

FOURTH FIVE-YEAR REVIEW
NORTHWESTERN STATES PORTLAND CEMENT COMPANY
SUPERFUND SITE
IAD980852461
MASON CITY, IOWA

June 2012

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Region 7
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7/12/12
Date



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List of Abbreviations and Acronyms

ARARs	applicable or relevant and appropriate requirements
ATSDR	Agency for Toxic Substances and Disease Registry
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CKD	cement kiln dust
COC	contaminant of concern
EPA	U.S. Environmental Protection Agency
IDNR	Iowa Department of Natural Resources
MCL	Maximum Contaminant Level
mg/l	milligram per liter
NCP	National Contingency Plan
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
NWSPCC	Northwestern States Portland Cement Company
O&M	operation and maintenance
pH	potential of hydrogen
RAO	remedial action objective
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
TBC	To Be Considered
TDS	total dissolved solids
TSS	total suspended solids

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Northwestern States Portland Cement Company		
EPA ID: IAD980852461		
Region: 7	State: IA	City/County: Mason City/Cerro Gordo
SITE STATUS		
NPL Status: Deleted		
Multiple OUs? No	Has the site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA If "Other Federal Agency" was selected above, enter Agency name: Click here to enter text.		
Author name (Federal or State Project Manager): Diana Engeman		
Author affiliation: EPA-Region 7		
Review period: 6/23/2011 - 6/1/2012		
Date of site inspection: 5/24/2012		
Type of review: Statutory		
Review number: 4		
Triggering action date: 9/12/2007		
Due date (five years after triggering action date): 9/12/2012		

Five-Year Review Summary Form (continued)

The table below is for the purpose of the summary form and associated data entry and does not replace the two tables required in Sections VIII and IX by the FYR guidance. Instead, data entry in this section should match information in Sections VII and IX of the FYR report.

Issues/Recommendations

OU(s) without Issues/Recommendations Identified in the Five-Year Review:
OU1

Issues and Recommendations Identified in the Five-Year Review:

OU(s): Click here to enter text.	Issue Category: Choose an item.			
	Issue: Click here to enter text.			
	Recommendation: Click here to enter text.			
Affect Current Protectiveness	Affect Future Protectiveness	Implementing Party	Oversight Party	Milestone Date
Choose an item.	Choose an item.	Choose an item.	Choose an item.	Enter date.

To add additional issues/recommendations here, copy and paste the above table as many times as necessary to document all issues/recommendations identified in the FYR report.

Protectiveness Statement(s)

Include each individual OU protectiveness determination and statement. If you need to add more protectiveness determinations and statements for additional OUs, copy and paste the table below as many times as necessary to complete for each OU evaluated in the FYR report.

Operable Unit: OU1	Protectiveness Determination: Protective	Addendum Due Date (if applicable): Click here to enter date.
Protectiveness Statement: The remedy at the Northwestern States Portland Cement Company site is protective of human health and the environment.		

Sitewide Protectiveness Statement (if applicable)

For sites that have achieved construction completion, enter a sitewide protectiveness determination and statement.

Protectiveness Determination: Protective	Addendum Due Date (if applicable): Click here to enter date.
Protectiveness Statement: The remedy at the Northwestern States Portland Cement Company site is protective of human health and the environment.	

Executive Summary

The Northwestern States Portland Cement Company Superfund site is located on a portion of the Holcim (US) Inc. former cement manufacturing facility north of Mason City, Iowa. The area where the contamination is located is known as the West Quarry. The remedy for the site included capping of the West Quarry and construction of a drainage system to minimize water infiltration; installation of dewatering wells and a treatment system to treat the contaminated groundwater before discharging to nearby Calmus Creek and groundwater monitoring to confirm the effectiveness of these actions. The site was deleted from the National Priorities List on August 31, 1995. The trigger for this five-year review was the signing of the Third Five-Year Review Report on September 12, 2007.

The determination that has been made during this five-year review is that the remedy continues to function as designed. The immediate threats have been addressed and the remedy continues to be protective of human health and the environment. There were no issues that were identified during this review that need to be addressed.

1.0 Introduction

The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings and conclusions of reviews are documented in five-year review reports. In addition, five-year review reports identify issues found during the review, if any, and recommendations to address them.

The Agency is preparing this five-year review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) section 121(c) and the National Contingency Plan (NCP). CERCLA §121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

The Agency interpreted this requirement further in the NCP; 40 CFR § 300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

The EPA Region 7 has conducted a five-year review of the remedial actions implemented at the Northwestern States Portland Cement Company (NWSPCC) site in Cerro Gordo County, Iowa. This review was conducted from June 2011 through June 2012. This report documents the results of the review.

This is the fourth five-year review for the site. The triggering action for this fourth statutory review is the completion date of the third five-year review which was September 12, 2007, as shown in the EPA's WasteLAN database. The five-year review is required because hazardous substances, pollutants or contaminants remain on the site above levels that allow for unlimited use and unrestricted exposure.

2.0 Site Chronology

Table 1 presents a summary of the major site events and relevant dates in the site chronology.

Table 1
Chronology of Site Events

Event	Date
Initial discovery of contamination	5/12/1986
Remedial Investigation/Feasibility Study (RI/FS) complete	3/1990
Proposed Plan available for public comment	3/1990
Record of Decision (ROD) signed	6/26/1990
Final listing on National Priorities List (NPL)	8/30/1990
Consent Decree (CD) for Remedial Design/Remedial Action (RD/RA) finalized	10/10/1991
RD completed	6/5/1992
RA construction began	6/24/1992
Preliminary Close Out Report signed	12/23/1993
Final Close Out Report	9/26/1994
Deletion from the NPL	8/31/1995
First five-year review completed	6/25/1997
Second five-year review completed	9/16/2002
Third five-year review completed	9/12/2007

3.0 Background

3.1 Physical Characteristics

The NWSPCC site consists of an area within the Holcim (US) Inc., (Holcim) cement manufacturing facility located just north of Mason City, Iowa, near the intersection of 25th Street and U.S. Highway 65. The facility has previously been known as both the Northwestern States Portland Cement Company and Holnam, Inc. In general, the remedial actions at the site involve an area known as the West Quarry located west of the Holcim plant. The site location is as shown in Figures 1 and 2, attached. Access to the NWSPCC site is through the Holcim facility office located west of U.S. Highway 65 on 17th Street N.W. Holcim ceased cement manufacturing at this facility in the fall of 2009. Two Holcim employees remain at the facility. Maintenance and operation of the remediation systems have been contracted to Holcim's environmental consultant, GZA GeoEnvironmental, Inc. (GZA).

3.2 Land and Resource Use

The site is located on the north side of the Mason City residential area. Another cement manufacturing plant is located just north of the NWSPCC site, with Calmus Creek between them. Calmus Creek flows to the Winnebago River, which is less than one mile east of the site.

Groundwater flow in the area of the site is primarily to the northeast, toward Calmus Creek and the Winnebago River. Potential pathways of groundwater migration were found to exist via the upper bedrock of the Devonian aquifer. During the RI ten private wells drawing water from this aquifer were identified about a mile north of the site as well as three wells in the Lime Creek Nature Preserve about a mile and a half northeast of the site. Wells with higher capacity are completed in the Cambrian Jordan Sandstone at depths greater than 1200 feet and include the cement plant well and Mason City water supply wells. These deep wells are typically uncased through the Devonian aquifer, allowing Devonian water to enter the well.

3.3 History of Contamination

Cement has been manufactured at the NWSPCC site since 1908. The area referred to as the West Quarry was mined for limestone, a raw material for cement production, until 1950. The West Quarry had reached a depth of approximately 40 feet and covered an area of about 150 acres. In 1969, the company began using the West Quarry for the disposal of waste cement kiln dust (CKD). When disposal activities ceased in 1985, approximately two million tons of CKD had been placed in the quarry and the quarry's unfilled area had been reduced to approximately 40 acres. The open portion of the quarry, filled with approximately 420 million gallons of water, was known as the West Quarry pond.

In 1979, two seeps emerged from the northeastern portion of the filled West Quarry and the water traveled overland and into Calmus Creek. The Iowa Department of Natural Resources (IDNR) found that downstream from the West Quarry the creek water potential of hydrogen (pH) was elevated and the total dissolved solids were also above background levels. In October 1980, water samples obtained from the West Quarry pond had a pH value of about 12.5. A fish kill occurred in Calmus Creek in September 1986.

The major concerns at the NWSPCC site were contaminated surface water and groundwater resulting from contact with waste CKD in the West Quarry. CKD is composed of a primary cement component, calcium oxide, which reacts with water and releases hydroxide ions into solution. The hydroxide ion concentration directly controls the pH level of an aqueous solution. Local groundwater and surface water have been impacted by high pH levels, and by an increase in total dissolved solids content, as well as elevated levels of potassium, sulfate and sodium. Trace amounts of heavy metals and phenol have also been detected sporadically. Of the contaminants identified, only arsenic is a possible carcinogen. CKD in the West Quarry is a Resource Conservation and Recovery Act (RCRA) hazardous waste. Water at the West Quarry having a pH value greater than 12.5 exceeds the RCRA criterion for corrosivity and is therefore a RCRA hazardous waste.

3.4 Initial Response

In 1984, the University of Iowa Hygienic Laboratory conducted an investigation of Calmus Creek, which empties into the Winnebago River less than one mile east of the site. During this investigation it was determined that surface water contamination of Calmus Creek was directly related to the NWSPCC

site. According to the study, highly alkaline water, contaminated by contact with CKD stored in the West Quarry, had been discharged into Calmus Creek and had caused the creek to become contaminated.

In 1987, the EPA conducted a site inspection. Based upon the results of the site inspection, the NWSPCC site was proposed for the NPL in June 1988 and was added to the final NPL listing in August 1990.

In 1990, the Northwestern States Portland Cement Company completed an RI/FS under the enforcement oversight of the IDNR. In March 1990, the Proposed Plan identifying the preferred remedy was presented to the public, starting the period for public comment.

3.5 Basis for Taking Action

In 1989 the Agency for Toxic Substances and Disease Registry (ATSDR) produced a Preliminary Health Assessment for the NWSPCC site, which concluded that the site was a potential health concern because of the potential risk to human health due to possible exposure to hazardous substances at concentrations that may result in adverse health effects. The ATSDR assessment expressed a concern for potential human exposure to chromium, lead, sodium, sulfate and elevated pH via ingestion of groundwater from on-site and off-site private wells. The assessment also concluded that human exposure to elevated pH may occur and may have occurred in the past via dermal contact, ocular contact and incidental ingestion of on-site soil, sediment, surface water and groundwater and via inhalation of reintrained dust.

An Endangerment Assessment was conducted as a part of the RI. Arsenic was identified as presenting an unacceptable level of carcinogenic risk in the event of consumption of groundwater from the site.

The Endangerment Assessment did not address other significant parameters affecting water quality at the site. These parameters included the concentrations of sodium, potassium, sulfate, as well as the pH and total dissolved solids. All of these parameters have been found at elevated levels in groundwater and surface water at the NWSPCC site.

There was no ecological risk assessment conducted although sampling of surface water and sediment in Calmus Creek took place during investigations at the site.

4.0 Remedial Actions

4.1 Remedy Selection

The ROD for the NWSPPCC site was signed on June 26, 1990. Remedial action objectives (RAOs) were developed based on data collected during the RI to aid in the development and screening of remedial alternatives that were considered for the ROD. The RAOs for the site were:

- Establishing inward hydraulic gradients around and beneath the CKD body, thus preventing off-site migration;
- Minimizing saturation of the waste CKD;
- Recovering, treating and discharging impacted groundwater; and
- Assessing the effectiveness of the remedial actions through long-term groundwater monitoring.

The selected remedy in the ROD includes the following actions:

- Dewatering of the West Quarry, which contained high pH water, followed by treatment and discharge of the treated water into Calmus Creek;
- Construction of a permanent drain system in the dewatered West Quarry to collect precipitation runoff and groundwater inflow to the quarry;
- Placement of an engineered clay cap over the area of the West Quarry filled with CKD to minimize infiltration through the CKD;
- Installation of bedrock dewatering wells to collect contaminated groundwater beneath the West Quarry, preventing migration of contaminated groundwater from the site and maintaining groundwater levels below the CKD;
- Installation of CKD dewatering wells, if necessary, to facilitate CKD dewatering;
- Treatment of contaminated water to meet National Pollution Discharge Elimination System (NPDES) discharge permit limits for discharge to Calmus Creek; and
- Plans for the dewatering system to be operated in perpetuity to maintain isolation of water from the waste CKD and to collect and treat any contaminated water generated from the West Quarry.

4.2 Remedy Implementation

In a CD entered into with the United States on October 10, 1991, Northwestern States Portland Cement Company and Holnam Inc., agreed to perform the RD/RA and pay past costs and response costs associated with the cleanup of the site. The RD was conducted in conformance with the ROD and was approved by the EPA on June 24, 1992.

The major components of the RA, as described in the ROD, commenced in 1989 with dewatering of the West Quarry. Construction of the cap over the quarry, the water treatment system and groundwater extraction system began in June 1992 and were completed in October 1993. The low permeability clay cap was constructed to isolate the West Quarry from surface resaturation. Seven groundwater extraction wells were installed around the West Quarry to lower the water table below the CKD. Two additional groundwater monitoring wells were installed to enhance site monitoring. Figure 2 shows the locations of monitoring wells, extractions wells, sump and the treatment system.

