 1 or Part 2 of the Regional Program will be presented to the Regional Forum.

Adaptive Management: Adaptive management will occur at the local, agency-specific, and regional levels. Local ESA teams and the Regional Forum will evaluate information gathered during the course of maintenance activities, BMP implementation, monitoring, and scientific research. Based on this evaluation, Part 3 Applications will be updated at the local level, and the *Guidelines* will be updated at the regional level. Program updates will be factored into the training program.

AGENCY ADAPTIVE MANAGEMENT

During the course of road maintenance activities, countless combinations of conditions occur that affect BMP effectiveness. It is for this reason that the BMPs in the Regional Program are outcome-based. The outcome-based approach allows all staff—road crew supervisors, environmental staff, engineers, and others—to respond to changing conditions at the worksite to achieve specified BMP outcomes.

In spite of the outcome-based approach, it is anticipated that there will be rare occasions when problems occur at the work site, reducing BMP effectiveness. When this occurs, agency adaptive management will be employed to avoid or minimize potential adverse impacts to habitat. There are three phases to the agency adaptive management process:

- Pre-activity evaluation.
- Maintenance activity.
- Adaptive management.

Pre-Activity Evaluation. Prior to starting work, the site is evaluated to determine appropriate maintenance activities and BMPs. Maintenance activities are selected to achieve the following dual goals:

1. Maintaining and repairing the ROW structure
2. Providing mitigation for the original construction of the ROW structure.

BMPs are selected to achieve the outcomes prescribed in the Regional Program, thus avoiding or minimizing adverse impacts and contributing to habitat conservation.

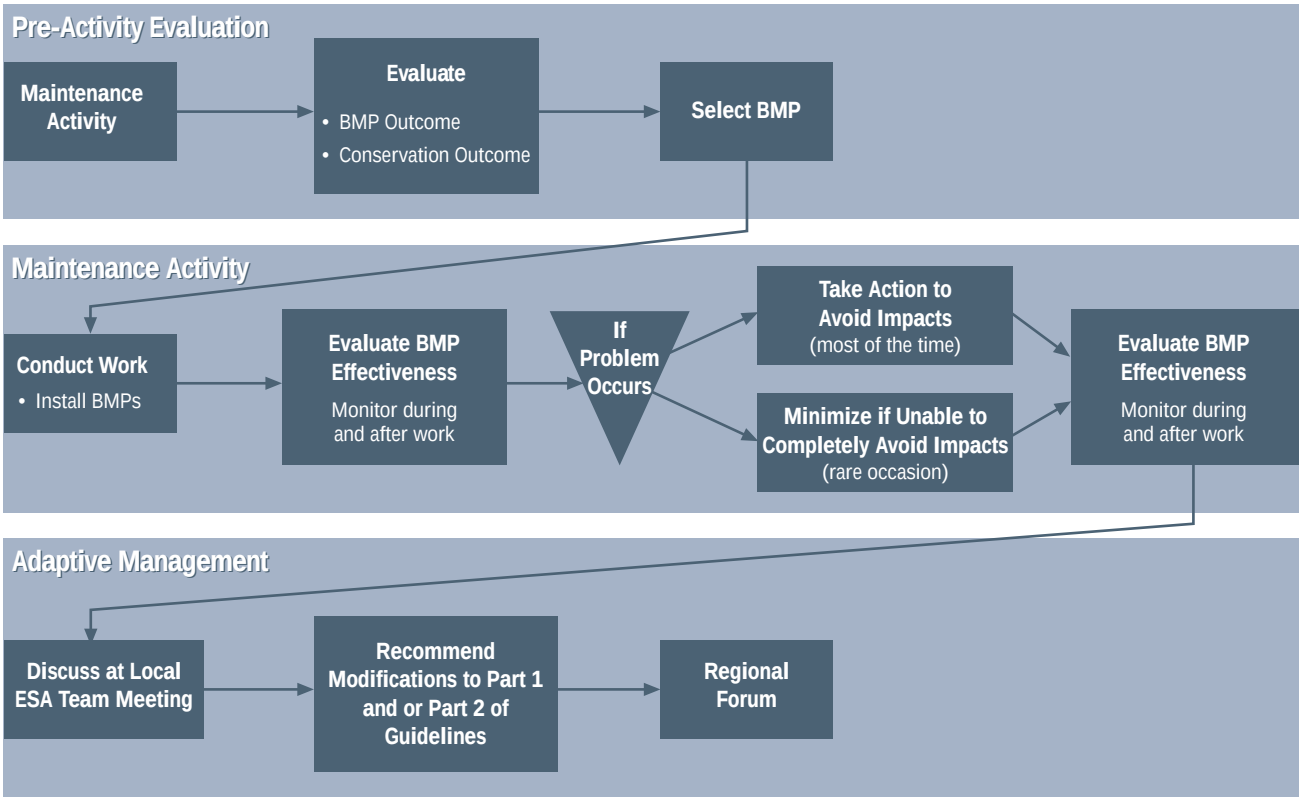
Maintenance Activity. Local ESA teams will be formed in each agency as defined in their Part 3 Application. Whenever corrective actions are taken, the local ESA team will evaluate the actions and their effectiveness.

During the course of maintenance activities, BMPs are installed and monitored. BMP monitoring occurs both during and after the maintenance activity itself to evaluate the effectiveness. If a problem occurs, corrective action will be taken to avoid impacts and to achieve the BMP outcome. Usually, actions involve installing additional BMPs, which, in combination with the initial BMPs, will achieve the BMP outcome.

In nearly all situations, it will be possible to correct problems as they arise. On rare occasions, however, adverse impacts could occur. In nearly all cases, these will be temporary impacts, lasting only until a combination of BMPs is installed to correct the problem.

Adaptive Management. Based on the local ESA team's evaluations, recommendations for modifications to Parts 1 or 2 of the Regional Program will be forwarded to the Regional Forum. The agency adaptive management process is shown on Figure 11.

Agency Adaptive Management
Figure 11



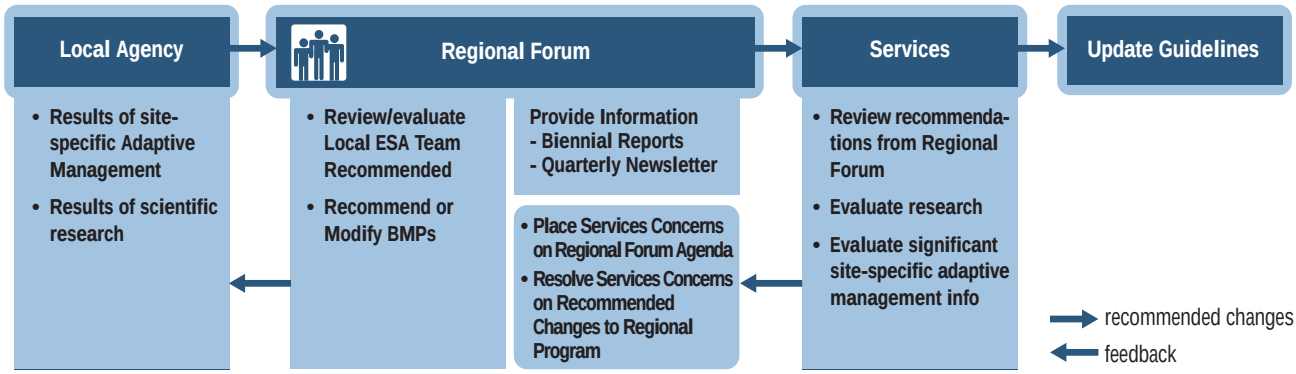
REGIONAL ADAPTIVE MANAGEMENT

Adaptive management is key to the success of the Regional Program. Adaptive management provides a means of improving conservation outcomes in three ways:

1. Improving site-specific outcomes at the local level
2. Improving the Regional Program at the regional level
3. Avoiding and minimizing potential adverse impacts by sharing information at the regional level.

Recommendations from local ESA teams are evaluated in Regional Forum meetings. Additionally, Regional Forum members evaluate the result of local agency scientific research. Based on this evaluation, the Regional Forum produces recommended program changes, which are submitted to the Services for final review and approval. If the Services have questions or concerns, these are referred back to the Regional Forum for resolution. Final program changes, as approved by the Services, are used to update the *Guidelines* (Figure 12).

Regional Adaptive Management
Figure 12



Program Element 7:
EMERGENCY RESPONSE

Road maintenance organizations must respond immediately to any natural or human caused emergencies. Emergency response actions must be undertaken to minimize or avoid:

- Imminent threat to public health or safety.
- Imminent threat to danger to public or private property.
- Imminent threat of serious environmental degradation.

EMERGENCY RESPONSE ACTIONS

Emergency response actions include, but are not limited to, fixing damage to roadways, roadsides, or ROW structures whenever an emergency occurs. Examples of emergency actions include fire response, spills, landslides, slumps, water, drainage, or sewer line repair and cleanup, utility line breaks, overflows of water reservoir facilities, stormwater facilities, sewer facilities, collection boxes, and other related facilities during operation or caused by high flow events, high precipitation events, flood events, snow and ice controls or other emergency conditions. These actions may or may not be technically defined as an emergency under Presidential declaration. However, failure to perform these activities may result in an imminent threat of serious environmental degradation, threat to public health or safety or damage to public or private property.

UNSCHEDULED MAINTENANCE ACTIVITIES

Unanticipated repairs require action to be started within a few days or before the next wet weather season within the in-water window to protect fish. Therefore, there is not enough time to go through the normal permitting process and require expedited permits. However, if the danger becomes more immediate and regulations cannot be met, the applications should be treated as emergency actions.

HAZARDOUS MATERIAL INCIDENT RESPONSE

Traffic accidents on roadways occasionally result in the release of hazardous materials to the environment. If the party(s) responsible for the hazardous materials release cannot be identified or made to contain and clean up the release, the Department of Ecology (Ecology) assumes these responsibilities. The role of road maintenance personnel is to manage traffic at incidents on roadways. This is conducted in support of the overall incident management

effort. Road maintenance personnel can also provide technical information (i.e. information on drainage system characteristics) in support of the incident response. However, trained maintenance personnel may take control actions when necessary and feasible to contain a release of petroleum products into surface waters.

MINIMIZATION AND AVOIDANCE

- Emergency response and inspection followed by notification of the appropriate resources in a timely manner.
- Develop a phone tree for resource contacts to be called during an emergency response.
- Where possible, emergency maintenance will use the same BMPs as routine maintenance activities to avoid additional impacts to wetlands, watercourses or streams.
- Emergency maintenance will provide, where possible, adequate erosion control or bank stabilization around watercourses.

Where appropriate, permit processing will begin as soon as the emergency situation has been stabilized.

Program Element 8:
Biological Data Collection

Existing ROW structures are linear and tend to have small-scale and minor site-specific points of impact. For that reason, the following biological data will be gathered in the ROW:

- Identification of aquatic habitat resources within ROW.
- ROW aquatic habitat location to make BMP decisions.
- Train and alert staff where to apply the guidelines.

Knowing the location of aquatic habitat within the ROW and using BMPs during maintenance activities in these areas will have a positive impact on aquatic habitat.

Element 8, Biological Data Collection, is the key to providing road maintenance staff with ROW aquatic habitat location information so that they can make appropriate BMP decisions. Under the biological data collection program element, agencies will develop processes to train and alert staff where the *Guidelines* need to be applied. Training and location of where to apply guidelines may be accomplished by the use of maps, geographic information systems (GIS), site visits, or marking locations in the field.

Some agencies currently have information on aquatic habitat resource locations. Once an initial aquatic habitat identification has been completed, ongoing updates will be made to address changing conditions. An agency will be considered in compliance with the Regional Program as long as there is a biological data collection process in place.

This data will be collected in the road ROW structure and used to evaluate the use of BMPs. The data collected and the results of this adaptive management process will be made available for project prioritization, biological assessments, and future planning.

Program Element 9:
BIENNIAL REPORTS

The Regional Forum will submit biennial reports to the Services on the status of all ten elements of the Regional Program. At a minimum, the reports will include the following:

- Status reports and updates on each program element.
- Training program, review and updates.
- Review of scientific research.
- Implementation review.
- Adaptive Management reports, including recommended changes to the *Guidelines*.

In addition to the formal reports, the Services will be provided copies of a quarterly newsletter. The biennial report will be provided to others upon request.

Program Element 10:
BMPS AND CONSERVATION OUTCOMES

REGIONAL PROGRAM BMPS

The Regional Program BMPs were developed with the idea that they must be outcome based. Rather than providing a "cookbook recipe" approach to BMPs, the Regional Program BMPs focus on the following outcomes:

- Minimize erosion/sedimentation.
- Contain pollutants.
- Maximize habitat improvements.

The *Guidelines* provide many options for achieving the outcomes identified in this program element, as well as the outcomes identified in Part 2, Best Management Practices. BMPs will be selected based on worksite conditions. The Regional Forum clearly recognizes the difficulties encountered when implementing BMPs. Conditions vary dramatically from site to site based on many factors:

- Soils/geological conditions.
- Stream/surface water hydrology.
- Groundwater conditions.
- Presence of utility lines or structures.
- Vegetation.
- Resource availability.
- Regulatory requirements (i.e. permit requirements).
- Legal requirements (such as safety standards, regulations).
- Terrain.
- Space available in ROW.

