Highway Division
Project Delivery Leadership Team
Operational Notice

NUMBER	SUPERSEDES	EFFECTIVE DATE	CANCELLATION DATE
PD-05	PD-05 (2000)	4/4/2006	
SUBJECT		ISSUING BODY	
Water Quality Mitigation		Project Delivery Leadership Team (PDLT)	

I. PURPOSE: This Operational Notice provides guidance in determining the need for stormwater quality mitigation for runoff from ODOT projects and the level of mitigation that could be necessary. Since PD-05 was instituted in August, 2000, the regulatory atmosphere has changed and more stringent requirements have been set in place. This Operational Notice takes into account those stricter requirements. By defining when mitigation is required and providing guidance on the levels of mitigation that are appropriate, ODOT will better incorporate stormwater quality planning and budgeting early into its project development process.

This Operational Notice shall apply to all ODOT projects, including state and federally funded local agency projects (collectively referred to as "ODOT projects" in this document) classified as modernization or that otherwise increase impervious surface area, change drainage patterns, or involve bridge construction. Implementation is expected to result in improved quality of stormwater discharges from ODOT highways and local roads, protection of the state's aquatic habitats and water resources, and compliance with various environmental regulations related to water quality.

PD-05 does not address stormwater quality during project construction. ODOT policy is that all ground disturbing activities must have an erosion and sediment control plan. Projects disturbing more than one acre of land are subject to the conditions of the National Pollutant Discharge Elimination System permit 1200-CA for discharge of stormwater from construction sites.

II. RATIONALE: ODOT is required to manage stormwater and protect the waters of the state that may be harmed by the construction or operation of ODOT facilities. Regulations and policies that govern how ODOT manages and protects these waters include the Clean Water Act, the Safe Drinking Water Act, the Endangered Species Act (ESA), the Magnuson-Stevens Act (MSA), Oregon Administrative Rule 340 Division 41, and the Oregon Plan for Salmon and Watersheds.

To meet these laws and evolving regulations, ODOT is required to provide mitigation for the adverse impacts that ODOT projects may have on water quality. This guidance presents ODOT's basic water quality goals, outlines how ODOT will assess projects to determine when stormwater quality mitigation is required and the general objectives for mitigation.

III. GUIDANCE: ODOT projects will comply with federal, state and local laws and ordinances regarding water quality, and will protect the beneficial uses of waters affected by the projects. Scoping for all ODOT projects shall include identifying opportunities to improve the quality of highway runoff.

The basic goals for ODOT projects are:

1. Stormwater runoff from a project shall not cause violations of water quality standards in the receiving water.
2. Stormwater runoff from a project shall not cause a net increase in the pollutant load discharged to receiving waters, unless the amount of treatment required is determined to be not practicable by the Region Environmental Manager.
3. Reduce the pollutant load in stormwater runoff from a project where it can be done within the financial and physical constraints of the project, as determined by the Project Team.

Stricter requirements may be imposed where Endangered Species Act or MSA issues, TMDL streams or designated water quality limited streams (303(d) list) are involved. Projects may be required to reduce or to avoid causing a net increase in the pollutant load discharged into receiving waters. Mitigation that meets the third goal (i.e. reduced the pollutant load) is to be described in the appropriate environmental documents and reported to the Water Resources Program Coordinator in the Geo-Environmental Section.

IV. LIMITATIONS: Defining how stormwater quality mitigation will be accomplished for ODOT projects is beyond the scope of this Operational Notice. This guidance only defines when stormwater quality mitigation will be required and the general goals for the mitigation. Project technical staff recommend and design stormwater quality mitigation facilities and techniques, estimate mitigation budgets, and determine if mitigation plans meet water quality and other environmental regulations. The Project Team makes the final selection of the type of mitigation for each project.

This Operational Notice does not provide guidance for situations where constraints prevent projects from achieving mitigation goals or requirements, or cases where typical requirements may not be appropriate. These situations must be dealt with on an individual project basis. The Project Team is responsible for recommending additional mitigation measures to the Technical Center Manager and the Area Manager for final approval.

V. MITIGATION DETERMINATION:

All ODOT projects are expected to support context sensitive sustainable solutions by meeting the water quality goals. The Mitigation Determination* identifies those projects that may fail to do so, and therefore require project specific mitigation. Regardless of the result of the

* See Appendix 2, Water Resources Process for ODOT Projects, for information on when and where the determination is done.

Mitigation Determination, projects should incorporate water quality improvement measures whenever possible.

ODOT shall evaluate each project's need for stormwater mitigation. The following criteria sort projects into the categories "Mitigation Required", "Analyze Impacts", and "Mitigation Usually Not Required" (see flowchart). The need for mitigation is based on regulatory requirements and magnitude of potential impact. As part of the evaluation, ODOT will coordinate with Oregon DEQ, other regulatory and resource agencies, and local jurisdictions to determine impact thresholds.

A. Stormwater Quality Mitigation Required when:
The project results in a net increase in impervious surface area, includes bridge construction, or changes drainage patterns,

AND ONE OF THE FOLLOWING APPLIES

1. The receiving water contains species listed as Threatened or Endangered (T&E) under the Endangered Species Act, or is Essential Fish Habitat (EFH) under the Magnuson-Stevens Fishery Conservation and Management Act.

2. Local ordinances require mitigation.

3. Projected ADT of 30,000 or greater, and the impervious surface area increases by 0.25 acres (1000 m^2)† or more.

4. Total Maximum Daily Loads (TMDLs) have been identified by Oregon DEQ for the receiving waters, and the project includes existing or proposed elements or activities that adversely affect the TMDL limitations.