According to the CD, the groundwater removed from the West Quarry shall be treated until such time as samples of the groundwater meet the performance standards for two consecutive quarters. The performance criteria for the groundwater are as follows:

pH	6.5-8.5
Chromium	0.050 milligram per liter (mg/l)
Lead	0.050 mg/l
Cadmium	0.005 mg/l
Nickel	0.200 mg/l

These performance standards are based on the federal Maximum Contaminant Levels (MCLs) for drinking water at the time the ROD was signed. MCLs, which are set forth at 40 CFR Part 141, are the permissible level of a contaminant in water which is delivered to any user of a public water system. Although it is not explicitly stated in the CD, it is unlikely that all of these levels will ever be achieved since the waste was left in place and will serve as a continuous source of contamination to the groundwater.

Operation, monitoring and maintenance of the system by Holcim have been on-going to achieve the RAOs. The extraction wells, which range from 160 to 220 feet deep, are able to produce sustainable production rates between 15 and 35 gallons per minute. The water pumped from the open portion of the West Quarry drainage system and from the groundwater extraction system is treated, as necessary, prior to discharge into Calmus Creek. The performance standards in the CD for the water discharged from the treatment system into Calmus Creek are as follows:

pH	6.0-9.0
Phenols	0.050 mg/l (maximum)
Total suspended solids (TSS)	30 mg/l (average) and 45 mg/l (maximum)

For discharge from the treatment system, the remedy shall achieve, at a minimum, the effluent standards established in the NPDES permit to meet the water quality standard of 750 mg/l of total dissolved solids (TDS). When the NPDES permit for this site was issued by the IDNR it did not include any requirement that had to be attained for phenols.

Although the selected remedy in the ROD did not include implementation of any type of institutional control, the CD required the implementation of a restrictive covenant on the site. The restrictive covenant was recorded with the Recorder of Cerro Gordo County, Iowa, on February 3, 1994, and prohibits the construction, installation, maintenance or use of any wells on the described property for the purpose of extracting water for human drinking purposes or for the irrigation of food or feed crops. The site was listed on the Iowa State Registry of Hazardous Waste or Hazardous Substance Disposal Sites (the Registry) on July 1, 1992, and continues to remain on the Registry. Listing on the Registry means that the site cannot be sold or the use of the site cannot be changed significantly without the written approval of the director of the IDNR.

The site achieved construction completion status when the Preliminary Close-out Report was signed on December 23, 1993. The EPA and the state determined that all RA construction activities were performed according to the specifications. The Final Close-out Report for the site was signed on September 26, 1994, and the site was deleted from the NPL on August 31, 1995.

4.3 Systems Operation and Maintenance

Holcim continues to conduct long-term monitoring, inspection and maintenance activities according to the Operations and Maintenance Manual, dated June 1994 and the Quality Assurance Project Plan, dated June 1992. The primary activities associated with the operation and maintenance (O&M) of the remedy includes the following:

- Operating and maintaining the groundwater extraction system;
- Operating and maintaining the groundwater treatment facility;
- Inspecting, mowing and repairing erosion in the cap and drainage system; and
- Monitoring groundwater and maintaining the monitoring wells.

Table 2 lists the annual O&M costs for the site for the past five years, as provided by Holcim. The estimate for O&M costs in the ROD was approximately \$65,000 per year after the first year of operation. The CD directed that the cost estimate for O&M, which was developed during the FS, be refined and submitted in the final RD. The estimate for O&M in the RD was \$115,500 per year, which is much closer to the actual costs than the amount that was included in the ROD. During the past five years these costs have varied significantly. Since cement manufacturing ceased in 2009, Holcim entered into a service contract with GZA to provide remediation system operation and maintenance and the costs have increased.

Table 2
Annual Operation and Maintenance Costs

Year	Total Costs
2007	\$46,076
2008	51,148
2009	47,353
2010	143,326
2011	138,176

5.0 Progress Since Last Review

The protectiveness statement in the third Five-Year Review Report for the site was as follows: The remedy at the Northwestern States Portland Cement Company site is protective of human health and the environment.

The recommendations made in the third Five-Year Review Report included:

- Groundwater monitoring to be conducted annually consistent with the Statement of Work attached to the CD.
- Metals analysis could be discontinued at HOL-MW3A, HOL-MW10 and HOL-MW13.
- There was no change in the requirement to analyze for phenols at all monitoring wells.

All of these recommendations have been fully implemented.

6.0 Five-Year Review Process

6.1 Administrative Components

The five-year review process was initiated on June 23, 2011, with a meeting of the team of people who would be working on the review. The team working on this five-year review includes the EPA Remedial Project Manager, Diana Engeman, as well as additional EPA technical staff, the community involvement coordinator and legal staff. Representatives of Holcim and their consultant, GZA, provided information necessary to conduct this five-year review.

6.2 Community Involvement

A fact sheet announcing the start of the fourth five-year review was emailed to federal and state congressional offices, mailed to local interested parties and placed on the Region 7 website on December 16, 2011. On February 13, 2012, a public notice announcing the start of the fourth five-year review was published in the *Mason City Globe Gazette*. Local interested parties include city and county officials, local organizations and citizens who have expressed an interest in the site. In general, the community interest in the NWSPCC site has been low. There were no comments or questions provided to the EPA from the public during this five-year review.

Soon after approval of this Fourth Five-Year Review Report, a notice will be placed in the same newspaper announcing that the Report is complete and that it is available to the public at the Mason City Public Library in Mason City, Iowa and the EPA Region 7 office.

6.3 Document Review

This five-year review consisted of a review of relevant documents including Remedial Action Annual Status Reports. See Attachment 1 for a list of documents that were reviewed.

6.4 Data Review and Evaluation

Site Operation and Maintenance

The plan for site O&M is described in the Operations and Maintenance Manual. According to this manual, inspection and maintenance of the numerous parameters related to operation of the extraction system, treatment system, cap and drainage system and groundwater monitoring were scheduled to be performed according to the frequency in Table 3 from that manual, which is attached to this report as Attachment 2. The results of groundwater monitoring and all other inspection and maintenance activities conducted during the year are reported annually in Remedial Action Annual Status Reports and will be discussed more thoroughly in the next section of this report.

For this five-year review, Remedial Action Annual Status Reports, submitted by GZA, on behalf of Holcim, were reviewed for 2007 through 2011. Contained in the Annual Status Reports were summaries of the annual groundwater monitoring results including interpretations of flow conditions at the site; the condition of the cap and maintenance activities associated with the cap and drainage system for the past

year; a summary of the operation of the treatment system and significant maintenance issues for the year and a list and schedule of activities planned for the upcoming year.

During the past five years, two significant events have occurred that had an effect on the site. The first was flooding in June 2008. From June 3 through 8, 2008, the Mason City area received 8.1 inches of rainfall, with 5.1 inches of rain on June 8. This led to significant flooding throughout the area and the loss of electricity, water and waste treatment services throughout the area. The pump in the retention pond became submerged and pumping ceased. A floating pump was installed so that pumping could begin again but not until the area had become inundated with water that encroached upon the West Quarry cap. The water on the cap resulted in stressed vegetation around the West Quarry sump. The heavy rainfall on June 8 resulted in significant sheet flow over the engineered cap. Isolated rills were identified on the western portion of the cap near the high rock wall. These rills penetrated only as deep as the topsoil. The rest of the cap remained in good condition. This demonstrated that the design of the cap worked at intended, preventing further damage. The rills were repaired and there is no longer any evidence of this damage to the cap. The stressed vegetation was reseeded and has recovered.

The second significant event in the past five years was the shutdown of operations at the cement manufacturing facility. Holcim no longer directly maintains and operates the West Quarry systems but has employed their long-time environmental consultant to do this work. GZA has been able to employ the same person who performed this work for Holcim to continue in that capacity. This event has not had any significant impact on the day-to-day operation and maintenance of this site. GZA continues to conduct all of the monitoring and support services as they have in the past.

Throughout the period of time since the third five-year review, the condition of the West Quarry cap and drainage system continued to be very good with routine maintenance and minor repairs, except as previously discussed. The surface drainage system which is composed of ditches, culverts and a retention pond continue to function as designed. The vegetation is well established and is maintained by annual fertilizing, weed control, mowing and bailing. No areas of erosion have been identified during the past five years except as mentioned previously following the heavy rainfall in June 2008. Those areas have been successfully repaired.

Sediment accumulation in the settling pond was believed to have contributed to occasional elevated levels of TSS in the effluent. The settling pond was by-passed from 2002 through 2007. In 2007, a six inch diameter polyvinylchloride by-pass line replaced the original flexible pipe and the settling pond was put back into service. Valves were installed to allow the option of diverting flow either through the settling pond or through the by-pass line. The by-pass line was designed to allow gravity drainage once the system is shut off, thus limiting freezing problems during the winter.

Routine repairs and modifications to the groundwater extraction and treatment systems were made as needed. This included the replacement of pumps and components that had become defective through use. Upgrades have been made to equipment to improve the ease of operation and monitoring. Most recently the acid pump and its controls were replaced.

The NPDES permit for discharge of treated water into Calmus Creek was issued by the IDNR and compliance with the permit is monitored by the IDNR Field Office in Mason City. According to a representative from that office, the most recent inspection was conducted on November 28, 2011. At that time the only significant negative observation that the inspector had was that it appeared that at least one of the pH meters was out of calibration and Holcim was instructed to recalibrate the meters. The previous inspection occurred on August 28, 2008. During the period of time since the last five-year

review, the monthly average for TSS of 30.0 mg/l was exceeded during September 2007 when the average TSS was 31.3 mg/l. On November 6, 2008, TDS was 864 mg/l, exceeding the permit limit of 750 mg/l and TSS was 53.6 mg/l, exceeding the maximum permit limit of 45 mg/l. During the period of November 5 through 6, 2008, nearly two inches of rain fell at the site which likely led to these parameters being outside the permit limits. These parameters were back in compliance when measured on November 8, 2008. On February 18, 2011, TSS was 46 mg/l, exceeding the maximum permit level of 45 mg/l. The permit level for pH was not exceeded. Holcim continues to submit reports as required by the NPDES permit.

The restrictive covenant for the site remains in effect and prohibits the construction, installation, maintenance or use of any wells on the described property for the purpose of extracting water for human drinking purposes or for the irrigation of food or feed crops. The site continues to be listed on the state Registry, which means that the site cannot be sold or the use of the site cannot be changed significantly without the written approval of the director of the IDNR. The covenant, in conjunction with listing on the Registry and the other elements of the remedy prevents anyone from coming into direct contact with waste or contaminated groundwater or consuming contaminated groundwater at the site.

Groundwater Monitoring

Groundwater monitoring has been conducted annually since the third five-year review. Groundwater monitoring is conducted according to the Quality Assurance Project Plan for the RA and the Operations and Maintenance Manual. Figure 2 is a site map showing monitoring well locations. During each round of groundwater sampling, water level measurements were taken in each of the monitoring wells. This information was used to determine the direction of groundwater flow and whether the groundwater extraction system was maintaining an inward gradient. The flow configurations for each sampling event from 2007 through 2011 indicated that inward gradients toward the hydraulic isolation system were being maintained. A map showing representative groundwater flow presented in Figure 2.

Attachment 3 is a table summarizing the groundwater analytical results, by monitoring well, for as far back as September 1992. Results for the field parameters of pH, groundwater temperature and conductivity are listed as well as laboratory analytical concentrations for cadmium, chromium, lead, nickel and phenols. In this table the results are compared against the performance standards that were established in the CD for pH, cadmium, chromium, lead and nickel, which are the contaminants of concern (COCs). Any value exceeding one of these performance standards is shaded on this table.

As was the case during the previous five-year review, the only wells continuing to exhibit elevated pH are HOL-MW1A, HOL-MW1B, HOL-MW2CR and HOL-MW12. During the July 2008 sampling event the pH of all of these wells were 1.0 to 1.2 units lower than they were in 2007 which was likely due to the significant recharge from the excessive rains in June 2008. In 2008 the pH in HOL-MW2CR fell to within the performance standard of 6.5 to 8.5 but was elevated again after that year. HOL-MW1A was expected to exhibit high pH since it is in the CKD in the West Quarry. The other three wells that continue to exhibit high pH are in the bedrock beneath the CKD. Once again, it is to be expected that these wells may exhibit high pH because of their location directly below the waste. However, as long as the groundwater extraction system continues to maintain an inward gradient, as it has, this groundwater will be treated and the migration of contaminated groundwater from the site will be prevented. This aspect of the remedy continues to be protective.

It was recommended in the Third Five-Year Review Report that sampling and analysis of metals could be discontinued at HOL-MW3A, HOL-MW10 and HOL-MW13 and that there would be no change in

the requirement to analyze groundwater samples for phenols. This leaves only HOL-MW3B and HOL-MW6 being sampled for metals after July 2007. Neither of these monitoring wells exceeded the performance standards for metals since the last five-year review. The performance standard for lead of 0.050 mg/l was the MCL at the time the ROD and CD were signed. There is no longer an MCL for lead but there is an action level of 0.015 mg/l at the tap. Comparing the monitoring results to this action level for lead, HOL-MW3B exceeded this level in 2007, 2008 and 2009 and HOL-MW6 exceeded this level in 2009 and 2010. These wells will continue to be monitored for metals for the next five years. Metals analysis will continue to be performed annually at HOL-MW3B and HOL-MW-6.

