I. Permittee Information

Permittee Name Western Washington University	**Permittee Coverage Number** WAR04-5701
Contact Name Ronald L. Bailey	**Date of Permit Coverage** 02/16/2007 - 02/15/2012
Mailing Address 526 High Street	**Phone number** 360-650-4917
City Bellingham	**State** / **Zip + 4** WA / 98225-9121
Email Adddress ron.bailey@wwu.edu	

II. Regulated Small MS4 Location

Municipal Entity Western Washington	*Entity Type: Mark X in the box that applies* **County** / **City/Town** / **Other** ( ) / ( ) / X
Major Receiving Water(s) Bellingham Bay (via CoB), Taylor Creek, and Connelly Creek	

III. Relying on another Governmental Entity

If you are relying on another governmental entity to satisfy one or more of the permit obligations, list the entity and briefly describe the permit obligation(s) they are implementing on your behalf below. ***Attach a copy of your agreement with the other entity to provide additional detail (unless previously submitted).***

Name of Entity:	**Permit Obligation(s):**

IV. Certification

All annual reports must be signed and certified by the responsible official(s) of permittee or co-permittees. Please print and sign this page of the reporting form and mail it (with an original signature) to Ecology at the address noted below. An electronic signature will not suffice.

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that Qualified Personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for willful violations.

Name	Ronald L. Bailey	Title	Operations Support Manager	Date	3/31/2010
Name	Donald T. Wynn	Title	Director of Facilities Management	Date	3/31/2010
Name	Kathy Wetherell	Title	Interim Vice President for Business & Financial Affairs	Date	3/31/2010
Name		Title		Date	
Name		Title		Date	

VI. Status Report Covering Calendar Year: 2009 **Name of permitted entity:** Western Washington University

PLEASE label reporting year and your entity name, above.
PLEASE refer to the INSTRUCTIONS tab for assistance filling out this table.
NOTE: For clarification on how to answer questions, place cursor over cell with red flag in corner.
NOTE: Items that have future compliance dates must still be answered to indicate status.
PLEASE label information in any attachments with corresponding question numbers.
PLEASE review your work for completeness and accuracy. Save this worksheet as you go!

	Question	Y/N/ NA	#	Comments (50 word limit)	Name of Attachment & Page Number, if applicable
	S6.D Stormwater Management Program				
1	**Attached** a copy of the Permittee's Stormwater Management Program document (SWMP) as per S6.A.5. (*Required* annually)	Yes		See attachments provided	See Att-1: SWMP Overview See Att-2: SWMP Timeline
2	**Attached** a notification of any jurisdictional boundary changes resulting in an increase or decrease in the Permittee's geographic area of coverage during the reporting period, and implications for the SWMP. (*Required* annually, S9.F.2)	NA		No change in jurisdictional boundary in 2009	
	S.6.D.1 Public Education and Outreach				
3	Labeled at least 50% of all storm drain inlets owned or operated by the Permittee that are located in maintenance yards, in parking lots, along sidewalks, and at pedestrian access points. (*Required by* 3 years from date of permit coverage or date established by Ecology, S6.D.1.a)	Yes		WWU grounds personnel labeled 100 of the university's approximately 175 storm drain inlets with the same placard that is in use by the City of Bellingham. The remaining inlets will be labeled during 2010	See Att-3: 2010 Program Activities
3a	Number of inlets labeled:		100		

Question		Y/N/ NA	#	Comments (50 word limit)	Name of Attachment & Page Number, if applicable
4	(Public ports, colleges and universities only) Distributed educational information to tenants and residents about the impact of stormwater discharges on receiving waters and steps that can be taken to reduce pollutants in stormwater runoff. (*Required by* 3 years from date of permit coverage, S6.D.1.b)	Yes		Coordinated with student reporter to publish in the campus newspaper (The Western Front) a special report documenting WWU's effots to manage storwmwater as part of LEED certification as well as a description of, and purpose for, WWU's stormwater system. Additional educational information will be communicated to all staff and students in 2010.	See Att-3: 2010 Program Activities See Att-4: Stormwater Management and Western's Pursuit of LEED Certification See Att-5: A Journey Through Western's Waterways
5	Labeled all storm drain inlets owned or operated by the Permittee that are located in maintenance yards, in parking lots, along sidewalks, and at pedestrian access points. (Required by August 15, 2011 or date established by Ecology, S6.D.1.a.ii)	NA		Requirement does not apply because not yet due	
5a	Number of inlets labeled:				
6	Re-labeled all storm drain inlets with labels when no longer clearly visible and/or easily readable within 90 days. (*Required* after all inlets labeled, S6.D.1.a.iii)	NA		Requirement does not apply because not yet due	
6a	Number of inlets labeled:				
	S6.D.2 Public Involvement and Participation				
7	Published a public notice and solicited public review of the SWMP. (*Required* by August 15, 2011 or date established by Ecology, S6.D.2.a)	NA		Requirement does not apply because not yet due	
8	Made the latest version of the SWMP available to the public. If posted on website, list address in *Comments.* (*Required by* August 15, 2011 or date established by Ecology, S6.D.2.b)	Yes		Information about WWU's Storm Water Management Program is posted on WWU Facilities Management's website. Included on the SWMP website are annual reports submitted to DoE and an opportunity for public feedback (http://www.wwu.edu/depts/fm/)	
	S6.D.3 Illicit Discharge Detection and Elimination				