The menu of options provided in the Regional Program allows crews, supervisors, design engineers, and environmental staff the flexibility to select the most efficient BMPs for each site.

IMPLEMENTATION STRATEGY

Flexibility in selecting BMPs depending on site conditions is an absolute necessity for successful implementation of the Regional Program. The Regional Forum will develop a training program for supervisory personnel and crews. The training will provide individuals with background information to

recognize when environmental staff needs to be consulted regarding BMPs and when BMPs should be used. Each agency will develop and implement a maintenance activity decision process flowchart, indicating the key points at which environmental staff will be consulted.

The training will be coupled with outcome monitoring to implement BMPs that are appropriately and effectively installed.

HOW TO USE THE BMP PORTIONS OF THE *GUIDELINES*

The success of the BMP portions of the *Guidelines* depends on understanding that the purpose of the Regional Program BMPs is to:

- Minimize erosion and sedimentation as a result of road maintenance activities or tasks.
- Contain pollutants generated from maintenance activities.
- Identify and maximize opportunities for implementing habitat protection and maintenance features.

Installing a BMP may not always meet all of the above purposes. The work site and BMPs must be monitored and maintained properly. If BMPs do not produce the desired outcomes, those BMPs may require modification or the use of additional BMPs.

READ THE *GUIDELINES*

It is important to read the entire *Guidelines* to gain a basic understanding of how BMPs can be useful in daily operations. Part 1, Program Element 10, BMPs and Conservation Outcomes and Part 2, Best Management Practices, are to be used **in tandem** to perform maintenance activities and implement BMPs. Road maintenance activities have been divided into 15 *Maintenance Categories* presented as separate sections in Part 1, Program Element 10, BMPs and Conservation Outcomes:

1. Roadway Surface.
2. Enclosed Drainage Systems.
3. Cleaning Enclosed Drainage Systems.
4. Open Drainage Systems.
5. Watercourses and Streams.

6. Stream Crossings.
7. Gravel Shoulders.
8. Street Surface Cleaning.
9. Bridge Maintenance.
10. Snow and Ice Control.
11. Emergency Slide/Washout Repair.
12. Concrete.
13. Sewer Systems.
14. Water Systems
15. Vegetation.

Each category includes activities, purpose, BMP outcomes, BMPs, and potential conservation outcomes. Some of the Part 1 BMPs are routine, while others require more detailed information. Those BMPs requiring more information are included in Part 2 in alphabetical order.

IDENTIFY CONSERVATION OUTCOMES

While developing these *Guidelines*, the Regional Forum identified "conservation outcomes" that could be achieved while performing road maintenance activities. Potential conservation outcomes are identified for each maintenance category. These conservation outcomes are the result of using BMPs to conserve aquatic species.

SELECT BMP OUTCOME CATEGORIES

When reviewing a proposed maintenance or construction activity, it is important to have some basic understanding of erosion and sediment control. It is easier and more effective to reduce soil particles and contaminants from becoming waterborne or airborne (entering or mixing with the water) than to separate them after they have mixed. To help select the appropriate BMP for your specific application, the BMPs in Part 2 have been grouped into eight site-specific BMP *Outcome Categories*:

1. Keep Water from Work Area.
2. Reduce Potential for Soil Erosion.
3. Filter/Perimeter Protection.

4. Settling.
5. Reduce Water Velocity/Erosive Forces.
6. Containment.
7. Habitat Protection/Maintenance.
8. Reduce Potential for Contaminants Falling into Water.

Part 2 presents more detailed information on the Outcome Categories, including the following:

- Definition.
- Desired Outcome.
- Applications.
- Limitations.
- Permit Conditions.
- BMP Options.

Part 2 also presents each site-specific BMP alphabetically. The Part 2 BMPs include a description, including a statement on its purpose, applications, limitations, construction guidelines, maintenance and removal. Many photos and illustrations are also provided.

The BMP Outcome Categories matrix shown on Figure 13 is a tool for selecting and using BMPs that meet the conservation outcomes of the Regional Program. Additional copies of the matrix are provided in Appendix C.

VISIT THE SITE

Before starting an activity, conduct a site visit to gather information. Useful information includes the scope of activity, work area, potential staging and temporary storage areas, proximity to sensitive areas or drainage features, soil conditions, existing vegetation, and amount of onsite water. Other important information is the presence of slopes, traffic, and an initial assessment of BMP options. This information will be used for five basic purposes:

1. Plan the activity.
2. Identify maintenance/construction methods, sequence, and schedule.
3. Determine equipment and materials.
4. Select BMP or combination of BMPs.
5. Determine permit needs.

SELECT AND IMPLEMENT A BMP OR COMBINATION OF BMPS

There is no ideal or perfect BMP for each specific activity. Generally, a combination of BMPs is used to meet the desired outcome. The *Guidelines* aid in the BMP selection process. The following steps will help make a successful BMP selection and work activity:

1. Use the following sample checklists or develop and use your own checklist (Figures 14 through 16).
2. Become familiar with the *Guidelines*.
3. Identify the Maintenance Category(s) to be performed and BMP categories.
4. Define the activity, scope, and limits.
5. Conduct a site visit.
6. Review BMP options.
7. List those BMPs (from both Part 1 and Part 2) applicable to the Maintenance Category(s) and site conditions.
8. Select the BMP(s) that will meet the desired outcome.
9. Secure permits.
10. Prepare a construction or maintenance sequence and schedule.
11. Conduct a pre-maintenance/pre-construction meeting to review the activity, roles and responsibilities, and BMPs (installation, monitoring, maintenance, and removal).

12. Gather the necessary equipment and materials.
13. Implement the BMP(s) by following the *Guidelines*, permit conditions, or plans.
14. Ask for help (if required).

USE THE CHECKLISTS

The sample checklists on the following pages have been developed to guide your maintenance activities, including site visits and selecting and implementing BMPs (see Figures 14 through 16). These checklists are also provided in Appendix D.

ASK FOR HELP

Generally, follow your own agency's Part 3 Application or protocols for assistance. Other agencies with membership in the Regional Forum may be able to offer additional assistance. See Appendix A for a list of Regional Forum contacts.

Activity and bmp

Planning and Selection
Sample Checklist #1
Figure 14

ACTIVITY INFORMATION	
Location:	Maintenance Activity:
Lead:	Date:
Description of Activity:	

CHECKLIST		
Steps	**Completed**	**Comments**
1. Make site visit before starting work.		
2. Define activity, scope and limits.		
3. Identify sensitive areas and drainage features.		
4. Is environmental staff required to review plans or provide crew support?		
5. Are fish present (or likely to be present) in work area or activity impact area. (If yes, contact environmental support staff or WSDFW.)		
6. Will fish exclusion be required? (If yes, coordinate with designated staff or agency.)		
7. Review Maintenance Category BMP options related to site-specific conditions.		
8. Select applicable BMPs from Part 1 and 2 of the *Guidelines.*		
9. Secure permits.		
10. Read and understand all permit conditions. Resolve permit conditions before moving forward.		
11. Prepare construction/maintenance schedule, and/or sequence (Including installing, monitoring, maintaining, and removing BMP(s).)		
12. Schedule a pre-maintenance or pre-construction meeting as necessary.		
13. Review activity as possible model for training and/or adaptive management discussions.		

Activity and bmp

Pre-construction and Pre-maintenance Meeting
Sample Checklist #2
Figure 15

ACTIVITY INFORMATION	
Location:	Maintenance Activity:
Lead:	Date:
Description of Activity:	

CHECKLIST		
Steps	**Completed**	**Comments**
1. Invite appropriate personnel and/or agencies.		
2. Prepare agenda and attendance/sign-in form.		
3. Outline construction/maintenance, schedule, and/or sequence (Including installation, monitoring, maintaining, & removing BMP(s)).		
4. Identify sensitive areas and drainage features.		
5. If fish exclusion required, follow Fish Exclusion Protocol in Appendix E.		
6. Clarify roles & responsibilities of all personnel & agencies related to all aspects of the activity.		
7. Discuss permits, approvals and their conditions.		
8. If environmental staff is required to be onsite during work activities: introduce personnel and their role(s).		

Activity and bmp

Installation, Monitoring, Maintaining and Removal Sample Checklist #3

Figure 16

ACTIVITY INFORMATION	
Location:	Maintenance Activity:
Lead:	Date:
Description of Activity:	

CHECKLIST		
Steps	**Completed**	**Comments**
1. Identify/mark work area and location of BMP(s).		
2. Arrange for delivery of BMP(s) products.		
3. Environmental staff support as appropriate.		
4. Make sure BMP(s) are installed in accordance with the *Guidelines*, permit conditions and/or specifications.		
5. Monitor/check BMP(s) routinely to make sure BMP outcomes are achieved, and make repairs, adjustments, and/or additions as necessary.		
6. Remove BMP(s) and re-vegetate in accordance with the *Guidelines*.		

Activity and bmp

Routine Part 1
Sample Checklist #4
Figure 17

Task	Yes	No
1. Make site visit before starting work		
2. Define activity, scope, and limits		
3. Review Part 1 BMPs		
• Permit needed		
• Scheduling considerations		
• Equipment maintenance		
• Disturbed soil		
• Waste material removed		
• Spill kit		
• Part 2 BMPs needed		
• Evaluate using detailed checklist 1, 2, and/or 3		
4. Is environmental staff required? NO – continue maintenance YES – contact environmental staff for review		
5. In water work		
• Stop work		
• Contact environmental staff for review		
• Evaluate using detailed checklist 1, 2, and/or 3		

Maintenance Category #1:
ROADWAY SURFACE

ACTIVITIES[1]

Repair, replace, install, or maintain roadway surfaces. Activities include the following: pothole and square cut patching; removing paved surface or roadway base; repairing roadway base; repaving; adding gravel or grading roads, access roads, or ROW surfaces; dust control; extending pavement edge; paving graveled shoulder; crack sealing; overlay; chip seal; resurfacing; pavement marking and traffic channelization; traffic control features.

PURPOSE

The roadway surface is part of the ROW structure. The slope of the road surface routes water and sediments off the roadway, to the shoulder, to an open drainage area or ditch or to an enclosed drainage system. Thus, the slope of the roadway surface is part of the water flow and sediment collection systems.

These activities are performed to provide a safe roadway surface for the traveling public and to reduce further roadway deterioration or failure. Most patching and resurfacing activities occur from May to October. Potholes are repaired as they occur within established guidelines to reduce accidents, vehicle damage, and adverse environmental impacts.

BMP OUTCOMES

- Restore structure.
- Minimize work site pollutants from maintenance/repair activities.
- Restore or maintain surface water drainage.
- Restore or maintain road surface/safety.
- Reduce turbidity.
- Reduce sediments from entering watercourses or streams.

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

BMPs
Maintenance Category #1: Roadway Surface

BMPs	*Description*
Roadway Surface	Perform repairs, replacement, and maintenance of roadway surface.
Shoulder Work	Maximize opportunities for shoulder work, which will increase infiltration or biofiltration. (See also Maintenance Category #7, Gravel Shoulders).
Part 2 BMPs (Site-specific BMPs)	Use any of the eight BMP outcome categories at or around the work site to reduce turbidity, sediment and/or worksite pollutants from entering watercourses or streams, wetlands, lakes, or other water bodies: • "Filter/Perimeter Protection," • "Reduce Potential for Soil Erosion" • "Reduce Water Velocity/Erosive Forces." Go to Part 2 BMPs for selection and installation guidelines.
Disturbed Areas	Exposed and unworked soils shall be stabilized by application of BMPs that protect soil from the erosive forces of raindrop impact and flowing water: • During winter season – October through June – no soils shall remain exposed and unworked for more than 2 days. • During the summer season – July through September – no soils shall remain exposed and unworked for more than 7 days. • These conditions apply to all soils onsite, whether or not at final grade.
	Prior to BMP removal, clean up accumulated sediments and seed or replant disturbed area.
Equipment/Tools	Tool and equipment cleanup procedures: • Routinely inspect equipment, tools and vehicles for leaks or damage. • Keep cleanup materials, such as dry absorbent materials, onsite to allow prompt cleanup of spills. • Promptly repair or replace leaking connections, pipes, hoses and/or valves.
	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field.

Continued on next page

BMPs
Maintenance Category #1: Roadway Surface (Continued)

BMPs	Description
Equipment/Tools *Continued from preceding page*	• Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Material/Debris Disposal	After repairs are completed, remove construction/maintenance waste materials from site for disposal or recycling.
	If area is swept with a pick-up sweeper, the material will be hauled out of the area to appropriate disposal site.
Painting/Marking	• Follow state and federal guidelines for handling paint and other traffic marking materials. • Stripe roadways in dry weather.
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Restore structure
- Protect watercourse, stream and/or water body.
- Maximize opportunities for increased infiltration.
- Reduce runoff of dirt, debris, sediment, and petroleum products from maintenance activity to maintain water quality.

