



Economic Impact Analysis

Sand and Gravel General Permit; NPDES and State Waste Discharge General Permit

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by

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Executive Summary

This Economic Impact Analysis (EIA) estimates the costs of complying with the Sand and Gravel General Permit (“permit”). It compares the costs of complying with the permit for small businesses to the costs of compliance for the largest ten percent of businesses, to determine whether the permit disproportionately impacts small businesses. This analysis is required by state rule in Washington Administrative Code (WAC) 173-226-120, which directs Ecology to determine if the permit imposes disproportionate burden on small businesses, and if it does, to mitigate the disproportion to the extent that is legal and feasible.

This EIA does not include the costs of complying with existing laws and rules, as permittees would be required to comply with requirements regardless of whether the permit reiterated or referenced them, or if the permit did not exist. Excluded costs include the costs of complying with:

- State ground water quality standards (WAC 173-200).
- State surface water quality standards (WAC 273-201A).
- State sediment management standards (WAC 173-204).
- Wastewater discharge permit fees (WAC 173-224).
- Federal laws and rules, including but not limited to the Clean Water Act and federal National Pollutant Discharge Elimination System (NPDES) regulations.

The types and attributes of facilities that are covered by the general permit are diverse. We estimated the costs of compliance for seven representative facilities:

1. Small, inactive sand & gravel pit
2. Small, active sand & gravel pit
3. Large, active sand & gravel pit
4. Small, active sand & gravel pit with concrete and recycling
5. Large, active sand & gravel pit with concrete and recycling
6. Small, active hot-mix asphalt facility
7. Large, active hot-mix asphalt facility

For each type of facility, we estimated the costs of developing or updating plans, as well as the necessary equipment and operating costs to implement BMPs and comply with the permit. As there may be capital and equipment investments that have already been made by existing permit holders, as well as existing plans that would only require updating, we estimated compliance costs for both new facilities and existing facilities, for each of the seven facility types.

Specific assumptions made for compliance behaviors for each new and existing type of facility can be found in the Appendix of this document.

Table 1: Compliance Cost per Employee (dollars)

Facility Type	Compliance Cost per Employee (dollars)	
	New	Existing
Small, inactive sand & gravel pit	1,020	890
Small, active sand & gravel pit	5,220	1,910
Large, active sand & gravel pit	1,320	610
Small, active sand & gravel pit with concrete and recycling	9,010	4,950
Large, active sand & gravel pit with concrete and recycling	900	520
Small, active hot-mix asphalt facility	1,950	940
Large, active hot-mix asphalt facility	110	60

Comparing small and large facilities for each facility type, for new and existing facilities, we find that the permit likely imposes disproportionate costs on small businesses. The disproportion ranges from small businesses likely paying between three and 18 times as much per employee as the largest ten percent of businesses do.

Ecology has taken the following actions to mitigate the compliance cost impact of the permit.

- Inactive sites have fewer permit requirements.
- Small business or extreme hardship fee reductions.
- Establishing performance rather than design standards.
- Increased technical assistance.
- Site Management Plans are updated only as needed.

In general, however, the permit’s impact on permittees of any size is difficult to mitigate significantly. This cannot be done legally and feasibly, because reducing requirements for or exempting small businesses is not possible without reducing the effectiveness of the permit in preventing creation or contribution to contamination of ground and surface waters, per the stated objectives of the Clean Water Act and chapter 90.48 RCW (the State Water Pollution Control Act).

Chapter 1: Introduction to the Economic Impact Analysis

This Economic Impact Analysis (EIA) estimates the costs of complying with the Sand and Gravel General Permit (“permit”). It compares the costs of complying with the permit for small businesses to the costs of compliance for the largest ten percent of businesses, to determine whether the permit disproportionately impacts small businesses. This analysis is required by state rule in Washington Administrative Code (WAC) 173-226-120, which directs Ecology to determine if the permit imposes disproportionate burden on small businesses, and if it does, to mitigate the disproportion to the extent that is legal and feasible.

1.1 Scope

WAC 173-226-120 requires the EIA to include:

- A brief description of the compliance requirements of the general permit.
- The estimated costs of complying with the permit, based on existing data for facilities intended to be covered under the general permit, including:
 - The minimum technology based treatment requirements identified as necessary under WAC 173-226-070.
 - The monitoring requirements contained in the general permit.
 - The reporting and recordkeeping requirements.
 - Plan submittal requirements.
 - Equipment.
 - Supplies.
 - Labor.
 - Increased administrative costs.
- A comparison, to the greatest extent possible, of the cost of compliance for small businesses with the cost of compliance for the largest ten percent of businesses intended to be covered under the permit.
- A summary of how the permit provides mitigation to reduce the effect on small businesses (if a disproportionate impact is expected), without compromising the mandated intent of the permit.

1.2 Definitions of small and large businesses

For the purposes of the EIA, a small business is an independent entity with 50 or fewer employees organized for the purpose of making a profit. Employment is typically based on the highest available level of ownership data. Not-for-profit and government enterprises are excluded.

1.3 Permit Coverage

The permit covers discharges of stormwater and wastewater, from a variety of industrial mining and processing operations, to waters of Washington State. Under federal and state water quality laws, a permit is required for the discharge of wastewater, including stormwater from industrial activity. The permit controls the discharge of pollutants to protect surface water and ground water quality.

The permit regulates discharges of process water, stormwater, and mine dewatering water associated with sand and gravel operations, rock quarries, and similar mining operations, including stockpiles of mined materials. It also covers concrete batch operations and hot mix asphalt operations. There are over 900 sand and gravel facilities across the state of Washington. Approximately 80 percent of these facilities discharge to groundwater only, whereas three percent of permittees discharge to surface water only. Some facilities discharge to both groundwater and surface water.

Mining-related activities can include:

- Excavating
- Screening
- Washing rock
- Crushing
- Blasting
- Manufacturing asphalt
- Manufacturing concrete

When rain hits sand and gravel facilities, it can pick up a variety of pollutants such as oil, soil, sand, and concrete ash. These pollutants can cause water quality problems by altering pH and water clarity. This, in turn, can cause problems for aquatic animals and plants, pollute drinking water, and impair recreation.

1.4 Excluded costs

This EIA does not include the costs of complying with existing laws and rules, as permittees would be required to comply with requirements regardless of whether the permit reiterated or referenced them, or if the permit did not exist. Excluded costs include the costs of complying with:

- State ground water quality standards (WAC 173-200).
- State surface water quality standards (WAC 273-201A).
- State sediment management standards (WAC 173-204).
- Wastewater discharge permit fees (WAC 173-224).
- Federal laws and rules, including but not limited to the Clean Water Act and federal National Pollutant Discharge Elimination System (NPDES) regulations.

1.5 Compliance costs included in the EIA

The permit requires sand and gravel facilities to control and reduce wastewater pollution. This includes developing and using a specific site management plan. The site management plan must contain four main components:

- Erosion & Sediment Control Plan (ESCP)
- Monitoring Plan
- Stormwater Pollution Prevention Plan (SWPPP)
- Spill Control Plan

1.5.1 Erosion & Sediment Control Plan (ESCP)

Excessive turbidity is often a major stormwater/process water contaminate at many sand and gravel facilities. The permit requires permittees to prepare an ESCP before conducting any earth moving activities. Permittees must develop this plan to select, install, and maintain appropriate erosion and sediment control best management practices (BMPs). Such BMPs include sediment ponds, perimeter dikes, and sediment barriers.

1.5.2 Monitoring Plan

Each facility must monitor their discharges of process water and stormwater according to the effluent limits and monitoring requirements in the permit. Additionally, discharges must not cause or contribute to a violation of Groundwater Quality Standards, Surface Water Quality Standards, or Sediment Management Standards.

1.5.3 Stormwater Pollution Prevention Plan (SWPPP)

Each facility must create and regularly update a SWPPP. The objectives of the SWPPP include:

- Eliminating the commingling of process water and stormwater.
- Implementing runoff conveyance, treatment, innovative, and source control BMPs.
- Preventing stormwater contamination.

The permit provides specific source control BMPs that Ecology has determined to be appropriate for most sand and gravel facilities covered under the permit. Sand and gravel facilities must evaluate these specific source control BMPs, include them in their SWPPP, and implement them on site if appropriate.

1.5.4 Spill Control Plan

It is typical under this permit for permittees to store chemicals that have the potential to cause water pollution if accidentally released. Additionally, spills can occur from the use of mechanical equipment and vehicles. The permit requires permittees to develop a plan to prevent, report, and minimize the damage from any spills that may occur.

Chapter 2: Costs of Compliance with the General Permit

The types and attributes of facilities that are covered by the general permit are diverse. We estimated the costs of compliance for seven representative facilities:

1. Small, inactive sand & gravel pit
2. Small, active sand & gravel pit
3. Large, active sand & gravel pit
4. Small, active sand & gravel pit with concrete and recycling
5. Large, active sand & gravel pit with concrete and recycling
6. Small, active hot-mix asphalt facility
7. Large, active hot-mix asphalt facility

For each type of facility, we estimated the costs of developing or updating plans, as well as the necessary equipment and operating costs to implement BMPs and comply with the permit. As there may be capital and equipment investments that have already been made by existing permit holders, as well as existing plans that would only require updating, we estimated compliance costs for both new facilities and existing facilities, for each of the seven facility types.