B. Analyze Project to Determine Need for Stormwater Quality Mitigation when:
The project results in a net increase in impervious surface area, includes bridge construction, or changes drainage patterns, but does not fall in the Mitigation Required category

AND ONE OF THE FOLLOWING APPLIES

1. Projected ADT of 750 or greater.

2. The impervious surface area increases by 0.25 acres (1,000 m^2) or more.

3. The receiving waters are on the 303(d) list of Water Quality Limited Water Bodies.

† Based on an increase in discharge during a 10 year 24 hour event of 0.5 cfs. This criterium applies to discharge to a single water body. For further discussion of the criteria see "0.25 acres" in the Definitions.

C. Stormwater Quality Mitigation Usually Not Required when:

ONE OF THE FOLLOWING APPLIES

1. The project results in no net increase in impervious surface area and no changes in drainage patterns, or

2. The project consists solely of non-traffic bearing elements, such as sidewalks, separated bike paths, and guardrail flares (this may be superseded by ESA and TMDL limitations), or

3. The project does not meet any of the Stormwater Quality Mitigation Required criteria, and both of the following criteria are met:
   ADT is less than 750 ADT, and
   The impervious surface area increases less than 0.25 acres (1,000 m^2)

VI. LEVEL OF ANALYSIS

Analysis and documentation is required for all ODOT projects covered by this Notice. The following briefly describes the objective of analysis for each project. The level and complexity of analysis and documentation should be proportionate to that of the project.

A. Stormwater Quality Mitigation Required.

1. T&E Species or EFH Present: In all cases analysis consists of determining what style and amount of mitigation is required prevent a net increase in pollutant load and pollutant concentration, prevent violations of water quality standards in receiving waters resulting from the discharge of project runoff, and identifying opportunities to reduce the pollutant load.
2. Local Ordinances: In all cases analysis consists of determining the style and amount of mitigation needed to meet requirements of the ordinances and the style of mitigation that best meets the goals of the mitigation.
3. ADT >30,000: In all cases analysis consists of determining the project impacts on water quality and determining the style of mitigation needed to meet ODOT Water Quality goals, including preventing violations of water quality standards.
4. TMDL: In all cases analysis consists of determining project's contribution to the TMDL pollutant, the level of treatment necessary to comply with the TMDL management plan, and determining the style of mitigation needed to meet that goal. If the project is not contributing to a TMDL pollutant load, documentation should be prepared that explains why mitigation for the TMDL pollutant is not necessary.

B. Analyze Project to Determine Need for Stormwater Quality Mitigation.

In all cases the analysis consists of determining the effect of project stormwater on the quality and beneficial uses of the receiving water, and whether that exceeds the impact threshold for requiring mitigation. If the project could cause violations of stormwater quality standards, exacerbate poor conditions in a 303(d) list water body, or otherwise adversely affect the receiving water's beneficial uses, analysis will determine the treatment goals to avoid the adverse impacts, and the style of mitigation necessary to meet those goals. In all cases analysis should identify the level of treatment to meet ODOT's water quality goals.

C. Water Quality Mitigation Usually Not Required.

1. No Increase in Impervious Surface: Further analysis usually not needed, but documentation explaining why water quality analysis was not done should be included in project files.
2. Only Non-traffic Bearing Elements:
    a. T&E Species or EFH Present: Will often require documentation explaining why the project will not affect water quality, the listed species or essential fish habitat.
    b. TMDL: Will often require documentation showing that the project will not conflict with the management plan. If the management plan requires mitigation for any increase in impervious surface area, analysis will estimate the pollutant load from the project and determine the style of mitigation needed to meet the TMDL management plan.
    c. None of the Above: No further analysis usually required, but documentation explaining why water quality analysis was not done should be included in project files.
3. No T&E Species/EFH Present and ADT <750 and New Impervious Surface < 1,000 m^2: Identify opportunities for non-engineered BMPs. No further analysis usually required, but documentation explaining why water quality impact analysis was not done should be included in project files.

VII. MITIGATION APPROACHES

Where mitigation is required or considered a desirable part of a project, it can be provided by Engineered Treatment Facilities or Best Management Practice (BMP) non-engineered techniques. Detailed definitions of these are provided in the appendix. The selection of the mitigation approach depends on the goals of the mitigation, the extent of the impact, and the site conditions. One approach is not inherently superior to the other, but engineered facilities are often more appropriate for locations with high pollutant loads. Both types of mitigation may require considerable extra right-of-way. Engineered Treatment Facilities typically involve greater construction costs and maintenance costs than BMPs, while BMPs often require more right-of-way and are not as flexible in placement as Engineered Facilities.

When mitigation is not required, the project is expected to implement opportunistic BMPs. This entails installing BMPs where feasible without requiring extra right-of-way or more than nominal extra construction cost.