Neither the ROD nor the CD includes a performance standard for phenols in groundwater but both include a performance standard for phenols in the discharge from the site to Calmus Creek. It appears that it was anticipated that the final NPDES permit for the site would include a maximum allowable level for phenols. However, when IDNR issued the NPDES permit it did not include any requirement for phenols. Since sampling of the monitoring wells began in September 1992, the wells have been sampled for phenols. Holcim has made numerous requests to EPA to be allowed to discontinue sampling for phenols. The most recent was a letter dated February 1, 2012, in which Holcim requested that they be allowed to discontinue sampling all monitoring wells annually for phenols and instead sample the discharge into Calmus Creek annually for phenols. This approach seems to better meet the intent of the ROD and CD. However, without historical data indicating the levels of phenols that might be expected to be discharged annual sampling might be insufficient. In a letter dated May 1, 2012, the EPA allowed Holcim to discontinue annual sampling of the monitoring wells for phenols and instead sample the discharge for phenols once per quarter. After eight quarters of sampling Holcim could request to decrease the sampling frequency if it is demonstrated that the performance standard of 0.050 mg/l for phenols would not be likely to be exceeded.

According to the Statement of Work attached to the CD and the Quality Assurance Project Plan, groundwater monitoring was to be conducted at least quarterly during construction of the RA and for two years following the completion of construction, then semi-annually for three years thereafter. After that time, groundwater monitoring was to be conducted annually. Construction of the RA was considered complete when the Preliminary Close-out Report was signed on December 23, 1993. Therefore, quarterly groundwater monitoring could have concluded after December 23, 1995, and semi-annual groundwater monitoring could have concluded after December 23, 1998. Annual groundwater monitoring could have begun as early as 1999 however, that did not occur until 2002. Since that time, groundwater monitoring has been conducted annually and will continue to be performed annually for the next five years.

6.5 Site Inspection

An inspection of the site was conducted on May 24, 2012. Participating in the inspection were Diana Engeman, the EPA Remedial Project Manager, John Flores, Site Manager, Holcim and Dave Franken, electrician and site operator, Holcim. The purpose of the inspection was to assess the protectiveness of the remedy, including the integrity of the cap and compliance with the restrictive covenant.

The West Quarry cap was found to be in good condition with no evidence of erosion paths from surface water drainage. The surface water drainage system appears to be operating properly. There were no activities observed that would violate any of the limitations imposed by the restrictive covenant. The Site Inspection Report is Attachment 4 to this report.

7.0 Technical Assessment

7.1 Question A: Is the remedy functioning as intended by the decision documents? YES

The remedy selected in the ROD included dewatering of the West Quarry and treatment of the water as well as construction of a drainage system and engineered cap over the West Quarry to collect precipitation and limit infiltration. The CD required that a restrictive covenant be placed on the site to impose limitations on the use of the property. Review of Annual Status Reports for the past five years and the site inspection confirm that the remedy continues to function as intended.

Public access to the site is restricted by fencing. The cap limits the potential for human exposure to site COCs and inhibits infiltration. Maintenance has been performed as necessary and appears to be effective. The dewatering and treatment system maintains an inward hydraulic gradient limiting potential off-site migration of impacted groundwater. Compliance with the NPDES permit for discharge of treated water to Calmus Creek is monitored by the IDNR.

The groundwater level measurements and the groundwater monitoring results indicate that the groundwater extraction system in the West Quarry continues to effectively lower the groundwater level in the CKD, collect contaminated groundwater from beneath the West Quarry and prevent contaminated groundwater from migrating off-site. The treatment system has been effectively treating the groundwater prior to discharge to Calmus Creek. This has been demonstrated by on-going compliance with the NPDES permit. There are sixteen monitoring wells associated with the site. The concentration of the COCs in groundwater were either less than their respective MCL or not detected in the samples. The primary COCs are chromium, lead, cadmium, nickel and phenols. Performance standards have been established for each COC as well as for pH. Metals are currently being analyzed in groundwater samples collected from wells HOL-MW3B and HOL-MW6. Performance standards have not been exceeded for metals during the last five years. The migration of high pH impacted groundwater from the site is restricted by the remedial system induced inward hydraulic gradient. In addition, the downward hydraulic gradient and buffering capacity of the limestone reduce pH values below and at a distance from the quarry. These factors provide plume stability.

Although the restrictive covenant was not an element of the selected remedy in the ROD, it was a requirement in the CD. The use restrictions imposed by the restrictive covenant in conjunction with the site being on the state Registry continues to effectively prevent exposures to wastes or contaminated groundwater. No activities were observed during the site inspection that would violate these restrictions.

7.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of remedy still valid? YES

Changes in Standards and To Be Considered (TBCs)

- *Have there been changes to risk-based cleanup levels or standards identified as applicable or relevant and appropriate requirements (ARARs) in the ROD that call into question the protectiveness of the remedy?* The contaminants of concern at this site (identified as “indicator chemicals” in the Endangerment Assessment) which had established performance standards in the ROD were chromium, lead, cadmium and nickel. A performance standard for pH was also established in the ROD. Arsenic was identified as a contaminant of concern but it was documented in the ROD that with very few detections of arsenic having been found, it was uncertain that elevated levels of arsenic were actually present in groundwater within the CKD.

Therefore, a performance standard for arsenic was not developed. The MCL for arsenic is currently 0.010 mg/l, reduced from 0.050 mg/l at the time of the ROD but no one is drinking this water. The MCL for cadmium remains unchanged at 0.005 milligrams per liter (mg/l). The MCL for chromium changed from 0.050 mg/l at the time of the ROD to 0.100 mg/l prior to completion of the first five-year review and remains unchanged. At the time of the ROD lead had an MCL of 0.050 mg/l. Lead no longer has an MCL but there is an action level of 0.015 mg/l at the tap. The performance standard of 0.200 mg/l for nickel in the ROD was based on an Iowa Groundwater Action Level, as there was no MCL at that time and currently there is not an MCL for nickel. Groundwater pH remains the primary parameter of concern at this site. The secondary MCL for pH remains unchanged at 6.5 to 8.5. These changes do not affect the protectiveness of the remedy since no one is being exposed to contaminated groundwater, nor is untreated groundwater exceeding any permit level being discharged into Calmus Creek.

Groundwater affected by the CKD is contained on site and does not discharge to Calmus Creek thus ecological receptors are not exposed to untreated groundwater from the site. Potential exposure to ecological receptors at the site includes exposure to aquatic life inhabiting Calmus Creek near the treated groundwater discharge point. Although an Ecological Risk Assessment has not been performed at this site, potential aquatic exposures are currently being monitored through the NPDES program, which limits the amount of the TSS and TDS entering the stream, as well as monitors the pH levels. Average discharge from the site has been within the NPDES limits for the TSS, TDS and pH. In addition, phenols will be sampled at the discharge point, in accordance with the ROD and the CD, once per quarter for eight quarters to determine if there is any exposure to phenols at the discharge point. Arsenic that was detected in monitoring wells during the RI was at concentrations well below the ecological screening levels for surface water. Arsenic that was detected in monitoring wells during the RI was at concentrations well below the ecological screening levels for surface water. The existing NPDES limits, as well the additional monitoring of phenols, should be protective of ecological health in Calmus Creek.

- *Are there newly promulgated standards that call into question the protectiveness of the remedy?*
No.
- *Have TBCs used in selecting cleanup levels at the site changed in ways that could affect the protectiveness of the remedy?* TBCs were not used in selecting cleanup levels for this site.

Changes in Exposure Pathways

- *Has land use or expected land use on or near the site changed (e.g., industrial to residential, commercial to residential)?* Land use has not changed at the site. Holcim still classifies the Mason City Plant as “mothballed” meaning they could resume operations at the facility if their business needs warrant. The site manager stated that even if the classification of the facility were to change to shutting down that action would likely take several years to complete and the company continues to be fully cognizant of the obligations they have for this site.
- *Have any human health or ecological routes of exposure or receptors changed or been newly identified (e.g., dermal contact where none previously existed, new populations or species identified on-site or near the site) that could affect the protectiveness of the remedy?* There are no newly identified human or ecological routes of exposure or receptors.

- *Are the COCs of sufficient volatility and toxicity to warrant a vapor intrusion investigation? Due to the lack of volatile organic compounds associated VOCs associated with this site, an evaluation of the potential vapor intrusion pathway is not warranted.*
- *Are there newly identified contaminants or contaminant sources? The available data do not demonstrate new contaminants or contaminant sources.*
- *Are there unanticipated toxic byproducts of the remedy not previously addressed by the decision documents (e.g., byproducts not evaluated at the time of remedy selection)? There are not any unanticipated toxic byproducts known.*
- *Have physical site conditions (e.g., changes in anticipated direction or rate of groundwater flow) or the understanding of these conditions (e.g., changes in anticipated direction or rate of groundwater flow) changed in a way that could affect the protectiveness of the remedy? There are no known changes in physical site conditions that could affect protectiveness of the remedy.*

Changes in Toxicity and Other Contaminant Characteristics

- *Have toxicity factors for contaminants of concern at the site changed in a way that could affect the protectiveness of the remedy? Toxicity values and the nomenclature for the values, for the chemicals of concern summarized in Table II of the ROD have changed since that document was issued. Table 3 provides both past and current toxicity values as well as hazard quotients and excess lifetime cancer risk estimates. Although there would be an unacceptable level of risk if people were consuming the water, no one is currently consuming the contaminated water and the implementation of the current remedy ensures that contaminated water will not migrate off-site to contaminate municipal or private drinking water wells.*

**Table 3
Comparison of Past and Current Toxicity Values**

Chemical Name	CDI (mg/kg-day)	ROD Toxicity Value				Current Toxicity Value			
		RfD _c (mg/kg-day)	PF	ROD HQ	ROD ELC	RfD _o (mg/kg-day)	SF	Current HQ	Current ELC
Arsenic	3.40x10 ⁻⁴	---	15	---	5.10x10 ⁻³	3.00x10 ⁻⁴	1.5	1.13	5.10x10 ⁻⁴
Chromium VI	1.20x10 ⁻³	5.00x10 ⁻³	---	0.24	---	3.00x10 ⁻³	0.5	0.40	6.0x10 ⁻⁴
Nickel	3.40x10 ⁻⁴	1.00x10 ⁻³	---	0.34	---	2.00x10 ⁻²	---	0.02	---
Lead	4.50x10 ⁻³	1.40x10 ⁻³	---	3.21	---	NA	---	---	---

mg/kg - milligram per kilogram

CDI - Chronic Daily Intake

RfD_c - Chronic Reference Dose Concentration

PF - Cancer Potency Factor (mg/kg-day)⁻¹

ELC - Excess Lifetime Cancer Risk

HQ - Hazard Quotient

RfD_o - Oral Reference Dose Concentration

SF - Slope Factor (mg/kg-day)⁻¹

HQ = CDI/RfD

ELC = CDI x PF or SF

NA - Not available

In the 1990 Endangerment Assessment it was stated that “Of the contaminants identified; only arsenic is a possible carcinogen.” Although only total chromium was analyzed for at the site, it should be noted that chromium (VI) is a human carcinogen via the inhalation route.

There are no known changes in ecological toxicity factors for the COCs for this site.

- *Have other contaminant characteristics changed in a way that could affect protectiveness of the remedy?* There are no other known changes to contaminant characteristics that could impact the protectiveness of the remedy.

Changes in Risk Assessment Methods

- *Have standardized risk assessment methodologies changed in a way that could affect the protectiveness of the remedy?* The Endangerment Assessment for the West Quarry, completed in March 1990, was conducted following the Superfund Public Health Evaluation Manual, prior to the EPA’s current standardized risk assessment methodologies (i.e., Risk Assessment Guidance for Superfund documents). Dermal contact with contaminated water while showering and bathing are currently quantified, which was not done in the 1990 Endangerment Assessment, and the EPA has more recent guidance on quantifying exposure for both the dermal and inhalation routes of exposure. Overall, these changes do not have a significant impact on the conclusions of the risk assessment nor do they affect the protectiveness of the remedy.

In 1997, the EPA Draft Ecological Risk Assessment Guidance was published. Although an ecological risk assessment was not performed at this site according to the 1997 guidance, the stream studies have adequately characterized potential ecological risk to Calmus Creek.

Evaluation of Remedial Action Objectives

The RAOs for the site were:

- Establishing inward hydraulic gradients around and beneath the CKD body, thus preventing off-site migration;
- Minimizing saturation of the waste CKD;
- Recovering, treating and discharging impacted groundwater; and
- Assessing the effectiveness of the remedial actions through long-term groundwater monitoring.

The response actions taken address the threats posed by this site and continue to protect human health and the environment through (1) manipulation of the hydraulic gradient so that contaminated water does not migrate off-site to expose people to contaminated municipal or private well water or pollute surface water bodies; (2) capping of the site which has minimized infiltration of water to the underlying contaminated media as well as eliminated human exposure to contaminated soil; (3) recovery and treatment of contaminated water so that no person is exposed to contaminants through the consumption of contaminated groundwater and (4) long-term groundwater monitoring that allows for the analysis of contaminant concentration to assure that these levels remain protective of human health and the environment through comparisons with ARARs (i.e., MCLs). Therefore, the RAOs are effectively being met.

7.3 Question C: Has other information come to light that could call into question the effectiveness of the remedy? NO.

No new targets were identified during this five-year review. The heavy rain event that occurred in 2008 had the potential to adversely affect the landfill cap but other than damage to the topsoil and vegetative cover, the clay cap performed as designed and the damage was repaired. There is no other information that calls into question the protectiveness of the remedy.