Question		Y/N/ NA	#	Comments (50 word limit)	Name of Attachment & Page Number, if applicable
9	Complied with all relevant ordinances, rules, and regulations of the local jurisdiction(s) that govern non-stormwater discharges. (*Required* from date of permit coverage, S6.D.3.a)	Yes		Received no notice of non-compliance	
10	Developed and adopted policies to prohibit illicit discharges and identified enforcement mechanisms. (*Required by* 1 year from date of permit coverage, S6.D.3.b.)	Yes		WWU's Stormwater Policy was adopted in 2008, is available via a link on SWMP website and was included in WWU's 2008 Annual Report	
11	Implemented policies to prohibit illicit discharges, including an enforcement plan. (*Required* 1 year from date of permit coverage, S6.D.3.b)	Yes		Procedures were adopted in 2008, are available via a link on SWMP website and were included in 2008's Annual Report	
12	Developed a map of the storm sewer system showing all known storm drain outfalls, receiving waters, and areas contributing runoff to each outfall. Made map available on request to Ecology or others, if requested. (*Required by* August 15, 2011 or date established by Ecology, S6.D.3.c)	Yes		A description and future plans of WWU's storm water system were included as part of the university's Utilites Master Plan Study prepared in 2007. Maps of the storm sewer system are available via a link on SWMP website and were included in WWU's 2008 Annual Report	
13	Conducted annual field inspections and visually inspected for illicit discharges at approximately one third of all known outfalls. (*Required to begin* by 2 years from date of permit coverage, S6.D.3.d)	Yes		WWU has 3 outfalls to natural waterways from MS4 that are visually inspected at least once per month for illicit discharges - all other MS4 outfalls are underground pipe connections to City of Bellingham's stormwater system	
13a	Number of outfalls inspected:		3		
14	Developed and implemented procedures to identify and remove illicit discharges. *Required by* 2 years from date of permit coverage, S6.D.3.d)	Yes		See question 11	

Question		Y/N/ NA	#	Comments (50 word limit)	Name of Attachment & Page Number, if applicable
15	**Attached a** summary of illicit discharges discovered and actions taken to eliminate the discharges. (*Required annually after* 2 years from date of permit coverage, S9)	Yes			See Att-6: 2009 Illicit Discharge Detection and Elimination
16	Developed and implementing a spill response plan that includes coordination with a qualified spill responder. (*Required by* August 15, 2011 or date established by Ecology, S6.D.3.e)	NA		Requirement does not apply because not yet due	
17	Provided staff training or coordinated with existing training to educate relevant staff on proper BMPs for preventing illicit discharges, including spills. (*Required by* 2 years from date of permit coverage, S6.D.3.f)	Yes		Reviewed storm water discharge BMPs with WWU grounds personnel at periodic crew meetings to ensure knowledge of what to look for during inspections and action to be taken.	
	S6.D.4 Construction Site Stormwater Control				
18	Complied with all relevant ordinances, rules, and regulations of the local jurisdiction(s) that govern construction phase stormwater pollution prevention measures. (*Required* from date of permit coverage, S6.D.4.a)	Yes		Received only one notice of contractor non-compliance and responded accordingly	See Att-6: 2009 Illicit Discharge Detection and Elimination
19	Obtained NPDES permit coverage for all applicable construction projects under the control of the Permittee. (*Required* from date of permit coverage, S6.D.4.b)	Yes		Obtained NPDES permits for Miller Hall, Buchanan Towers, and maintenance warehouse construction projects - permits held by contractor	
20	Coordinated with local jurisdictions on construction projects owned or operated by other entities that discharge into Permittee's MS4. (*Required* after date of permit coverage, S6.D.4.c)	NA		There are no other discharges into WWU's MS4	

	Question	Y/N/ NA	#	Comments (50 word limit)	Name of Attachment & Page Number, if applicable
21	Provided training for relevant staff in erosion and sediment control BMPs and requirements, or hired trained contractors to perform the work for all construction projects owned and operated by the Permittee. (*Required* after date of permit coverage, S6.D.4.d)	Yes		Appropriate staff training is required of all contractors hired for major public work projects	
22	Provided access, as requested, for inspection of construction sites under the control of the Permittee during the active grading and/or construction period. (*Required* after date of permit coverage, S6.D.4.e)	Yes		Received no notice of denied access	
	S6.D.5 Post-Construction Stormwater Management for New Development and Redevelopment				
23	Complied with all relevant ordinances, rules, and regulations of the local jurisdiction(s) that govern post-construction stormwater pollution prevention measures, including proper operation and maintenance of the MS4. (*Required* after date of permit coverage, S6.D.5.a)	Yes		Received no notice of non-compliance	
24	Coordinated with local jurisdictions on projects owned or operated by other entities that discharge into Permittee's MS4. (*Required* after date of permit coverage, S6.D.5.b)	NA		There are no other discharges into WWU's MS4	
	S6.D.6 Pollution Prevention and Good Housekeeping for Municipal Operations				
25	Developed and implemented an Operation and Maintenance program. (*Required by* 3 years from date of permit coverage, S6.D.6.a)	Yes		Routine inspection of storm water intakes and outflows have been incorporated into WWU Grounds Shop preventive maintenance schedules	See Att-3: 2010 Program Activities