VIII. OTHER CONSIDERATIONS

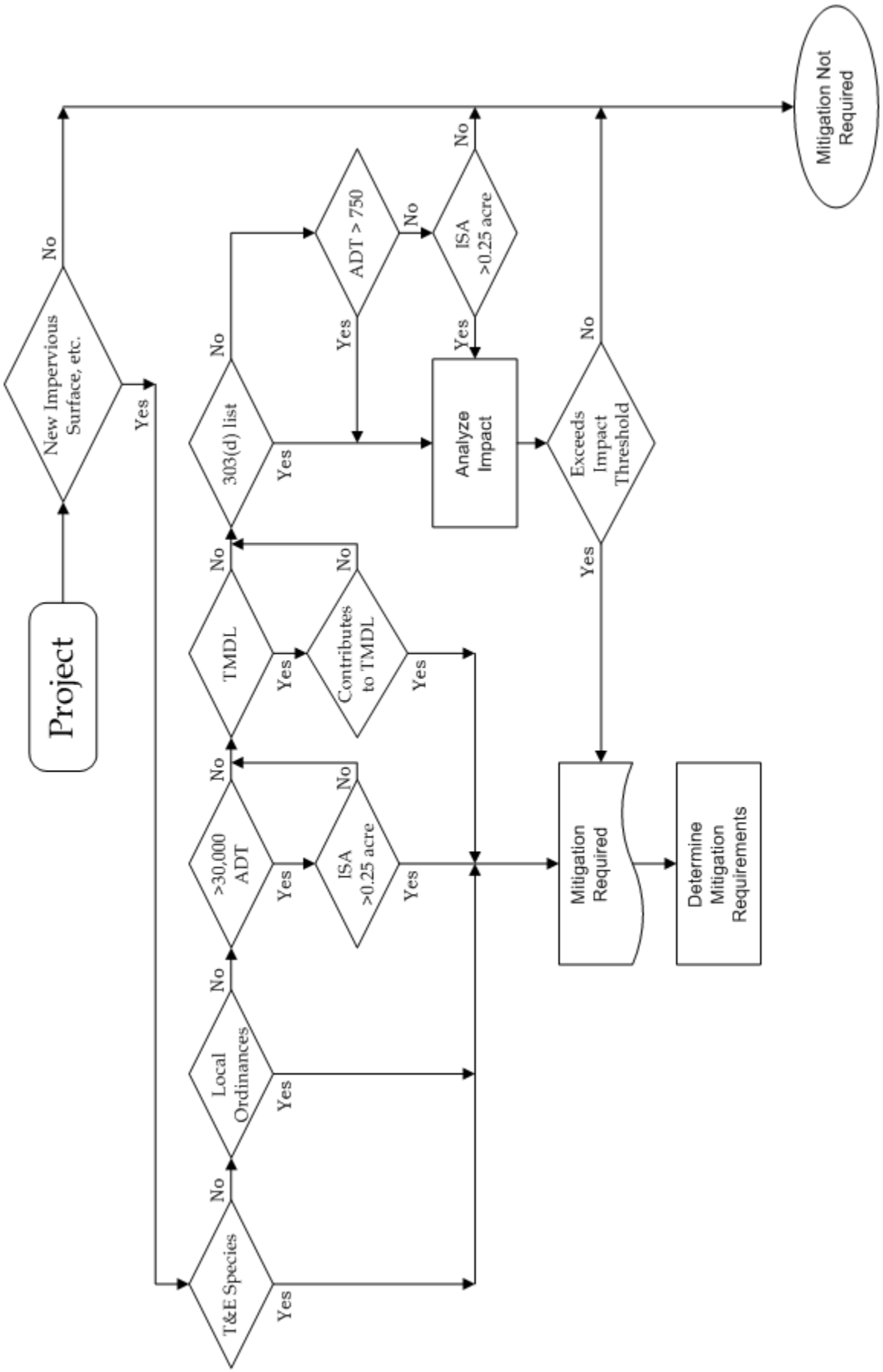
Bridge Deck Drains (Scuppers): Stormwater runoff from bridges shall not be discharged directly into receiving waters. Retrofitting bridge drainage should be considered if project work provides a reasonable opportunity to include stormwater mitigation or correct past water quality problems.

Clean Water Act Section 401 "Clean Water" Certification: If a project is impacting wetlands or waterways, a Clean Water Act Section 404 permit or a Division of State Lands Removal Fill permit may be needed. A Water Quality certification or approval is required for both permits. The certification or approval is granted after the review of the project's Stormwater Management Plan, which shows how water quality standards are being met, which usually involves treatment of highway runoff.

Curbs and Other Changes in Stormwater Drainage: The addition of curbs to roadways or the placing of stormwater into pipes or gutters where stormwater previously flowed over vegetated slopes or through vegetated ditches may reduce existing stormwater quality treatment. Such projects are considered changes in drainage patterns, and are to be evaluated for water quality impacts.

Onsite Stormwater Treatment Not Feasible: Site conditions may occasionally preclude sufficient stormwater treatment within the project boundaries. In this case off-site mitigation will frequently be required elsewhere within the watershed. Because off-site mitigation may not directly address site specific impacts, additional documentation and permits or authorizations may be required. Therefore, the need to resort to off-site mitigation should be identified as soon as possible in the project development process.

Water Quality Mitigation Decision Flowchart



July 19, 2005

Appendices

1. Definitions ..... Page 9
2. Water Resources Process for ODOT Projects ..... Page 15

APPENDIX 1

DEFINITIONS

303(d) List: The list of water bodies that are unable to support the beneficial uses they would normally provide because of poor water quality, poor physical conditions, or degraded hydrologic conditions. Section 303(d) of the Clean Water Act requires the development and periodic updating of this list. Oregon Department of Environmental Quality (DEQ) is responsible for assembling and maintaining the list, and updates it every few years. Information provided with the list is the water body name, pollutants causing violations of water quality standards, and a summary of the supporting measurements. A 303(d) listing is the first step in developing Total Daily Maximum Loads (TMDLs). DEQ: Total Maximum Daily Loads (TMDLs)

750 ADT (Average Daily Traffic): The traffic volume below which it is assumed by ODOT that pollutant concentrations in highway runoff are very low and have little or no adverse impact on the receiving waters. Pollutant loading in highway runoff is roughly related to traffic volumes, with water quality criteria exceedances usually associated with much greater ADT (see 30,000 ADT below). A traffic volume of 750 ADT is assumed to generate a very low pollutant load and is consistent with other ODOT ADT based design thresholds that are used for resurfacing, rehabilitation and restoration (3-R) projects. ODOT felt that this consistency would help simplify design standards for ODOT engineers.