Specific assumptions made for compliance behaviors for each new and existing type of facility can be found in the Appendix of this document.

2.1 Data used in this analysis

We used various data sources, as appropriate, for this analysis:

- Quantities and attributes of compliance inputs (equipment, hours, operating inputs, maintenance) were based on:
 - Past industry and Department of Transportation (DOT) estimates.
 - Ecology inspector professional experience.
 - Specific requirements in the permit.
- Compliance input unit costs were based on:
 - Updated past industry and DOT estimates.
 - Current retail prices.
 - Current wages (overhead as appropriate).
 - Current lab test rates.
 - Ten percent interest rates for annualized capital cost repayments.

For sources of specific data used in this analysis, see References.

2.2 Scope of time

Ecology economic analyses typically make estimates based on either a 20-year timeframe or the expected life of the regulation in question. In the case of general permits, the expected life is five years. However, many of the compliance costs analyzed for general permits involve capital purchases. We therefore chose to estimate annualized costs, to account for the cost of repaying up-front capital costs such as machinery and built capital over the life of the investment. All reported total costs of compliance are annual equivalents.

2.3 Summary of compliance cost estimates

We estimated compliance costs for each of the seven types of representative facilities. Assumptions, inputs, and calculations are presented in Appendix of this document. Estimates are in rounded thousands of current 2015-dollars.

Table 2: Summary of compliance costs

Facility Type	Estimated Compliance Cost (thousands of \$)	
	New	Existing
Small, inactive sand & gravel pit	2	2
Small, active sand & gravel pit	50	18
Large, active sand & gravel pit	98	46
Small, active sand & gravel pit with concrete and recycling	88	48
Large, active sand & gravel pit with concrete and recycling	159	93
Small, active hot-mix asphalt facility	24	12
Large, active hot-mix asphalt facility	51	27

Chapter 3: Relative Compliance Costs for Small and Large Businesses

This chapter compares the costs of compliance per employee for small businesses to the compliance cost per employee at the largest ten percent of businesses covered by the permit. The governing rule (173-226-120) allows for this comparison to be made on one of the following bases:

- Cost per employee
- Cost per hour of labor
- Cost per one hundred dollars of sales

We use cost per employee, because this data is readily and most comprehensively available for businesses operating in Washington State.

3.1 Facility size data

Facility size distribution was based on Washington Employment Security Department (ESD) data for the number of establishments and total employment in each size class (one to four employees, five to nine employees, etc.) by the US Census Bureau's North American Industry Classification System (NAICS) code. This data was available at the 3-digit NAICS level, for facilities in the most-likely applicable industry groups:

- NAICS 212 – Mining (except Oil and Gas). Includes NAICS 21232 – Sand, Gravel, Clay, and Ceramic and Refractory Minerals Mining and Quarrying.
- NAICS 324 – Petroleum and Coal Products Manufacturing. Includes NAICS 32412 – Asphalt Paving, Roofing, and Saturated Materials Manufacturing.

The average employment estimates used were:

- Inactive small facility – Two employees.
- Active small facilities in NAICS 212 – Ten employees.
- Active largest ten percent of facilities in NAICS 212 – 74 employees.
- Active small facilities in NAICS 324 – 12 employees.
- Active largest ten percent of facilities in NAICS 324 – 463 employees.
- Active small facilities in NAICS 327 – Ten employees.
- Active largest ten percent of facilities in NAICS 327 – 178 employees.

There was no overlap between small facilities and the largest ten percent of all facilities.

3.2 Relative costs of compliance

The table below summarizes the cost of compliance per employee at the seven types of representative facility.

Table 3: Relative costs of compliance

Facility Type	Compliance Cost per Employee (dollars)	
	New	Existing
Small, inactive sand & gravel pit	1,020	890
Small, active sand & gravel pit	5,220	1,910
Large, active sand & gravel pit	1,320	610
Small, active sand & gravel pit with concrete and recycling	9,010	4,950
Large, active sand & gravel pit with concrete and recycling	900	520
Small, active hot-mix asphalt facility	1,950	940
Large, active hot-mix asphalt facility	110	60

Comparing small and large facilities for each facility type, for new and existing facilities, we find that the permit likely imposes disproportionate costs on small businesses. The disproportion ranges from small businesses likely paying between three and 18 times as much per employee as the largest ten percent of businesses do.

Chapter 4: Mitigation of Disproportional Impacts

Because the permit likely imposes disproportionate costs of compliance on small businesses, WAC 173-226-120 directs Ecology to reduce the impact on small businesses where legal and feasible.

4.1 Mitigation options under WAC 173-226-120

The governing rule states the following options should be considered to reduce the impact of the permit on small businesses:

- Establishing differing compliance or reporting requirements or timetables for small businesses.
- Clarifying, consolidating, or simplifying the compliance and reporting requirements under the general permit for small businesses.
- Establishing performance rather than design standards.
- Exempting small businesses from parts of the general permit.

4.2 Mitigation actions

Ecology has taken the following actions to mitigate the compliance cost impact of the permit:

- Inactive sites have fewer permit requirements.
- Small business or extreme hardship fee reductions.
- Establishing performance rather than design standards.
- Increased technical assistance.
- Site Management Plans are updated only as needed.

In general, however, the permit's impact on permittees of any size is difficult to mitigate significantly. This cannot be done legally and feasibly, because reducing requirements for or exempting small businesses is not possible without reducing the effectiveness of the permit in preventing creation or contribution to contamination of ground and surface waters, per the stated objectives of the Clean Water Act and chapter 90.48 RCW (the State Water Pollution Control Act).

4.2.1 Fewer permit requirements at inactive sites

Inactive sites have fewer permit requirements. If they have no excavation or mining (are inactive), and no process water or mine dewatering discharge, they are not required to have:

- Stormwater monitoring
- Wet and dry erosion and sediment inspections
- Equipment inspections

4.2.2 Small business or extreme hardship fee reductions

A business may apply for a small business fee reduction if it meets the following criteria:

1. Be a corporation, partnership, sole proprietorship, or other legal entity formed for the purpose of making a profit;
2. Be independently owned and operated from all other businesses (that is, not a subsidiary of a parent company);
3. Have annual sales of one million (1,000,000.00) dollars or less of the goods and services produced using the processes regulated by the wastewater discharge permit; and
4. Pay an annual wastewater discharge permit fee greater than five hundred (500.00) dollars.

The permit fee for an eligible small business will be reduced to 50 percent of the annual permit fee.

A business may apply for an extreme hardship fee reduction if it has annual sales of one hundred thousand (100,000.00) dollars or less of the goods and services produced using the processes regulated by the wastewater discharge permit. The permit fee for a small business meeting the extreme hardship criteria will be reduced to 128.

4.2.3 Establishing performance rather than design standards

Establishing performance standards, instead of design standards allows operators to omit some BMPs and requirements from their SMP if site conditions render the requirements unnecessary. Small sites, or those with less complexity, can then have fewer BMPs than large or complex sites, and therefore fewer compliance costs.

4.2.4 Increased technical assistance

Ecology inspectors frequently spend additional time helping small businesses understand and comply with the permit. This includes going through and explaining each section of the permit. Inspectors have also provided small businesses with additional help material, aerial site images for creation of site maps, and spreadsheets for tracking compliance.

4.2.5 Site Management Plans are updated only as needed

All permittees must review their SMPs yearly, but they are only required to update the plans as necessary to respond to changes in facility and site conditions, or in response to cases of non-compliance. Small sites or less-complex sites typically have fewer changes in facility and site conditions. They therefore are less likely to need to update their SMP as frequently as larger or more complex sites.

Appendix: Compliance Cost Assumptions, Inputs, and Calculations

A.1: Small, inactive sand & gravel pit – new

Assumptions:

- Five acre site.
- No process water discharge.
- No mine dewatering discharge.
- No discharge to surface waters.
- No equipment operations.
- Stabilization best management practices (BMPs) focus on eliminating exposed soils that are exposed to stormwater.
- Five acres of disturbed area needs erosion control measures.
- No structural BMPs needed for inactive sites.
- Operating and maintenance (O&M) costs based on a registered professional engineer certifying the site is in compliance with permit conditions every three years. The federal baseline requires either this option, or annual inspections. As annual inspections are likely to be less feasible than three-year certification, we include the entire cost of this option to conservatively overestimate costs of compliance.