	Question	Y/N/ NA	#	Comments (50 word limit)	Name of Attachment & Page Number, if applicable
26	Conducted spot checks of stormwater facilities after major storms. (*Required to begin by* 3 years from date of permit coverage, S6.D.6.a.i)	Yes		WWU Grounds personnel inspect storm water intakes and outflows following major storms and corrective action is taken as necessary	See Att-3: 2010 Program Activities
27	Developed and implemented a Stormwater Pollution Prevention Plan (SWPP) for material storage areas, heavy equipment storage areas, and maintenance areas not covered by another NPDES permit that covers stormwater discharges associated with the activity. (*Required* by 3 years from date of permit coverage or date established by Ecology, S6.D.6.a.vi)	Yes		WWU's Facilities Management (FM) maintenance yard was reconfigured in 2009 due to construction of a new warehouse. FM Grounds and Shop Maintenance personnel have been assigned the responsibility to properly maintain facility/area as designed. A powered air sweeper has been purchased and will be routinely used to sweep sidewalks, roadways, and maintenance areas of excess sand, dirt and debris to prevent from entering storm water intakes.	See Att-3: 2010 Program Activities
28	Have NPDES permit for Stormwater Discharges Associated with Industrial Activities coverage for all applicable industrial facilities operated by the Permittee. (*Required after date of* permit coverage, S6.D.6.b)	NA		Have no industrial facility requirements	
29	Provided adequate training for staff to carry out the Operations and Maintenance plan to minimize impacts to water quality. (*Required to begin by* 3 years from date of permit coverage, S6.D.6.d)	Yes		WWU maintenance personnel have been trained by shop supervisors in correct procedures for properly controlloing pressure washer runoff, pipe flushing, and other non-storm water discharges to ensure water quality. O&M training will routinely continue in 2010.	See Att-3: 2010 Program Activities
	S7 Compliance with Total Maximum Daily Load Requirements				
30	Is there an approved Total Maximum Daily Load (TMDL) applicable to stormwater discharges from a MS4s owned or operated by the Permittee? (S7)	No		Received no notification of applicable TMDL	

Question		Y/N/ NA	#	Comments (50 word limit)	Name of Attachment & Page Number, if applicable
31	Complied with the specific TMDL requirements identified in Appendix 2. (S7.A)	NA		No TMDL requirements	
32	Attached status report of TMDL implementation. (S7.A)	NA		No TMDL requirements	
33	Where monitoring was required in Appendix 2, conducted the monitoring according to an approved Quality Assurance Project Plan. (S7.A)	NA		No TMDL requirements	
	General Conditions				
34	Notified Ecology of the failure to comply with the permit terms and conditions within 30 days of becoming aware of the non-compliance. (G20)	NA		Received no notice of non-compliance	
35	Notified Ecology immediately in cases where the Permittee becomes aware of a discharge into or from the Permittees MS4 which could constitute a threat to human health, welfare, or the environment? (G3)	NA		Discharge problems recorded in question #15 above were determined to be minor in nature and addressed only as a 'concern' rather than a 'threat to human health, welfare, or the environment' so no notification to Ecology took place.	See Att-6: 2009 Illicit Discharge Detection and Elimination
36	Took appropriate action to correct or minimize discharges into or from the MS4 which could constitute a threat to human health, welfare, or the environment. (G3.A)	Yes		Corrective action was taken in all circumstances that raised a concerned awareness to ensure that no threat to human health, welfare, or the environment occurred.	See Att-6: 2009 Illicit Discharge Detection and Elimination
	S4 Compliance with Standards				
37	If applicable, attached a summary of the status of implementation of any actions taken pursuant to S4.F and the status of any monitoring, assessment, or evaluation efforts conducted during the reporting period. (S4.F.3.d)	NA		Received no S4.F notification	

PROGRAM OVERVIEW

Western Washington University's, in concert with the Washington State Department of Ecology, will implement a Storm Water Management Program (SWMP) with the expressed purpose of reducing the discharge of pollutants from Western's storm water system to the maximum extent practicable and to protect the water quality of out-flowing waterways. Western's SWMP will consist of the following components:

Coordination

The SWMP will include mechanisms to encourage coordinated storm water related policies, programs and projects on Western owned properties with the City of Bellingham, other local jurisdictions, and university departments.

Public Education and Outreach

- Storm drain inlets will be labeled with the message "Dump no waste" and indicate the point of discharge as a river, lake, bay, or groundwater. 50% of drains will be labeled within 3 years of permit coverage and all drains will be labeled no later than 180 days prior to expiration date of the storm water permit.
- Annually, starting no later than 3 years from beginning of permit coverage, the university will distribute educational information to students and staff on the impact of storm water discharges on receiving water and the steps than can be taken to reduce pollutants in storm water runoff.

Public Involvement and Participation

- Western's SWMP will be posted and updated on the university website, with opportunity provided for public comment.
- No later than 180 days prior to expiration date of the storm water permit, the university will publish a public notice in the Bellingham Herald and solicit public review of the SWMP.

Illicit Discharge Detection and Elimination

- From the date of coverage of the storm water permit, Western will comply with all relevant ordinances, rules and regulations of the City of Bellingham, and other applicable local jurisdictions.

- Within 1 year from the date of permit coverage, Western will develop and adopt appropriate policies prohibiting illicit discharges and illegal dumping and identify enforcement mechanisms. The enforcement mechanisms will be implemented no later than 18 months from the date of permit coverage.
- No later than 180 days prior to the expiration date of the permit, Western will develop a storm sewer system map showing the locations of all known storm drain outfalls, labeling the receiving waters, and delineating the areas contributing runoff to each outfall. The map will be posted on the university website along with the SWMP.
- Within 2 years of the date of permit coverage, the university will conduct field inspections and visually inspect for illicit discharges at 1/3 of known outfalls and continue with 1/3 of outfalls each year thereafter. Procedures will be developed and implemented to identify and remove any illicit discharges and records will be kept of inspections and follow-up activities.
- No later than 180 days prior to expiration date of the permit, Western will develop and implement a spill response plan that includes coordination with a qualified spill responder.
- Western will train all relevant staff on proper best management practices (BMP) for preventing spills and illicit discharges.