7.4 Summary of Technical Assessment

Based upon the data reviewed and the site inspection, the remedy is functioning as intended by the ROD. There have not been any changes to the physical conditions of the site that would affect the protectiveness of the remedy. The cap and drainage system are in good condition and continue to function as intended, as demonstrated during the extreme precipitation event that occurred in 2008. The groundwater extraction and treatment system continue to function as designed and effectively lower the groundwater level and treat contaminated water prior to discharge to Calmus Creek. This is demonstrated through evaluation of water level measurements made in the monitoring wells annually and on-going compliance with the NPDES permit for discharged water. The monitoring wells are in good condition and sampling results demonstrate that the remedy is functioning as intended.

While there have been changes to some MCLs and in some of the toxicity factors since implementation of the ROD, due to the remediation activities, no exposure to contaminated media is occurring. There have been no changes to the standardized risk assessment methodology that adversely affect the protectiveness of the remedy.

Inspections and maintenance of the cap, drainage system and extraction and treatment systems over the past five years ensure that these systems continue to function as designed and that the remedy continues to be protective. These actions should continue to occur in the same manner for the next five years. The restrictive covenant remains in place for the site and must continue to do so. Annual groundwater monitoring should continue to ensure that the remedy is effective and protective. Compliance with the NPDES permit must continue to ensure that contaminants are not being released to Calmus Creek.

8.0 Issues

There were no issues identified during this five-year review.

9.0 Recommendations and Follow-up Actions

There were no recommendations or follow-up actions identified during this five-year review.

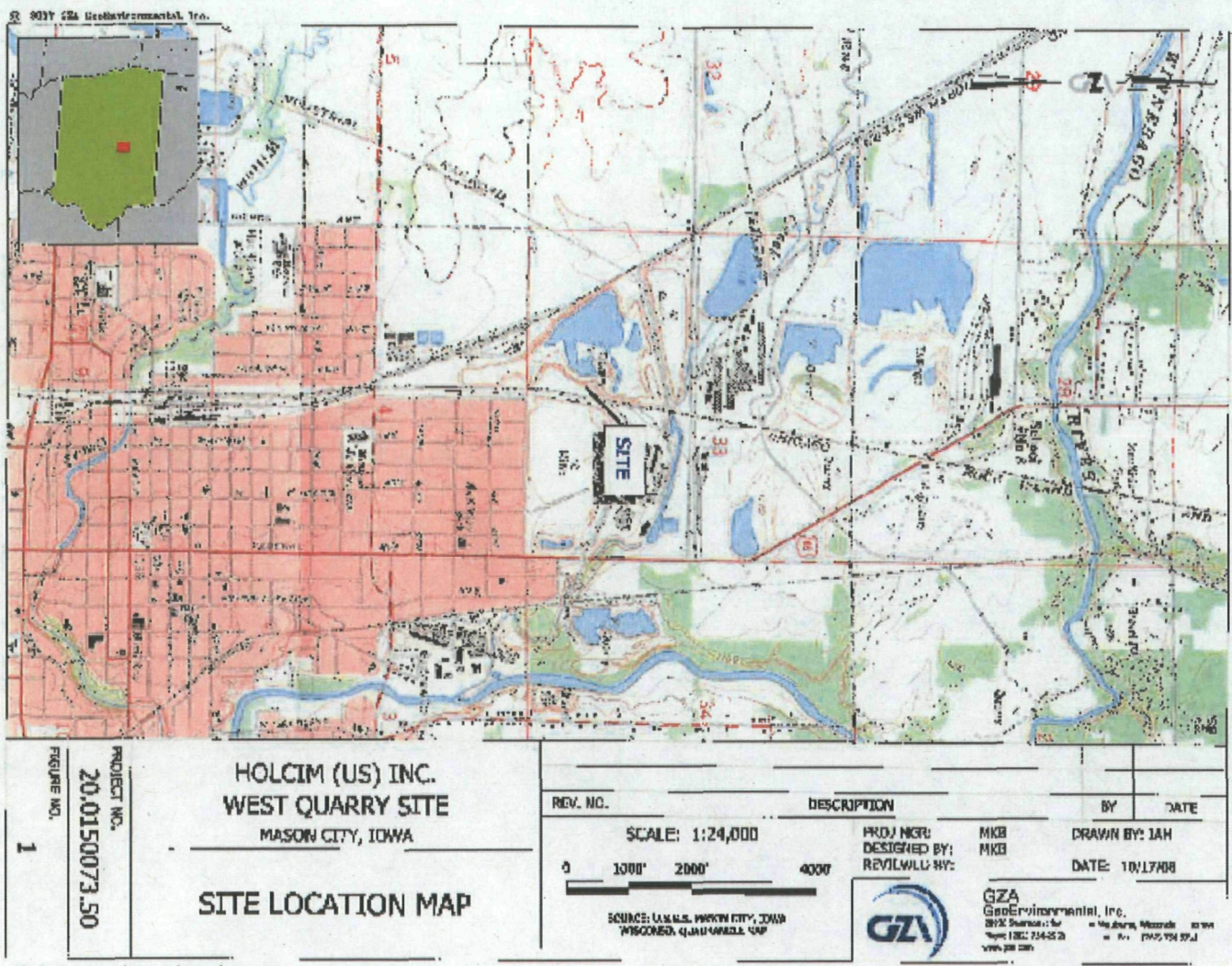
10.0 Protectiveness Statement

The remedy at the Northwestern States Portland Cement Company site is protective of human health and the environment.

11.0 Next Five-Year Review

The next five-year review for the Northwestern States Portland Cement Company site will be required in June 2017.

Figure 1
Site Location Map



GZA GeoEnvironmental, Inc. 2012 Sources: for Map 1:82 714-25-23 www.gza.com

Figure 2 Site Layout



Figure 3 Groundwater Flow Map



Attachment 1

Site Documents Reviewed

Calmus Creek Stream Survey Report, Holnam, Inc., Mason City, Iowa, November 30, 1995.

Consent Decree, United States of America v. Northwestern States Portland Cement Company and Holnam Inc., October 10, 1991.

Five-Year Review, Northwestern States Portland Cement Company (NWSPCC) Site, Mason City, Iowa, June 25, 1997.

Operations and Maintenance Manual for the West Quarry Site Remediation System, Holnam, Inc., Mason City, Iowa, June 1994.

Quality Assurance Project Plan for the Remedial Action at the West Quarry Site, Mason City, Iowa, June 1992.

Record of Decision for Northwestern States Portland Cement Company Site, Mason City, Iowa, June 20, 1990.

Remedial Action Annual Status Report for 2007 Holcim (US) Inc. West Quarry Site, Mason City, Iowa, December 28, 2007.

Remedial Action Annual Status Report for 2008 Holcim (US) Inc. West Quarry Site, Mason City, Iowa, December 5, 2008.

Remedial Action Annual Status Report for 2009 Holcim (US) Inc. West Quarry, Mason City, Iowa, January 4, 2010.

Remedial Action Annual Status Report for 2010 Holcim (US) Inc. West Quarry Site, Mason City, Iowa, December 17, 2010.

Remedial Action Annual Status Report for 2011 Holcim (US) Inc. West Quarry Site, Mason City, Iowa, December 30, 2011.

Remedial Design Plan for the West Quarry Site, Mason City, Iowa, June 1992.

Second Five-Year Review Report, Northwestern States Portland Cement Company, Cerro Gordo County, Iowa, September 16, 2002.

Third Five-Year Review Report, Northwestern States Portland Cement Company, Cerro Gordo County, Iowa, September 12, 2007.

Attachment 2 Inspection and Maintenance Frequency



TABLE 3
Inspection and Maintenance Frequency

Daily	Weekly	Quarterly	Semi Annual	Annual
Discharge flow	Sample collection if creek flow is > 10 cfs	Sample monitoring wells	Inspect and service acid meter pump	Check acidifiers: suspension in sump and sedimentation basin
Discharge pH	Check condition of retention pond pumps and lines	Inspect cap		
Discharge TDS	Check condition of acid tanks and lines	Inspect erosion control structures		
Creek flow				
Creek TDS				
Extraction well flow				
Extraction well levels				
Sump pH				
Sump flow				
Acid flow				
Acid level				
Sample collection if creek flow is < 10 cfs				

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Attachment 3
Groundwater Monitoring Data
(beginning on the following page)

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Holcim (US) Inc. West Quarry
Mason City, Iowa**

WELL NUMBER AND DATE SAMPLED	FIELD PARAMETERS			LABORATORY PARAMETERS					
	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (ug/l)	PHENOLS (mg/l)	
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS	
HOL-MW1A	Sep-92	12.7	13	13,000	<0.001	<0.001	0.002	<0.02	0.073
	Dec-92	12.7	11	15,180	<0.001	<0.001	<0.001	0.03	0.07
	Mar-93	12.7	8	17,640	<0.001	<0.001	<0.001	0.02	0.065
	Jun-93	12.7	14	17,152	<0.001	<0.001	0.005	0.04	0.01
	Sep-93	Insufficient Sample for Field Parameters			0.002	0.011	0.027	0.042	0.16
	Dec-93	Insufficient Water For Sample From Dec-93 to Dec-97							
	Jun-98	>13	11.6	7,980	0.004	0.002	0.009	0.024	0.088
	Dec-98	Dry							
	Jun-99	12.1	12.8	7,510	<.003	<0.001	0.004	0.019	0.11
	Dec-99	Dry							
	Jun-00	Insufficient Sample for Field Parameters			<0.0002	0.0014	0.002	0.022	0.164
	Dec-00	Dry							
	Jun-01	12.8	14.5	6,670	<0.0002	<0.001	0.007	0.02	0.046
	Dec-01	Insufficient Water for Field Parameters or Analytical Samples							
	Jul-02	Dry							
	Jun-03	12.2	14.8	6,500	Metals Analyses No Longer Required per USEPA				
	Jul-04	12.1	12.1	5,000					0.043
	Jul-05	12.5	15.5	4,000					0.076
	Jul-06	12.6	13.3	5,000					0.063
	Jul-07	12.4	12.2	4,020					NS
Re-sample Jan-08				0.049					
Jul-08	11.2	11.1	29,000	0.0528					
Jun-09	12.2	13.9	2,750	0.0969					
Aug-10	12.9	11.9	4,400	0.0636					
Jul-11	13.1	11.3	7,080	0.026					
HOL-MW1B	Sep-92	12.5	14	14,080	<0.001	0.006	0.002	<0.02	0.073
	Dec-92	12.5	11.3	14,796	<0.001	0.042	0.04	0.04	0.04
	Mar-93	12.7	9	18,590	0.003	0.031	0.01	0.02	0.029
	Jun-93	12.9	14	40,320	<0.005	0.004	0.019	0.07	0.09
	Sep-93	11.5	13.02	39,600	0.008	0.022	0.018	<0.02	<0.05
	Dec-93	12.5	10.5	23,630	0.001	0.013	0.039	0.03	<0.05
	Mar-94	12.7	10	11,200	<0.001	0.007	0.02	<0.02	<0.05
	Jun-94	12.5	13.9	20,340	<0.005	<0.01	<0.003	<0.03	0.056
	Sep-94	13.0	15	31,250	0.011	0.028	0.2	0.05	0.121
	Dec-94	13.4	5	5,846	<0.002	0.007	0.036	0.016	0.163
	Apr-95	12.8	7	6,191	<0.002	<0.002	<0.002	<0.02	0.042
	Jun-95	13.2	14	15,360	<0.002	<0.002	0.003	0.023	0.047
	Sep-95	13.4	11	4,400	0.001	<0.001	<0.002	0.006	0.079
	Dec-95	>13	7	27,180	0.006	0.002	<0.002	0.009	0.044
	Jun-96	12.5	15	8,375	0.004	<0.001	<0.005	0.006	0.023
	Dec-96	>13	7.1	46,100	0.007	<0.003	0.011	0.017	0.081
	Aug-97	>13	11.3	76,900	<0.01	<0.015	0.009	<0.055	0.159
	Dec-97	>13	9.4	77,300	<0.001	0.001	<0.005	0.015	0.018