Conservation objectives and how they are achieved are shown on the following table:

Roadway Surface Maintenance	
Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one or more of the following:
Maintain or restore sediment transport system to reduce loading to watercourses or streams. Remove or reduce sediment to protect watercourses or streams. Maintain or restore nutrient process by re-vegetating (at optimum time for successful revegetation) after disturbance. Repair/maintenance of road surface reduces water splashing off of roadway, which in turn reduces: • Turbidity. • Sediment loading. • Erosion. • Off-road damages from vehicles leaving road surface. • Spills. • Structural damage to shoulders and ditches.	Performing maintenance activities. Reducing vehicle accidents: • Reduces risk of pollutants and debris entering aquatic habitat. • Reduces structural damage to watercourse or stream system. Reducing roadway or shoulder failure: • Reduces risk of roadway/shoulder failure sediment from entering aquatic habitat watercourse or stream. • Open holes disturb road base/subgrade, which reduces erosion. Patching holes eliminates transport of sediment into drainage system and/or surface water. Maintenance can reduce adverse effects on shoulders, open and closed drainage systems, stream crossings, and offsite habitat. Using appropriate erosion/sediment control BMPs during construction/maintenance. Re-vegetate disturbed soils

Maintenance Category #2:
ENCLOSED DRAINAGE SYSTEMS

Activities[1]

Repair, replacement, installation, and maintenance tasks performed on enclosed drainage systems include the following: facilities, retention/detention facilities, pollution control devices, manholes, catch basins, vaults, pipes, access roads; and inlets/outlets. Facilities can be located on ROW, public property, separate tracts, easements, or on private property. Facilities are designed according to current standards, and installed according to permit conditions.

Purpose

The enclosed drainage system is part of the ROW structure that routes water and sediments from roadways and surface structures through water and sediment collection systems to outlet areas. Enclosed drainage systems—which are used for water quality and quantity treatment—are designed to accumulate sediment over time. Because of limited storage capacity, this sediment should be removed to maintain treatment effectiveness and environmental protection. Therefore, the purpose of such maintenance includes one or more of the following:

- Remove large quantities of sediment and debris from stormwater before it enters watercourses or streams.
- Improve the roadway drainage system to efficiently remove, collect and convey water from the ROW to permit the maximum use of the roadway.
- Reduce damage to roadway structures.
- Protect the abutting property from damages.
- Restore surface water drainage.
- Ensure structural integrity.
- Vegetation management.

BMP Outcomes

- Restore structure.
- Reduce sediment from entering watercourses or streams and aquatic habitat.
- Minimize worksite pollutants from construction/repair area.

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

- Restore or maintain water quality:
  - Remove debris.
  - Remove trash.
  - Remove yard waste.
  - Remove sediment.
  - Reduce turbidity.

BMP

See table on next page.

BMPs

Maintenance Category #2: Enclosed Drainage Systems

BMPs	*Description*
Enclosed Drainage Systems	Perform repair, replacement, and maintenance of enclosed drainage systems.
Part 2 BMPs (Site-specific BMPs)	Use any of the following eight BMP outcome categories at or around the work site to reduce turbidity, sediment and/or pollutants from entering watercourses, streams, wetlands, lakes, or other water bodies: • "Filter/Perimeter Protection," • "Keep Water from Work Area," and/or • "Reduce Potential for Soil Erosion." Refer to Part 2 BMPs for selection and installation guidelines.
Disturbed Areas	Exposed and unworked soils shall be stabilized by application of BMPs that protect soil from the erosive forces of raindrop impact and flowing water: • During winter season – October through June – no soils shall remain exposed and unworked for more than 2 days. • During the summer season – July through September – no soils shall remain exposed and unworked for more than 7 days. • These conditions apply to all soils onsite, whether or not at final grade.
	Prior to BMP removal, clean up accumulated sediments and seed or replant disturbed area.
Equipment/Tools	Tool and equipment cleanup procedures: • Routinely inspect equipment, tools, and vehicles for leaks or damage. • Keep cleanup materials, such as dry absorbent materials, onsite to allow prompt cleanup of spills. • Promptly repair or replace leaking connections, pipes, hoses and/or valves.
	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. *Continued on next page*

BMPs

Maintenance Category #2: Enclosed Drainage Systems (Continued)

BMPs	*Description*
Equipment/Tools *Continued from preceding page*	• Use drip pans under equipment when maintaining, repairing or servicing in the field. • Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Material/Debris Disposal	After repairs are completed, remove construction waste materials from site for disposal or recycling.
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel.

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Protect watercourse, stream and/or water body.
- Reduce work site pollutants to maintain water quality.
- Control the storage, delivery, and routing of surface and ground water to control volumes and velocities of stormwater discharge by cleaning and maintaining system.
- System maintenance and repairs reduce pollutant transport from system breaks.

Conservation objectives and how they are achieved are shown on the following table:

Repair, Replacement and Installation of Enclosed Drainage Systems	
Conservation Objectives include one or more of the following:	***Conservation Objectives Achieved By*** one or more of the following:
Maintain or restore water quality. Maintain or restore functional components of the drainage system to trap and reduce sediment loading to watercourses or streams. The system includes, but is not limited to: • Catch basins. • Manholes. • Inlets. • Pipes. • Facilities. • Vaults. • Retention/detention facilities. • Pollution control devices. • Outlets. • Other types of pollutant collection/separation facilities. Maintain or restore flow volumes and velocities by removing sediments and repairing structures. Reduce/Remove sediment and debris from drainage system. Trap and remove sediment and debris before it enters watercourses, streams or water bodies. Repair plugged lines, breaks, or blockages to reduce: • Turbidity. • Sediment loading. • Offsite flooding and/or erosion. • Offsite habitat impacts. • Debris loading.	Performing repairs, implementing replacements, and installing systems. Reducing drainage system failure: • Reduces risk of enclosed system failure and resultant washout sediment and other pollutants and debris from entering aquatic habitat watercourses and/or streams. Providing proper in-system storage to: • Reduce peak flows. • Reduce offsite sediment transport. • Provide for silt collection system to reduce sediment loading to watercourse or stream. Cleaning and removing of large quantities of sediment and other debris before it reaches watercourses, streams and/or water bodies. Using erosion/sediment controls during construction/maintenance. Reducing flooding, erosion, and sediment from broken, or damaged, system by making repairs. Reducing sediment conveyance through drainage system by trapping and removal. Re-vegetate disturbed soils.

Maintenance Category #3:
CLEANING ENCLOSED DRAINAGE SYSTEMS

Activities[1]

Removing debris, sediments, and liquids from enclosed drainage systems using a vacuum/flush truck ("Vactor"), by hand, or other mechanical means. Enclosed drainage systems include the following: facilities, retention/ detention facilities, manholes, catch basins, vaults, pipes, access roads, pollution control devices and inlets. Enclosed drainage systems can be located on ROW, separate tracts, easements, or on private property.

Purpose

To clean and remove large quantities of sediments and/or other debris from drainage systems before entering watercourses, streams and/or water bodies.

To ensure the enclosed drainage system efficiently removes, collects, and conveys water from the road ROW to permit the maximum use of the roadway.

- To reduce damage to roadway structures.
- To protect the abutting property from damages.
- To maintain or restore surface water drainage.
- To maintain or restore structural integrity.
- To manage vegetation.

BMP Outcomes

- Restore structure.
- Improve water quality.
- Minimize work site pollutants from leaving construction/repair area.
- Reduce turbidity.
- Restore surface water drainage.
- Clean up and remove sediment from drainage system.
- Minimize flooding from plugged system.
- Reduce potential plugging of systems.
- Reduce overflows/ flooding.
- Reduce sediment and debris loading to watercourses, streams and other water bodies.

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

BMPs

Maintenance Category #3: Cleaning Enclosed Drainage Systems

BMPs	*Description*
Cleaning Enclosed Drainage Systems	Maintain drainage systems.
Pre-Activity	Use BMPs that include, but are not limited to: • Blocking facility outlet. • Using less water. • Blocking downgradient end of pipe.
Equipment/Tools	When using high-pressure flushing equipment, vacuum out solids to reduce sediment and turbidity from moving downgrade throughout the drainage system..
	Tool and equipment cleanup procedures: • Routinely inspect equipment, tools, and vehicles for leaks or damage. • Keep cleanup materials, such as dry absorbent materials, onsite to allow prompt cleanup of spills. • Promptly repair or replace leaking connections, pipes, hoses and/or valves.
	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field. • Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
Continued on next page	If unable to move tools and equipment offsite, control and remove cleaning by-products.

BMPs

Maintenance Category #3: Cleaning Enclosed Drainage Systems (Continued)

BMPs	*Description*
Material/Debris Disposal	Remove and dispose of collected materials and liquids offsite
	Solid materials removed from the site will be taken to a disposal or recycling area
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent • Pad • Shovel.

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Reduce worksite pollutants to maintain water quality.
- Protect watercourse, stream and/or water body.
- Control the storage, delivery, and routing of surface and ground water to control volumes and velocities of stormwater discharge by removing sediments.
- Reduce sediment transport from system breaks by cleaning.
- Cleaning system reduces sediment and debris transport to watercourses, streams and/or water bodies.

Conservation objectives and how they are achieved are shown on the following table:

Cleaning Enclosed Drainage Systems	
Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one or more of the following:
Maintain or restore water quality. Maintain or restore sediment collection process by removing sediments from: • Catch basins. • Maintenance holes. • Retention/detention facilities. • Pipes. • Inlets. • Vaults. • Other types of pollutant collection/separation facilities. Maintain or restore flow volumes and velocities by cleaning system. Trap and remove sediment and other debris before it enters watercourses, streams and/or water bodies. Remove blockages or plugs to reduce: • Turbidity. • Offsite erosion. • Offsite habitat impacts.	Removing sediments and debris from drainage system as a source control measure. Routine cleaning to reduce drainage system failure due to debris or sediment blockages: • Reduce risk of roadway/shoulder failure sediment from entering aquatic habitat. • Reduce vehicle accidents. • Reduce pollutants from vehicle accidents. Providing proper in-system storage to: • Reduce peak flows. • Reduce flooding. • Reduce offsite sediment transport. • Maximize pollutant collection capabilities. Cleaning and removing sediment and debris before it reaches watercourses, streams and/or water bodies.

Maintenance Category #4:
OPEN DRAINAGE SYSTEMS

Activities[1]

Repair, replacement, installation and maintenance tasks performed on open drainage systems. These systems include facilities, retention/detention facilities, swales, pollution control devices, manholes, catch basins, vaults, pipes, culverts, ditches, and inlets/outlets. (Open drainage systems that are part of the watercourses and streams system are covered in Maintenance Category 5, Watercourses and Streams.)

Open drainage systems include stormwater conveyance systems that were created entirely by artificial means, such as roadside ditches and storm or surface water runoff facilities. These structures are not watercourses, streams or wetlands.

Open drainage systems can be located within the road ROW, on easements, tracts, public property or on private property.

PURPOSE

- Maintenance tasks performed on open drainage systems include, but are not limited to, activities such as the following:
  - Cleaning.
  - Reshaping/regrading.
  - Erosion control/bank stabilization of drainage system.
  - Vegetation management.
  - Removing debris, trash, yard waste, sediment.
  - Repairing structures.
- Open drainage systems are part of the ROW structure that routes water and sediment from roadways or surface structures to outlet areas. The system allows sediments to separate and settle from the water flow, a process that cleans and removes large quantities of sediments out of stormwater systems.
- Maintaining open drainage systems includes activities to preserve line and grade, depth and cross section, and inflow and outflow of culverts. Open systems should be kept free of trash, debris, sediment and vegetation that restricts or constricts the open drainage system (in compliance with federal and state regulations).

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

- Roadside ditches generally consist of inslopes, a ditch, and back slopes (see Figure 4, Open Drainage System, under "Right of Way Structure," in the Introduction). The inslopes can be vegetated with grass or small forbs. Small trees and brush may be allowed outside of the back slope of ditches (in compliance with federal and state regulations).
- Roadside ditch maintenance operations are performed when sediment, debris, or vegetation in a ditch impedes flows or storage of water and sediments to a point where safety or structural integrity of the roadway system is jeopardized. Maintenance of roadside ditches improve properly functioning systems, which can reduce:
    - Sheet flow of surface water across the roadway, which creates slope erosion.
    - Hazardous driving conditions, particularly during cold weather.
    - Roadway washouts during storm events.
    - Flooding of adjacent property.
    - Saturation of the road sub-base.
    - Large quantities of sediment transported to watercourses or streams.

BMP Outcomes

- Maintain and restore water quality by cleaning ditches or structures.
- Maintain or restore structure.
- Minimize sediment or debris from leaving construction/repair area.
- Maintain or restore surface water drainage and storage.
- Maintain or restore sediment storage capacity.
- Reduce flooding from plugging of system/reduced storage area.
- Keep structure clear of debris, trash, and yard waste.
- Reduce sediments and debris from entering watercourses or streams.
- Reduce sediment conveyance through drainage system by trapping and removal.
- Leave vegetated sections in ditch where sediment buildup has not impeded flow or infiltration.