Construction Site Storm Water Runoff Control

- From the date of coverage of the storm water permit, Western will comply with all relevant ordinances, rules and regulations of the City of Bellingham, and other applicable local jurisdictions that govern construction phase storm water pollution prevention measures.
- Western will obtain, as required, National Pollutant Discharge Elimination System (NPDES) permits that cover the storm water discharges associated with the construction activity, prior to discharging.
- Western will provide training, or coordinate with existing training programs, to educate relevant staff in erosion and sediment control BMPs and requirements, or hire trained contractors to perform the work.
- Western will coordinate with the Department of Ecology, or local jurisdiction, to provide access for inspection of construction sites or other land disturbances greater than or equal to one acre.

Post-construction Storm Water Management for New Development and Redevelopment

- From the date of coverage of the storm water permit, Western will comply with all relevant ordinances, rules and regulations of the City of Bellingham, and other applicable local jurisdictions that govern post-construction storm water pollution prevention measures.
- No later than 1 year from the date of permit coverage, Western will comply with the Minimum Technical Requirements for post construction storm water controls for new development and redevelopment of construction sites or other land disturbances greater than or equal to one acre.

Pollution Prevention and Good Housekeeping Maintenance and Operation

- Within 3 years from the date of permit coverage, Western will develop and implement a maintenance and operation (M&O) plan to minimize storm water pollution from activities conducted by the university.
- The M&O plan will include record keeping procedures to track 1) performance of operational source control activities, 2) performance of scheduled inspections and maintenance activities, 3) responses to spills and other potential pollution incidents.
- The M&O plan will include relevant training of all employees whose construction, operations, or maintenance job functions may impact storm water quality.

Reporting Requirements

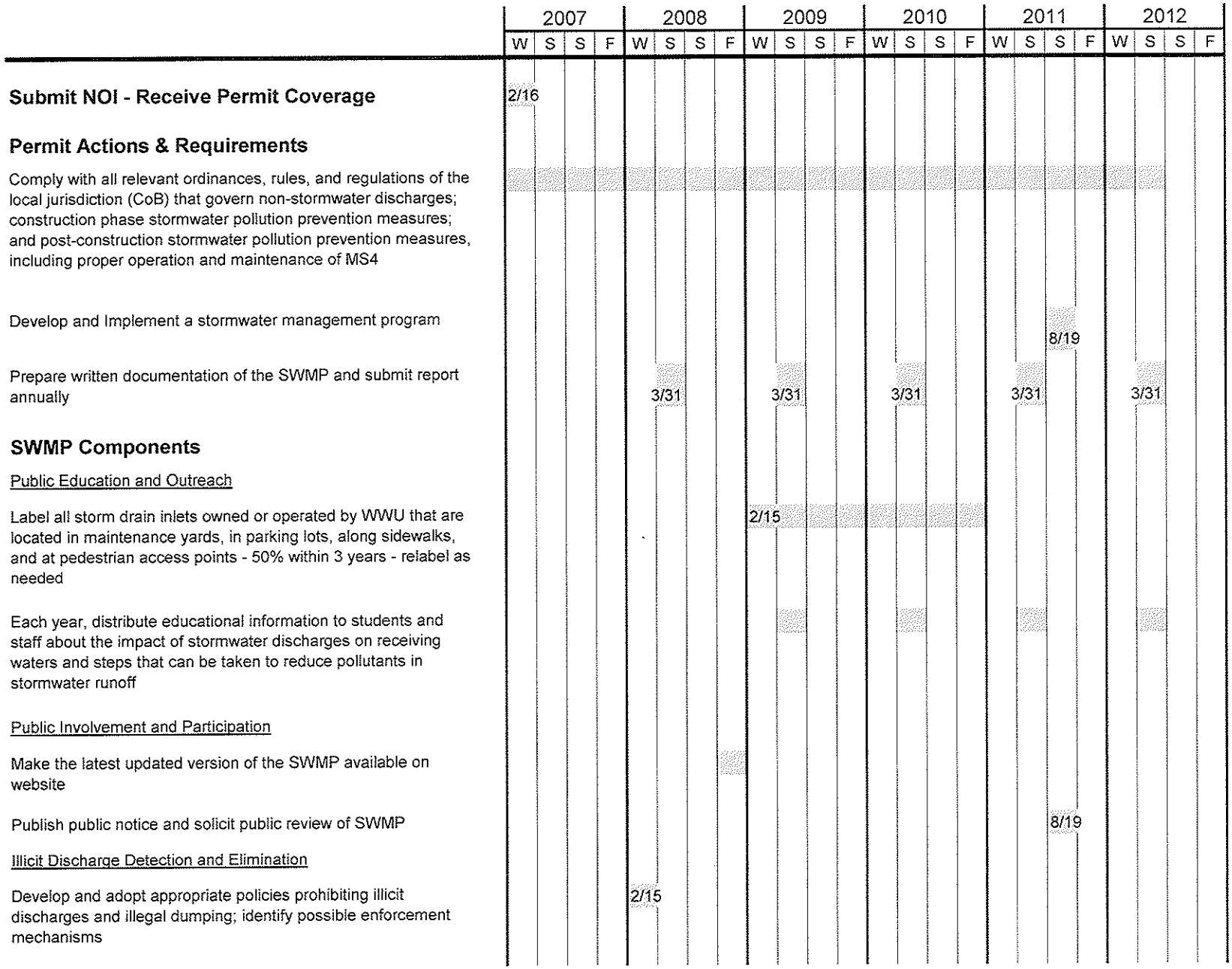
- The university will maintain and make readily available a SWMP document that identifies the program plans and activities for the ensuing year(s).
- The university will submit no later than March 31 each year, beginning in the year 2008, an Annual Report to the Department of Ecology, using the forms provided.