0.25 acres (1,000 m^2): The area of new impervious surface area that would generate no more than 0.5 cfs (0.028 m^3/s) of flow during a 10 year return period storm in the northern Willamette Valley. This is the threshold of what is considered by ODOT to not result in a significant adverse impact to the capacity of an existing storm drain system. The threshold was determined by evaluating historical runoff control criteria relating to significant flow increases and requirements for detention. For water quality purposes, 0.5 cfs is considered enough flow to make an engineered treatment facility cost effective, if that approach is determined to be appropriate. An increase in impervious surface area greater than 0.25 acres does not mean that an engineered facility is required. A limiting assumption for the 0.25 acre threshold is that the new impervious surface area all discharges to the same receiving water.

30,000 ADT: The threshold of high traffic roads, defined for stormwater quality purposes. Research results reported in "Retention, Detention and Overland Flow for Pollutant Removal from Highway Stormwater Runoff (Dorman et al 1996) found few significant impacts from runoff from highways with less than 30,000 ADT. The same ADT was set as the divide between pollutant loading from high traffic volume, urban highways and those from low traffic volume, rural highways in Pollutant Loadings and Impacts from Highway Stormwater Runoff (Driscoll et al 1990).

ADT: Average Daily Traffic. The ADT levels used in this guidance refer to the anticipated traffic volumes 20 years after construction of the project (the usual design life). This value is usually listed as the "Proposed ADT" in the Project Prospectus.

Analyze Impacts: Projects that do not clearly fall into the category of Require Mitigation or No Mitigation Required are to be analyzed to determine how they will affect receiving water quality. Specifically, will a project likely cause a violation of water quality standards, exacerbate existing water quality problems or otherwise exceed the Impact Threshold. The results of this analysis determines the necessity of mitigation, and the targets and goals of mitigation. Projects that do require stormwater quality mitigation are analyzed to determine mitigation targets and goals, and the effect on receiving water quality of implemented treatment measures. Conducting the analysis is the responsibility of the project Water Resources Specialist and the results are presented in the Water Resources Impact Assessment. The analysis looks at the impact of the highway facility within the project limits, not just the effect of any additional effective impervious area.

The basic method of evaluation is the FHWA procedure presented in "Pollutant Loadings and Impacts from Highway Stormwater Runoff" (Driscoll et al 1990). This method takes average stormwater pollutant loadings, contributing highway area, average stream flow of the receiving water, and rainstorm intensity and frequency to estimate the three year, single storm, in-stream pollutant concentration resulting from project runoff. By comparing that value with water quality standards or other target concentrations, the likelihood of an adverse affect on water quality can be estimated.

The values for average stormwater pollutant loadings from roads with high (>30,000) ADT are taken from ODOT's NPDES monitoring in Portland and Eugene. For highways with lower ADTs, the values chosen are from those given in Driscoll for roads with ADT's less than 30,000, or the ODOT NPDES monitoring, whichever is lowest. When interpreting the results it must be remembered that the estimated impact from low ADT highways is probably greater than the actual impact. Likewise, since no monitoring results are available yet from southern Oregon or east of the Cascades, the analysis results may not accurately reflect actual conditions.

Target values are usually the EPA acute toxicity criteria and the EPA suggested threshold effect level (Driscoll et al 1990). The FHWA method considered that if the ratio between the once in 3 year in-stream pollutant concentration from highway runoff and the target is below 0.75, then a toxicity problem resulting from the runoff is unlikely. There are several factors that can justify using a different target or lowering the 3-year concentration ratio. These include TMDL load allocations, new information on the effects of a pollutant, sensitive beneficial uses of the receiving water, a 303(d) listing, or a suspicion that a stream may have a water quality problem.

Other factors are also taken into account during the impact assessment. These include the relative increase in pollutant loading between existing and proposed conditions, impacts to landscape elements that provide water quality benefits, cumulative impacts, secondary (indirect) impacts, public perception, and local conditions.

BMP: Best Management Practice. BMPs are physical, structural, and or operational practices employed to reduce or eliminate the pollutant load carried by highway runoff. Within ODOT, BMP refers to a non-engineered feature or activity that is known to have a water quality benefit, but for which pollutant removal efficiency cannot be confidently estimated. These BMPs include, but are not limited to, filter strips, vegetated roadside ditches, street sweeping, and vegetation preservation or enhancement. Additional information on highway maintenance BMPs is available in the most current version of "The ODOT Routine Roadside Maintenance Water Quality and Habitat Protection Best Management Practices".

Bridge Construction: For the purposes of PD-05, "bridge construction" includes building a new or replacement bridge, any work that increases the impervious surface of an existing bridge, and major structural work that involves substantial changes to the drainage system. Minor adjustment of inlets due to repaving or upgrading bridge rails is not included.

Change in Drainage Pattern: An alteration in the flow path of highway runoff, the location of the drainage system, the type of drainage system, or discharging into a different receiving water. The addition of curbs is considered a change in drainage pattern. Minor adjustments such as relocating or upgrading inlets are not included. Changing the flow path may result in needing to enlarge or rebuild the drainage system, and can also cause an increase in the peak discharge discharged into a water body. Changing the type of drainage system can result in an increase of the discharged pollutant load. Actions such as simply widening ditches and incorporating vegetation are considered mitigation and do not require further mitigation. Just shifting the location of a drainage system provides an opportunity to incorporate water quality features, but does not automatically trigger the need for mitigation unless the facility discharges to a water body containing T&E species, or is already contributing to violations of water quality standards. Shifting done in conjunction with a realignment of the roadway will trigger an impact assessment. Discharging stormwater into a different receiving water than was originally the case constitutes a new impact to that water body and would require mitigation.