BMPs

Maintenance Category #4: Open Drainage Systems

BMPs	*Description*
Open Drainage Systems	Maintain drainage systems.
Permits	Maintenance activities within waters of the state will be covered under Maintenance Category #5, Watercourses and Streams.
Scheduling	Plan and schedule work in dry conditions, except in emergency situations
Part 2 BMPs (Site-specific BMPs)	Use any of the eight BMP outcome categories at or around the work site to reduce turbidity, sediment and/or pollutants from entering watercourses or streams, wetlands, lakes, or other water bodies: • "Filter/Perimeter Protection," • "Keep Water from Work Area," • "Reduce Potential for Soil Erosion," • "Reduce Water Velocity/Erosive Forces" Go to Part 2 BMPs for selection and installation guidelines.
Disturbed Areas	Exposed and unworked soils shall be stabilized by application of BMPs that protect the soil from the erosive forces of raindrop impact and flowing water: • During winter season – October through June – no soils shall remain exposed and unworked for more than 2 days. • During the summer season – July through September – no soils shall remain exposed and unworked for more than 7 days. • These conditions apply to all soils onsite, whether or not at final grade.
	Leave vegetative buffer outside of work zone to provide biofiltration and shading outside of the back slope of ditch.
	Leave vegetative buffer of grasses and small forbs between the shoulder and ditch if the area is wide enough.
	Leave vegetated sections of grasses and small forbs in ditchline, where sediment buildup does not impede flow or infiltration.
	After removal of sediments from ditch line, replant disturbed soils with grasses and small forbs.
	Prior to BMP removal, clean up accumulated sediments and seed or replant disturbed area.
Equipment/Tools	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. *Continued on next page*

Maintenance Category #4: Open Drainage Systems (Continued)

BMPs	*Description*
Equipment/Tools *Continued from preceding page*	• Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field. • Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Material/Debris Disposal	Remove and dispose of collected materials and liquids offsite
	Solid materials removed from the site will be taken to a disposal or recycling area
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel.

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Protect downgrade habitat by removing sediment.
- Protect water quality.
- Reduce work site pollutant runoff to watercourses, streams and/or water bodies.
- Maintain or restore the storage, delivery, and routing of surface and ground water to control volumes and velocities of discharge by removing sediment loading from drainage system.
- Maintain or restore storage area of sediment and other pollutants.
- Remove sediment from system.
- Vegetation management.

Conservation objectives and how they are achieved are shown on the following table:

Maintaining Open Drainage Systems	
Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one or more of the following:
Open drainage system maintenance activities reduce the potential for sediment and debris from reaching watercourses or streams. Maintain or restore water quality by removal of sediment and other pollutants. Revegetation provides biofiltration, shading and bank stabilization. Maintain or restore sediment collection process by removal of excess sediment. This maintenance activity reduces the potential for sediment to reach downgrade fish habitat. Control flow volumes and velocities by removing sediment and repairing structures.	Performing maintenance, repair, and upkeep of system. Reducing drainage system failure. Reducing risk of sediment from roadway/shoulder failure from entering aquatic habitat. Reducing erosion in unlined ditches by seeding ditch line. Increasing or improving biofiltration by seeding ditchline and disturbed soil. Maintaining or restoring velocities and peak flows by creating storage areas by cleaning ditches to reduce blockages. Providing erosion/sediment controls during maintenance work to protect water quality and reduce sediment.

Maintenance Category #5:
WATERCOURSES AND STREAMS

Determination of Watercourses and Streams for Maintenance Activities.

WAC 220-110-020 (83): "'Watercourse' and 'river or stream' means any portion of a channel, bed, bank, or bottom waterward of the ordinary high water line of waters of the state including areas in which fish may spawn, reside, or through which they may pass, and tributary waters with defined bed or banks, which influence the quality of fish habitat downstream. This includes watercourses which flow on an intermittent basis or which fluctuate in level during the year and applies to the entire bed of such watercourse whether or not the water is at peak level. This definition does not include irrigation ditches, canals, stormwater runoff devices, or other entirely artificial watercourses, except where they exist in a natural watercourse which has been altered by humans."

Activities[1]

Repair, replacement, installation, and maintenance tasks performed on watercourses or streams. These activities may include structural repair/ replacement, slope stabilization, sediment removal, vegetation management, debris removal, access road maintenance, habitat maintenance and improvements (for example, fish ladders, weirs, and large woody material).

Some roadside ditches and stormwater facilities can be watercourses or streams. Watercourses and streams can be located within the road ROW, on easements, tracts, and public property or on private property. Proposed maintenance activities within waters of the state will be reviewed prior to work with the Washington State Department of Fish and Wildlife (WDFW) staff to ensure HPA compliance. In addition to project-specific HPA requirements, road crews will adhere to the provisions of these *Guidelines* to ensure compliance with the Regional Program. Environmental support staff will review the planned work and contact WDFW to determine if the facility meets the definition above.

Purpose

- Maintenance tasks performed on roadside ditches or stormwater facilities that are watercourses or streams include activities such as the following:
    - Cleaning.

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

- Reshaping/regrading.
- Erosion control/slope stabilization.
- Vegetation management.
- Removing debris, trash, yard waste, and sediment.
- Repairing structures.

- Maintaining ditches or stormwater facilities that are watercourses or streams includes activities to preserve line and grade, depth and cross section, inflow and outflow of culverts (in compliance with federal, state and local regulations).
- Ditches or stormwater facilities that are watercourses or streams are maintained when sediment, debris, or vegetation impede flows, or storage of water and sediment to a point where safety or the ROW structure is compromised.
- Check dams, or similar BMP's should not be used when maintenace activities are conducted in locations that could reduce actual or potential high flow salmonid refuge functions.
- Providing maintenance can reduce:
  - Hazardous driving conditions, particularly during cold weather.
  - Roadway washouts during storm events.
  - Flooding of adjacent property.
  - Saturation of the road sub-base.
  - Large quantities of sediment transport.
  - Water quality impacts.
  - Impacts to habitat.
  - Jeopardizing structural integrity of roadway system
  - Facilities that are not properly functioning (from a transportation infrastructure, water quality, or habitat perspective).

BMP Outcomes

- Maintain and restore water quality by cleaning ditches and/or stormwater facilities that are watercourses or streams.
- Maintain or restore structure.
- Minimize sediment or debris from leaving construction/repair area.
- Maintain or restore surface water drainage and storage.
- Maintain or restore sediment storage capacity.
- Reduce flooding from plugging of system or reduced storage area.
- Keep structure clear of debris, trash, and yard waste.
- Reduce sediment and debris from entering watercourses or streams.

- Reduce sediment conveyance through drainage system by trapping and removal.
- Leave vegetated sections in ditch where sediment buildup has not impeded flow to the point of causing flood damage/hazard or overtopping a road.
- Improve in-stream biofiltration.
- Large woody material (LWM) may be relocated within the ROW to help maintain stream forming processes and to support fish habitat as permit, public safety, and ROW structure conditions allow.

BMPs
Maintenance Category #5: Watercourses and Streams

BMPs	*Description*
Watercourses & Streams	Maintain drainage systems that are watercourses and/or streams.
Permits	Maintenance activities within waters of the state will be reviewed with WDFW, and permitted with an HPA, as necessary.
	When required, habitat restoration will be designed and constructed in accordance with applicable permits.
Scheduling	Plan and schedule work in dry conditions or when flows are anticipated to be at their lowest when possible.
Fish Exclusion	Follow "Fish Exclusion Protocol" (Appendix E) and permit conditions during maintenance activities.
	Fish will be excluded from the construction area using appropriate methods such as the use of nets, dewatering at a controlled rate, and removal of stranded fish according to HPA permit conditions.
Part 2 BMPs (Site-specific BMPs)	Use any of the eight BMP outcome categories at or around the work site to reduce turbidity, sediment and/or pollutants from entering watercourses, streams, wetlands, lakes, or other water bodies: • "Filter/Perimeter Protection," • "Keep Water from Work Area," • "Habitat Protection/Maintenance" and/or • "Reduce Water Velocity/Erosive Forces." Go to Part 2 BMPs for selection and installation guidelines.
Disturbed Areas	Exposed and unworked soils shall be stabilized by application of effective BMPs that protect the soil from the erosive forces of raindrop impact and flowing water: • During winter season – October through June – no soils shall remain exposed and unworked for more than 2 days. • During the summer season – July through September – no soils shall remain exposed and unworked for more than 7 days. • These conditions apply to all soils onsite, whether or not at final grade. *Continued on next page*

BMPs

Maintenance Category #5: Watercourses and Streams (Continued)

BMPs	Description
Disturbed Areas *Continued from preceding page*	Minimize disturbance to riparian vegetation: • Mark job site. • Flag work area. • Operate equipment to minimize damage to riparian habitat.
	Leave vegetative buffer of grasses and small forbs between the shoulder and ditch if the area is wide enough.
	Leave vegetated sections in ditchline, where sediment buildup does not impede flow or infiltration.
	Leave vegetative buffer outside of work zone to provide biofiltration and shading outside of the back slope of ditch.
	Monitor water quality in accordance with permit requirements.
	Monitor plantings in accordance with permit requirements.
	Prior to BMP removal, clean up accumulated sediment and seed or replant disturbed area.
Equipment/tools	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field. • Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials such as: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Material/Debris Disposal	After repairs are completed, remove construction/maintenance waste materials from work site and dispose of and/or recycle.
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel.

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Protect habitat.
- Protect water quality.
- Reduce work site pollutant runoff to watercourses, streams and/or water bodies.
- Maintain or restore the storage, delivery, and routing of surface and ground water to control volumes and velocities of discharge by removing sediment loading from drainage system.
- Remove sediment from system.
- Identify chronic sediment deposit problem sites that require frequent sediment removal.

Conservation objectives and how they are achieved are shown on the following table:

Maintaining Ditches and/or Stormwater Facilities which are Watercourses or Streams	
Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one or more of the following:
Reduce the potential for sediment and debris to adversely impact fish habitat. Maintain or restore water quality by removal of sediments and other pollutants. Revegetate to provide biofiltration, shading, and bank stabilization and promote macro-invertebrate population growth. Maintain or restore sediment collection process by removal of excess sediment. Control flow volumes and velocities by removing sediments and repairing structures.	Performing maintenance, repair, and upkeep of system. Reducing drainage system failure. Reducing risk of roadway/shoulder failure sediments from entering aquatic habitat. Reducing erosion in unlined ditches by seeding ditch line. Increasing or improving biofiltration by seeding ditch line and disturbed soil. Maintaining or restoring velocities and peak flows by creating storage areas by cleaning ditches to reduce blockages. Providing erosion/sediment controls during maintenance work to protect water quality and reduce sediments. Identifying chronic sediment deposit locations and potential sources of excess sediment. Provide information to agency watershed planning, regulatory agencies, and/or agency CIP program for permanent solution.

Maintenance Category #6: STREAM CROSSINGS

Activities[1]

Repair, cleaning, maintenance, installation or replacement/upgrade of stream crossing facilities, such as pipes, arch pipes, box culverts, fish ladders, weirs, sediment pools, access roads and bridges. Maintenance within waters of the state will be reviewed with the WDFW.

PURPOSE

This work is done to reduce flooding or catastrophic road failure as a result of facilities which have filled to capacity or are blocked with sediment or debris or which may be undersized, damaged, or deteriorated. Timely replacement or upgrade of these facilities is critical in terms of roadway safety, habitat protection, fish passage, and infrastructure preservation.

BMP Outcomes

- Maintain, repair or replace structure.
- Improve or maintain fish passage (HPA).
- Improve or maintain riparian habitat (HPA).
- Improve or maintain streambed habitat within pipe, culvert or area within work zone (HPA).
- Minimize construction/repair worksite area sediments and debris from entering watercourses, streams or water bodies.
- Maintain or restore surface water drainage by performing repairs.
- Reduce streambed/stream bank erosion by revegetation or stabilization of disturbed soils.
- Reduce flooding and erosion from blockages of system by removing obstructions such as debris, trash, yard waste, sediment.
- LWM may be relocated within the ROW to help maintain stream forming processes and to support fish habitat as permits, public safety and ROW structure conditions allow.
- Check dams, or similar BMP's should not be used when maintenace activities are conducted in locations that could reduce actual or potential high flow salmonid refuge functions.