General Conditions

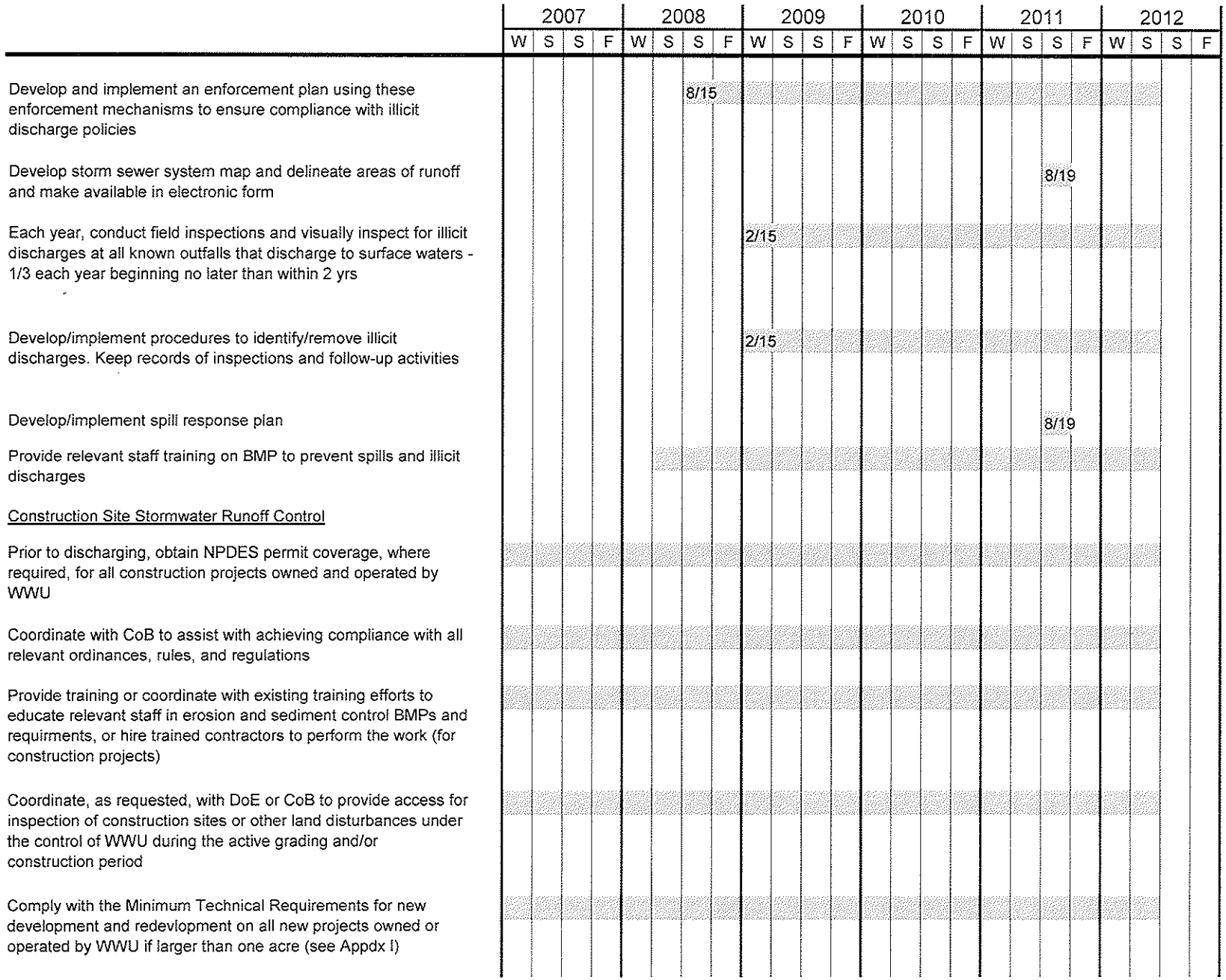
- The university will comply with the general conditions of the storm water permit as identified by the Department of Ecology in accordance with the following:
  Discharges and activities consistent with terms and conditions of permit
  Proper operation and maintenance
  Spill notification

Prohibition of intentional storm water bypass
Right of entry allowed
Duty to mitigate
No conveyance of property rights
Compliance with other laws and statutes
Monitoring
No re-entry of removed substances
Severability
Revocation of coverage
Transfer of coverage
General permit modification and revocation
Reporting a cause for modification or revocation
Appeals
Penalties
Duty to reapply
Certification and signature
Non-compliance notification