Determination That Meeting Mitigation Goal is Not Practicable: The decision that providing the amount of treatment necessary to meet ODOT's water quality mitigation goals should be based on the presence of physical impediments and adverse impacts to other resources. The evaluation should weigh convenience to the project against the impacts to the aquatic resources, regulatory delays, and the costs of any additional compensatory actions that may be required.

Determine Mitigation Requirements: Once the need for mitigation has been established, the next phase of analysis identifies the targets, goals and style of the mitigation measures. These are based on the magnitude of the impact, the particulars of the condition of the receiving water, regulatory requirements, and local site conditions. The targets are the pollutants that could potentially adversely affect water quality, exacerbate an existing condition, have TMDL load allocations or are the basis for 303(d) listings.

Effective Impervious Surface Area: The amount of impervious surface within the project boundaries that discharges stormwater to a receiving water. This includes pavement that drains to ditches, gutters, or storm drains that discharge into streams, lakes, or wetlands, pavement that is immediately adjacent to those water bodies, and pavement that drains to dry wells or other underground injection systems. Not included is pavement that drains to dead end ditches or into fields, and pavement where stormwater is not collected and a considerable distance of vegetated ground separates the pavement and the nearest water body.

Engineered Treatment Facilities: A treatment facility that requires engineering analysis to determine the hydrology, hydraulics and design of the structure. Engineered treatment facilities include features such as dry and wet detention basins, engineered water quality swales (bioswales), treatment wetlands, and proprietary systems. Pollutant removal efficiencies can be reasonably estimated for engineered treatment facilities. Such facilities are often well suited for urbanized settings with highly polluted runoff, locations where there are physical constraints, including right-of-way, on the placement of treatment facilities, and where there are specific targets for pollutant loads. Engineered treatment facilities are covered by Chapter 14 in the ODOT Hydraulics Manual.

Impact Threshold: The level of effect of a project on water quality that is severe enough to drive the requirement for mitigation. The threshold may vary with the receiving water and the agency with authority over the water. At a minimum, the impact threshold is the water quality standard set out in OAR 340 Division 41. Other thresholds include TMDL load allocations, increases in 303(d) list pollutants for a stream, and effect determinations under the ESA, among others.

Level of Mitigation: The amount and capability of water quality treatment necessary to meet the goals of the mitigation. This will generally be expressed in terms of the amount of stormwater treated (volume, flow rate, or design storm), the size of the contributing area, and the pollutant removal efficiency of the facility.

Load Allocation: The portion of a TMDL for a specific water body that is attributed to non-point pollutant sources (such as agriculture or forestry) and natural background sources (soils, groundwater, vegetation etc.). Part of the Load Allocation may be reserved for future sources.

Mitigate: The act of avoiding, reducing, offsetting, or compensating for an impact. For water quality, this usually consists of limiting the amount of pollutants entering highway runoff and removing pollutants from highway runoff before discharge into surface or ground water. Mitigation for impacts that could increase water temperature often requires establishment of riparian shading vegetation. Off-site mitigation includes actions such as converting impervious surface to pervious, vegetated surface, or treating runoff from impervious surfaces elsewhere in the affected watershed.

Mitigation Goals: The amount of pollutant reduction in highway runoff required, and the targeted pollutants. These goals are determined by the extent of the impact of the project highway on water quality, the sensitivity of the receiving waters, and the regulations and rules

that apply to the receiving waters. At a minimum projects' mitigation should meet the ODOT water quality goals set forth in section III Guidance. More specific goals may be set to meet various regulatory requirements. They may be expressed as a general change in conditions, as specific numerical targets, as runoff from a specified amount of impervious surface area, or of volume of runoff from a design storm. Exceeding project goals should be done whenever it is cost effective and fits within the project's budget.

Mitigation Measures: The actions, features and practices that are implemented to mitigate for a specific project's impacts to water quality. The mitigation measures are selected and designed by the project engineer. These typically consist of two styles of drainage features, either non-engineered BMPs or engineered stormwater treatment facilities. When planning mitigation measures, the preference is to treat stormwater from the project highway or adjacent highway segments that discharge to the same receiving water. It is not necessary to treat stormwater from the precise new impervious surface or project highway segment. It is sufficient to treat the appropriate amount of stormwater from equivalent surfaces. In those cases, discharge of the treated stormwater should be upstream or very close to the discharge of the project specific stormwater. In situations where site conditions prevent the installation of stormwater treatment facilities, it may be necessary to go off-site or to participate in watershed scale mitigation activities. While implementation of maintenance practices that support water quality is an important part of ODOT's overall stormwater management plan, specifying those as mitigation for project impacts is generally not recommended. Maintenance activities are often outside the control of the project development team, and other factors, such as budgets or emergencies, can hinder complete implementation of a specified maintenance plan.

The choice of mitigation measures is guided by the goals of the mitigation, the targeted pollutants, project location, climate, available space, conflicting resources and cost. In order to achieve the mitigation goal, more than one type of mitigation measure may be needed on a project. The project stormwater engineer is responsible for determining if multiple mitigation measures are necessary.

Net New Impervious Surface Area: The difference between the amount of impervious surface within the project boundaries before the project is constructed and after the project is completed. This measure takes into account both new pavement and the amount of pavement that is removed. It is therefore possible to have a project with new paving that still results in a decrease in total impervious surface area.