Table A 1: Compliance costs for small inactive sand & gravel pit -- new

SMALL INACTIVE SAND AND GRAVEL PIT – new								
ITEM	QUANTITY	UNITS	UNIT COST \$	COST \$	USEFUL LIFE (YEARS)	ANNUALIZED COST \$	ANNUAL O&M COST \$	TOTAL ANNUAL COST \$
Site Management Plan (SMP)								
Write SMP	18	Hours	63	1,128	5	297		297
Stabilization BMPs								
Initial Site Stabilization	40	Hours	16	644	10	105		105
Heavy Equipment	40	Hours	29	1,159	10	189		189
Heavy Equipment Mobilization	4	Hours	40	161	10	26		26
Hydromulching	5	Acres	1,610	8,051	10	1,310		1,310
Activities								
Certification of Permit Compliance	6	Hours	63	376	3		151	151
TOTAL								2,079

A.2 Small, inactive sand & gravel pit – existing

Assumptions:

- Five acre site.
- No process water discharge.
- No mine dewatering discharge.
- No discharge to surface waters.
- No equipment operations.
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater.
- Five acres of disturbed area needs erosion control measures.
- No structural BMPs needed for Inactive Sites.
- Every three years a registered professional engineer must certify that the site is in compliance with permit conditions. The federal baseline requires either this option, or annual inspections. As annual inspections are likely to be less feasible than three-year certification, we include the entire cost of this option to conservatively overestimate costs of compliance.

Table A 2: Compliance costs for small inactive sand & gravel pit -- existing

SMALL INACTIVE SAND AND GRAVEL PIT - existing								
ITEM	QUANTITY	UNITS	UNIT COST (\$)	COST (\$)	USEFUL LIFE (YEARS)	ANNUALIZED COST (\$)	ANNUAL O&M COST (\$)	TOTAL ANNUAL COST (\$)
Site Management Plan (SMP)								
Write SMP	2	Hours	63	125	5	33		33
Stabilization BMPs								
Initial Site Stabilization	40	Hours	16	644	10	105		105
Heavy Equipment	40	Hours	29	1,159	10	189		189
Heavy Equipment Mobilization	4	Hours	40	161	10	26		26
Hydromulching	5	Acres	1,610	8,051	10	1,310		1,310
Activities								
Certification of Permit Compliance	6	Hours	63	376	3		151	151
TOTAL								
								1,814

A.3 Small, active sand & gravel pit – new

Assumptions:

- Three acres of disturbed area.
- Discharge to groundwater (no surface water discharge).
- 78 ft. X 85 ft. unlined wet pond. Depth four to five ft. with a 4:1 slope.
- Process wastewater is pretreated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- SMP includes site map. Plan must be reviewed yearly and updated if necessary.
- Includes wet, dry, visual inspections.
- Vehicle/equipment inspections are conducted by drivers
- Assume groundwater discharge – Erosion and sediment control inspections aren't required. Erosion and sediment control BMPs must be inspected once a week.
- Must write a report on each inspection.
- No commingling of process water and stormwater.
- All Type 3 stormwater is treated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- Swale installed after hydromulching of exposed areas.

- Drum spill containment with pallet.
- Mechanical push broom sweeper
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- One monitoring sample point; monitoring three quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 3: Compliance costs for small active sand & gravel pit -- new

SMALL ACTIVE SAND AND GRAVEL PIT (NAICS 212321 / SIC 1442) - new								
ITEM	QUANTITY	UNITS	UNIT COST (\$)	COST (\$)	USEFUL LIFE (YEARS)	ANNUALIZED COST (\$)	ANNUAL O&M COST (\$)	TOTAL ANNUAL COST (\$)
PROCESS WASTEWATER MANAGEMENT								
Wet Pond								
Grader	8	Hours	29	232	10	38		38
Front-end Loader	8	Hours	29	232	10	38		38
Labor	32	Hours	20	650	10	106		106
Heavy Equipment Mobilization	12	Hours	40	483	10	79		79
Biofiltration Swale								
Grader, Four Foot Wide	8	Hours	29	232	10	38		38
Support Vehicle	8	Hours	40	322	10	52		52
Labor	8	Hours	20	163	10	26		26
Supervision	2	Hours	28	57	10	9		9
Hydromulching of Swale	1	Unit	403	403	10	66		66
Biofiltration Swale and Pond O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40.26	161	1		177	177
Labor	4	Hours	20.32	81	1		89	89
SITE MANAGEMENT PLAN								
Write SMP	40	Hours	62.65	2,506	1	2,756		2,756
Inspections								
Labor	8	Hours	20.32	163	1		179	179
Write Insp. Rpt.—Labor	2	Hours	20.32	41	1		45	45
Write Insp. Rpt.—Supervision	2	Hours	28.27	57	1		62	62
Vehicle / Equipment Inspections	225	Hours	20.32	4,572	1		5,029	5,029
Sediment / Erosion Control Inspections	0	Hours	20.32	0	1		0	0
Recordkeeping	0	Hours	0	0	0		0	0

STORMWATER POLLUTION PREVENTION								
Perimeter Berm and Re-sloping	86	Hours	145	12,463	10	2,028		2,028
Biofiltration Swale								
Grader, four Foot Wide	8	Hours	29	232	10	38		38
Support Vehicle	8	Hours	40	322	10	52		52
Labor	8	Hours	20	163	10	26		26
Supervision	2	Hours	28	57	10	9		9
Hydromulching of Swale	1	Unit	403	403	10	66		66
Mechanical Sweeper	1	Unit	163,000	163,000	10	26,527		26,527
Biofiltration Swale O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40.26	161	1		177	177
Labor	4	Hours	20.32	81	1		89	89
Spill Kit	1	Kit	615	615	1		677	677
Secondary Containment	1	Unit	529.77	530	1		583	583
Street Sweeping	90	Hours	20.32	1,829	1		2,012	2,012
EROSION AND SEDIMENT CONTROL								
Stabilization BMPs								
Initial Site Stabilization	40	Hours	16	644	5	170		170
Heavy Equipment	40	Hours	29	1,159	5	306		306
Heavy Equipment Mobilization	4	Hours	40	161	5	42		42
Hydromulching of Exposed Areas	0.50	Acres	1,610	805	5	212		212

MONITORING								
Process Water Monitoring	1	Smpl. Pts.	3,642	3,642	1		4,007	4,007
Stormwater Monitoring	1	Smpl. Pts.	3,642	3,642	1		4,007	4,007
Recordkeeping	0	n/a	0	0	0		0	0
TOTAL								50,030

Table A 4: Monitoring costs for small active sand & gravel pit

Effluent Monitoring							
Annualized Cost per Sample Point							
Assume Groundwater Only Discharge							
Assume Monitoring for nine months of the year							
Type of Discharge	Pollutant	Cost Per Test (\$)	Sampling Labor Cost (\$)	Freq.	Freq. Units	Total Cost (\$)	
NAICS 212321 Process Water to Ground	Oil Sheen	0	20.32	239	Yearly	3,642	
Total Cost						3,642	
NAICS 212321 Stormwater to Ground	Oil Sheen	0	20.32	239	Yearly	3,642	
Total Cost						3,642	
Highest Annual Cost						7,285	

A.4 Small, active sand & gravel pit – existing

Assumptions:

- Three acres of disturbed area.
- Discharge to groundwater (no surface water discharge).
- SMP includes site map. Plan must be reviewed yearly and updated if necessary.
- Includes wet, dry, visual inspections.
- Vehicle/equipment inspections conducted by drivers
- Assume groundwater discharge – Erosion & Sediment Control inspections aren't required. Erosion and sediment control BMPs must be inspected once a week.
- Must write a report on each inspection.
- Drum spill containment with pallet.

- Mechanical push broom sweeper.
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- One monitoring sample point; monitoring three quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 5: Compliance costs for small active sand & gravel pit -- existing

SMALL ACTIVE SAND AND GRAVEL PIT (NAICS 212321 / SIC 1442) - existing								
ITEM	QUANTITY	UNITS	UNIT COST (\$)	COST (\$)	USEFUL LIFE (YEARS)	ANNUALIZED COST (\$)	ANNUAL O&M COST (\$)	TOTAL ANNUAL COST (\$)
Biofiltration Swale and Pond O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40	161	1		177	177
Labor	4	Hours	20	81	1		89	89
SITE MANAGEMENT PLAN								
Update SMP	4	Hours	63	251	1	276		276
Inspections								
Labor	8	Hours	20	163	1		179	179
Write Insp. Rpt.--Labor	2	Hours	20	41	1		45	45
Write Insp. Rpt.--Supervision	2	Hours	28	57	1		62	62
Vehicle / Equipment Inspections	225	Hours	20	4,572	1		5,029	5,029
Sediment / Erosion Control Inspections	0	Hours	20	0	1		0	0
Recordkeeping	0	Hours	0	0	0		0	0
Biofiltration Swale O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40	161	1		177	177
Labor	4	Hours	20	81	1		89	89
Spill Kit	1	Kit	615	615	1		677	677
Secondary Containment	1	Unit	530	530	1		583	583
Street Sweeping	90	Hours	20	1,829	1		2,012	2,012

EROSION AND SEDIMENT CONTROL								
Stabilization BMPs								
Initial Site Stabilization	40	Hours	16	644	5	170	0	170
Heavy Equipment	40	Hours	29	1,159	5	306	0	306
Heavy Equipment Mobilization	4	Hours	40	161	5	42	0	42
Hydromulching of Exposed Areas	0.50	Acres	1,610	805	5	212	0	212
MONITORING								
Process Water Monitoring	1	Smpl. Pts.	3,642	3,642	1		4,007	4,007
Stormwater Monitoring	1	Smpl. Pts.	3,642	3,642	1		4,007	4,007
Recordkeeping	0	n/a	0	0	0		0	0
TOTAL								18,351

A.5 Large, active sand & gravel pit – new

Assumptions:

- Four wet ponds. Each pond a 78 ft. X 85 ft. unlined wet pond. Depth four to five ft. with a 4:1 slope.
- Four grass-lined biofiltration swales.
- Process wastewater is pretreated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- SMP includes site map. Plan must be reviewed yearly and updated if necessary.
- Oil water separator inspections 15 minutes monthly for six months plus events, plus wet & dry season inspections, plus visual surface water inspections. Environmental managers complete the wet and dry inspections at larger sites.
- Vehicle/equipment inspections conducted by drivers.
 - 15 minutes per inspection
 - Five days per week
 - 52 weeks per year
 - Nine to ten vehicles
- Erosion and sediment control BMPs must be inspected once a week. Assume half hour per inspection.
- Must write a report on each inspection.