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

BMPs

Maintenance Category #6: Stream Crossings

BMPs	*Description*
Permits	Maintenance activities within waters of the state will be reviewed by WDFW and permitted with an HPA, as necessary.
	When required, habitat restoration will be designed and constructed in accordance with applicable permits.
Scheduling	If seasonal watercourse or stream, schedule work during dry conditions.
	Plan and schedule work in dry conditions or low flow conditions except in emergency situations if possible (HPA).
Fish Exclusion	Follow "Fish Exclusion Protocol" (Appendix E) and permit conditions during maintenance activities.
	Fish will be excluded from the construction area using appropriate methods such as the use of nets, dewatering at a controlled rate, and removal of stranded fish according to HPA permit conditions.
Part 2 BMPs (Site-specific BMPs)	Use any of the eight BMP outcome categories at or around the work site to reduce turbidity, sediment and/or pollutants from entering watercourses or streams, wetlands, lakes, or other water bodies: • "Filter/Perimeter Protection," • "Keep Water from Work Area," • "Habitat Protection/Maintenance" and/or • "Reduce Water Velocity/Erosive Forces." Go to Part 2 BMPs for selection and installation guidelines.
Disturbed Areas	All exposed and unworked soils shall be stabilized by application of effective BMPs that protect the soil from the erosive forces of raindrop impact and flowing water: • During winter season – October through June – no soils shall remain exposed and unworked for more than 2 days. • During the summer season – July through September – no soils shall remain exposed and unworked for more than 7 days. • These conditions apply to all soils onsite, whether or not at final grade.
	Minimize disturbance to riparian vegetation: • Mark job site. • Flag work area. • Position equipment to protect riparian habitat.
	Monitor water quality.
	Restore vegetation appropriate for site conditions within riparian areas.
	Protect outflows by bio-vegetation techniques or armoring to reduce erosion.
	Monitor vegetation and stream habitat in accordance with permit requirements.
Continued on next page	Prior to BMP removal, clean up accumulated sediments and seed or replant disturbed area.

BMPs
Maintenance Category #6: Stream Crossings (Continued)

BMPs	*Description*
Equipment/Tools *Continued from preceding page*	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field. • Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials such as: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Material/Debris Disposal	After repairs are completed, remove construction/maintenance waste materials from work site and dispose of and/or recycle.
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel.

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Repair, replace or maintain structure.
- Protect habitat and watercourse or stream by performing maintenance.
- Protect habitat and watercourse or stream while performing maintenance.
- Reduce work site pollutant runoff.

- Restore or maintain fish passage through structure.
- Maintain or restore the storage, delivery, and routing of surface and ground water to control volumes and velocities of discharge by maintaining structure.

Culvert replacement work in stream crossings can significantly contribute to conservation when that work meets the habitat goal to "restore or maintain fish passage through structure." To that end, Washington State law and regulations require that new or retrofit culverts be designed for fish passage. (RCW 77.55.060; WAC 220-110-070). Culvert installation and replacement under these sections requires the issuance of a Hydraulic Project Approval (HPA) by the Washington Department of Fish and Wildlife (WDFW). All work done under this section will comply with the HPA. To clarify the fish passage criteria defined by WAC 220-110-070, the Washington Department of Fish and Wildlife prepared a design manual entitled "Fish Passage Design at Road Culverts" (the Manual) (WDFW 1999). The Manual was reviewed by the National Marine Fisheries Service, which concluded that, when designing retrofit or replacements of existing culverts (The WDFW guidelines should result in improved habitat conditions with the potential to bring impaired habitat on a trend to Properly Functioning Conditions (PFC), and that using the WDFW manual while designing a new culvert should not impair PFC as long as the hydraulic and other fish passage considerations are properly applied. NMFS memorandum, Assistant Regional Administrator for Hydro Division to Assistant Regional Administrator for Habitat Conservation Division, November 28, 2001). Therefore, the Regional Program incorporates the relevant considerations for the design of new and retrofit culverts stated in the Manual, as well as other fish passage and habitat considerations addressed in the last chapter of the Manual. (As of the date of this publication, the Manual can be viewed on the Internet at http://www.wa.gov/wdfw/hab/engineer/cm/fpdrc.pdf.)

Conservation objectives and how they are achieved are shown on the following table:

Performing Stream Crossing Maintenance	
Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one of more or the following:
Maintain structures. Improve fish passage. Reduce damage to shoulders, roadways and riparian habitat that may be caused by flooding from blockages. Maintain or restore water quality by repairing, replacing or maintaining structure. Maintain or restore nutrient process by re-vegetating after land disturbance to hold sediments and to remove nutrients. Maintain or restore natural flow volumes and stream velocities in the vicinity of the stream-crossing project.	Performing maintenance. Reducing flooding and drainage system failure. Reducing the risk of sediment from roadway/shoulder failure from entering aquatic habitat and watercourse or stream. Reducing adverse habitat impacts stemming from catastrophic culvert/pipe failures. Reducing stream bank erosion by repair work and re-vegetating. Providing stream shading by planting riparian area (HPA). Reducing habitat-detrimental flooding caused by a plugged system or reduced storage capacity. Flooding within the ROW can by detrimental to salmonids or habitat by introducing pollutants (bypassing structures that trap sediment or provide infiltration), stranding fish, destroying vegetation, and/or severely eroding stream channels. Providing appropriate erosion/sediment control BMPs during maintenance work. Maintaining or restoring flow capacity and stream velocities in the vicinity of stream-crossing projects.

Potential Capital or Major Restoration Projects

In some cases, habitat restoration work—which is beyond the scope of routine maintenance activities—might be done as capital improvement projects or as major restoration projects. In these cases, the following BMPs may apply where ROW is available and to the extent that design/habitat considerations allow:

- Remove artificial bank hardening and/or channel confining structures.
- Enhance or add areas of spawning, migration, feeding, or rearing habitat.
- Create connections to off-channel habitat.

In all cases, capital or major restoration projects must be done in accordance with federal, state, and local regulations and permit requirements.

Maintenance Category #7:
GRAVEL SHOULDERS

Activities[1]

Maintenance tasks performed on gravel shoulders improve drainage, restore proper grade, restore filtering capability, maintain vegetation to provide adequate site distance, smooth rutting, and remove buildup of sediment before entering drainage system.

Purpose

Gravel shoulders are part of the ROW structure that runs along the edge of the roadway or surface structures. The removal of sediment, sod, and debris from the shoulder road edge is part of the sediment collection system. The filtering of sediments and the opportunity for infiltration is part of the water flow system.

Maintenance activities are performed to ensure the gravel shoulder functions as a filter for sediments, provides biofiltration, and controls surface water runoff. Maintenance of a vegetative buffer (grasses and small forbs) between the shoulder and ditch, if the area is wide enough, reduces erosion.

BMP Outcomes

- Restore structure.
- Minimize the amount of construction or repair to reduce the amount of worksite sediments and debris to from entering watercourses, streams or water bodies.
- Restore or maintain surface water drainage.
- Reduce or trap sediments in gravel.
- Reduce road surface flooding by allowing water to run off roadway.
- Reduce turbidity.
- Allow infiltration of water through gravel.
- In areas where open ditch sections abut the roadway, use gravel and vegetation on the roadway shoulder to provide a filter strip for runoff before water enters the ditch.

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

BMPs

Maintenance Category #7: Gravel Shoulders

BMPs	*Description*
Gravel Shoulders	Perform Maintenance.
	Remove builtup sediment and sod.
	Restore gravel shoulder.
	Roll shoulder material to ensure proper grade and retention of sediment control qualities.
Scheduling	Periodically remove sediment deposits and vegetation during the dry season when possible with a motor grader.
Part 2 BMPs (Site-specific BMPs)	Use any of the eight BMP outcome categories as appropriate at or around the work site to reduce turbidity, sediment and/or pollutants from entering watercourses or streams, wetlands, lakes, or other water bodies: • "Filter/Perimeter Protection" Go to Part 2 BMPs for selection and/or installation guidelines.
Disturbed Areas	Exposed and unworked soils shall be stabilized by application of effective BMPs that protect the soil from the erosive forces of raindrop impact and flowing water: • During winter season – October through June – no soils shall remain exposed and unworked for more than 2 days. • During the summer season – July through September – no soils shall remain exposed and unworked for more than 7 days. • These conditions apply to all soils onsite, whether or not at final grade.
	Prior to BMP removal, clean up accumulated sediment and seed or replant disturbed area.
	Minimize disturbance to vegetation outside of shoulder area. Leave vegetative strip where possible between the gravel and ditch line for biofiltration.
Equipment/Tools *Continued on next page*	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field. • Use non-toxic solvents whenever possible.

BMPs

Maintenance Category #7: Gravel Shoulders (Continued)

BMPs	*Description*
Equipment/Tools *Continued from preceding page*	• Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Material/Debris Disposal	After repairs are completed, remove construction/maintenance waste materials from work site and dispose of and/or recycle.
	Use pickup sweepers to remove materials from roadway in assigned areas.
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel.

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Protect watercourse, stream and other water bodies.
- Restore or maintain water quality.
- Control the storage, delivery, and routing of surface and ground water to control volumes and velocities of stormwater discharge by cleaning and maintaining shoulders for sheet flow and infiltration.
- Reduce sediment transport by removing sediment before it enters watercourses and/or streams.
- Maximize opportunities for increased infiltration and/or biofiltration.

Conservation objectives and how they are achieved are shown on the following table:

Gravel Shoulder Maintenance

Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one or more of the following:
Maintain or restore water quality by reducing worksite pollutants. Maintain or restore sediment transport process. Gravel and grass trap and remove sediment before entering ditch or surface water. Maintain or restore nutrient process by re-vegetating disturbed soil. Control flow volumes and velocities (sheet flow vs. point discharge) by performing shoulder maintenance. Increase opportunities for infiltration by placing gravel on the edge of the roadway. Maintain, repair, or replace shoulder area to: • Slow velocity. • Reduce turbidity. • Reduce flooding and ponding on roadway. • Reduce splashing off roadway.	Reducing environmental damage from vehicle accidents, which, in turn, reduces risk of pollutants such as petroleum hydrocarbons, heavy metals, road wash-off, and debris from entering aquatic habitat. In addition it reduces structural damage to watercourses and stream systems. Reducing roadway or shoulder failure that reduces the risk of sediment entering aquatic habitat as a result of roadway and shoulder failure, and reduces sub-base damage. Using erosion/sediment control BMPs during maintenance activities. Controlling, reducing and/or removing sediment before it reaches watercourses, streams or water bodies.

Maintenance Category #8:
STREET SURFACE CLEANING

Activities[1]

Removing soil, organic material, dust, trash and other debris to keep road surfaces clean and remove sediment from the roadway before it enters the storm drain system, surface water system, watercourses, streams or other water bodies. The removal of dust also reduces airborne pollution and sediment loading.

Purpose

Street cleaning the ROW surface structure traps and removes large quantities of sediment. Roadways and surface structures are part of the sediment and water collection system.

Street surface cleaning activities are performed to provide a safe roadway surface for the traveling public. Sweeping reduces sediment loading to the drainage system, surface waters, watercourses, streams and other water bodies. Soil, organic material, other debris and pollutants are removed before entering watercourses, stream and/or other water bodies.

BMP Outcomes

- Clean roadway surface.
- Remove soil, organics, solid waste and debris from entering watercourses, streams and/or water bodies.
- Reduce turbidity.
- Restore surface water drainage by cleaning curbs and drain inlets.
- Improve water quality by removing sediment.
- Minimize flooding caused by plugged drains.
- Reduce sediment loading of shoulders, ditches, detention ponds and watercourses and/or streams.

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

BMPs
Maintenance Category #8: Street Surface Cleaning

BMPs	*Description*
Pre-Activity	Use cleanup procedures that protect water quality.
Equipment/Tools	Control speed of sweeper to minimize airborne particulates and remove maximum amount of debris.
	Use water spray system on sweeper to reduce dust.
	Use pickup sweepers to remove materials from roadway in assigned areas.
	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field. • Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Material/Debris Disposal	Remove construction/maintenance waste materials from work site and dispose of and/or recycle.
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel.

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Restore or preserve water quality.
- Protect watercourses, streams and/or other water bodies by performing maintenance.
- Reduce sediment transport and loading of drainage systems, watercourses or streams, or other water bodies.
- Reduce sediment and pollutant transport and loading of drainage systems, watercourses, streams or other water bodies.

Conservation objectives and how they are achieved are shown on the following table:

Street Cleaning	
Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one or more of the following:
Maintain or restore water quality by reducing sediment, pollutants, and debris from entering drainage systems, watercourses, streams and/or other water bodies. Maintain or restore sediment transport process by removing sediment before it enters: • Catch basins/Manholes. • Detention/Retention ponds. • Swales. • Pipes. • Inlets. • Ditches. • Shoulders.	Reducing environmental damage from vehicle accidents that, in turn, reduces risk of pollutants such as petroleum hydrocarbons, heavy metals, road wash-off, and debris from entering aquatic habitat. In addition it reduces structural damage to watercourses and stream systems. Reducing sediments and contaminants from reaching the stormwater, watercourse, stream system and other water bodies. Reducing occurrence of debris clogged drain inlets. Reducing flooding and drainage system failure by removing surface and curb line sediments and debris.

Maintenance Category #9:
BRIDGE MAINTENANCE

Activities[1]

Bridge maintenance activities include inspecting, testing, repairing, replacing, maintaining, painting or resurfacing components of the bridge such as the electrical system, substructure, superstructure, surface footings, piers, supports, access roads, abutments, ramps, and vegetation management.