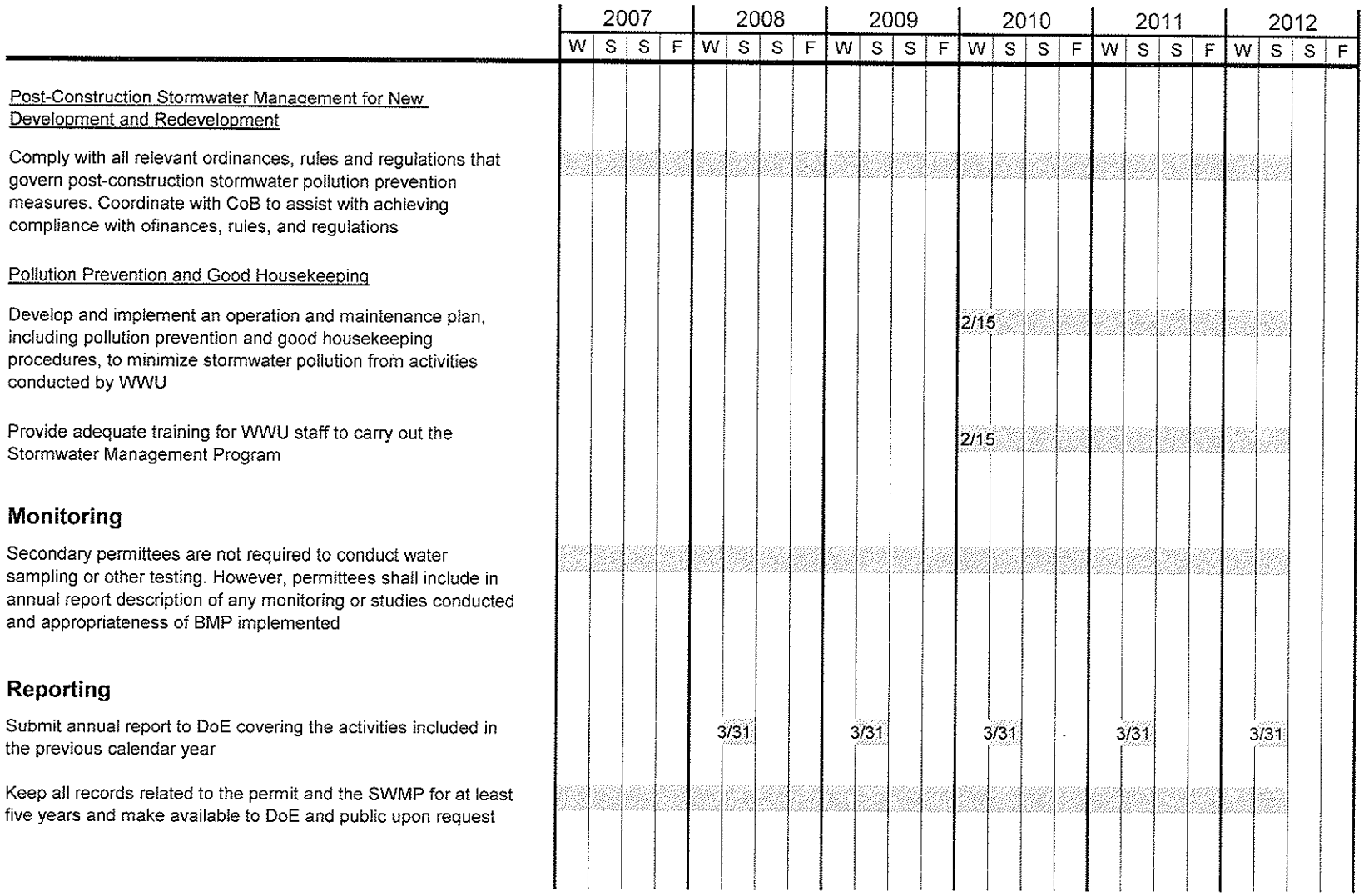
WWU Storm Water Management Program



WWU Storm Water Management Program



WWU Storm Water Management Program



PROGRAM ACTIVITIES FOR 2010

Following are the activities that will occur during 2010 to reduce the discharge of pollutants from Western's storm water system to the maximum extent practicable and to protect the water quality of out-flowing waterways.

Coordination

- The university, through the department of Facilities Management, will actively maintain open communication with the city of Bellingham's department for storm water management, operators of other local MS4's, and the Department of Ecology to exchange best practices and address issues and concerns.

Public Education and Outreach

- Complete labeling of all storm drain inlets with the message "Dump no waste" during 2010 and replace any labels that are damaged or missing.
- Prepare and distribute educational information to students and staff on the impact of storm water discharges on receiving water and the steps than can be taken to reduce pollutants in storm water runoff.

Public Involvement and Participation

- Maintain Western's SWMP website (http://www.wwu.edu/depts/fm/) and promote use for public information and comment.

Illicit Discharge Detection and Elimination

- Comply with all relevant ordinances, rules, and regulations of the local jurisdiction (CoB) that govern non-storm water discharges; construction phase storm water pollution prevention measures; and post-construction storm water pollution prevention measures, including proper operation and maintenance of MS4.
- Maintain SWMP policies and procedures – adopt additional policies and procedures as necessary.
- Conduct field inspections and visually inspect for illicit discharges at all known outfalls of MS4. Inspection activities to include identification and removal of any illicit discharges and recording of inspections and follow-up activities.
- Continue to provide training for all relevant staff on proper best management practices (BMP) to prevent spills and illicit discharges.

Construction Site Storm Water Runoff Control

- Comply with all relevant ordinances, rules and regulations of the City of Bellingham, and other applicable local jurisdictions that govern construction phase storm water pollution prevention measures.
- Obtain, as required, National Pollutant Discharge Elimination System (NPDES) permits that cover the storm water discharges associated with the construction activity, prior to discharging.
- Provide training, or coordinate with existing training programs, to educate relevant staff in erosion and sediment control BMPs and requirements, or hire trained contractors to perform the work.
- Coordinate with the Department of Ecology, or local jurisdiction, to provide access for inspection of construction sites or other land disturbances greater than or equal to one acre.

Post-construction Storm Water Management for New Development and Redevelopment

- Comply with all relevant ordinances, rules and regulations of the City of Bellingham, and other applicable local jurisdictions that govern post-construction storm water pollution prevention measures.
- Comply with the Minimum Technical Requirements for post construction storm water controls for new development and redevelopment of construction sites or other land disturbances greater than or equal to one acre.

Pollution Prevention and Good Housekeeping Maintenance and Operation

- Maintain a maintenance and operation plan, including pollution prevention and good housekeeping procedures, to minimize storm water pollution from activities conducted by WWU. The M&O plan includes relevant training of all employees whose construction, operations, or maintenance job functions may impact storm water quality.

Reporting Requirements

- No later than March 31, 2010, submit an Annual Report to the Department of Ecology, using the forms provided.

- No later than December 31, 2010, prepare program activities for 2011 and update the relevant SWMP documents.