- No commingling of process water and stormwater.
- All Type 3 stormwater is treated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- Swale installed after hydromulching of exposed areas.
- Spill kits for fuel dock, maintenance shop, storage area.
- Vacuum or regenerative air sweeper.
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. 5 acres of disturbed area needs erosion control measures.
- Assume hydromulching for 1/4 to 1/2 of the site.
- Two process water monitoring sample points. Monitoring nine months per year.
- One stormwater sample point; monitoring three quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 6: Compliance costs for large active sand & gravel pit -- new

LARGE ACTIVE SAND AND GRAVEL PIT – new								
ITEM	QUANTITY	UNITS	UNIT COST (\$)	COST (\$)	USEFUL LIFE (YEARS)	ANNUALIZED COST (\$)	ANNUAL O&M COST (\$)	TOTAL ANNUAL COST (\$)
PROCESS WASTEWATER MANAGEMENT								
Wet Pond								
Grader	32	Hours	29	927	10	151		151
Front-end Loader	32	Hours	29	927	10	151		151
Labor	128	Hours	20	2,601	10	423		423
Heavy Equipment Mobilization	48	Hours	40	1,932	10	314		314
Biofiltration Swale								
Grader, 4 Foot Wide	32	Hours	29	927	10	151		151
Support Vehicle	32	Hours	40	1,288	10	210		210
Labor	32	Hours	20	650	10	106		106
Supervision	8	Hours	28	226	10	37		37
Hydromulching of Swale	4	Unit	403	1,610	10	262		262
Biofiltration Swale and Pond O & M								

Mower	12	Hours	32	386	1		425	425
Support Vehicle	16	Hours	40.26	644	1		709	709
Labor	16	Hours	20.32	325	1		358	358
SITE MANAGEMENT PLAN								
Write SMP	80	Hours	62.65	5,012	1	5,513		5,513
Inspections								
Labor	16	Hours	20.32	325	1		358	358
Write Insp. Rpt.--Labor	6	Hours	20.32	122	1		134	134
Write Insp. Rpt.--Supervision	2	Hours	28.27	57	1		62	62
Vehicle / Equipment Inspections	600	Hours	20.32	12,192	1		13,411	13,411
Sediment / Erosion Control Inspections	12	Hours	20.32	244	1		268	268
Recordkeeping	0	Hours	0	0	0		0	0
STORMWATER POLLUTION PREVENTION								
Perimeter Berm and Re-sloping	172	Hours	145	24,927	10	4,057		4,057
Biofiltration Swale								
Grader, 4 Foot Wide	8	Hours	29	232	10	38		38
Support Vehicle	8	Hours	40	322	10	52		52
Labor	8	Hours	20	163	10	26		26
Supervision	2	Hours	28	57	10	9		9
Hydromulching of Swale	1	Unit	403	403	10	66		66
Wheel wash	1	Unit	48876.19	48,876	10	7,954		7,954
Vacuum or regenerative air sweeper	1	Unit	209,000	209,000	10	34,014		34,014
Activities								
Biofiltration Swale O & M								
Mower	12	Hours	32	386	1		425	425
Support Vehicle	16	Hours	40.26	644	1		709	709
Labor	16	Hours	20.32	325	1		358	358
Spill Kit	3	Kit	615	1,845	1		2,030	2,030
Secondary Containment	3	Units	529.77	1,589	1		1,748	1,748
Street Sweeping	130	Hours	20.32	2,642	1		2,906	2,906

EROSION AND SEDIMENT CONTROL								
Stabilization BMPs								
Initial Site Stabilization	40	Hours	16	644	5	170		170
Heavy Equipment	40	Hours	29	1,159	5	306		306
Heavy Equipment Mobilization	4	Hours	40	161	5	42		42
Hydromulching of Exposed Areas	2	Acres	1,610	3,220	5	850		850
Biofiltration Swale								
Grader, Four Foot Wide	8	Hours	29	232	10	38		38
Support Vehicle	8	Hours	40	322	10	52		52
Labor	8	Hours	20	163	10	26		26
Supervision	2	Hours	28	57	10	9		9
Hydromulching of Swale	1	Unit	403	403	10	66		66
Biofiltration Swale O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40.26	161	1		177	177
Labor	4	Hours	20.32	81	1		89	89
MONITORING								
Process Water Monitoring	2	Smpl. Pts.	5,780	11,560	1		12,716	12,716
Stormwater Monitoring	1	Smpl. Pts.	5,669	5,669	1		6,236	6,236
Recordkeeping	0	0	0	0	0		0	0
TOTAL								98,316

Table A 7: Monitoring costs for large active sand & gravel pit

Effluent Monitoring						
Annualized Cost per Sample Point						
Assume Monitoring for 12 months of the year						
Type of Discharge	Pollutant	Cost Per Test (\$)	Sampling Labor Cost (\$)	Freq.	Freq Units	Total Cost (\$)
NAICS 212321 Process Water to Surface	Turbidity	15	20.32	23	Yearly	812
	TSS	16.67	20.32	3	Yearly	111
	Oil Sheen	0	20.32	239	Yearly	4,856
Total Cost						5,780
NAICS 212321 Process Water to Ground	Oil Sheen	0	20.32	239	Yearly	4,856
Total Cost						4,856
NAICS 212321 Stormwater to Surface	Turbidity	15	20.32	23	Yearly	812
	Oil Sheen	0	20.32	239	Yearly	4,856
Total Cost						5,669
NAICS 212321 Stormwater to Ground	Oil Sheen	0	20.32	239	Yearly	4,856
Total Cost						4,856
Highest Annual Cost						11,449

A.6 Large, active sand & gravel pit – existing

Assumptions:

- Oil water separator inspections 15 minutes monthly for six months plus events, plus wet & dry season inspections, plus visual surface water inspections. Environmental managers complete the wet and dry inspections at larger sites.
- Vehicle/equipment inspections conducted by drivers.
 - 15 minutes per vehicle
 - Five days per week
 - 52 weeks per year
 - 9-10 vehicles/equipment
- Erosion and sediment control BMPs must be inspected once a week.
- Must write a report on each inspection.
- Spill kit for fuel dock, maintenance shop, storage area
- Vacuum or regenerative air sweeper.

- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. 5 acres of disturbed area needs erosion control measures.
- Assume hydromulching 1/4 to 1/2 of the site.
- Two process water sample points; monitoring nine months per year.
- One stormwater sample point; monitoring three quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero. It is assumed to be zero.
- Only updating SMP required.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 8: Compliance costs for large active sand & gravel pit -- existing

LARGE ACTIVE SAND AND GRAVEL PIT - existing								
ITEM	QUANTITY	UNITS	UNIT COST (\$)	COST (\$)	USEFUL LIFE (YEARS)	ANNUALIZED COST (\$)	ANNUAL O&M COST (\$)	TOTAL ANNUAL COST (\$)
PROCESS WASTEWATER MANAGEMENT								
Biofiltration Swale and Pond O & M								
Mower	12	Hours	32	386	1	0	425	425
Support Vehicle	16	Hours	40	644	1	0	709	709
Labor	16	Hours	20	325	1	0	358	358
SITE MANAGEMENT PLAN								
Update SMP	8	Hours	62.65	501	1	551	501	1,052
Inspections								
Labor	16	Hours	20.32	325	1	0	358	358
Write Insp. Rpt.--Labor	6	Hours	20.32	122	1	0	134	134
Write Insp. Rpt.--Supervision	2	Hours	28.27	57	1	0	62	62
Vehicle / Equipment Inspections	600	Hours	20.32	12,192	1	0	13,411	13,411
Sediment / Erosion Control Inspections	12	Hours	20.32	244	1	0	268	268
Recordkeeping	0	Hours	0	0	0	0	0	0
Activities								
Biofiltration Swale O & M								
Mower	12	Hours	32	386	1	0	425	425
Support Vehicle	16	Hours	40	644	1	0	709	709
Labor	16	Hours	20	325	1	0	358	358
Spill Kit	3	Kit	615	1,845	1	0	2,030	2,030
Secondary Containment	3	Units	530	1,589	1	0	1,748	1,748
Street Sweeping	130	Hours	20	2,642	1	0	2,906	2,906
EROSION AND SEDIMENT CONTROL								
Stabilization BMPs								
Initial Site Stabilization	40	Hours	16	644	5	170	0	170
Heavy Equipment	40	Hours	29	1,159	5	306	0	306
Heavy Equipment Mobilization	4	Hours	40	161	5	42	0	42
Hydromulching of Exposed Areas	2	Acres	1,610	3,220	5	850	0	850
Biofiltration Swale O & M								
Mower	3	Hours	32	97	1	0	106	106