New Impervious Surface Area: The amount of unpaved ground that is converted to pavement by the project. In some jurisdictions, stormwater regulations are concerned with the total new impervious surface area, not just the net new impervious surface area.

Pollutant Concentration: The amount of a pollutant in a specific volume of stormwater (i.e mg/l). Chemical water quality standards and toxicity criteria are usually given as pollutant concentrations, as are some TMDLs.

Pollutant Load: The amount of a pollutant carried by stormwater runoff. Usually expressed as weight or mass per time or event (i.e. lbs/year or lbs/storm). Some TMDLs are expressed as pollutant loads.

Receiving Water: The river, stream, lake, pond, wetland or aquifer that may be affected by the discharge of stormwater runoff from a project. Analysis of the potential for water quality violations is usually limited to the water body at the point of initial discharge. For analysis of impacts to 303(d) and TMDL streams, and listed species, connected downstream water bodies need to be taken into account.

TMDL: Total Maximum Daily Load. The TMDL is the total amount of a specific pollutant that can enter a specific water body from all sources without violating water quality standards. The Clean Water Act requires that the state establish a TMDL for each pollutant that exceeds water quality standards for every stream on the 303(d) list. TMDLs are used to allocate permissible pollutant discharges from point sources, non-point sources, natural background levels, and future sources.

Waste Load Allocation: The total permissible pollutant contribution from a particular point source to a specific water body with a TMDL. Waste Load Allocations are used to establish effluent limits in NPDES discharge permits. Part of the Waste Load Allocation may be reserved for future sources.

Water Quality Impacts: Transportation projects impact water quality by discharging polluted highway runoff to receiving waters, and by disturbing features of the landscape that provide water quality benefits. Typical pollutants are sediment, bacteria, nutrients, oil and grease, and metals. These are generated by traffic, or are deposited on the highway surface from airfall or other sources. Especially sensitive landscape elements that have water quality benefits are wetlands, which capture many pollutants, and riparian zones, which both trap nutrients and provide shade, keeping water temperatures down. Highway runoff in Oregon rarely increases stream temperature, simply because precipitation usually falls when temperatures are relatively low. However, projects that remove riparian shrubs and trees do contribute to in-stream temperature increases.

References

Dorman, M.E., George, T.S., Hartigan, J.P., Quasebarth, T.F., 1996, Retention, detention, and overland flow for pollutant removal from highway stormwater runoff Volume II Design Guidelines: Federal Highway Administration FHWA-RD-96-096, 231 p.

Driscoll, E.D., Shelley, P.E. and Strecker, E.W., 1990, Pollutant loadings and impacts from highway stormwater runoff, Volume I: Design procedure: Federal Highway Administration Final Report FHWA-RD-88-006, 61 p.

APPENDIX 2

WATER RESOURCES PROCESS

The following outlines the process by which ODOT projects are evaluated for water resources impacts, decisions made on the mitigation required, and how the mitigation designs are produced and reviewed for appropriateness and acceptability. The unit or specialist responsible for each step is identified, as well as those who need to receive the documentation produced.

1) Prospectus, Part 3: The Part 3 Prospectus is produced after a project has been placed on the STIP at the beginning of the project development process, and is used to assign the environmental classification (1, 2 or 3) to a project, identify resources potentially impacted by the project, and identify potential project elements that could affect those resources. A checklist is provided on the Project Deliver Work Planning (PDWP electronic form under "Water Resources and Wetlands". The Part 3 is completed by the Region Environmental Coordinator (REC) or under their supervision and review. Information required to complete the prospectus includes the project location and general project concept. At this point projects with no potential for impacts to water resources are determined to not require further evaluation. All other projects require a Baseline Report.

2) Baseline Report: The Water Resources Baseline report is produced prior to the beginning of design work and identifies water resources within the Area of Potential Impact (API), as well as those resources that could be affected by activities within the API. It is used to provide designers with information needed to avoid and minimize impacts to water resources, and to allow resource specialists to determine if further assessment will be required. The Baseline report may be prepared by either the REC or the Water Resources Specialist. Information required to complete the Water Resources Baseline Report includes the prospectus and the API. The report is for use by the REC or Environmental Project Manager, the Water Resources Specialist, and the Roadway Designer, the Hydraulics Designer, and the Bridge Designer (as necessary). At this point projects with no potential impacts to water resources are determined to not require further evaluation. All other projects require a Water Resources Impact Assessment.

3) Water Resources Impact Assessment: The Water Resources Impact Assessment (WRIA) is conducted if the Baseline Report indicates that water resources could be impacted by the proposed project. The Assessment has several purposes. First, it determines what level of mitigation is required for the project. Second, it provides the targets and the goals of the mitigation. Third, it documents the potential impacts of the project without mitigation and the anticipated project impacts with the recommended mitigation. The assessment is based on Project Delivery Leadership Team Notice 05 (PD-05). The Water Resources Impact Assessment is prepared by the Water Resources Specialist. Information required to complete the Water Resources Impact Assessment includes the Baseline Report, available project drawings, and existing and proposed impervious surface area (+/- 20% accuracy). The report is provided to the Region Environmental Coordinator (REC) or Environmental Project

Manager (EPM), the Project Leader, the project Biologist, the Roadway Designer, the Hydraulics Designer, and the Bridge Designer (as necessary).

Water Resources Impact Assessment recommendations provide direction to the project design teams on how to proceed designing water resource facilities. The recommendations fall into one of the three following categories:

3a) No Water Resources Mitigation Required: No further design or analysis is required. The project must still comply with ODOT policy and permit requirements with regards to erosion and sediment control, and to pollution prevention. Water quality BMPs should be incorporated into the project whenever possible without incurring substantial extra cost.