**TABLE 2
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Holcim (US) Inc. West Quarry
Mason City, Iowa**

WELL NUMBER AND DATE SAMPLED	FIELD PARAMETERS			LABORATORY PARAMETERS						
	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)		
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS		
HOL-MW1B (Cont.)	Jun-98	>13	12.9	62,200	<0.001	<0.001	<0.001	0.021	0.088	
	Dec-98	>13	11.5	60,100	0.002	0.005	0.014	0.014	2.0	
	Jun-99	12.7	13.8	48,000	0.003	<.001	0.002	0.015	0.393	
	Dec-99	12.4	7.1	46,600	0.003	0.003	<0.001	0.012	<0.25	
	Jun-00	13.0	13.3	48,500	0.003	<0.001	<0.001	0.032	<0.25	
	Dec-00	>13.0	9.8	34,600	0.0006	<0.001	<0.001	0.005	<0.05	
	Jun-01	13.6	15.1	32,300	0.003	<0.001	<0.001	0.01	0.148	
	Dec-01	12.9	9.5	10,500	0.004	0.004	<0.001	0.063	0.019	
	Jul-02	12.8	15.7	10,000	0.00258	0.0021	<0.001	<0.003	<0.005	
	Jun-03	13.0	12.9	32,000	Metals Analyses No Longer Required per USEPA					0.08
	Jul-04	12.6	12.3	22,000						0.083
	Jul-05	13.1	15.3	18,000						0.072
	Jul-06	13.1	13.8	14,000						0.109
	Jul-07	12.7	12.2	12,060						0.987*
	Re-sample Jan-08									0.050
	Jul-08	11.7	12.4	65,000						0.0963
	Jun-09	12.5	14.4	6,000						0.0901
	Aug-10	12.8	11.9	7,000						0.0566
Jul-11	13.0	12.1	40,300	0.0380						
HOL-MW2B	Sep-92	11.7	16	9,075	<0.001	0.008	0.005	0.026	0.063	
	Dec-92	12.3	11.3	9,727	<0.001	0.009	0.008	0.03	0.01	
	Mar-93	12.4	11	11,040	0.002	0.122	0.003	<0.02	<0.01	
	Jun-93	12.2	15	9,375	<0.001	0.012	0.011	0.07	0.07	
	Sep-93	11.7	11	6,348	0.002	0.032	0.028	<0.02	0.13	
	Dec-93	Insufficient Water For Sample								
	Mar-94	Insufficient Water For Sample								
	Jun-94				<0.005	0.1	0.5	0.03	0.076	
	Sep-94	Insufficient Water For Sample Since Sep-94								
	Jun-99	8.2	13	2,890	0.001	0.008	0.013	0.036	<0.25	
	Dec-99	Insufficient Water For Sample								
	Jun-00	Dry								
	Jun-01	7.8	13.6	1,700	0.0003	0.0015	0.011	0.004	0.009	
	Dec-01	Dry								
	Jul-04	7.5	12.9	1,300	Metals Analyses No Longer Required per USEPA					<0.005
	Jul-05	8.1	15.5	1,600						<0.005
	Jul-06	8.0	14.3	1,700						<0.005
	Jul-07	7.8	12.2	1,474						0.994*
Re-sample Jan-08				<0.005						
Jul-08	7.2	12.9	875	<0.0018						
Jun-09	7.3	13.3	475	<0.018						
Aug-10	7.7	11.7	900	0.002						
Jul-11	8.1	12.3	1,640	<0.005						

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Mason City, Iowa**

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	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)	
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS	
HOL-MW2CR	Mar-94	10.3	7	7,550	0.006	0.031	0.014	<0.02	0.07
	Jun-94	10.4	19	5,424	<0.005	<0.01	0.005	<0.03	0.016
	Sep-94	9.2	14	5,376	0.002	0.065	0.077	0.126	0.013
	Dec-94	10.6	7	6,342	<0.002	0.005	0.013	0.033	0.021
	Apr-95	10.4	11	7,604	<0.002	0.004	0.005	0.028	0.012
	Jun-95	10.4	15	7,500	<0.002	0.004	0.007	0.021	0.009
	Sep-95	10.3	11	8,300	0.003	0.003	0.003	0.015	0.035
	Dec-95	10.4	9	8,580	0.002	0.002	0.004	0.014	0.019
	Jun-96	10.4	15	6,875	<0.002	0.002	<0.005	0.016	0.015
	Dec-96	10.3	9	8,180	<0.002	<0.003	0.01	0.011	0.023
	Aug-97	10.1	12.6	8,281	<0.01	<0.015	0.01	<0.055	0.03
	Dec-97	10.5	10	8,030	<0.001	0.004	<0.005	0.016	0.01
	Jun-98	10.2	14.8	7,540	0.002	0.003	0.012	0.014	0.019
	Dec-98	10.1	14.4	7,550	0.003	0.021	<0.001	0.009	<0.025
	Jun-99	9.8	12.4	7,150	<0.001	0.004	0.002	0.011	<0.025
	Dec-99	10.4	5.7	7,020	<0.0003	0.006	0.001	0.011	<0.025
	Jun-00	9.7	12	2,210	0.005	<0.001	<0.001	0.008	<0.025
	Dec-00	10.7	7.3	5,630	0.00026	<0.001	<0.001	0.008	<0.025
	Jun-01	9.8	13.2	6,210	0.0002	<0.001	<0.001	0.009	0.005
	Dec-01	10.2	12	4,500	0.0003	<0.001	<0.001	0.009	0.049
	Jul-02	10.0	15.7	5,000	0.0004	0.002	<0.001	0.01	<0.005
	Jun-03	9.0	13	4,200	Metals Analyses No Longer Required per USEPA				<0.005
	Jul-04	8.8	11.4	3,500					<0.005
	Jul-05	8.9	15.4	2,600					<0.005
	Jul-06	8.9	13.3	1,900					<0.005
	Jul-07	8.6	11.1	2,622					0.933*
Re-sample	Jan-08								<0.005
	Jul-08	8.4	12.9	1,475					<0.0018
	Jun-09	9.1	12.7	1,300					<0.02
	Aug-10	9.5	11.7	2,500					<0.02
	Jul-11	8.9	11.7	4,960					0.0084
HOL-MW3A	Sep-92	7.3	24	622	<0.001	0.018	0.008	<0.02	0.01
	Dec-92	7.2	9.2	722	<0.001	0.04	0.019	<0.02	<0.01
	Mar-93	7.3	11.5	680	<0.001	0.051	0.016	0.02	<0.01
	Jun-93	7.5	10	532	<0.001	0.048	0.028	0.02	<0.01
	Sep-93	6.8	11	690	0.001	0.01	0.02	<0.02	<0.05
	Dec-93	7.4	12.2	630	0.002	0.246	0.047	<0.02	<0.05
	Mar-94	7.6	8	588	1.26	0.099	0.026	<0.02	<0.05
	Jun-94	7.0	11	693	<0.005	<0.01	<0.003	<0.03	<0.01
	Sep-94	7.2	8	647	<0.002	0.031	0.015	0.037	0.008
	Dec-94	7.2	9	644	<0.002	0.005	0.005	<0.008	0.005
	Apr-95	7.7	12	603	<0.002	0.003	0.002	<0.008	0.008
	Jun-95	7.1	14	640	<0.002	0.021	0.015	0.023	0.006

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Holcim (US) Inc. West Quarry
Mason City, Iowa**

WELL NUMBER AND DATE SAMPLED	FIELD PARAMETERS			LABORATORY PARAMETERS					
	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)	
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS	
HOL-MW3A	Sep-95	7.5	10.5	700	<0.001	0.003	<0.002	0.004	0.055
(Cont.)	Dec-95	7.6	8.5	725	0.007	0.076	0.031	0.064	0.012
	Jun-96	7.2	7	605	0.003	0.042	0.02	0.035	0.014
	Dec-96	7.7	7.2	750	<0.002	0.02	0.012	0.022	0.02
	Aug-97	7.0	9.3	1,110	<0.01	<0.015	0.006	<0.055	0.007
	Dec-97	6.8	8.3	810	<0.001	0.006	0.026	0.065	0.014
	Jun-98	7.4	8.5	900	0.002	0.006	0.009	0.014	0.061
	Dec-98	7.4	8.6	900	0.003	0.013	0.002	0.003	<0.025
	Jun-99	7.8	10	840	<0.001	0.005	0.008	0.017	<0.025
	Dec-99	8.2	8.2	780	0.002	0.033	0.018	0.035	<0.025
	Jun-00	7.3	10	760	0.0004	0.0035	0.007	0.008	<0.025
	Dec-00	6.8	8.5	620	0.00064	0.0045	0.00113	0.005	<0.025
	Jun-01	7.4	11.6	620	<0.0002	0.002	0.002	<0.003	0.006
	Dec-01	6.3	11	500	0.0005	0.018	0.02	0.028	<0.005
	Jul-02	7.6	11.6	500	<0.0002	0.0027	<0.001	0.003	<0.005
	Jun-03	6.7	9	475	<0.0002	0.012	0.00529	0.006	<0.005
	Jul-04	6.4	10.2	420	0.0005	0.0121	0.006	0.0088	<0.005
	Jul-05	7.5	11.2	500	<0.0004	0.0178	0.0124	0.0161	<0.005
	Jul-06	7.4	15	731	0.00036	0.00486	0.00299	0.00893	<0.005
	Jul-07	7.6	10	420	<0.0002	0.00263	0.00337	0.00625	0.724*
Re-sample	Jan-08				Metals Analyses No Longer Required per USEPA				<0.005
	Jul-08	7.2	10.7	270					<0.0018
	Jun-09	7.2	9.3	375					<0.02
	Aug-10	7.6	11.4	600					0.00285
	Jul-11	7.1	9.4	571					0.018
HOL-MW3B	Sep-92	7.2	20	417	<0.001	0.015	0.006	<0.02	0.01
	Dec-92	7.2	6.5	722	<0.001	0.023	0.053	<0.02	<0.01
	Mar-93	7.3	9	1,001	0.003	0.016	0.03	<0.02	<0.01
	Jun-93	6.9	11	1,035	<0.001	0.007	0.02	0.02	<0.01
	Sep-93	6.9	10.5	1,029	<0.001	0.018	0.006	<0.02	<0.01
	Dec-93	7.2	6	1,085	<0.001	0.011	0.023	<0.02	<0.05
	Mar-94	7.5	10	980	0.003	0.022	0.031	<0.02	<0.05
	Jun-94	7.4	12	1,059	<0.005	<0.01	<0.003	<0.03	<0.01
	Sep-94	7.5	10	910	<0.002	<0.002	0.017	<0.008	0.045
	Dec-94	7.1	8	1,029	<0.002	<0.002	0.009	<0.008	0.012
	Apr-95	7.3	11	1,005	<0.002	<0.002	0.031	<0.008	<0.005
	Jun-95	7.1	12	1,005	<0.002	0.003	0.023	<0.008	<0.005
	Sep-95	7.2	10	1,000	<0.001	0.001	0.008	0.002	0.042
	Dec-95	7.5	4	870	0.005	0.003	0.023	0.005	0.008
	Jun-96	7.0	13	860	<0.001	0.001	0.018	0.003	0.015
	Dec-96	7.1	7.8	1,210	<0.002	<0.003	0.005	<0.011	0.035
	Aug-97	6.7	8.17	1,410	<0.01	<0.015	0.015	<0.055	0.015
	Dec-97	6.8	8	1,370	<0.001	0.001	0.024	0.004	0.038

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Holcim (US) Inc. West Quarry
Mason City, Iowa**

WELL NUMBER AND DATE SAMPLED	FIELD PARAMETERS			LABORATORY PARAMETERS					
	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)	
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS	
HOL-MW3B (Cont.)	Jun-98	7.4	9.4	1,360	0.002	0.003	0.059	0.007	0.028
	Dec-98	7.2	9.5	1,470	0.002	0.004	0.056	0.003	<0.025
	Jun-99	7.8	10.5	1,170	<0.001	<0.001	0.012	0.007	<0.025
	Dec-99	8.0	7.7	1,900	<0.00026	0.017	0.00109	0.004	<0.025
	Jun-00	7.1	10.5	1,290	<0.0002	<0.001	0.023	<0.003	<0.025
	Dec-00	6.7	8.1	1,020	0.00021	<0.001	0.0354	0.005	Bottle Broken
	Jun-01	7.5	13	1,080	0.001	<0.001	0.047	0.005	0.006
	Dec-01	6.5	10	800	<0.0002	<0.001	0.0143	0.004	<0.005
	Jul-02	7.3	11.1	800	<0.0002	0.0034	0.031	0.005	<0.005
	Jun-03	6.9	10.2	750	<0.0002	0.0026	0.0298	<0.003	<0.005
	Jul-04	7.0	10	600	<0.0002	0.0024	0.0322	0.0026	<0.005
	Jul-05	7.4	10.3	525	<0.0004	<0.0032	0.0329	0.0029	<0.005
	Jul-06	7.4	12.8	821	<0.0002	<0.0016	0.0228	0.00373	0.032
	Jul-07	7.5	10	560	<0.0002	<0.0016	0.0435	0.00342	0.901*
	Re-sample Jan-08								<0.005
	Jul-08	7.4	11.6	292	<0.00012	0.0019	0.036	<0.006	0.0203
	Jun-09	7.3	10.3	375	<0.00012	0.0012	0.018	<0.00012	<0.02
	Aug-10	7.7	10.2	950	<0.002	<0.005	0.011	<0.002	0.000976
	Jul-11	7.8	10	821	<0.002	0.0016	0.015	0.0015	0.045
HOL-MW4	Sep-92	6.8	26.5	1,800	<0.001	0.012	0.005	<0.02	<0.01
	Dec-92	6.7	9.8	2,284	<0.001	0.023	0.011	0.08	<0.01
	Mar-93	7.1	9	1,430	<0.001	0.007	0.004	<0.02	<0.01
	Jun-93	7.0	13	1,980	0.001	0.017	0.016	0.03	<0.01
	Sep-93	7.0	12	4,221	<0.001	0.018	0.006	<0.02	<0.01
	Dec-93	7.2	9	1,430	<0.001	0.007	0.003	<0.02	<0.05
	Mar-94	7.1	10	1,400	0.001	0.011	0.005	<0.02	<0.05
	Jun-94	Insufficient Sample for Field Parameters			<0.005	<0.01	<0.003	<0.003	<0.01
	Sep-94	6.9	10	1,960	<0.002	<0.002	<0.002	<0.008	<0.005
	Dec-94	6.8	9	1,573	<0.002	<0.002	<0.002	<0.008	0.008
	Apr-95	7.3	11	1,474	<0.002	0.004	<0.002	<0.008	<0.005
	Jun-95	7.3	11	1,104	<0.002	0.005	0.005	<0.008	0.013
	Sep-95	7.4	10	1,550	<0.001	0.003	0.002	0.003	0.031
	Dec-95	7.1	7	1,740	0.008	0.004	0.002	0.002	0.021
	Jun-96	7.1	13.2	1,165	<0.001	0.002	<0.001	0.002	0.029
	Dec-96	7.4	9.5	2,450	<0.002	<0.003	0.003	<0.011	0.016
	Aug-97	6.9	9.1	3,170	<0.01	<0.015	<0.005	<0.055	0.041
	Dec-97	6.7	8.6	3,530	0.002	0.004	0.004	0.004	0.007
	Jun-98	7.1	11.6	3,160	<0.001	0.003	0.002	0.003	0.057
	Dec-98	7.2	12.4	2,700	<0.001	0.003	<0.001	<0.002	<0.025
	Jun-99	7.5	11.4	2,620	<0.001	0.002	0.002	0.005	<0.025
	Dec-99	7.8	6.7	2,400	0.0004	0.004	<0.001	0.003	<0.025
	Jun-00	5.8	10.4	3,150	<0.0002	0.0015	<0.001	<0.003	<0.025
Dec-00	5.7	10.4	3,950	<0.0002	<0.001	0.0013	<0.003	<0.025	