Support Vehicle	4	Hours	40	161	1	0	177	177
Labor	4	Hours	20	81	1	0	89	89
MONITORING								
Process Water Monitoring	2	Smpl. Pts.	5,780	11,560	1	0	12,716	12,716
Stormwater Monitoring	1	Smpl. Pts.	5,669	5,669	1	0	6,236	6,236
Recordkeeping	0	0	0	0	0	0	0	0
GRAND TOTAL								45,644

A.7 Small, active sand & gravel pit with concrete and recycling – new

Assumptions:

- Three acres of disturbed area.
- 78 ft. X 85 ft. unlined wet pond. Depth four to five ft. with a 4:1 slope.
- Process wastewater is pretreated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- Lined impoundment (i.e. containment basin). Concrete liner.
- Carbon dioxide (CO₂) sparging.
- Process water BMP Operating and Maintenance (O&M) includes O&M for pond, swale, lined impoundment, sparging unit
- pH adjustment includes 5,000 to 10,000 gal. tank. Injectors and control panel.
- pH labor includes checking on and maintaining carbon dioxide adjustments
- SMP includes site map. Plan must be reviewed yearly and updated if necessary.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers
- Erosion and sediment control BMPs must be inspected once a week. Assume two Hours
- Must write a report on each inspection.
- No commingling of process water and stormwater.
- All Type 3 stormwater is treated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- Swale installed after hydromulching of exposed areas.
- Mechanical push broom sweeper

- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 9: Compliance costs for small active sand & gravel pit with concrete and recycling -- new

SMALL ACTIVE SAND AND GRAVEL PIT, CONCRETE READY-MIX, & RECYCLING OPERATION (NEW)								
ITEM	QUANTITY	UNITS	UNIT COST (\$)	COST (\$)	USEFUL LIFE (YEARS)	ANNUALIZED COST (\$)	ANNUAL O&M COST (\$)	TOTAL ANNUAL COST (\$)
PROCESS WASTEWATER MANAGEMENT								
Wet Pond								
Grader	8	Hours	29	232	10	38	0	38
Front-end Loader	8	Hours	29	232	10	38	0	38
Labor	32	Hours	20	650	10	106	0	106
Heavy Equipment Mobilization	12	Hours	40	483	10	79	0	79
Biofiltration Swale								
Grader, four Foot Wide	8	Hours	29	232	10	38	0	38
Support Vehicle	8	Hours	40	322	10	52	0	52
Labor	8	Hours	20	163	10	26	0	26
Supervision	2	Hours	28	57	10	9	0	9
Hydromulching of Swale	1	Unit	403	403	10	66	0	66
Lined Impoundment (Concrete Batch Plant)								
Carbon Dioxide pH Adjustment	1	Unit	8,051	8,051	5	2,124	0	2,124
Process Water BMP O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40.26	161	1		177	177
Pond, Swale, Impoundment Labor	8	Hours	20.32	163	1		179	179
Carbon Dioxide Refills -- pH Adjustment	2	Tank	79.62	159	1		175	175

Labor -- pH adjustment	260	Hours	20.32	5,283	1		5,812	5,812
Site Management Plan								
Write SMP	92	Hours	62.64	5,763	1	6,340		6,340
Writing Materials Handling Procedures	8	Hours	62.64	501	5	132		132
Inspections								
Labor	16	Hours	20.32	325	1		358	358
Write Insp. Rpt.--Labor	6	Hours	20.32	122	1		134	134
Write Insp. Rpt.--Supervision	2	Hours	28.27	57	1		62	62
Vehicle / Equipment Inspections	600	Hours	20.32	12,192	1		13,411	13,411
Sediment / Erosion Control Inspections	12	Hours	20.32	244	1		268	268
Recordkeeping	0	Hours	0	0	0		0	0
Stormwater Pollution Prevention								
Perimeter Berm and Re-sloping	86	Hours	145	12,463	10	2,028		2,028
Biofiltration Swale								
Grader, 4 Foot Wide	8	Hours	29	232	10	38		38
Support Vehicle	8	Hours	40	322	10	52		52
Labor	8	Hours	20	163	10	26		26
Supervision	2	Hours	28	57	10	9		9
Hydromulching of Swale	1	Unit	403	403	10	66		66
Spill Kit	3	Kit	615	1,845	1	2,030		2,030
Secondary Containment	3	Unit	529.77	1,589	1	1,748		1,748
Mechanical Sweeper	1	Unit	163,000	163,000	10	26,527		26,527
Activities								
Biofiltration Swale O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40.26	161	1		177	177
Labor	4	Hours	20.32	81	1		89	89
Street Sweeping	130	Hours	20.32	2,642	1		2,906	2,906

Erosion Sediment Control Stabilization BMPs								
Initial Site Stabilization	40	Hours	16	644	5	170		170
Heavy Equipment	40	Hours	29	1,159	5	306		306
Heavy Equipment Mobilization	4	Hours	40	161	5	42		42
Hydromulching of Exposed Areas	3	Acres	1,610	4,831	5	1,274		1,274
Biofiltration Swale								
Grader, Four Foot Wide	8	Hours	29	232	10	38		38
Support Vehicle	8	Hours	40	322	10	52		52
Labor	8	Hours	20	163	10	26		26
Supervision	2	Hours	28	57	10	9		9
Hydromulching of Swale	1	Unit	403	403	10	66		66
Biofiltration Swale O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40.26	161	1		177	177
Labor	4	Hours	20.32	81	1		89	89
MONITORING								
PIT Process Water Monitoring	1	Smpl. Pts.	4,335	4,335	1		4,768	4,768
ReadyMix / Concrete Recycling Process Water Monitoring	1	Smpl. Pts.	4,596	4,596	1		5,056	5,056
PIT Stormwater Monitoring	1	Smpl. Pts.	4,252	4,252	1		4,677	4,677
ReadyMix / Concrete Recycling Stormwater Monitoring	1	Smpl. Pts.	4,513	4,513	1		4,964	4,964
Recordkeeping	0	0	0	0	0		0	0
TOTAL								87,931

Table A 10: Monitoring costs for small active sand & gravel pit with concrete and recycling

Effluent Monitoring						
Annualized Cost per Sample Point						
Assume Monitoring for 9 Months of the year						
Type of Discharge	Pollutant	Cost Per Test (\$)	Sampling Labor Cost (\$)	Freq.	Freq Units	Total Cost Adjusted for 9 Months (\$)
NAICS 212321 Process Water to Surface	Turbidity	15	20.32	23	Yearly	609
	TSS	16.67	20.32	3	Yearly	83
	Oil Sheen	0	20.32	239	Yearly	3,642
Total Cost						4,335
NAICS 212321 Process Water to Ground	Oil Sheen	0	20.32	239	Yearly	3,642
Total Cost						3,642
NAICS 212321 Stormwater to Surface	Turbidity	15	20.32	23	Yearly	609
	Oil Sheen	0	20.32	239	Yearly	3,642
Total Cost						4,252
NAICS 212321 Stormwater to Ground	Oil Sheen	0	20.32	239	Yearly	3,642
Total Cost						3,642
NAICS 327320 & ECY002 Process Water to Surface	pH	11.33	20.32	11	Yearly	261
	Turbidity	15	20.32	23	Yearly	609
	TSS	16.67	20.32	3	Yearly	83
	Oil Sheen	0	20.32	239	Yearly	3,642
Total Cost						4,596
NAICS 327320 & ECY002 Process Water to Ground	pH	11.33	20.32	11	Yearly	261
	Oil Sheen	0	20.32	239	Yearly	3,642
Total Cost						3,904
NAICS 327320 & ECY002 Stormwater to Surface	pH	11.33	20.32	11	Yearly	261
	Turbidity	15	20.32	23	Yearly	609
	Oil Sheen	0	20.32	239	Yearly	3,642
Total Cost						4,513
NAICS 327320 & ECY002 Stormwater to Ground	pH	15	20.32	11	Yearly	291
	Oil Sheen	0	20.32	239	Yearly	3,642
Total Cost						3,934

A.8 Small, active sand & gravel pit with concrete and recycling – existing

Assumptions:

- Three acres of disturbed area.
- Process water BMP O&M includes O&M for pond, swale, lined impoundment, sparging unit
- Sparging includes 5,000 to 10,000 gal. tank. Injectors and control panel.
- pH adjustment labor includes checking on and maintaining carbon dioxide adjustments
- Time for writing materials acceptance procedures for concrete recycling.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers
- Erosion and sediment control BMPs must be inspected once a week.
- Must write a report on each inspection.
- Mechanical push broom sweeper
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- SMP requires only updating.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 11: Compliance costs for small active sand & gravel pit with concrete and recycling -- existing

SMALL ACTIVE SAND AND GRAVEL PIT, CONCRETE READY-MIX, & RECYCLING OPERATION - existing								
ITEM	QUANTITY	UNITS	UNIT COST (\$)	COST (\$)	USEFUL LIFE (YEARS)	ANNUALIZED COST (\$)	ANNUAL O&M COST (\$)	TOTAL ANNUAL COST (\$)
PROCESS WASTEWATER MANAGEMENT								
Process Water BMP O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40	161	1		177	177
Pond, Swale, Impoundment Labor	8	Hours	20	163	1		179	179
Carbon Dioxide Refills -- pH Adjustment	2	Tank	80	159	1		175	175

Labor -- pH adjustment	260	Hours	20	5,283	1		5,812	5,812
SITE MANAGEMENT PLAN								
Update SMP	8	Hours	62.65	501	1	551		551
Writing Materials Handling Procedures	8	Hours	62.65	501	5	132		132
Inspections								
Labor	16	Hours	20.32	325	1		358	358
Write Insp. Rpt.--Labor	6	Hours	20.32	122	1		134	134
Write Insp. Rpt.--Supervision	2	Hours	28.27	57	1		62	62
Vehicle / Equipment Inspections	600	Hours	20.32	12,192	1		13,411	13,411
Sediment / Erosion Control Inspections	12	Hours	20.32	244	1		268	268
Recordkeeping	0	Hours	0	0	0		0	0
Spill Kit	3	Kit	615	1,845	1	2,030		2,030
STORMWATER POLLUTION PREVENTION								
Activities								
Biofiltration Swale O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40	161	1		177	177
Labor	4	Hours	20	81	1		89	89
Street Sweeping	130	Hours	20	2,642	1		2,906	2,906
EROSION AND SEDIMENT CONTROL								
Stabilization BMPs								
Initial Site Stabilization	40	Hours	16	644	5	170		170
Heavy Equipment	40	Hours	29	1,159	5	306		306
Heavy Equipment Mobilization	4	Hours	40	161	5	42		42
Hydromulching of Exposed Areas	3	Acres	1,610	4,831	5	1,274		1,274

Biofiltration Swale O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40	161	1		177	177
Labor	4	Hours	20	81	1		89	89
MONITORING								
PIT Process Water Monitoring	1	Smpl. Pts.	4,335	4,335	1		4,768	4,768
ReadyMix / Concrete Recycling Process Water Monitoring	1	Smpl. Pts.	4,596	4,596	1		5,056	5,056
PIT Stormwater Monitoring	1	Smpl. Pts.	4,252	4,252	1		4,677	4,677
ReadyMix / Concrete Recycling Stormwater Monitoring	1	Smpl. Pts.	4,513	4,513	1		4,964	4,964
Recordkeeping	0	0	0	0	0		0	0
GRAND TOTAL								48,304

A.9 Large, active sand & gravel pit with concrete and recycling – new

Assumptions:

- Four wet ponds. Each pond a 78 ft. X 85 ft. unlined wet pond. Depth four to five ft. with a 4:1 slope.
- Four grass-lined biofiltration swales.
- Process wastewater is pretreated by a 200 foot, grass-lined biofiltration swale. Need one such swale per 3 acres of disturbed area.
- Lined Impoundment (i.e. containment basin) with concrete liner.
- CO2 sparging.
- Sparging includes 5,000 to 10,000 gal. tank. Injectors and control panel.
- pH adjustment includes checking on and maintaining carbon dioxide adjustments
- SMP includes site map. Plan must be reviewed yearly and updated if necessary.
- Time for writing materials acceptance procedures for concrete recycling.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers

- Erosion and sediment control BMPs must be inspected once a week. Assume two hours.
- Must write a report on each inspection.
- No commingling of process water and stormwater.
- All Type 3 stormwater is treated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- Swale installed after hydromulching of exposed areas.
- Secondary containment should consist of a bermed concrete pad with a roof.
- Mechanical push broom sweeper.
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- Four sample points; monitoring nine months per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 12: Compliance costs for large active sand & gravel pit with concrete and recycling -- new

LARGE ACTIVE SAND AND GRAVEL PIT WITH CONCRETE AND RECYCLING - new								
ITEM	QUANTITY	UNITS	UNIT COST (\$)	COST (\$)	USEFUL LIFE (YEARS)	ANNUALIZED COST (\$)	ANNUAL O&M COST (\$)	TOTAL ANNUAL COST (\$)
PROCESS WASTEWATER MANAGEMENT								
Wet Pond								
Grader	32	Hours	29	927	10	151		151
Front-end Loader	32	Hours	29	927	10	151		151
Labor	128	Hours	20	2,601	10	423		423
Heavy Equipment Mobilization	48	Hours	40	1,932	10	314		314
Biofiltration Swale								
Grader, 4 Foot Wide	32	Hours	29	927	10	151		151
Support Vehicle	32	Hours	40	1,288	10	210		210
Labor	32	Hours	20	650	10	106		106
Supervision	8	Hours	28	226	10	37		37
Hydromulching of Swale	4	Unit	403	1,610	10	262		262
Lined Impoundment (Concrete Batch Plant)								
Lined Impoundment (Concrete Batch Plant)	1	Unit	3,543	3,543	10	577		577

Recycling Pond System - Concrete Batch	1	Unit	88,563	88,563	10	14,413		14,413
Carbon Dioxide pH Adjustment	1	Unit	8,051	8,051	5	2,124		2,124
Biofiltration Swale and Pond O & M								
Mower	12	Hours	32	386	1		425	425
Support Vehicle	16	Hours	40.26	644	1		709	709
Pond, Swale, Impoundment Labor	8	Hours	20.32	163	1		179	179
Carbon Dioxide Refills -- pH Adjustment	2	Tank	79.62	159	1		175	175
Labor -- pH adjustment	260	Hours	20.32	5,283	1		5,812	5,812
SITE MANAGEMENT PLAN								
Write SMP	120	Hours	62.65	7,517	1	8,269		8,269
Writing Materials Handling Procedures	8	Hours	62.65	501	5	132		132
Total				501				132
Inspections								
Labor	24	Hours	20.32	488	1		536	536
Write Insp. Rpt.--Labor	8	Hours	20.32	163	1		179	179
Write Insp. Rpt.--Supervision	2	Hours	28.27	57	1		62	62
Vehicle / Equipment Inspections	900	Hours	20.32	18,288	1		20,117	20,117
Sediment / Erosion Control Inspections	16	Hours	20.32	325	1		358	358
Recordkeeping	0	Hours	0	0	0			0
STORMWATER POLLUTION PREVENTION								
Perimeter Berm and Re-sloping	172	Hours	145	24,927	10	4,057		4,057
Biofiltration Swale								
Grader, Four Foot Wide	8	Hours	29	232	10	38		38
Support Vehicle	8	Hours	40	322	10	52		52
Labor	8	Hours	20	163	10	26		26
Supervision	2	Hours	28	57	10	9		9
Hydromulching of Swale	1	Unit	403	403	10	66		66

Spill Kit	5	Kit	615	3,075	1	3,383		3,383
Secondary Containment	1	Unit	3220.49	3,220	10	524		524
Wheel Wash	1	Unit	48876.19	48,876	10	7,954		7,954
Regenerative air or vacuum Sweeper	1	Unit	209,000	209,000	10	34,014		34,014
Activities								
Biofiltration Swale O & M								
Mower	12	Hours	32	386	1		425	425
Support Vehicle	16	Hours	40.26	644	1		709	709
Labor	16	Hours	20.32	325	1		358	358
Street Sweeping	130	Hours	20.32	2,642	1		2,906	2,906
EROSION AND SEDIMENT CONTROL								
Stabilization BMPs								
Initial Site Stabilization	40	Hours	16	644	5	170		170
Heavy Equipment	40	Hours	29	1,159	5	306		306
Heavy Equipment Mobilization	4	Hours	40	161	5	42		42
Hydromulching of Exposed Areas	5	Acres	1,610	8,051	5	2,124		2,124
Biofiltration Swale								
Grader, Four Foot Wide	8	Hours	29	232	10	38		38
Support Vehicle	8	Hours	40	322	10	52		52
Labor	8	Hours	20	163	10	26		26
Supervision	2	Hours	28	57	10	9		9
Hydromulching of Swale	1	Unit	403	403	10	66		66
Biofiltration Swale O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40.26	161	1		177	177
Labor	4	Hours	20.32	81	1		89	89
MONITORING								
PIT Process Water Monitoring	2	Smpl. Pts.	5,780	11,560	1		12,716	12,716
ReadyMix / Concrete Recycling Process Water Monitoring	2	Smpl. Pts.	6,128	12,256	1		13,482	13,482