General Conditions

- Comply with the general conditions of the storm water permit as identified by the Department of Ecology in accordance with the following:
  - Discharges and activities consistent with terms and conditions of permit
  - Proper operation and maintenance
  - Spill notification
  - Prohibition of intentional storm water bypass
  - Right of entry allowed
  - Duty to mitigate
  - No conveyance of property rights
  - Compliance with other laws and statutes
  - Monitoring
  - No re-entry of removed substances
  - Severability
  - Revocation of coverage
  - Transfer of coverage
  - General permit modification and revocation
  - Reporting a cause for modification or revocation
  - Appeals
  - Penalties
  - Duty to reapply
  - Certification and signature
  - Non-compliance notification

Att-4: Stormwater Management and Western's Pursuit of LEED Certification

Stormwater management and Western's pursuit of LEED certification

by Emily Linroth

Friday, October 30, 2009

New construction projects on campus feature innovative techniques for building and landscaping to manage stormwater as Western seeks LEED certification.

Both the addition to Buchanan Towers and the renovated Miller Hall are applying for Leadership in Energy and Environmental Design (LEED) certification. LEED is a system that rates environmentally friendly buildings on their water and energy efficiency, indoor air quality, carbon dioxide emission reduction and sensitivity to impacts on nearby resources. Points are assigned for each category based on how well a building does, much like a grading system.

Because Western is a public university, funding for the majority of buildings and renovations on campus comes from the state. Washington state law requires that all publicly funded new buildings or major renovations designed after July of 2005 must be certified at the LEED Silver level. This means buildings must receive at least 50 out of 100 possible points on the LEED scale.

One of the requirements for the level of certification Western is seeking is for the buildings to have specially designed landscaping.

Many of the techniques Western is implementing focus on managing stormwater. Vegetation around buildings and in parking lots may look like landscaping but is also functional in filtering runoff. These areas of vegetation contain mostly native plants and are known as rain gardens. Larger areas of vegetation that form ponds to catch water and filter it through plant roots are called bioswales.

"These rain gardens have been proven to be very effective at both slowing down the water and improving the quality of the water that leaves the site," said Ed Simpson, assistant director of facilities design and planning administration for Facilities Management.

Western is planning on placing rain gardens around the renovated Miller Hall and the Buchanan Towers addition, Simpson said.

"It almost looks like small islands in and around the parking lot," said Director of Facilities Management Tim Wynn of the planned rain gardens for Buchanan Towers.

Bioswales are also planned for behind Miller Hall to reduce runoff, Wynn said. The courtyard will be covered by Western's first "green roof," which will host a mix of short flowering plants and grasses that will absorb rainwater and be visible from the offices above. The roof does not reach all the way to the walls to allow daylight in around its edges and to let filtered water flow down.

"It's aesthetic as well as it will reduce stormwater," Simpson said.

The Academic Instructional Center on south campus, which is also LEED certified, handles surface water with a mix of native vegetation such as ferns, dogwoods and vine maples that need no irrigation after being established. These plants help filter water before it enters the south campus stormwater system.

Controlling stormwater during construction is also a requirement for LEED certification. Crews for the Buchanan Towers addition have installed fences to trap silt, added filters to water catch basins and put straw around areas of open excavation.

Crews must also be careful when disposing of residue from cement trucks, said Christina Maginnis, municipal stormwater specialist for the

harmful if it enters the stormwater system because it can upset pH balances in creeks and harm salmon, Maginnis said.

Most of these stormwater management projects are requirements of the LEED program, but Western is also mitigating runoff in other areas of campus.

Western has dealt with stormwater for years by maintaining a brick campus instead of paving it, said Ron Bailey, manager of operations support for Facilities Management. After the bricks are laid side by side, a layer of sand is brushed over the top. The sand settles between the bricks, allowing water to soak into the ground beneath them instead of pooling on top.

"The brick pavement allows a hard surface to walk on, but water is able to go through it," Bailey said.

As the bricks settle over time, the space between them decreases, causing slow draining. If bricks sink below storm drains, puddles continue to form and crews pull them up and re-lay them, Bailey said. Although this is an ongoing maintenance project, it is better than paving campus, which would force all water to go straight to a storm drain instead of letting some of it soak into the ground, Bailey said.

The cost of managing stormwater varies depending on the system, Simpson said. Some solutions have not been tried at Western because they are too expensive at this time, and others are not feasible because of the physical characteristics of campus.

The individual improvements with new construction will make a difference in water quality, Wynn said, even though major projects such as paving parking lots and overhauling the north campus stormwater system have not been planned yet due to cost restrictions.

"It's definitely on everybody's list, and my guess is that in a few years it will rise to the top of the pile," Wynn said of the north campus upgrade.

A journey through Western's waterways

by Emily Linroth

Friday, October 30, 2009

It begins with one drop of water, ricocheting off a roof and onto the ground, where it joins other droplets and debris in their rush to a storm drain. The rainwater can pick up oil, leaves, garbage and other contaminants on its journey into drains and creeks that eventually lead to Bellingham Bay.

This is stormwater, a major culprit carrying pollutants into Puget Sound and surrounding waterways. These pollutants can wreak havoc on aquatic life and water quality, threatening survival of species such as salmon, and affecting drinking water safety.

To combat pollution, groups in Bellingham and around the country are building systems that slow water down and rely on natural filtration instead of funneling untreated stormwater into bodies of water such as Bellingham Bay.

Western is responsible for treating its stormwater before it leaves campus property, said Tim Wynn, director of Facilities Management at Western. Some methods the university uses to slow down and filter stormwater are obvious, such as vegetation. Others are right beneath students' feet.

Stormwater flows through a network of pipes and vaults under Western's campus before joining with the city system. Runoff from the football field and its nearby service road and all other water from north campus drains into an underground pipe along the service road between the Performing Arts Center plaza and the bookstore, said Ed Simpson, assistant director of facilities design and planning administration for Facilities Management. This pipe connects to a city pipe that follows Cedar Street into Bellingham Bay.