Purpose

Bridge repair, replacement, installation, and maintenance activities are performed to provide a safe roadway system for the traveling public, and to protect bridge infrastructure according to local, state and federal regulations. This, in turn, protects the stream, riparian habitat, and streambank by limiting the number of crossings through the habitat area.

BMP Outcomes

- Improve or maintain fish passage (HPA).
- Improve or maintain riparian habitat (HPA).
- Improve or maintain streambed habitat (HPA).
- Reduce sediment at construction or repair area.
- Reduce streambed or streambank erosion.
- Reduce flooding by removal of blockages.
- Reduce failure of structure.
- Reduce debris from entering waterway.
- Large woody material (LWM) may be relocated within the ROW to help maintain stream forming processes and to support fish habitat as permit, public safety, and ROW structure conditions allow.

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

BMPs
Maintenance Category #9: Bridge Maintenance

BMPs	*Description*
Permits	Bridge maintenance activities requiring an HPA will be reviewed with the WDFW and permitted prior to construction in accordance with the HPAs.
Scheduling	If bridge maintenance is to be performed in a seasonal watercourse or stream, schedule the work during dry conditions if possible.
Habitat Measures	Maintain or add areas of spawning, migration, feeding, or rearing habitat as directed by WDFW (HPA) permit, public safety, and ROW structure conditions allow.
	Place appropriate streambed material (HPA)
Part 2 BMPs (Site-specific BMPs)	Use any of the eight BMP outcome categories at or around the work site to reduce turbidity, sediment and/or pollutants from entering watercourses or streams, wetlands, lakes, or other water bodies: • "Filter/Perimeter Protection," • "Reduce Potential for Contaminants Falling into Water," • "Settling," • "Habitat Protection/Maintenance" and/or • "Reduce Water Velocity/Erosive Forces." Go to Part 2 BMPs for selection and/or installation guidelines.
Disturbed Areas	Exposed and unworked soils shall be stabilized by application of effective BMPs that protect the soil from the erosive forces of raindrop impact and flowing water: • During winter season – October through June – no soils shall remain exposed and unworked for more than 2 days. • During the summer season – July through September – no soils shall remain exposed and unworked for more than 7 days. • These conditions apply to all soils onsite, whether or not at final grade.
	Monitor water quality in accordance with permit requirements.
	Restore vegetation where appropriate for site conditions within riparian areas (HPA).
	Minimize disturbance to riparian vegetation: • Mark job site. • Flag work area. • Operate equipment to minimize damage to riparian habitat.
	Prior to BMP removal, clean up accumulated sediment and seed or replant disturbed area.
Equipment/Tools *Continued on next page*	Tool and Equipment cleanup procedures: • Routinely inspect equipment, tools and vehicles for leaks or damage. • Keep cleanup materials, such as dry absorbent materials, onsite to allow prompt cleanup of spills. • Promptly repair or replace leaking connections, pipes, hoses and/or valves.

BMPs

Maintenance Category #9: Bridge Maintenance (Continued)

BMPs	*Description*
Equipment/Tools *Continued from preceding page*	Clean equipment and tools offsite in an area where pollutants can be contained.
	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field. • Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Material/Debris Disposal	After repairs are completed, remove construction/maintenance waste materials from work site and dispose of and/or recycle.
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel.

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Contribute to the restoration and/or enhancement of aquatic habitat (HPA).
- Control worksite pollutant run-off.
- Maintain or restore fish passage through structure.
- Maintain or restore water quality off bridge by maintaining drainage system.
- Repair, replace or maintain structure.
- Maintain habitat and watercourse or stream by performing maintenance.
- Reduce flooding.
- Preserve or restore watercourse or stream velocities impaired by blockages in the vicinity of the bridge maintenance activity.

Conservation objectives and how those objectives are achieved are shown on the following table:

Bridge Maintenance	
Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one or more of the following:
Modify artificial barriers that are not part of structure to maintain or enhance fish habitat (HPA). Maintain or restore water quality by performing maintenance such as: • Surface repair/cleaning. • Drainage repair/cleaning. • Structure repair/cleaning.	Performing maintenance. Reducing flooding on bridge surface. Reducing environmental damage from vehicle accidents that, in turn, reduces risk of pollutants such as petroleum hydrocarbons, heavy metals, road wash-off, and debris from entering aquatic habitat. Structural damage to watercourses and stream systems is reduced by not having vehicles leave the road surface. Providing shade along watercourses or streams by planting riparian area outside of bridge site (HPA, federal, state, or other regulations). Providing erosion/sediment control BMPs during maintenance work.

Maintenance Category #10:
SNOW AND ICE CONTROL

Activities[1]

Road maintenance crews are responsible for sanding and plowing operations during periods of freezing weather. Snow and ice removal is considered to be work of such importance that it is classified as an emergency operation. Safety for the traveling public and road department personnel shall be given primary consideration at all times. Snow and ice removal reduces vehicle accidents that may adversely impact sensitive areas. Post-event cleanup is considered a continuation of the event and removal of sediment from the road surface reduces sediment loading and preserves water quality.

Purpose

These activities are performed to provide a reasonably safe roadway surface for the traveling public, which in turn protects the environment by reducing accidents and vehicles leaving the roadway.

BMP Outcomes

- Provide a reasonably safe roadway surface for the traveling public.
- Minimize pollutants resulting from vehicle accidents such as petroleum hydrocarbons, heavy metals, and road wash-off from entering storm drainage/stream system.
- Reduce salt and other chemicals from entering water bodies.
- Reduce the occurrence of vehicles leaving the road surface and entering sensitive areas.
- Reduce sediment loading to sensitive areas.

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

BMPs

Maintenance Category #10: Snow and Ice Control

BMPs	*Description*
Operational	Minimize use of salt by reducing salt-to-sand ratios.
	Treat sand cleanup as part of the emergency: remove sand as a priority in order to remove sediments.
	Plow snow in areas that allow vegetation to filter and contain sand.
	Prioritize cleanup efforts to aquatic habitat areas to minimize impacts.
	Prioritize cleanup in areas without sediment collection systems.
Equipment/Tools	Tool and Equipment cleanup procedures: • Routinely inspect equipment, tools and vehicles for leaks or damage. • Keep cleanup materials, such as dry absorbent materials, onsite to allow prompt cleanup of spills. • Promptly repair or replace leaking connections, pipes, hoses and/or valves.
	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field. • Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires.
	Surfaces shall be cleaned following any discharge or spill incident.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Material/Debris Disposal	Remove construction/maintenance waste materials from work site and dispose of and/or recycle.
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel.

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Maintain or restore water quality.
- Protect aquatic habitat and riparian area.

Conservation objectives and how those objectives are achieved are shown on the following table:

Snow and Ice Control	
Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one or more of the following:
Maintain or restore water quality. Reduce vehicle accidents to: • Reduce risk of petroleum and debris entering aquatic habitat. • Reduce structural damage to stream system. • Reduce vehicles from entering drainage, surface water or habitat. Reduce sediment transport by cleaning sand from roadway.	Removing sand from roadway surface reduces sediment contribution to adjacent water bodies and reduces dust and minimizes resulting air quality impacts. Reducing salt and chemical use maintains water quality. Improving traction reduces accidents, which reduces pollutants from entering aquatic habitats. Improving traction to keep vehicles on roadway and out of aquatic habitats or riparian areas.

Maintenance Category #11:
EMERGENCY SLIDE/WASHOUT REPAIR

Activities[1]

Slides and washouts are caused by the impact of heavy rainfall or freeze and thaw conditions on unstable and/or saturated soils. Slides and washouts may occur on the slope above or below roadways, private property, or sensitive areas. Slide or washout repair activities may include the following: removal of slide/washout material from ROW; backfilling or stabilizing slope, reestablishment of damaged roadway structures; repairing and cleaning drainage system, restoring access road, revegetating, and/or armoring with rock.

Purpose

This emergency response activity is done to protect the public, to repair the roadway system, and to prevent further damage to the roadway, private property and/or the environment. The initial response to emergencies relating to slide and washout repair is covered under Program Element 7, Emergency Response. After the emergency is stabilized, the work is covered under this maintenance category.

BMP Outcomes

- Control sediment and debris from ROW.
- Stabilize slide/washout area within the ROW to reduce environmental, transportation and/or structural impacts.
- Repair roadways, repair access roads, surface drainage, storm water system, and/or other ROW structures.

BMPs

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

Maintenance Category #11: Emergency Slide/Washout Repair

BMPs	*Description*
Permits	Maintenance within waters of the state will be reviewed by WDFW, and permitted with an HPA, as necessary.
	When required habitat restoration will be designed and constructed in accordance with applicable permits.
Fish Exclusion	Where practical and without jeopardizing the emergency response, in a timely manner, "Fish Exclusion Protocol" (Appendix E) and permit conditions will be followed during maintenance activities.
	Fish will be excluded from the construction area using appropriate methods such as the use of nets, dewatering at a controlled rate, and removal of stranded fish according to HPA permit conditions.
Part 2 BMPs (Site-specific BMPs)	Use any of the eight BMP outcome categories at or around the work site to reduce turbidity, sediment and/or pollutants from entering watercourses, streams, wetlands, lakes, or other water bodies: • "Filter/Perimeter Protection," • "Reduce Water Velocity/Erosive Forces," and/or • "Keep Water from Work Area." Go to Part 2 BMPs for selection and installation guidelines.
Disturbed Areas	Exposed and unworked soils shall be stabilized by application of effective BMPs that protect the soil from the erosive forces of raindrop impact and flowing water: • During winter season – October through June – no soils shall remain exposed and unworked for more than 2 days. • During the summer season – July through September – no soils shall remain exposed and unworked for more than 7 days. • These conditions apply to all soils onsite, whether or not at final grade
	Prior to BMP removal, clean up accumulated sediment and seed or replant disturbed area.
Material/Debris Disposal	After repairs are completed, remove construction/maintenance waste materials from site for disposal or recycling.
Equipment/Tools *Continued on next page*	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field.

BMPs

Maintenance Category #11: Emergency Slide/Washout Repair (Continued)

BMPs	*Description*
Equipment/Tools *Continued from preceding page*	• Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel.

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Reduce erosion/sedimentation to restore water quality.
- Reduce sediment loading offsite.
- Contribute to the restoration of aquatic habitat (HPA).
- Encourage revegetation to stabilize slope and provide riparian habitat near aquatic habitat.
- Maintain or restore the storage, delivery, and routing of surface and ground water in order to control flow rate and velocity of discharge by restoring the damaged structure.

Conservation objectives and how they are achieved are shown on the following table:

Slide/Washout Repair	
Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one or more of the following:
Preserve or restore water quality by removing slide material. Maintain or restore sediment transport process by opening roadway, ditches, and closed drainage systems. Maintain or restore nutrient process by revegetating after land disturbance in order to hold sediments and to remove nutrients. Maintain or restore flow volumes and stream velocities.	Reducing catastrophic road failure. Removing slide material from the ROW. Reducing the risk of slide material entering aquatic habitat. Reducing flooding on roadway by clearing roadway, ditches, and/or closed drainage systems. Flooding within the ROW can by detrimental to aquatic habitat by introducing pollutants (bypassing structures which trap sediment or provide infiltration), stranding fish, destroying vegetation, or severely eroding stream channels. Providing erosion/sediment control BMPs during, and following, maintenance work within the slide or washout area. Re-vegetate disturbed soils.

Maintenance Category #12: CONCRETE

Activities[1]

Maintenance activities performed on the concrete structures, such as concrete roadways, sidewalks, driveways, curb and gutter sections include the following: removal or repair of damaged sections and installation of new structures.

Purpose

These activities are performed to provide a safe roadway and pedestrian traffic infrastructure and to maintain adequate conveyance of surface water to drainage systems.

BMP Outcomes

- Reduce velocities by opening curb cuts for sheet flow when possible.
- Increase infiltration by opening curb cuts when possible.
- Minimize pollutants from leaving maintenance or repair area.
- Improve surface water drainage.

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

BMPs

Maintenance Category #12: Concrete

BMPs	*Description*
Part 2 BMP (Site-specific BMPs)	Use any of the eight BMP outcome categories at or around the work site to reduce turbidity, sediment and/or pollutants from entering watercourses, streams, wetlands, lakes, or other water bodies: • "Filter/Perimeter Protection" • "Containment" Go to Part 2 BMPs for selection and installation guidelines.
Disturbed Areas	Exposed and unworked soils shall be stabilized by application of BMPs that protect the soil from the erosive forces of raindrop impact and flowing water: • During winter season – October through June – no soils shall remain exposed and unworked for more than 2 days. • During the summer season – July through September – no soils shall remain exposed and unworked for more than 7 days. • These conditions apply to all soils onsite, whether or not at final grade.
	Prior to BMP removal, clean up accumulated sediment and seed or replant disturbed area.
Material/Debris Disposal	After repairs are completed, remove construction/maintenance waste materials from site for disposal or recycling.
Equipment/Tools	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field. • Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel.

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Reduce pollutant runoff to restore water quality.