3b) Best Management Practice (BMP) Level Mitigation Required: Approved Design drawings must incorporate BMPs into the drainage and roadside development elements. The drawings are developed by the Roadway Engineer. The drainage elements of the drawings are transmitted to the Water Resources Specialist, the Biologist, the REC/EPM, and the Project Leader. The Water Resources Specialist and the Biologist provide review of the Approved Design drawings to determine if they meet the mitigation goals. The Biologist and the REC/EPM provide review to ensure that the BMPs do not adversely impact other resources.

3c) Engineered Mitigation Required: When the resulting recommendation includes an engineered mitigation solution a Preliminary Stormwater Report should be prepared.

4) Preliminary Stormwater Report: This report is prepared if recommended by the WRIA or the project team. The Preliminary Stormwater Report evaluates the mitigation options and proposes a recommended mitigation plan. The report is the responsibility of the project Hydraulics Engineer and should be completed prior to Approved Design and prior to completion of the environmental documents. The Hydraulics Engineer may determine an abbreviated version of this report is sufficient due to project specific site constraints. At a minimum, a technical memo should be prepared describing why the Preliminary Stormwater Report was not necessary. An outline/guidance for the contents of the Preliminary Stormwater Report is available in the ODOT Hydraulics Manual. The report is transmitted to the Water Resources Specialist, the project Biologist, the REC/EPM, the Project Leader, Roadway, Right-of-Way, Hazmat, Utilities, and any other specialist that may have project elements affected by the design. The Water Resources Specialist and the Biologist provide review to determine if the plans meet the mitigation goals. The Biologist and the REC/EPM provide review to ensure that the recommended mitigation facilities do not adversely impact other resources. The Project Leader is responsible for the Project Team's selection of the preferred mitigation plan. If the preferred mitigation plan is different than the recommended mitigation plan, the preferred mitigation plan will be reviewed by the Water Resources Specialist to ensure that mitigation goals and targets are met, and by the REC/EPM to ensure

that other resources are not adversely affected. The finally agreed upon mitigation plan is then included in Approved Design.