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Holcim (US) Inc. West Quarry
Mason City, Iowa**

WELL NUMBER AND DATE SAMPLED	FIELD PARAMETERS			LABORATORY PARAMETERS									
	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)					
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS					
HOL-MW-4 (Cont.)	Jun-01	6.6	11.1	2,900	<0.0002	0.001	0.002	<0.003	0.005				
	Dec-01	6.7	9	2,600	<0.0002	0.002	0.0024	<0.003	0.099				
	Jul-02	6.9	12.8	3,600	<0.0002	0.003	0.00235	<0.003	<0.005				
	Jun-03	6.9	10.7	3,300	Metals Analyses No Longer Required per USEPA				<0.005				
	Jul-04	6.9	11.6	3,000					<0.005				
	Jul-05	6.9	13.4	1,900					<0.005				
	Jul-06	6.9	11.2	1,653					<0.005				
	Jul-07	7.0	10	1,400					0.582*				
	Re-sample Jan-08								0.006				
	Jul-08	7.0	11.1	1,150					<0.00163				
	Jun-09	7.0	11.1	900					0.0181				
	Aug-10	7.4	11.4	800					0.00266				
Jul-11	7.1	10.9	760	<0.005									
HOL-MW5A	Sep-92	10.5	9	486					Not Enough Sample for Laboratory Analyses				
	Dec-92	10.7	9.5	568					<0.001	0.003	0.004	<0.02	<0.01
	Mar-93	10.4	8	500	0.001	0.002	0.005	<0.02	0.01				
	Jun-93	10.5	12	670	<0.001	0.004	0.002	0.02	0.04				
	Sep-93	9.8	10	639	Not Enough Sample for Laboratory Analyses								
	Dec-93	10.1	10	686	<0.001	<0.001	0.003	<0.02	<0.05				
	Mar-94	10.1	10	630	0.002	0.002	<0.001	0.034	<0.05				
	Jun-94	9.5	12.1	603	<0.005	<0.01	<0.003	<0.03	<0.01				
	Sep-94	9.8	11	552	<0.002	<0.002	<0.002	<0.008	0.165				
	Dec-94	9.1	6	543	<0.002	<0.002	0.002	<0.008	0.011				
	Apr-95	8.9	5.5	550	<0.002	<0.002	<0.002	<0.008	0.01				
	Jun-95	9.0	13	594	<0.002	0.002	0.006	<0.008	0.012				
	Sep-95	9.2	12.5	600	<0.001	0.004	0.007	0.01	0.016				
	Dec-95	8.3	6	700	0.002	0.002	0.003	0.004	0.008				
	Jun-96	8.0	10	595	<0.001	0.001	<0.001	0.003	0.009				
	Dec-96	9.2	9	880	<0.002	<0.003	0.005	<0.011	<0.005				
	Aug-97	7.7	9.3	930	<0.01	<0.015	0.006	<0.055	0.027				
	Dec-97	8.0	9.8	840	<0.005	<0.005	0.001	<0.01	<0.005				
	Jun-98	8.1	10.2	950	0.001	0.002	0.007	0.01	0.049				
	Dec-98	7.8	10	870	<0.001	0.001	0.001	0.003	<0.025				
	Jun-99	8.6	11	900	<0.001	<0.001	0.003	0.01	<0.25				
	Dec-99	8.9	6.1	920	<0.0003	0.002	<0.001	0.003	<0.025				
	Jun-00	7.9	12.6	1,030	<0.0002	<0.001	<0.001	<0.003	<0.025				
	Dec-00	8.4	11.2	880	0.00049	<0.001	0.00477	0.008	<0.025				
	Jun-01	7.4	15.9	830	<0.0002	<0.001	0.003	0.003	<0.005				
	Dec-01	7.3	10	470	<0.0002	0.0011	0.0017	<0.003	0.009				
	Jul-02	8.0	13.9	650	<0.0002	0.0019	<0.001	<0.003	<0.005				

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Holcim (US) Inc. West Quarry
Mason City, Iowa**

WELL NUMBER AND DATE SAMPLED		FIELD PARAMETERS			LABORATORY PARAMETERS					
		pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)	
PERFORMANCE STANDARDS		6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS	
HOL-MW5A (Cont.)	Jun-03	7.5	13.5	575	Metals Analyses No Longer Required per USEPA					<0.005
	Jul-04	8.1	13.3	600						<0.005
	Jul-05	8.0	13.9	500						<0.005
	Jul-06	7.5	12.7	932						<0.005
	Jul-07	8.1	12.2	536						1.01*
	Re-sample Jan-08									<0.005
	Jul-08	7.1	12	220						<0.0018
	Jun-09	7.7	13.5	500						<0.02
	Aug-10	7.8	12.1	750						0.00283
	Jul-11	8.3	10.6	635						<0.0038
	HOL-MW5B	Sep-92	11.3	9						602
Dec-92		10.5	9.4	551	<0.001	0.001	0.002	<0.01	<0.01	
Mar-93		8.3	1	644	0.002	0.001	<0.001	<0.02	<0.01	
Jun-93		9.6	12	670	<0.001	0.004	0.002	0.04	0.03	
Sep-93		8.5	10.1	714	0.002	0.008	0.003	<0.02	<0.05	
Dec-93		9.7	11	662	0.001	<0.001	<0.001	<0.02	<0.05	
Mar-94		7.6	9	715	<0.001	0.002	<0.001	<0.02	<0.05	
Jun-94		7.7	14	717	<0.005	<0.01	<0.003	<0.03	<0.01	
Sep-94		8.5	12	536	<0.002	<0.002	<0.002	<0.008	0.006	
Dec-94		8.1	8	588	<0.002	<0.002	<0.002	<0.008	0.006	
Apr-95		8.3	5	711	0.002	<0.002	<0.002	<0.008	0.007	
Jun-95		8.2	12.5	765	<0.002	0.002	0.005	<0.008	0.007	
Sep-95		7.6	13	660	<0.001	0.012	0.014	0.013	0.02	
Dec-95		6.4	3.5	790	0.004	0.013	0.01	0.013	0.008	
Jun-96		7.6	16.5	605	<0.001	<0.001	<0.001	0.001	0.014	
Dec-96		8.5	9	770	<0.002	0.007	0.01	0.015	0.017	
Aug-97		7.0	11.8	1,060	<0.01	<0.015	0.013	<0.055	0.03	
Dec-97		8.6	9.1	950	<0.005	<0.005	<0.001	<0.01	0.008	
Jun-98		8.2	9.8	970	0.003	0.002	0.007	0.01	0.014	
Dec-98		7.6	9.2	1,270	<0.001	<0.001	<0.001	0.003	<0.025	
Jun-99		8.6	11	870	<0.001	<0.001	<0.001	0.005	<0.025	
Dec-99		8.9	5	800	<0.003	<0.001	<0.001	<0.003	<0.025	
Jun-00		8.1	12.6	890	<0.0002	<0.001	<0.001	<0.003	<0.025	
Dec-00		8.2	10	680	<0.0002	<0.001	<0.001	<0.003	<0.025	
Jun-01		7.2	14.3	780	<0.0002	<0.001	0.002	0.004	<0.005	
Dec-01		7.4	9	700	<0.0002	<0.001	<0.001	<0.003	0.012	
Jul-02		8.0	12.1	600	<0.0002	0.0017	<0.001	<0.003	<0.005	
Jun-03		7.6	12.3	550	Metals Analyses No Longer Required per USEPA					0.005
Jul-04		7.8	13	600						<0.005
Jul-05		7.7	14.8	525						<0.005
Jul-06		7.6	17.7	924						0.008
Jul-07	8.0	11.6	612	0.901*						
Re-sample Jan-08				<0.005						

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Holcim (US) Inc. West Quarry
Mason City, Iowa**

WELL NUMBER AND DATE SAMPLED	FIELD PARAMETERS			LABORATORY PARAMETERS					
	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)	
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS	
HOL-MW5B (Cont.)	Jul-08	7.0	12	218	Metals Analyses No Longer Required per USEPA				<0.0018
	Jun-09	7.6	14.2	500					<0.018
	Aug-10	7.6	10.8	800					0.00251
	Jul-11	7.7	10.8	773					<0.0038
HOL-MW6	Sep-92	6.9	14	1,050	<0.001	0.09	0.028	<0.02	0.013
	Dec-92	7.0	7	1,057	<0.001	0.04	0.022	0.04	0.04
	Mar-93	7.1	3.5	880	<0.001	0.028	0.008	<0.02	0.01
	Jun-93	7.1	13	924	<0.001	0.042	0.023	0.01	0.01
	Sep-93	6.9	17.2	814	0.001	0.027	0.019	<0.02	<0.05
	Dec-93	7.4	7	830	0.001	0.028	0.016	<0.02	<0.05
	Mar-94	7.0	5.5	1,177	0.002	0.092	0.039	<0.02	<0.05
	Jun-94	7.2	16	1,452	<0.005	0.017	0.014	<0.03	<0.01
	Sep-94	7.4	15.5	800	<0.002	0.01	0.026	<0.008	0.007
	Dec-94	6.9	7.5	1,714	<0.002	<0.002	0.007	<0.008	0.016
	Apr-95	7.6	7	1,812	<0.002	0.034	0.035	0.028	0.028
	Jun-95	7.1	19	650	<0.002	0.013	0.023	0.011	0.011
	Sep-95	6.9	16	1,210	<0.001	0.019	0.016	0.011	0.012
	Dec-95	7.1	6	1,860	0.002	0.008	0.007	0.008	0.012
	Jun-96	7.0	18	920	0.002	0.027	0.023	0.011	0.008
	Dec-96	7.1	6.8	1,660	<0.002	0.012	0.014	<0.011	0.02
	Aug-97	6.7	17	1,320	<0.01	<0.015	<0.005	<0.055	0.019
	Dec-97	8.6		1,850	<0.005	0.025	0.014	0.013	0.009
	Jun-98	7.1	14.7	1,690	0.006	0.04	0.045	0.02	0.013
	Dec-98	7.2	13.8	1,850	<0.001	0.016	0.023	0.011	<0.025
	Jun-99	7.3	14.3	1,170	<0.001	0.014	0.023	0.015	<0.025
	Dec-99	7.4	6.5	1,080	<0.0003	0.001	<0.001	0.009	<0.025
	Jun-00	7.1	13.9	1,260	0.0012	0.0052	0.0107	0.007	<0.025
	Dec-00	7.0	9.4	1,000	<0.0002	0.0012	0.00416	0.004	<0.025
	Jun-01	6.9	15.5	1,000	<0.0002	0.003	0.006	0.007	0.007
	Dec-01	7.6	10	900	0.0002	0.0087	0.0047	0.007	0.009
	Jul-02	7.3	16.5	600	0.00033	0.015	0.0115	0.011	<0.005
	Jun-03	6.9	11.4	1,000	0.000227	0.0095	0.0112	0.01	<0.005
	Jul-04	6.9	15.6	800	0.0005	0.0162	0.0212	0.013	<0.005
	Jul-05	7.2	16.2	550	<0.004	0.0125	0.0146	0.0098	0.012
	Jul-06	7.6	14.7	550	<0.0002	<0.0016	0.00097	0.00264	<0.005
	Jul-07	7.4	15	500	<0.0002	0.00459	0.0082	0.00487	0.794*
Re-sample	Jan-08	-	-	-	-	-	-	-	<0.005
	Jul-08	7.3	16.9	215	0.00018	0.01	0.0075	<0.006	<0.0018
	Jun-09	7.2	15.6	480	0.00045	0.03	0.031	0.007	0.0201
	DUP	-	-	-	0.00036	0.025	0.030	0.0062	0.03

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Holcim (US) Inc. West Quarry
Mason City, Iowa**