PIT Stormwater Monitoring	1	Smpl. Pts.	5,669	5,669	1		6,236	6,236
ReadyMix / Concrete Recycling Stormwater Monitoring	2	Smpl. Pts.	6,017	12,034	1		13,237	13,237
Recordkeeping	0	0	0	0	0		0	0
GRAND TOTAL								159,400

Table A 13: Monitoring costs for large active sand & gravel pit with concrete and recycling

Effluent Monitoring						
Annualized Cost per Sample Point						
Assume Monitoring for 12 Months of the year						
Type of Discharge	Pollutant	Cost Per Test	Sampling Labor Cost	Freq.	Freq Units	Total Cost
NAICS 212321 Process Water to Surface	Turbidity	15	20.32	23	Yearly	812
	TSS	16.67	20.32	3	Yearly	111
	Oil Sheen	0	20.32	239	Yearly	4,856
Total Cost						5,780
NAICS 212321 Process Water to Ground	Oil Sheen	0	20.32	239	Yearly	4,856
Total Cost						4,856
NAICS 212321 Stormwater to Surface	Turbidity	15	20.32	23	Yearly	812
	Oil Sheen	0	20.32	239	Yearly	4,856
Total Cost						5,669
NAICS 212321 Stormwater to Ground	Oil Sheen	0	20.32	239	Yearly	4,856
Total Cost						4,856
NAICS 327320 & ECY002 Process Water to Surface	pH	11.33	20.32	11	Yearly	348
	Turbidity	15	20.32	23	Yearly	812
	TSS	16.67	20.32	3	Yearly	111
	Oil Sheen	0	20.32	239	Yearly	4,856
Total Cost						6,128
NAICS 327320 & ECY002 Process Water to Ground	pH	11.33	20.32	11	Yearly	348
	Oil Sheen	0	20.32	239	Yearly	4,856
Total Cost						5,205
NAICS 327320 & ECY002 Stormwater to Surface	pH	11.33	20.32	11	Yearly	348
	Turbidity	15	20.32	23	Yearly	812
	Oil Sheen	0	20.32	239	Yearly	4,856
Total Cost						6,017
NAICS 327320 & ECY002 Stormwater to Ground	pH	11.33	20.32	11	Yearly	348
	Oil Sheen	0	20.32	239	Yearly	4,856
Total Cost						5,205

A.10 Large, active sand & gravel pit with concrete and recycling – existing

Assumptions:

- pH adjustment includes 5,000 to 10,000 gallon tank. Injectors and control panel.
- pH adjustment labor includes checking on and maintaining carbon dioxide adjustments
- Time for writing materials acceptance procedures for concrete recycling.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers
- Erosion and sediment control BMPs must be inspected once a week. Assume two hours.
- Must write a report on each inspection.
- Mechanical push broom sweeper.
- Stabilization BMPs focus on eliminating exposed soils that are exposed to stormwater. Five acres of disturbed area needs erosion control measures.
- Four sample points; monitoring nine months per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Only updating of SMP is required.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 14: Compliance costs for large active sand & gravel pit with concrete and recycling -- existing

LARGE ACTIVE SAND AND GRAVEL PIT with concrete and recycling- existing								
ITEM	QUANTITY	UNITS	UNIT COST (\$)	COST (\$)	USEFUL LIFE (YEARS)	ANNUALIZED COST (\$)	ANNUAL O&M COST (\$)	TOTAL ANNUAL COST (\$)
PROCESS WASTEWATER MANAGEMENT								
Biofiltration Swale and Pond O & M								
Mower	12	Hours	32	386	1		425	425
Support Vehicle	16	Hours	40	644	1		709	709
Pond, Swale, Impoundment Labor	8	Hours	20	163	1		179	179
Carbon Dioxide Refills -- pH Adjustment	2	Tank	80	159	1		175	175

Labor -- pH adjustment	260	Hours	20	5,283	1		5,812	5,812
SITE MANAGEMENT PLAN								
Update SMP	8	Hours	63	501	1	551		551
Writing Materials Handling Procedures	8	Hours	63	501	5	132		132
Inspections								
Labor	24	Hours	0	0	1		0	0
Write Insp. Rpt.--Labor	8	Hours	20	163	1		179	179
Write Insp. Rpt.--Supervision	2	Hours	20	41	1		45	45
Vehicle / Equipment Inspections	900	Hours	28	25,446	1		27,991	27,991
Sediment / Erosion Control Inspections	16	Hours	20	325	1		358	358
Recordkeeping	0	Hours	0	0	0			0
STORMWATER POLLUTION PREVENTION								
Activities								
Biofiltration Swale O & M								
Mower	12	Hours	32	386	1		425	425
Support Vehicle	16	Hours	40	644	1		709	709
Labor	16	Hours	20	325	1		358	358
Street Sweeping	130	Hours	20	2,642	1		2,906	2,906
EROSION AND SEDIMENT CONTROL								
Stabilization BMPs								
Initial Site Stabilization	40	Hours	16	644	5	170		170
Heavy Equipment	40	Hours	29	1,159	5	306		306
Heavy Equipment Mobilization	4	Hours	40	161	5	42		42
Hydromulching of Exposed Areas	5	Acres	1,610	8,051	5	2,124		2,124

Biofiltration Swale O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40	161	1		177	177
Labor	4	Hours	20	81	1		89	89
Spill Kit	5	Kit	615	3,075	1	3,383		3,383
MONITORING								
PIT Process Water Monitoring	2	Smpl. Pts.	5,780	11,560	1		12,716	12,716
ReadyMix / Concrete Recycling Process Water Monitoring	2	Smpl. Pts.	6,128	12,256	1		13,482	13,482
PIT Stormwater Monitoring	1	Smpl. Pts.	5,669	5,669	1		6,236	6,236
ReadyMix / Concrete Recycling Stormwater Monitoring	2	Smpl. Pts.	6,017	12,034	1		13,237	13,237
Recordkeeping	0	0	0	0	0		0	0
TOTAL								93,019

A.11 Small, active hot-mix asphalt facility – new

Assumptions:

- Small asphalt batch plant.
- SMP includes site map. Plan must be reviewed yearly and updated if necessary.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers
- Not conducting earth moving activities.
- Must write a report on each inspection.
- No commingling of process water and stormwater.
- All Type 3 stormwater is treated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- Swale installed after hydromulching of exposed areas.
- Asphalt release agent application area includes large concrete pad sloped to an oil water separator.

- One sample point; monitoring three quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 15: Compliance costs for small active hot mix asphalt operation -- new

SMALL ACTIVE HOT MIX ASPHALT OPERATION - new								
ITEM	QUANTITY	UNITS	UNIT COST (\$)	COST (\$)	USEFUL LIFE (YEARS)	ANNUALIZED COST (\$)	ANNUAL O&M COST (\$)	TOTAL ANNUAL COST (\$)
SITE MANAGEMENT PLAN								
Write SMP	40	Hours	62.65	2,506	1	2,756		2,756
Inspections								
Labor	8	Hours	20.32	163	1		179	179
Write Insp. Rpt.--Labor	2	Hours	20.32	41	1		45	45
Write Insp. Rpt.--Supervision	2	Hours	28.27	57	1		62	62
Vehicle / Equipment Inspections	225	Hours	20.32	4,572	1		5,029	5,029
Sediment / Erosion Control Inspections	0	Hours	20.32	0	1		0	0
Recordkeeping	0	Hours	0	0	0		0	0
STORMWATER POLLUTION PREVENTION								
Perimeter Berm and Re-sloping	86	Hours	145	12,463	10	2,028		2,028
Biofiltration Swale								
Grader, Four Foot Wide	8	Hours	29	232	10	38		38
Support Vehicle	8	Hours	40	322	10	52		52
Labor	8	Hours	20	163	10	26		26
Supervision	2	Hours	28	57	10	9		9
Hydromulching of Swale	1	Unit	403	403	10	66		66
Spill Kit	1	Kit	615	615	1	677		677
Asphalt Release Agent Application Area	1	Unit	3220.49	3,220	10	524		524
Oil Water Separator	1	Unit	40088.14	40,088	10	6,524		6,524
Secondary Containment	1	Unit	529.77	530	1	583		583
Activities								

Biofiltration Swale O & M								
Mower	3	Hours	32	97	1		106	106
Support Vehicle	4	Hours	40.26	161	1		177	177
Labor	4	Hours	20.32	81	1		89	89
MONITORING								
Stormwater Monitoring	1	Smpl. Pts.	4,513	4,513	1		4,964	4,964
Recordkeeping	0	0	0	0	0		0	0
GRAND TOTAL								23,935