Conservation objectives and how they are achieved are shown on the following table:

Concrete	
Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one or more of the following:
Maintain or improve water quality. Maintain or restore stormwater conveyance. Maintain or restore sediment transport process by repairing road, curb or other ROW structure.	Reducing environmental damage from vehicle accidents. Lowering the number of accidents reduces the risk of pollutants such as petroleum hydrocarbons, heavy metals, road wash-off, and debris from entering aquatic habitat. In addition, it reduces structural damage to watercourses and stream systems. Reducing roadway or shoulder failure which reduces the risk of sediment entering aquatic habitat as a result of roadway and shoulder failure and reduces sub-base damage. Using appropriate erosion/sediment control BMPs.

Maintenance Category #13:
SEWER SYSTEMS

Activities[1]

Repair, replace, install, and maintain operating components of sewer facilities, including, but not limited to, treatment facilities, lift stations, pump stations, main lines, collection lines, trunk lines, interceptors, lake lines, access roads, associated ROW and storage/detention facilities.

Purpose

To maintain the integrity of the infrastructure, to provide additional services or components, to maintain operational reliability, and to protect public health and safety.

Ensure that the sewer/storm system efficiently collects and removes water from the ROW to achieve the following:

- Permit the maximum use of the roadway.
- Reduce damage to roadway structures.
- Protect the abutting property from damages.
- Restore surface water drainage in combined sewer/storm systems.
- Manage vegetation.

BMP Outcomes

- Restore structure.
- Minimize work site pollutants from construction/repair area.
- Reduce sediment conveyance by trapping and removal of sediment from the work site.
- Restore or maintain surface water drainage.
- Restore or maintain water quality:
  - Remove debris.
  - Remove trash.
  - Reduce turbidity.

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

BMPs
Maintenance Category #13: Sewer Systems

BMPs	*Description*
Sewer System	Maintain sewer system.
Part 2 BMPs (Site-specific BMPs)	Use any of the eight BMP outcome categories at or around the work site to reduce turbidity, sediment and/or pollutants from entering watercourses, streams, wetlands, lakes, or other water bodies: • "Filter/Perimeter Protection" • "Keep Water from Work Area" and/or • "Reduce Potential for Soil Erosion" Go to Part 2 BMPs for selection and installation guidelines.
Disturbed Areas	Exposed and unworked soils shall be stabilized by application of BMPs that protect the soil from the erosive forces of raindrop impact and flowing water: • During winter season –October through June–no soils shall remain exposed and unworked for more than 2 days. • During the summer season –July through September–no soils shall remain exposed and unworked for more than 7 days. • These conditions apply to all soils onsite, whether or not at final grade.
	Prior to BMP removal, clean up accumulated sediments and seed or replant disturbed area.
Equipment/Tools	Tool and equipment cleanup procedures: • Routinely inspect equipment, tools and vehicles for leaks or damage. • Keep cleanup materials, such as dry absorbent materials, onsite to allow prompt cleanup of spills. • Promptly repair or replace leaking connections, pipes, hoses and/or valves.
	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field. • Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials such as: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.

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BMPs

Maintenance Category #13: Sewer Systems (Continued)

BMPs	*Description*
Equipment/Tools *Continued from preceeding page*	If unable to move tools and equipment offsite, control and remove cleaning by-products.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Material/Debris Disposal	After repairs are completed, remove construction/maintenance waste materials from site for disposal or recycling.
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel.

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Protect watercourse and/or stream.
- Reduce worksite pollutants to restore or maintain water quality.
- Control the storage, delivery, and routing of surface and ground water to control volumes and velocities of stormwater discharge by repairing and maintaining sewer system.
- Reduce sediment transport from system breaks by maintaining and repairing system.
- Maximize opportunities for increased infiltration or biofiltration.

Conservation objectives and how those objectives are achieved are shown on the following table:

Repair, Replacement, and Installation of Sewer Systems	
Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one or more of the following:
Maintain or restore water quality. Maintain or restore functional components of the sewer system reduce sediment loading to: • Watercourses and/or streams. • Manholes. • Pump stations. • Main lines, trunk lines, lake lines and outfalls. • Side sewer connections. Maintain or restore functional components of sewer system to reduce sewage released to watercourses and/or streams. Maintain or restore flow volumes and velocities by repairing surface areas, roadway, ditches, shoulder and repairing structures. Reduce/Remove sediment from drainage system. Trap and remove sediment before entering watercourses and/or streams. Repair plugged lines, brakes, or blockages to reduce: • Turbidity. • Sediment loading. • Offsite erosion. • Offsite habitat impacts. • Sewage releases.	Performing repairs, replacement, and installation of systems. Reducing sewer system failure: • Reduces risk of roadway/shoulder failure sediment from entering aquatic habitat and watercourses and/or streams. Using erosion/sediment controls during construction/maintenance. Reducing flooding, erosion, sediment and sewage releases from broken, or damaged, system by making repairs. Re-vegetate disturbed soils

Maintenance Category #14:
WATER SYSTEMS

Activities[1]

Repair, replace, install and maintain operating components of water system facilities including, but not limited to, treatment plant, transmission mains, distribution lines, fire flow systems, reservoirs, tunnels, pump stations, meters, flushing, dewatering, services, access roads, and associated ROWs or water system structures.

Purpose

To maintain the integrity of the infrastructure, to collect, treat and distribute, clean drinking water, to provide additional service and components, to maintain operational reliability, and to protect health and safety issues.

BMP Outcomes

- Restore structure.
- Reduce sediment from entering watercourses, streams and aquatic habitat areas as a result of maintenance work.
- Minimize work site pollutants from construction/repair area.
- Reduce sediment conveyance by repairing damaged, broken, or leaking parts of a system.
- Restore or maintain water quality by making repairs:
    - Remove debris.
    - Remove sediment.
    - Restore surface grade.
    - Restore ditch line.
    - Restore road surface.
- Reduce turbidity by making repairs.
- Reduce flooding from broken pipes.

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

BMPs

Maintenance Category #14: Water Systems

BMPs	Description
Water System	Maintain water system.
Operational	Develop protocols for dechlorination of water.
	Develop a flushing program.
Part 2 BMPs (Site-specific BMPs)	Use any of the eight BMP outcome categories at or around the work site to reduce turbidity, sediment and/or pollutants from entering watercourses, streams, wetlands, lakes, or other water bodies: • "Filter/Perimeter Protection" • "Keep Water from Work Area" and/or • "Reduce Potential for Soil Erosion." Go to Part 2 BMPs for selection and installation guidelines.
Disturbed Areas	Exposed and unworked soils shall be stabilized by application of BMPs that protect the soil from the erosive forces of raindrop impact and flowing water: • During winter season – October through June – no soils shall remain exposed and unworked for more than 2 days. • During the summer season – July through September – no soils shall remain exposed and unworked for more than 7 days. • These conditions apply to all soils onsite, whether or not at final grade.
	Prior to BMP removal, clean up accumulated sediment and seed or replant disturbed area.
Equipment/Tools	Tool and equipment cleanup procedures: • Routinely inspect equipment, tools and vehicles for leaks or damage. • Keep cleanup materials, such as dry absorbent materials, onsite to allow prompt cleanup of spills. • Promptly repair or replace leaking connections, pipes, hoses and/or valves.
	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field. • Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials: grease, oil, oil filters,antifreeze, cleaning solutions, lead-acid batteries, hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.

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BMPs

Maintenance Category #14: Water Systems (Continued)

BMPs	Description
Equipment/Tools *Continued from preceeding page*	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in an area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Material/Debris Disposal	After repairs are completed, remove construction/maintenance waste materials from site for disposal or recycling.
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel.

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Protect watercourse and/or stream.
- Reduce worksite pollutants to restore or maintain water quality.
- Control the storage, delivery, and routing of surface and ground water to control volumes and velocities of stormwater discharge by restoring surface after installation, repair or replacement of underground piping.
- Reduce sediment transport from system breaks by maintaining and repairing system.
- Maximize opportunities for increased infiltration or biofiltration where possible.

Conservation objectives and how they are achieved are shown on the following table:

Repair, Replacement, and Installation of Water Systems	
Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one or more of the following:
Maintain or restore water quality. Maintain or restore functional components of the water system and reduce sediment loading to watercourses and/or streams from: • Leaks. • Breaks. • Damaged. • Replacement. Maintain or restore flow volumes and velocities by repairing water system structures. The repair of breaks or leaks reduces: • Turbidity. • Sediment loading. • Offsite erosion. • Offsite habitat impacts.	Performing repairs, replacement, and installation of systems. Repairing water system failure: • Reduces risk of roadway/shoulder failure sediment from entering aquatic habitat and watercourses and/or streams. Using erosion/sediment controls during construction/maintenance. Reducing flood erosion and sediment loading from broken or damaged system by making repairs. Re-vegetate disturbed soils

Maintenance Category #15: Vegetation

Activities[1]

Activities include repair, replacement, installation, removal and/or maintainance of the vegetation within the ROW. Vegetation is an integral part of the road ROW structure. Vegetation maintenance includes, but is not limited, to mechanical, chemical, cultural and biological control. It also includes the systems and structues that support the vegetation.

Purpose

The primary purpose of vegetation maintenance is to promote, maintain, sustain, manage, or encourage vegetation growing within the ROW to comply with a variety of regulations and standards. Activities include suppressing non-desirable vegetation and enhancing desirable vegetation to accomplish the following:

- Minimize competition between desirable and non-desirable vegetation.
- Control or suppress pest infestations.
- Protect disturbed soils.
- Meet public safety requirements.
- Improve visibility.
- Improve surface and subsurface drainage.
- Reduce potential fire risk.
- Pollution control.
- Reduce dust.
- Reduce erosion.
- Maintain water quality.
- Protect habitat.
- Reduce pavement deterioration.
- Reduce deterioration of ROW structures.
- Encourage infiltration.

[1]Maintenance activities are NOT development or redevelopment activities but are mitigation over the life of the structure and are as defined on page x of the Introduction Section of the RRMP Guidelines.

Complying with vegetation regulations and standards for each system within the ROW structure may involve coordination with but not limited to any of the following regulations:

- Labor & Industry (L&I) regulations.
- Pipeline safety.
- Electrical regulations.
- Water regulations.
- Sewer regulations.
- Roadway regulations.
- HPA regulations.
- U.S. Army Corps of Engineers (Corps) regulations.
- Ecology regulations
- Dike and dam regulations.
- Local ordinances and codes.
- Department of Agriculture regulations.
- Noxious Weed control regulations.

Although the Services are not considering herbicide use for take limits, reduction or elimination of the take prohibition, BMPs for road maintenance herbicide use are included in the *Guidelines*. These BMPs are included to ensure that agencies electing to use herbicides as part of their vegetation management program do so appropriately. This includes fertilizers that contain herbicides and pesticides.

Roadside Vegetation Management Zones

For the purposes of this program, roadsides are divided into three typical vegetation management zones reflecting specific roadside management objectives for curbed and non-curbed roadways. The zones are: 1) vegetation-free, 2) operational, and 3) transitional. All zones should be managed to support the dual vegetation management roles for maximum environmental benefits while meeting regulations and standards. Although three zones are described in this maintenance category, not all zones are applicable to every ROW.

1. Zone 1 (Vegetation-Free Zone)

The vegetation management objective in Zone 1 is to maintain an area free of vegetation. This maintenance is performed for fire control and to improve surface drainage to expedite runoff from paved surfaces into drainage structures. Zone 1 maintenance is also performed to improve visibility and reduce breakup of pavement and deterioration of roadside structures and hardware.

Curbed Roadways. Zone 1 begins at the curb face and extends to the back of the sidewalk, including guardrails, signs, and other roadway hardware.

Non-curbed Roadways. Zone 1 on non-curbed roadways begins at the edge of the traveled way or paved shoulder. It extends to include all unpaved shoulder areas, guardrails, and other roadway hardware to a point where rock base material intercepts native soil or dirt fill.

2. Zone 2 (Operational Zone)

The objective of vegetation management in Zone 2 is to maintain the functional characteristics of the ROW structure while complying with regulations and standards. The ROW structure includes drainage facilities such as ditches and gutters. Landscaping, both public and private, may be included in Zone 2. Zone 2 maintenance preserves or enhances sight distances to signs, on curves, and at intersections. It also reduces erosion and undesirable plant species while enhancing motorists' ability to see pedestrians and animals.

Curbed Roadways. On curbed roadways, Zone 2 begins at the back of the curb or sidewalk. Zone 2 extends away from the road to include the roadside ditch or other drainage features, regulatory signs, and the remainder of the ROW involving sight distances, developed ROW, clear zones or public safety. Zone 2 extends to the edge of Zone 3, when Zone 3 exists.

Non-curbed Roadways. On non-curbed roadways, Zone 2 begins at the outside edge of Zone 1, or at the pavement edge if no Zone 1 exists. Zone 2 extends away from the road to include the roadside ditch or other drainage features, regulatory signs, and the remainder of the ROW involving sight distances, developed ROW, clear zones, or public safety. Zone 2 extends to the edge of Zone 3, when Zone 3 exists.