WELL NUMBER AND DATE SAMPLED	FIELD PARAMETERS			LABORATORY PARAMETERS					
	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)	
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS	
HOL-MW6 (Cont.)	Aug-10	7.6	17.8	700	<0.002	0.027	0.02	0.011	0.000933
	DUP	7.6	17.8	700	<0.002	0.027	0.02	0.011	0.045
	Jul-11	7.3	14.5	594	0.0002	0.0095	0.0072	0.0086	<0.005
	DUP	7.3	14.5	594	0.00025	0.016	0.0081	0.0095	<0.005
HOL-MW8	Sep-92	7.1	10.5	1,529	<0.001	0.013	0.011	<0.02	0.013
	Dec-92	6.7	7	1,888	<0.001	0.033	0.008	0.02	0.04
	DUP				<0.001	0.032	0.013	<0.02	0.02
	Mar-93	6.7	8.5	1,595	<0.001	0.014	0.008	<0.02	<0.01
	DUP				0.001	<0.001	0.005	<0.02	<0.01
	Jun-93	6.9	11	2,208	<0.001	0.031	0.007	<0.02	0.02
	DUP				<0.001	0.022	0.005	<0.02	<0.01
	Sep-93	6.7	11.5	1,156	<0.001	0.031	0.003	<0.02	<0.05
	DUP				0.001	0.134	0.019	<0.02	<0.05
	Dec-93	7.1	11	2,070	0.004	0.261	0.045	<0.02	<0.05
	DUP				0.003	0.207	0.041	<0.02	<0.05
	Mar-94	6.8	9	2,145	0.006	0.146	0.018	<0.02	<0.05
	DUP				0.003	0.134	0.019	<0.02	<0.05
	Jun-94	7.9	10	1,610	<0.005	<0.01	<0.003	<0.03	<0.01
	DUP				<0.005	<0.01	<0.003	<0.03	<0.01
	Sep-94	7.1	11	1,932	<0.002	0.015	<0.003	0.023	0.01
	DUP				<0.002	<0.002	<0.002	0.013	0.009
	Dec-94	7.0	9	1,931	<0.002	<0.002	<0.002	0.008	0.013
	DUP				<0.002	<0.002	0.003	0.016	0.006
	Apr-95	7.0	9	2,360	<0.002	0.004	0.003	0.016	0.036
	DUP				<0.002	0.004	0.003	0.016	0.085
	Jun-95	7.1	13	2,244	<0.002	0.006	0.009	0.021	0.011
	DUP				<0.002	0.006	0.01	0.021	0.011
	Sep-95	6.8	11	1,950	<0.001	0.003	0.005	0.014	0.016
	DUP				<0.001	0.002	0.004	0.011	0.013
	Dec-95	7.2	8	2,200	0.002	0.025	0.02	0.028	0.01
	DUP				0.003	0.011	0.01	0.018	0.011
	Jun-96	6.8	6.5	2,140	<0.001	0.003	0.004	0.015	0.009
	DUP				<0.001	0.003	0.004	0.016	0.016
	Dec-96	6.9	9.2	2,600	<0.002	<0.003	0.004	<0.011	0.015
	DUP				<0.002	0.003	0.003	0.014	0.008
	Aug-97	6.8	10.6	2,730	<0.01	<0.015	0.009	<0.055	0.019
	DUP				<0.01	<0.015	<0.005	<0.055	0.011
	Dec-97	7.4	9.2	2,310	<0.005	<0.005	0.004	0.014	0.009
	DUP				No duplicate sample collected				
	Jun-98	7.2	10.7	1,970	0.001	0.002	0.001	0.008	0.006
	DUP				0.001	<0.001	<0.001	0.009	0.013
	Dec-98	7.2	10.2	2,490	<0.001	0.001	0.003	0.014	<0.025

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Holcim (US) Inc. West Quarry
Mason City, Iowa**

WELL NUMBER AND DATE SAMPLED	FIELD PARAMETERS			LABORATORY PARAMETERS									
	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)					
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS					
HOL-MW8 (Cont.)	DUP			<0.001	0.002	0.002	0.012	<0.025					
	Jun-99	7.4	10	1,490	<0.001	<0.001	<0.001	0.010	<0.025				
	DUP			<0.001	<0.001	<0.001	0.010	<0.025					
	Dec-99	7.7	7	1,490	<0.00026	0.0018	0.00259	0.009	<0.025				
	DUP			<0.0003	0.0030	0.00200	0.008	<0.025					
	Jun-00	8.5	11.2	930	0.00090	<0.001	0.00163	0.013	<0.025				
	DUP			0.0015	0.0013	0.0032	0.018	<0.025					
	Dec-00	7.0	10.7	1,300	<0.00027	<0.001	0.00181	0.006	<0.025				
	DUP			0.0004	<0.001	0.00277	0.007	<0.025					
	Jun-01	7.2	12.5	1,120	0.0007	<0.001	0.005	0.014	0.005				
	DUP			0.0008	<0.001	0.005	0.018	0.01					
	Dec-01	6.4	11	1,000	<0.0002	0.001	0.0018	0.004	0.007				
	DUP			<0.0002	0.0012	0.0026	0.005	0.043					
	Jul-02	6.9	11.5	950	0.00022	0.0050	0.0038	0.0090	<0.005				
	DUP			0.00022	0.0071	0.0039	0.0190	<0.005					
	Jun-03	6.8	11	1,000	Metals Analyses No Longer Required per USEPA				<0.005				
	DUP			0.0620									
	Jul-04	6.6	11.4	900					<0.005				
	Jul-05	6.9	12.8	800					0.0100				
	Jul-06	7.02	11.6	775					<0.005				
	Jul-07	7	10.5	695					1.16*				
	Re-sample Jan-08			<0.005									
	Jul-08	6.7	11.9	510					<0.0018				
	Jun-09	6.9	11.8	500					0.0283				
	Aug-10	7.4	12.3	850					0.0216				
	Jul-11	6.67	9.8	910					<0.005				
HOL-MW9	Sep-92	7.1	10	1,428					<0.001	0.009	0.004	<0.02	0.013
	Dec-92	7.0	10.3	1,376					<0.001	0.018	0.012	<0.02	0.03
	Mar-93	7.7	8.5	1,595					0.001	0.022	0.02	<0.02	<0.01
	Jun-93	7.3	14	1,536					<0.001	0.005	0.005	0.03	0.02
	Sep-93	7.0	13	1,650	<0.001	0.01	0.004	0.026	<0.05				
	Dec-93	7.4	9.5	1,704	0.001	0.013	0.007	<0.02	<0.05				
	Mar-94	7.4	11	1,656	0.002	0.014	0.005	<0.02	<0.05				
	Jun-94	7.5	14	1,677	<0.005	<0.01	<0.003	<0.03	<0.01				
	Sep-94	7.2	11.5	1,496	<0.002	0.011	<0.002	0.011	0.006				
	Dec-94	7.4	10	1,540	<0.002	<0.002	0.002	<0.008	0.005				
	Apr-95	7.2	7.5	1,639	<0.002	0.002	<0.002	<0.008	0.033				
	Jun-95	7.3	13	1,782	<0.002	0.004	0.007	0.009	0.013				
	Sep-95	7.3	11	1,800	<0.001	0.005	0.005	0.01	0.113				
	Dec-95	7.4	7.5	1,350	0.002	0.002	<0.002	0.006	0.011				
	Jun-96	7.2	12	1,755	<0.001	0.005	0.004	0.016	0.02				
	Dec-96	7.1	8	1,930	<0.002	<0.003	<0.001	<0.011	0.019				
	Aug-97	7.2	11.7	2,320	<0.01	<0.015	<0.005	<0.055	0.008				

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Holcim (US) Inc. West Quarry
Mason City, Iowa**

WELL NUMBER AND DATE SAMPLED	FIELD PARAMETERS			LABORATORY PARAMETERS					
	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)	
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS	
HOL-MW9 (Cont.)	Dec-97	7.6	8.9	2,110	<0.005	<0.005	<0.001	<0.01	0.009
	Jun-98	7.6	13.1	2,220	<0.001	0.001	0.003	0.005	0.011
	Dec-98	7.7	12.1	2,570	<0.001	<0.001	0.001	<0.001	<0.025
	Jun-99	7.5	11.8	1,960	<0.001	<0.001	<0.001	0.008	<0.025
	Dec-99	8.0	7.1	2,210	0.00035	0.0013	0.001222	0.005	<0.025
	Jun-00	5.2	11.3	1,640	0.0004	<0.001	<0.001	0.004	0.0517
	Dec-00	7.6	9.3	1,620	<0.0002	<0.001	<0.001	<0.003	<0.025
	Jun-01	8.2	12.6	1,780	<0.0002	<0.001	0.002	0.004	<0.005
	Dec-01	7.6	10	1,350	<0.0002	<0.001	<0.001	<0.003	0.011
	Jul-02	7.3	11.8	1,250	<0.0002	0.0030	0.00214	0.0080	<0.005
	Jun-03	7.1	11.3	1,175	Metals Analyses No Longer Required per USEPA				<0.005
	Jul-04	7.3	12.9	1,100					<0.005
	Jul-05	7.6	11	1,000					<0.005
	Jul-06	7.6	11.9	900					<0.005
	Jul-07	7.5	11.6	952					0.826*
	Re-sample Jan-08								<0.005
	Jul-08	7.5	12.7	820					<0.0018
	Jun-09	7.8	11.5	600					0.0712
Aug-10	7.7	10.4	1,300	<0.018					
Jul-11	7.0	10.2	2,700	<0.005					
HOL-MW10	Sep-92	7.3	13	1,980	<0.001	0.009	0.005	<0.02	<0.01
	Dec-92	6.9	8.6	1,958	<0.001	0.099	0.047	0.06	0.03
	Mar-93	7.4	6	1,550	0.003	0.036	0.03	<0.02	<0.01
	Jun-93	7.1	13	1,320	<0.001	0.026	0.028	0.03	0.01
	Sep-93	7.1	13.8	1,316	0.001	0.048	0.036	<0.02	<0.05
	Dec-93	7.3	9	1,430	0.002	0.05	0.031	<0.02	<0.05
	Mar-94	7.3	7.5	1,490	0.004	0.033	0.019	0.026	<0.05
	Jun-94	1.1	8	1,838	<0.005	<0.01	0.003	<0.03	<0.01
	Sep-94	7.2	13	1,518	<0.002	<0.002	0.009	0.015	<0.005
	Dec-94	6.9	9	1,573	<0.002	0.009	0.024	0.028	0.02
	Apr-95	7.1	4	1,120	<0.002	0.002	0.011	0.022	<0.005
	Jun-95	7.2	12	1,474	<0.002	0.01	0.025	0.029	0.007
	Sep-95	6.6	13.5	1,700	0.002	0.007	0.01	0.02	<0.01
	Dec-95	7.2	8	1,550	0.003	0.017	0.019	0.031	0.01
	Jun-96	7.4	17.3	1,065	0.001	0.014	0.025	0.041	0.009
	Dec-96	7.2	8	1,470	<0.002	0.027	0.017	0.035	0.018
	Aug-97	7.1	14.4	1,910	<0.01	<0.015	<0.005	<0.055	0.043
	Dec-97	7.1	8.9	1,530	<0.005	0.009	0.033	0.056	<0.005
	Jun-98	7.4	11.3	1,610	0.004	0.009	0.019	0.061	0.014
	Dec-98	7.3	12.4	1,500	0.007	<0.001	0.003	0.023	<0.025
	Jun-99	7.6	13.1	1,350	0.001	0.001	0.003	0.031	<0.025
	Dec-99	Well Damaged, Could Not Be Sampled							
	Jun-00	Well Damaged, Could Not Be Sampled							

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Holcim (US) Inc. West Quarry
Mason City, Iowa**

WELL NUMBER AND DATE SAMPLED	FIELD PARAMETERS			LABORATORY PARAMETERS					
	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)	
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS	
HOL-MW10 (Cont.)	Dec-01	7.3	8.0	1,100	0.0003	0.0018	0.0029	0.021	<0.005
	Jul-02	7.2	13.9	1,000	0.000353	0.0031	0.00664	0.031	<0.005
	Jun-03	7.0	10.6	825	0.000245	0.0045	0.00534	0.02	<0.005
	Jul-04	7.1	13.3	800	0.0003	0.0028	0.0039	0.0143	<0.005
	Jul-05	7.3	13.8	750	<0.0004	<0.0032	0.0032	0.0203	<0.005
	Jul-06	7.4	14.4	850	<0.0002	<0.0016	0.00225	0.0141	<0.005
	Jul-07	7.5	12.7	1,396	<0.0002	<0.0016	0.00204	0.0142	0.470*
	Re-sample Jan-08				Metals Analyses No Longer Required per USEPA				<0.005
	Jul-08	6.9	13.8	500					<0.0018
	Jun-09	7.37	14.2	550					<0.02
	Aug-10	7.50	13.7	1,100					<0.018
	Jul-11	7.52	10.6	860					<0.005
HOL-MW11A	Sep-92	7.1	11	1,035	<0.001	0.018	0.006	<0.02	0.013
	Dec-92	7.0	8	1,176	<0.001	0.011	0.005	<0.02	0.04
	Mar-93	7.0	5	1,106	0.003	0.018	0.009	<0.02	<0.01
	Jun-93	7.5	11	897	<0.001	0.033	0.012	0.05	<0.01
	Sep-93	6.9	12.5	1,064	<0.001	0.016	0.002	<0.02	<0.05
	Dec-93	7.5	8.5	1,233	0.001	0.033	0.016	<0.02	<0.05
	Mar-94	7.2	8.5	1,051	<0.001	0.011	<0.001	0.033	<0.05
	Jun-94	Well Casing Bent, Could Not Sample							
	Sep-94	7.2	12	600	<0.002	0.02	<0.002	0.01	<0.005
	Dec-94	7.3	8.5	1,160	<0.002	0.011	0.019	0.026	<0.005
	Apr-95	7.3	4	825	<0.002	0.01	0.002	<0.008	<0.005
	Jun-95	7.8	12	670	<0.002	0.043	0.007	0.012	0.007
	Sep-95	6.8	12	950	0.005	0.019	<0.002	0.002	0.013
	Dec-95	7.2	7	1,280	0.005	0.007	<0.002	0.003	0.01
	Jun-96	7.4	14	590	<0.001	0.041	0.002	0.004	0.011
	Dec-96	7.2	9	1,110	0.002	0.021	0.009	0.012	0.008
	Aug-97	6.9	9.8	1,750	<0.01	0.019	0.012	<0.055	0.025
	Dec-97	6.3	9.1	1,590	<0.005	0.014	0.002	<0.01	<0.005
	Jun-98	7.6	12.5	1,500	<0.001	0.03	0.002	0.008	0.012
	Dec-98	8.3	11.4	2,000	<0.001	0.011	<0.001	0.003	<0.025
	Jun-99	6.7	11.3	1,020	<0.001	0.008	0.002	0.008	<0.025
	Dec-99	6.6	6.6	1,190	<0.0003	0.008	0.003	0.005	<0.025
	Jun-00	7.7	12.8	520	<0.0002	0.0085	0.004	0.004	<0.025
	Dec-00	7.5	10.3	1,070	<0.0002	0.0091	0.00186	0.004	<0.025
Jun-01	7.1	13.5	970	0.0004	0.009	0.012	0.005	<0.005	
Dec-01	7.5	18	800	<0.0002	0.0074	0.0017	<0.003	<0.005	
Jul-02	7.1	14.6	950	<0.0002	0.011	0.00341	0.004	<0.005	