Table A 16: Monitoring costs for small active hot mix asphalt operation

Effluent Monitoring						
Annualized Cost per Sample Point						
No Process Water Discharges Allowed for Hot Mix Asphalt						
Assume Monitoring for nine months of the year						
Type of Discharge	Pollutant	Cost Per Test (\$)	Sampling Labor Cost (\$)	Freq.	Freq Units	Total Cost Adjusted for 9 Months (\$)
NAICS 324121 Stormwater to Surface	pH	11.33	20.32	11	Yearly	261
	Turbidity	15	20.32	23	Yearly	609
	Oil Sheen	0	20.32	239	Yearly	3,642
Total Cost						4,513
NAICS 324121 Stormwater to Ground	pH	11.33	20.32	11	Yearly	261
	Oil Sheen	0	20.32	239	Yearly	3,642
	Total Cost					

A.12 Small, active hot-mix asphalt facility – existing

Assumptions:

- Small asphalt batch plant.
- SMP includes site map. Plan must be reviewed yearly and updated if necessary.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers
- Not conducting earth moving activities.
- Must write a report on each inspection.
- One sample point; monitoring three quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 17: Compliance costs for small active hot mix asphalt operation -- existing

SMALL ACTIVE HOT MIX ASPHALT OPERATION - existing								
ITEM	QUANTITY	UNITS	UNIT COST (\$)	COST (\$)	USEFUL LIFE (YEARS)	ANNUALIZED COST (\$)	ANNUAL O&M COST (\$)	TOTAL ANNUAL COST (\$)
SITE MANAGEMENT PLAN								
Update SMP	4	Hours	62.65	251	1	276		276
Inspections								
Labor	8	Hours	20.32	163	1		179	179
Write Insp. Rpt.--Labor	2	Hours	20.32	41	1		45	45
Write Insp. Rpt.--Supervision	2	Hours	28.27	57	1		62	62
Vehicle / Equipment Inspections	225	Hours	20.32	4,572	1		5,029	5,029
Sediment / Erosion Control Inspections	0	Hours	20.32	0	1		0	0
Recordkeeping	0	Hours	0	0	0		0	0
STORMWATER POLLUTION PREVENTION								
Spill Kit	1	Kit	615	615	1	677		677
Activities								
Biofiltration Swale O & M								
Mower	3	Hours	32	97	1		106	106

Support Vehicle	4	Hours	40	161	1		177	177
Labor	4	Hours	20	81	1		89	89
MONITORING								
Stormwater Monitoring	1	Smpl. Pts.	4,513	4,513	1		4,964	4,964
Recordkeeping	0	0	0	0	0		0	0
GRAND TOTAL								
								11,604

A.13 Large, active hot-mix asphalt facility – new

Assumptions:

- Large asphalt batch plant.
- SMP includes site map. Plan must be reviewed yearly and updated if necessary.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers
- Not conducting earth moving activities.
- Must write a report on each inspection.
- No commingling of process water and stormwater.
- All Type 3 stormwater is treated by a 200 foot, grass-lined biofiltration swale. Need one such swale per three acres of disturbed area.
- Swale installed after hydromulching of exposed areas.
- Asphalt release agent application area includes large concrete pad sloped to an oil water separator.
- Secondary containment should be an impervious surface, bermed, and covered.
- 1 sample points; monitoring three quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five day work week.

Table A 18: Compliance costs for large active hot mix asphalt operation -- new

LARGE ACTIVE HOT MIX ASPHALT OPERATION - new								
ITEM	QUANTITY	UNIT S	UNIT COST (\$)	COST (\$)	USEFUL LIFE (YEARS)	ANNUALIZED COST (\$)	ANNUAL O&M COST (\$)	TOTAL ANNUAL COST (\$)
SITE MANAGEMENT PLAN								
Write SMP	80	Hours	62.65	5,012	1	5,513		5,513
Inspections								
Labor	16	Hours	20.32	325	1		325	325
Write Insp. Rpt.--Labor	6	Hours	20.32	122	1		122	122
Write Insp. Rpt.--Supervision	2	Hours	28.27	57	1		57	57
Vehicle / Equipment Inspections	600	Hours	20.32	12,192	1		12,192	12,192
Sediment / Erosion Control Inspections	0	Hours	20.32	0	1		0	0
Recordkeeping	0	Hours	0	0	0		0	0
STORMWATER POLLUTION PREVENTION								
Perimeter Berm and Re-sloping	172	Hours	145	24,927	10	4,057		4,057
Biofiltration Swale								
Grader, Four Foot Wide	8	Hours	29	232	10	38		38
Support Vehicle	8	Hours	40	322	10	52		52
Labor	8	Hours	20	163	10	26		26
Supervision	2	Hours	28	57	10	9		9
Hydromulching of Swale	1	Unit	403	403	10	66		66
Spill Kit	3	Kit	615	1,845	1	2,030		2,030
Asphalt Release Agent Application Area	1	Unit	3220.49	3,220	10	524		524
Oil Water Separator	2	Unit	40088.14	80,176	10	13,048		13,048
Secondary Containment	1	Unit	805.13	805	1	886		886
Activities								
Biofiltration Swale O & M								
Mower	3	Hours	32	97	1		97	97
Support Vehicle	4	Hours	40.26	161	1		161	161
Labor	4	Hours	20.32	81	1		81	81

MONITORING								
Stormwater Monitoring	2	Smpl. Pts.	5,930	11,860	1		11,860	11,860
Recordkeeping	0	0	0	0	0		0	0
GRAND TOTAL								51,143

Table A 19: Monitoring costs for large hot mix asphalt operation

Effluent Monitoring						
Annualized Cost per Sample Point						
No Process Water Discharges Allowed for Hot Mix Asphalt						
Assume Monitoring for 12 Months of the year						
Type of Discharge	Pollutant	Cost Per Test (\$)	Sampling Labor Cost (\$)	Freq.	Freq Units	Total Cost (\$)
NAICS 324121 Stormwater to Surface	pH	11.33	20.32	11	Yearly	261
	Turbidity	15	20.32	23	Yearly	812
	Oil Sheen	0	20.32	239	Yearly	4,856
Total Cost						5,930
NAICS 324121 Stormwater to Ground	pH	11.33	20.32	11	Yearly	348
	Oil Sheen	0	20.32	239	Yearly	4,856
	Total Cost					5,205

A.14 Large, active hot-mix asphalt facility – new

Assumptions:

- Large asphalt batch plant
- SMP includes site map. Plan must be reviewed yearly and updated if necessary.
- Must conduct two stormwater inspections per year.
- Vehicle/equipment inspections conducted by drivers
- Not conducting earth moving activities.
- Must write a report on each inspection.
- One sample points; monitoring three quarters per year.
- Copies of all monitoring reports, laboratory data, and quality assurance and control documentation must be retained for three to five years. The cost of complying with these requirements is the cost of storing records. This cost is either very low or zero.
- Daily monitoring when discharge occurs. Discharge occurs daily. Five-day work week.

Table A 20: Compliance costs for large active hot mix asphalt operation -- existing

LARGE ACTIVE HOT MIX ASPHALT OPERATION - existing								
ITEM	QUANTITY	UNITS	UNIT COST (\$)	COST (\$)	USEFUL LIFE (YEARS)	ANNUALIZED COST (\$)	ANNUAL O&M COST (\$)	TOTAL ANNUAL COST (\$)
SITE MANAGEMENT PLAN								
Update SMP	8	Hours	62.6455 4095	501	1	551		551
Inspections								
Labor	16	Hours	20.32	325	1		325	325
Write Insp. Rpt.--Labor	6	Hours	20.32	122	1		122	122
Write Insp. Rpt.--Supervision	2	Hours	28.2733 3333	57	1		57	57
Vehicle / Equipment Inspections	600	Hours	20.32	12,192	1		12,192	12,192
Sediment / Erosion Control Inspections	0	Hours	20.32	0	1		0	0
Recordkeeping	0	Hours	0	0	0		0	0
STORMWATER POLLUTION PREVENTION								
Spill Kit	3	Kit	615	1,845	1	2,030		2,030
Activities								

Biofiltration Swale O & M								
Mower	3	Hours	32	97	1		97	97
Support Vehicle	4	Hours	40	161	1		161	161
Labor	4	Hours	20	81	1		81	81
MONITORING								
Stormwater Monitoring	2	Smpl. Pts.	5,930	11,860	1		11,860	11,860
Recordkeeping	0	0	0	0	0		0	0
GRAND TOTAL								27,475

Sources

RCW 34.05.272 requires Ecology to categorize references for certain significant agency actions, including general permits, into the following categories:

1. Peer review is overseen by an independent third party.
2. Review is by staff internal to Department of Ecology.
3. Review is by persons that are external to and selected by the Department of Ecology.
4. Documented open public review process that is not limited to invited organizations or individuals.
5. Federal and state statutes.
6. Court and hearings board decisions.
7. Federal and state administrative rules and regulations.
8. Policy and regulatory documents adopted by local governments.
9. Data from primary research, monitoring activities, or other sources, but that has not been incorporated as part of documents reviewed under other processes.
10. Records of best professional judgment of Department of Ecology employees or other individuals.
11. Sources of information that do not fit into one of the other categories listed.

The number in parentheses following each reference indicates the best-fit category for each source below.

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