3. ZONE 3 (TRANSITION ZONE)

The objective of vegetation management in Zone 3 is to minimize maintenance efforts in the outer edges of undeveloped portions of the ROW. Zone 3 creates a compatible transition area between Zone 2, the operating road ROW, and the abutting land until the ROW is needed for its dedicated purpose.

When Zone 3 occurs, it extends away from the edge of Zone 2, to the limit of the road ROW.

TYPES OF VEGETATION MAINTENANCE ACTIVITIES

There are four types of vegetation maintenance activities, which are generally called "controls." They are mechanical, chemical, cultural and biological controls:

1. MECHANICAL CONTROL

Mechanical control techniques involve the use of mechanical tools or motorized equipment to manage desirable vegetation or suppress non-desirable vegetation to minimize competition. The work involves grass mowing, brush mowing, manual or power brush cutting. Another mechanical control is tree maintenance, which includes pruning and removing trees to maximize longevity, environmental benefits, and public safety.

a. Grass Mowing

Grass mowing is used to control the growth of planted or natural grasses and other types of vegetation from encroaching upon the ROW, road pavement, gravel shoulder, and flow lines of roadside ditches. Grass mowing may be used to meet regulation and operational requirements within the other maintenance categories.

The actual area mown should reflect the need to meet specific, pre-defined goals and objectives for a particular ROW area. The actual number of cuts, however, may vary depending on the vegetation makeup and budget. Generally, road ROW areas are mowed twice a year and most access road ROW areas once a year. (Mowing in certain areas may be higher or lower than these stated generalities due to regulations or operational requirements.)

Finished cut height for grasses is generally 2 to 6 inches aboveground. The finished cut height for other ground cover species is generally 12 inches or greater aboveground.

Grass mowing at some sites is the only way to control vegetation. Sites such as culvert ends, streams, ponds, ditches with year-round water and other 'herbicide sensitive' sites are often maintained by mowing if the site is accessible to suitable equipment.

Mowing equipment could consist of tractor-mounted rotary or flail mowers equipped with either grass- or brush-cutting blades. Trimming and edging tools are usually handheld string trimmers or blade trimmers and edgers. Hand tools for trimming may be used on special occasions.

b. Brush Mowing

Mechanical brush mowing is used as a control technique to remove the undesirable growth of brush species, small trees, and other vegetation. Such growth may interfere with safe operation of the facility and/or maintenance of the ROW structure including drainage systems. This work is usually done in the area beyond the grass-mowing limit, most often beyond the backslope of the ditch in Zone 2 to the edge of Zone 3. Brush mowing in Zone 3 would be used for selective control of brush. (Brush mowing, however, may be used to control brush in all three zones.)

Brush mowing can be done in conjunction with herbicide treatments. The timing of cutting is critical to enhancing rather than negating herbicide activity. Consult the herbicide label to determine proper sequencing or delay of mowing either before or after herbicide application.

At some sites, mowing brush is the only way to accomplish vegetation control without herbicide application. Sites such as culvert ends, streams, ponds, ditches with year-round water and other 'herbicide sensitive' sites can be maintained by mowing.

(Herbicide application can also be used following proper regulations and types of herbicides that are allowed at a specific site.)

Equipment usually involves a tractor-mounted boom flail-type mower with blades designed to cut either brush or small trees.

c. Manual Brush Cutting

Manual brush cutting is a technique to control the growth of brush species, small trees, and other vegetation in small areas, where mobilization of brush mowing equipment and associated flaggers and signs is not practicable.

This work is often used to accomplish selective removal, and is usually done in Zones 2 or 3 on the portion of ROW structure that is beyond grass mowing limits.

Equipment used in manual brush cutting could be chainsaws, brush saws (string, wire or blade types), pruning saws, lopper/pruners or any other type of hand-held power equipment. Chippers or grinders may be used to dispose of the debris resulting from the cutting operation. Chips should be spread over the site if desirable or hauled offsite.

d. Aerial Saw Work

Aerial saw work includes any work accomplished by raising a worker up, or having a worker climb off the ground to maintain vegetation. Aerial saw work is a method used to trim tree limbs and remove both undesirable trees and vegetation. The goal is to meet clearance heights over roads, electrical wires, sidewalks, and other ROW structures to promote better public safety and to minimize future damage to utilities and equipment.

e. Cultivation

Disturbance of soil and/or weeds by cultivation is another method of vegetation management. This method can be used to keep Zone 1 areas free of vegetation or for selective prevention or elimination of weeds around desirable plants in Zones 2 or 3.

Cultivation can be accomplished with either hand tools or power equipment. Hoes, rakes, rototillers and road graders are examples of equipment.

2. CHEMICAL CONTROL

Application of herbicides may occur at any time of the year allowed by the product label and the following guidelines:

- Zone 1 treatments will generally be accomplished by the use of pre- and post-emergent non-selective herbicides applied in early spring.
- Zones 2 and 3 vegetation management generally involves the use of selective herbicides.
- Applications in Zones 2 and 3 may be summer foliage, or dormant stem, stump or modified basal treatments when allowed by the label.
- Where site conditions or herbicide label restrictions preclude the use of herbicides, mowers and other methods will be utilized.

3. CULTURAL CONTROL

Cultural control involves enhancing the vigor of desirable plants so that they can eventually crowd out or prevent encroachment by undesirable plants. Cultural control techniques only work within Zones 2 and 3.

a. Fertilizers on Weak Stands of Grass

An example of cultural control is the use of fertilizers on weak grass stands to enable vigorous grass stands to overtake weeds.

b. Barriers

Use of physical barriers can be classified as a cultural control technique. Barriers stop plant growth originating below the barrier by physically preventing it from reaching the soil surface. In the case of germinating weed seed above the barrier, control is accomplished by preventing the roots of seedlings from reaching the soil.

4. BIOLOGICAL CONTROL

Biological control of vegetation involves using living organisms to destroy or compete with the undesirable plant. These living organisms include insects, disease organisms (parasites, viruses, bacteria, fungi, etc.), plants, livestock, rodents, and fish. These natural enemies are usually brought in from areas of the world where the undesirable plant is native and is controlled by these natural predators. Predators are tested to make sure that they affect only the target plant and not any other economically important plants or animals. Once deemed safe, they are turned loose against the target plant. Examples of

effective biological control utilizing natural predators in ROW areas are the Cinnabar Moth and Flea Beetle on Tansy Ragwort, and the Chrysolina Beetle on Klamathweed or Goatweed.

Another application of biological control agents involves reintroducing native plants to a site. These plants are introduced to an area where they grow more rapidly and outcompete existing weeds and exotic vegetation. Native species are well adapted to site conditions and most will overtake and outcompete weeds.

Where applicable, vegetation maintenance will be conducted in all 15 maintenance categories described in the *Guidelines*.

BMP Outcomes:

- Improved water quality.
- Improved air quality.
- Increased sight distance.
- Improved visibility of shoulder for emergencies and obstacles.
- Reduce shading on roadway (reduced icing, reduced accidents).
- Reduced fire hazard.
- Compliance with pipeline safety and easement regulations.
- Facilitation of inspection and maintenance of other features and structures.
- Reduced flooding.
- Improved driver guidance (provides visual definition).
- Improved pedestrian safety (divides uses: pedestrian rather than vehicular).
- Reduced storm (blow down) hazard.
- Reduced overspray (irrigation system malfunction) hazard.
- Improve drainage by increasing infiltration and percolation.
- Reduce spread of noxious weeds and undesirable vegetation.
- Limit erosion.
- Increase biofiltration.
- Lower herbicide use when used in conjunction with other BMPs or other integrated management components.

BMPs
Maintenance Category #15: Vegetation

BMPs	*Description*
ROW	Perform repairs, replacement, and maintenance of roadway vegetation.
Shoulder Work	Maximize opportunities for shoulder work, which will increase infiltration or biofiltration. (See also Maintenance Category #7, Gravel Shoulders).
Part 2 BMPs **(Site-specific BMPs)**	Use any of the eight BMP outcome categories in Part 2 at or around the worksite to reduce turbidity, sediment and/or worksite pollutants from entering watercourses or streams, wetlands, lakes, or other water bodies. Types of BMP categories: • "Filter/Perimeter Protection" • "Reduce Potential for Soil Becoming Water or Air Borne," and/or • "Reduce Water Velocity/Erosive Forces." Go to Part 2-BMPs for selection and installation guidelines.
Disturbed Areas	Exposed and unworked soils shall be stabilized by applying BMPs that protect soil from erosive forces of raindrop impact and flowing water: • During winter season – October through June – no soils shall remain exposed and unworked for more than 2 days. • During the summer season –July through September–no soils shall remain exposed and unworked for more than 7 days. • These conditions apply to all soils onsite, whether or not at final grade.
	Prior to BMP removal, clean up accumulated sediments and seed or replant disturbed area.
Mowing	• Grass mowing finished height of 2 to 6 inches to minimize scalping of soil surface. • Do not mow below ordinary high water mark of streams or waterways.
Brush Cutting	• Grass cutting finished height 2 to 6 inches to minimize scalping of soil surface. • Native brush vegetation cutting finished height of 12 inches to maximize growth of desirable vegetation. • Do not brush cut below the ordinary high water mark of streams and waterways.
Hand Cutting	• Grass mowing finished height of 2 to 6 inches to minimize scalping of soil surface. • Do not mow below the ordinary high water mark of streams or waterways.
Seeding	• Avoid overspray into streams, ponds, lakes or wetlands. • Cover all exposed soil within project limits to avoid erosion.
Chipping *Continued on next page*	• Spread chips evenly along Zones 2 or 3. • Remove chips from project site.

BMPs

Maintenance Category #15: Vegetation (Continued)

BMPs	Description
Chemical Application	• Follow state and federal requirements, along with product label instructions.
Equipment/Tools	Tool and equipment cleanup procedures: • Routinely inspect equipment, tools, and vehicles for leaks or damage. • Keep cleanup materials, such as dry absorbent materials, onsite to allow prompt cleanup of spills. • Promptly repair or replace leaking connections, pipes, hoses and/or valves.
	Vehicle and equipment maintenance, repair and/or service will be performed at designated repair facilities whenever possible. Use the following practices to reduce the potential for discharge of pollutants to watercourses or streams from vehicle and equipment maintenance, service and repair operations: • Prohibit discharge of any wastewaters to stormwater drains. Do not pour material down drains or hose down work areas. Use either dry sweeping or damp mopping. • Remove buildup of oils and grease on equipment. • Perform equipment and vehicle maintenance in areas that prevent discharges to the storm drain system. • Use drip pans under equipment when maintaining, repairing or servicing in the field. • Use non-toxic solvents whenever possible. • Clean maintenance area storm drain grates regularly. • Collect and properly manage (recycle or dispose of) used materials such as the following: grease, oil, oil filters, antifreeze, cleaning solutions, lead-acid batteries,hydraulic and transmission fluids, and tires. • Surfaces shall be cleaned following any discharge or spill incident.
	At end of shift, park equipment in designated areas.
	Clean equipment and tools offsite in area where pollutants can be contained.
	If unable to move tools and equipment offsite, control and remove cleaning by-products.
Material/Debris Disposal	After repairs are completed, remove construction/maintenance waste materials from site for disposal or recycling.
	If area is swept with a pick-up sweeper, the material will be hauled out of the area to appropriate disposal site.
Spill Prevention & Control	Carry Spill Kit used for small spills related to equipment failure. Desired outcome is to control, absorb, or contain spill for cleanup and disposal. Minimum requirements: • Absorbent. • Pad. • Shovel

POTENTIAL CONSERVATION OUTCOMES

Habitat Goals:

- Improve drainage by reducing erosion.
- Reduce the spread of noxious weeds and undesirable vegetation.
- Limit erosion.
- Provide shading/reduce water temperature.
- Suppress non-desirable vegetation.
- Enhance desirable vegetation.
- Provide habitat for macro-invertebrates upon which aquatic species feed.
- Increase biofiltration.
- Lower herbicide use.

Conservation objectives and how they are achieved are shown on the following table:

Repair, Replacement, Installation and Maintenance of ROW Vegetation	
Conservation Objectives include one or more of the following:	**Conservation Objectives *Achieved By*** one or more of the following:
Maintain or restore water quality. Reduce erosion. Re-vegetation of disturbed areas provides: • Biofiltration. • Shading. • Bank stabilization. • Food. • Cover. • Nutrient process. Maintain or restore flow volumes and velocities by repairing ROW system structures and vegetation maintenance provides: • Holds sediments. • Removes nutrients. • Reduces erosion. • Offsite erosion. • Offsite habitat impacts.	Performing repairs, replacement, installation and maintenance of vegetation in the ROW • Re-vegetation of disturbed soils. • Reduce noxious weeds. • Reduce undesirable vegetation. • Increase shading. • Enhance desirable vegetation. Using erosion/sediment controls during maintenance. Reducing flood erosion and sediment from broken or damaged system by managing vegetation. Leave vegetation within ditches if not affecting flow or operation. Protect vegetation outside of work site.

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