The north campus system has been in place as long as some of the older university buildings, which are more than 100 years old, Simpson said. At that time, stormwater was funneled into channels, ditches and pipes and ran straight into the bay without treatment. The pipe that drains from north campus still follows this route.

"Now we put it into a main line that the city has that goes down and dumps it right into the bay without proper primary or secondary treatment," Wynn said.

A north campus system update is on the agenda for the future, Wynn said.

Water on south campus takes a different path. Many of the buildings on south campus were built recently, such as the Communication Facility, the Wade King Student Recreation Center and the Campus Services Building, Simpson said. This allowed Western to plan and build a stormwater system before the buildings went in.

All the water from the top of the hill by Carver Gym past all south campus buildings flows into a massive water retention vault under the tennis courts near Bill McDonald Parkway, Simpson said.

"It's basically a giant baffled swimming pool under the tennis courts," said John Rybczyk, an associate professor of environmental science at Western who studies wetland systems and researches wastewater treatment.

The concrete vault is 200 feet long, 75 feet wide and 13.5 feet high. Water flows in one end and makes its way through eight compartments to the other side. As the water slows down, particles it carried from the ground above settle to the bottom of the vault, Wynn said.

"It allows all the water coming from the storm system to stop and settle out all the sediment that would otherwise go into streams," Wynn said.

The stormwater then flows under Bill McDonald Parkway to a wetland across the street. The water is filtered by the wetland before it goes underground and connects to Padden Creek, which runs into Bellingham Bay near the Post Point Wastewater Treatment Plant.

The wetland was created along with the vault to handle south campus expansion, Rybczyk said. It has a series of above- and below-ground filters that collect sediment and debris.

Two large ponds with mostly native vegetation, called bioswales, slow the water down and allow most of the remaining sediment to settle out. That water then flows into areas with gravel and plants whose roots pick up finer particles such as clay. These are called rock-plant filters, and they are the last step before the stormwater goes underground at Douglas Avenue on its way to Padden Creek.

"It's a really good system," Rybczyk said. "It's designed to work without a lot of maintenance. It might get overgrown with plants, but that's what it's supposed to do."

Fisher Fountain in Red Square was connected to the stormwater system until last February, when it was moved to a sanitary line that drains to the wastewater treatment plant. The fountain's water comes from the city's drinking water supply, so it is chlorinated, Skipper said. Students used to put dye and soap in the water, which ended up in Bellingham Bay when Western drained the fountain to clean it. The chemicals could harm aquatic organisms.

"While it looks kind of neat for a little while, eventually it's going to be hazardous," said Ron Bailey, manager of operations support for Facilities Management.

Stormwater and the particles it carries can damage ecosystems and lead to poor water quality, but using wetlands and stormwater management plans to filter runoff before it reaches larger bodies of water can help minimize the impact.

"What we're really doing is protecting the environment—not just the streams, but Puget Sound itself," Wynn said.

STORM WATER MANAGEMENT PROGRAM

Problem Report Log – 2009

Month	Problem	Action Taken
February, 2009	Received letter from concerned students regarding ongoing maintenance of South Campus Storm Water Retention Ponds.	WWU Grounds personnel investigated area and found no abnormal condition. Provided students with understanding of documented maintenance procedures and water quality testing data from Institute of Watershed Studies. Students were appreciative of response.
February, 2009	Received communication from City of Bellingham, Dept. of Public Works, regarding observed practice of WWU Food Service personnel pressure washing loading dock.	WWU maintenance personnel responded to location and detected 'murky' water flowing into storm drain inlet. The cleaning activity was stopped and WWU Food Service was informed of the potential hazard of allowing untreated water (with higher than allowed levels of chlorine) and possible contaminants to flow into storm drains. Best Management Practices (BMPs) were established and implemented to protect waterways with the use of de-chlorinating tablets, protective sock filters around inlets, and directing any cleaning of solids to be done in areas that flow into grease-trap protected sanitary sewers.
March, 2009	Received communication from City of Bellingham, Dept of Public Works, that while conducting preventive maintenance inspection of city storm drains leading past WWU north campus they detected a potential illicit discharge.	CoB Public Works provided WWU with in-pipe camera photos indicating a possible cross-contamination between sewer line and storm drain. WWU plumbers responded and found side-by-side cleanouts in a branch line that had been (mistakenly) swapped during construction approximately 10 years prior. The situation was immediately corrected.

Month	Problem	Action Taken
November, 2009	City of Bellingham inspector observed an unacceptable turbid discharge coming from the construction area of a new warehouse at the university's Physical Plant and flowing into a road-side ditch during a period of extremely high rainfall.	The contractor had just completed the spreading and grading of new gravel around the warehouse when the heavy rainstorm occurred. Protective absorption socks were immediately placed around storm drain inlets to allow collecting water to pool and settle prior to flowing from drain into the ditch. WWU grounds personnel have continued to re-grade and re-direct water flows through maintenance and storage yards to prevent reoccurrence of problem. Furthermore, in 2010 WWU will re-design area, including the re-location of storm drain inlets, to improve the flow of storm water. This situation, particularly because of happening in their own backyard, became an excellent training opportunity for WWU grounds personnel in the execution of BMPs for storm water management.
December, 2009	WWU grounds personnel, while conducting inspections following a heavy rain storm, observed unusually high levels of water in the ponds of the South Campus storm water retention area and questioned whether they were functioning properly.	The retention pond water levels were found to be extremely high due to a blocked outlet culvert. WWU grounds personnel cleaned out the culvert (removed a large log that had become wedged inside the pipe) allowing the ponds to remain at the levels designed for proper functioning of the system.