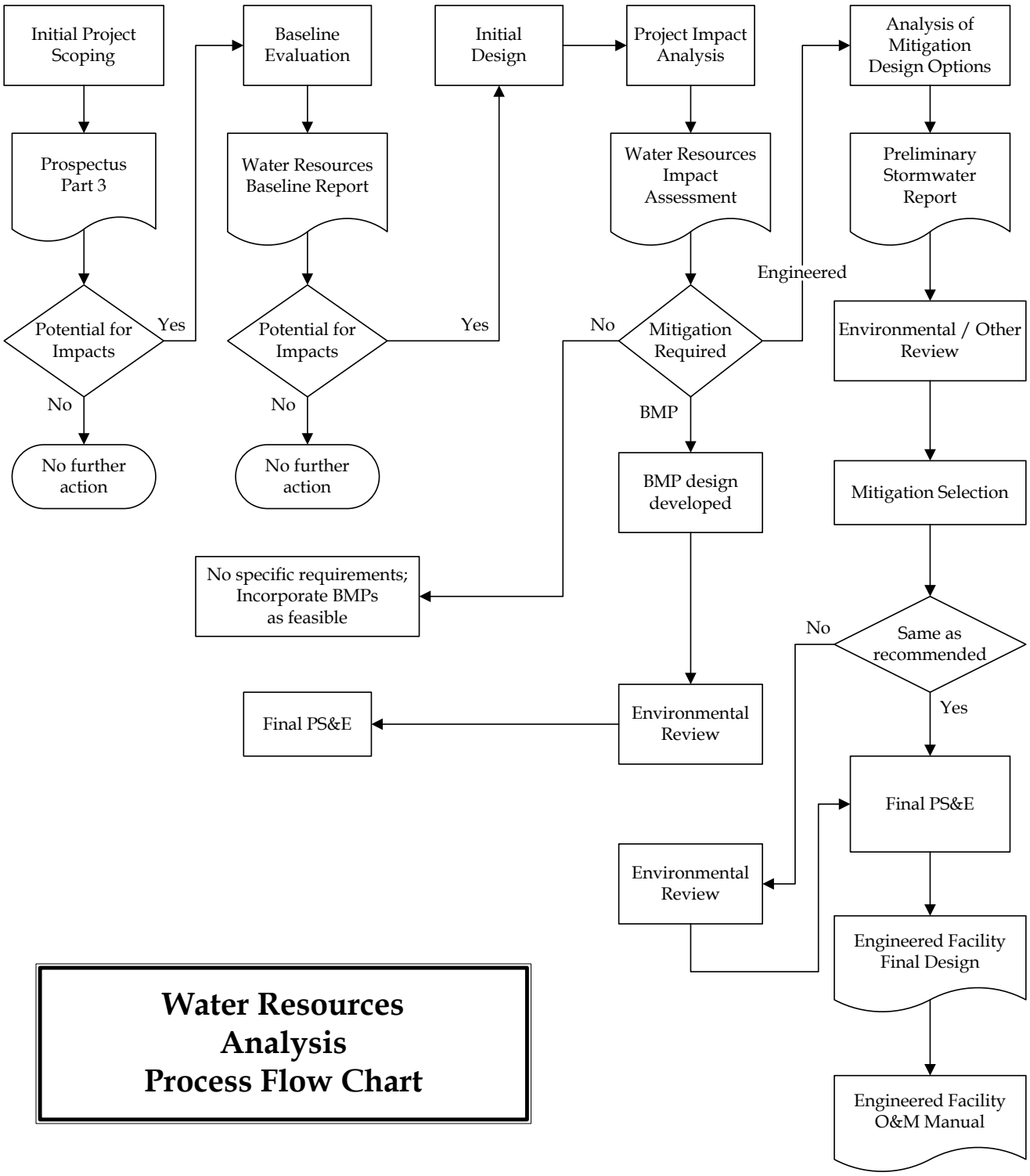
5) Final PS&E

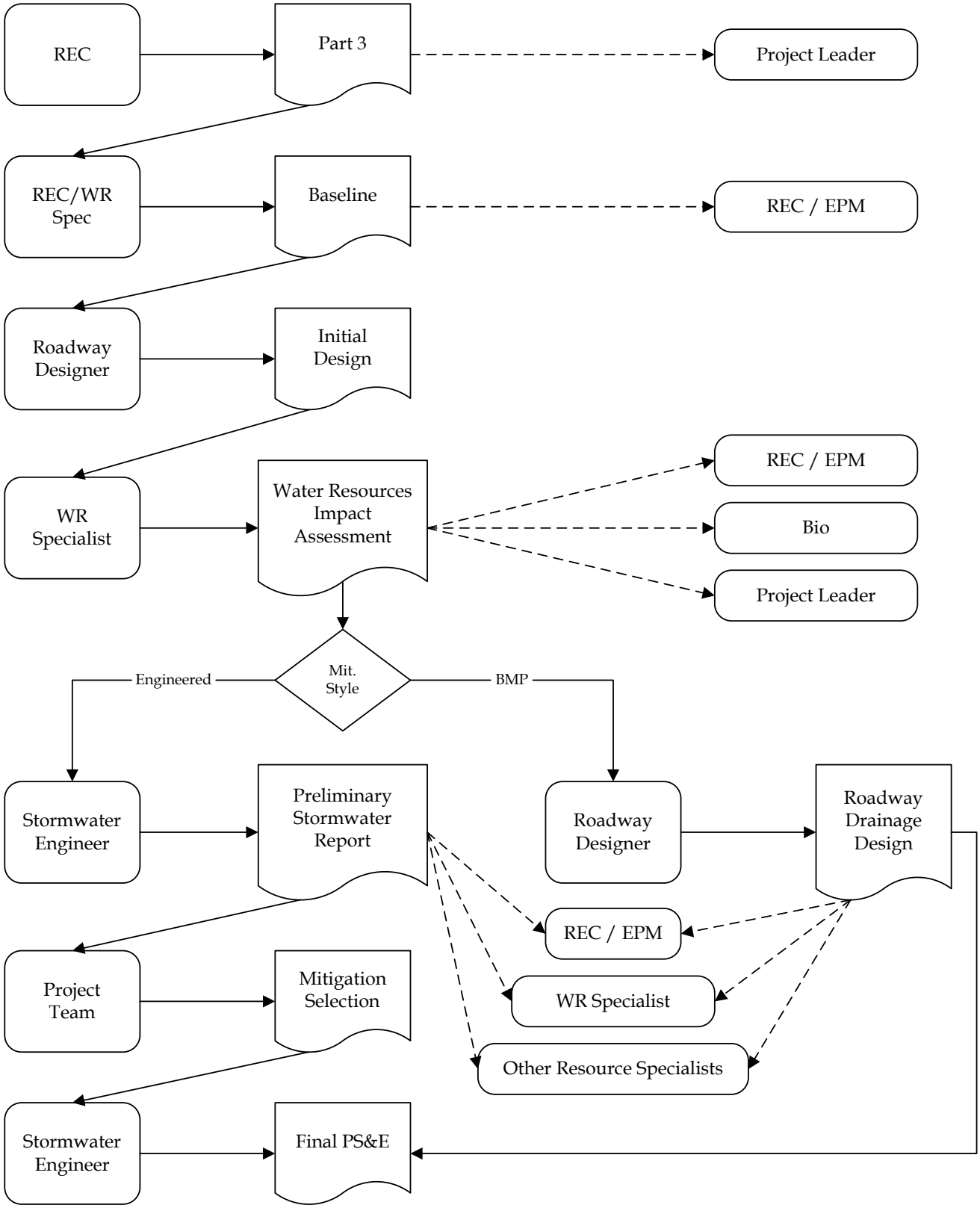
The Plans Specifications and Estimate (PS&E) package developed for construction should incorporate the appropriate water resources mitigation recommendations described by the preceding documents.

5a) BMP Level Final Mitigation Plan: Following approval of the stormwater mitigation shown in the Approved Design, the Final PS&E package is produced by the Roadway Engineer incorporating the BMP level mitigation features. The design is reviewed by the Water Resources Specialist to ensure that any changes between the Approved Design and the Final PS&E are consistent with the goals and targets of the mitigation.

5b) Engineered Facility Final Design: Following the selection of the preferred mitigation plan the Final PS&E package is produced by the project Hydraulics Engineer. The Facility package is reviewed by the Water Resources Specialist to ensure that any changes from the mitigation plan selected are consistent with the goals and targets of the mitigation.

5c) Engineered Facility Operation and Maintenance (O&M) Manual: Each engineered stormwater facility (detention, treatment, pumping, infiltration, etc) must be accompanied by a site specific O&M manual. This manual is necessary to assure the agreements and assumptions made during the water resources impact assessment process are fulfilled for the life of the facility. An outline/guidance for the contents of the Operation and Maintenance Manual is available in the ODOT Hydraulics Manual. The O&M manual is provided to the unit responsible for the long-term maintenance of the facility.



Water Resources Analysis Process Flow Chart

Water Resources Analysis
Responsibilities and Communication