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Holcim (US) Inc. West Quarry
Mason City, Iowa**

WELL NUMBER AND DATE SAMPLED	FIELD PARAMETERS			LABORATORY PARAMETERS					
	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)	
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS	
HOL-MW11A (Cont.)	Jun-03	7.0	9.4	750	Metals Analyses No Longer Required per USEPA				<0.005
	Jul-04	7.1	12.2	700					<0.005
	Jul-05	7.4	12.7	500					<0.005
	Jul-06	7.5	13.4	1,006					<0.005
	Jul-07	7.5	12.2	536					0.724*
Re-sample	Jan-08								<0.005
	Jul-08	7.5	12.2	200					<0.0018
	Jun-09	7.6	11.9	300					<0.02
	Aug-10	7.9	14	500					0.000912
	Jul-11	7.8	10.8	846					<0.005
HOL-MW11B	Sep-92	7.1	9.8	705	<0.001	0.004	0.02	<0.02	0.025
	Dec-92	7.0	7.3	600	<0.001	0.002	0.006	0.02	0.04
	Mar-93	6.8	8.5	725	0.005	0.002	0.011	<0.02	<0.01
	Jun-93	7.1	13	726	0.002	0.004	0.008	0.03	0.01
	Sep-93	6.9	10.9	690	0.001	0.003	0.004	<0.02	<0.05
	Dec-93	7.4	9	686	0.005	0.111	0.04	<0.02	<0.05
	Mar-94	7.1	9	622	0.005	0.022	0.013	<0.02	<0.05
	Jun-94	7.3	14	621	<0.005	0.018	<0.003	<0.03	<0.01
	Sep-94	7.2	10	532	<0.002	<0.002	0.003	<0.008	0.006
	Dec-94	7.1	6	620	<0.002	0.004	0.004	0.012	0.007
	Apr-95	7.4	8	662	<0.002	<0.002	<0.002	<0.008	<0.005
	Jun-95	7.1	13	660	0.003	0.005	0.009	0.01	0.014
	Sep-95	6.4	10	700	0.002	0.005	0.006	0.005	0.119
	Dec-95	7.4	8	590	0.002	0.005	0.003	0.005	0.009
	Jun-96	7.2	14.8	460	<0.001	0.003	0.005	0.005	0.014
	Dec-96	7.2	9	600	<0.002	0.009	0.005	0.012	0.015
	Aug-97	Well Damaged, Could Not Sample							
	Dec-97	Well Damaged, Could Not Sample							
	Sep-02	Well Abandoned							
HOL-MW12	Jun-93	12.9	17	5,664	0.001	0.284	0.454	0.04	0.08
	Sep-93	13.1	11.6	39,440	<0.001	0.012	0.006	0.021	0.07
	Dec-93	13.1	9	35,750	0.001	0.011	0.009	<0.02	0.07
	Mar-94	13.3	9	22,880	0.006	0.013	0.004	0.032	<0.05
	Jun-94	13.9	14.5	33,390	<0.005	<0.01	<0.003	<0.03	<0.01
	Sep-94	12.3	15	32,500	<0.002	<0.002	0.04	0.028	0.404
	Dec-94	13.9	9	31,460	<0.002	<0.002	0.02	0.029	0.178
	Apr-95	13.4	10	29,400	<0.002	0.002	<0.002	0.027	0.027
	Jun-95	13.9	16	43,560	<0.002	<0.002	0.004	0.028	0.201
	Sep-95	13.5	10.5	44,000	0.002	0.001	0.003	0.026	0.31
	Dec-95	>13	6.5	27,500	<0.002	0.007	0.008	0.029	0.073
	Jun-96	>13	15	36,900	<0.001	<0.001	<0.005	0.022	0.087
	Dec-96	>13	8.2	48,200	<0.002	<0.003	<0.004	0.028	0.018
	Aug-97	>13	12	46,300	<0.01	<0.015	<0.005	<0.055	0.149

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Holcim (US) Inc. West Quarry
Mason City, Iowa**

WELL NUMBER AND DATE SAMPLED	FIELD PARAMETERS			LABORATORY PARAMETERS					
	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)	
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS	
HOL-MW12 (Cont.)	Dec-97	>13	8.9	43,600	<0.005	<0.005	<0.001	<0.01	0.027
	Jun-98	>13	13.8	53,300	<0.001	<0.001	<0.001	0.022	0.066
	Dec-98	7.2	10.5	53,700	<0.001	0.002	0.006	0.034	0.2
	Jun-99	13.4	12	47,000	<0.001	<0.001	<0.001	0.022	0.379
	Dec-99	12.2	7.1	47,500	0.002	0.018	0.001	0.027	<0.25
	Jun-00	12.4	12.2	14,300	0.0004	<0.001	<0.001	0.023	<0.25
	Dec-00	>13	6.7	35,900	0.0005	0.0015	<0.001	0.027	<0.125
	Jun-01	13.7	14.6	30,400	0.002	<0.001	<0.001	0.029	0.07
	Dec-01	13.7	12	21,500	0.0002	<0.001	<0.001	0.02	0.038
	Jul-02	13.2	14.3	23,000	0.000419	<0.0016	<0.001	0.027	0.0491
	Jun-03	13.2	12.2	19,500	Metals Analyses No Longer Required per USEPA				0.043
	Jul-04	12.6	12.3	16,000					0.066
	Jul-05	13.0	11.8	9,000					0.054
	Jul-06	12.8	13.4	9,100					0.051
	Jul-07	12.3	11.1	6,900					0.781*
Re-sample	Jan-08	-	-	-					0.040
	Jul-08	11.1	14.4	6,025					0.0461
	Jun-09	12.2	12.3	3,500					0.0596
	Aug-10	12.8	11.5	6,400					0.0468
	Jul-11	12.7	10.8	6,400					0.016
HOL-MW13	Jun-93	9.1	15	2,063	<0.001	0.022	0.039	0.05	0.02
	Sep-93	11.9	10.1	3,640	0.001	0.024	0.022	<0.02	<0.05
	Dec-93	9.7	11	1,656	<0.001	0.023	0.027	0.03	0.07
	Mar-94	9.0	9	1,573	0.005	0.03	0.034	<0.02	<0.05
	Jun-94	4.0	12	1,286	<0.005	<0.01	<0.003	<0.03	0.17
	Sep-94	8.8	13	1,452	<0.002	0.008	0.026	0.014	0.005
	Dec-94	8.5	7	1,359	<0.002	<0.002	0.011	0.021	0.007
	Apr-95	7.7	10	1,050	<0.002	0.006	0.019	0.017	<0.005
	Jun-95	8.0	19	1,074	<0.002	0.002	0.004	0.011	0.016
	Sep-95	8.5	10	1,100	<0.001	0.003	0.004	0.008	0.017
	Dec-95	8.2	6	1,120	<0.002	<0.002	0.002	0.006	0.005
	Jun-96	7.9	13.5	1,170	<0.001	0.005	0.008	0.027	0.022
	Dec-96	8.0	7.6	1,100	<0.002	<0.003	0.006	0.013	0.011
	Aug-97	7.3	12	1,420	<0.01	<0.015	<0.005	<0.055	0.019
	Dec-97	7.1	7.8	1,380	<0.005	<0.005	0.01	<0.01	<0.005
	Jun-98	7.5	10.8	1,430	0.001	<0.001	<0.001	0.009	0.023
	Dec-98	8.2	10	2,170	<0.001	0.005	<0.001	0.005	<0.025
	Jun-99	8.1	11.1	1,120	<0.001	0.001	<0.001	0.008	<0.025
	Dec-99	8.4	7.1	1,680	<0.0003	0.006	<0.001	0.003	<0.025
	Jun-00	8.1	11.3	920	<0.0002	<0.001	<0.001	<0.003	<0.025
	Dec-00	7.7	9.2	960	<0.0002	<0.001	0.00274	0.005	<0.025
	Jun-01	7.1	12.3	900	<0.0002	<0.001	0.003	0.005	<0.005
	Dec-01	8.1	13	650	<0.0002	<0.001	<0.001	<0.003	<0.005

TABLE 2
GROUNDWATER ANALYTICAL RESULTS
Holcim (US) Inc. West Quarry
Mason City, Iowa

WELL NUMBER AND DATE SAMPLED	FIELD PARAMETERS			LABORATORY PARAMETERS					
	pH (units)	TEMP (Celsius)	CONDUCTIVITY (umhos/cm @ 25° C)	CADMIUM (mg/l)	CHROMIUM (mg/l)	LEAD (mg/l)	NICKEL (mg/l)	PHENOLS (mg/l)	
PERFORMANCE STANDARDS	6.5 TO 8.5	NPS	NPS	0.005	0.05	0.05	0.2	NPS	
HOL-MW13 (Cont.)	Jul-02	7.3	11.6	650	<0.0002	0.0017	0.00149	<0.003	<0.005
	Jun-03	7.1	10.6	700	<0.0002	<0.0016	<0.001	<0.003	<0.005
	Jul-04	7.4	12.2	700	<0.0002	0.0018	0.0018	0.0029	0.006
	Dup	7.4	12.2	700	<0.0002	0.0018	0.0018	0.0029	<0.005
	Jul-05	7.4	10.9	500	<0.0004	<0.0032	0.0008	0.0052	0.005
	Dup	7.4	10.9	500	<0.0004	<0.0032	0.0007	0.005	<0.005
	Jul-06	7.8	11.8	1,050	<0.0002	<0.0016	<0.0003	0.00145	<0.005
	Dup	7.8	11.8	1,050	<0.0002	<0.0016	0.00033	0.00148	<0.005
	Jul-07	7.6	11.1	690	<0.0002	<0.0016	0.00034	0.00186	0.803*
	Dup	7.6	11.1	690	<0.0002	<0.0016	0.00041	0.002	0.641*
Re-sample	Jan-08	-	-	-	Metals Analyses No Longer Required per USEPA				0.052
	Dup	-	-	-					<0.005
	Jul-08	7.2	12.5	650					<0.0018
	Jun-09	7.3	11.4	525					0.0406
	Aug-10	7.3	11	800					<0.02
	Jul-11	7.6	10.3	655					0.038

Notes:

1. Groundwater samples were collected by GZA GeoEnvironmental, Inc. on the dates indicated.
2. Field parameters were measured by GZA during the sampling. Conductivity values were corrected for temperature and are reported in micromhos per centimeter (umhos/cm) at 25 degrees Celsius.
3. Laboratory parameters were analyzed by Suburban Laboratories, Inc. of Waukesha, Wisconsin for the Sep-92 through Mar-94 sampling events and by IEA, Inc. (also known as AEN) of Schaumburg, Illinois for the Jun-94 through Dec-97 sampling events. AEN became Severn Trent Laboratories of Monroe, Connecticut and analyzed the Jun-98 samples. The Dec-98 through Jul-07 samples were analyzed by Siemens (formerly US Filter/Enviroscan) of Rothschild, Wisconsin. The samples collected from 1998 to present were analyzed by Test America of Watertown, Wisconsin.
4. Cadmium, chromium, lead, nickel and phenols analytical results are reported in milligrams per liter (mg/l). "—" indicates that the parameter was not detected above the method detection limit specified in the June 1992 Quality Assurance Project Plan.
5. The groundwater samples were not field filtered. As such, the reported concentrations are considered to represent total concentrations.
6. The performance standards (PS) are included in the June 1992 Quality Assurance Project Plan. "NPS" indicates that no PS has been established.
7. **BOLD** results indicate concentrations that exceed the performance standard.
8. "*" indicates suspect phenol concentration due to laboratory equipment contamination. Wells were resampled for phenol analysis in January 2008.
9. "NS" indicates the well was not sampled.

Attachment 4 Site Inspection Checklist

I. SITE INFORMATION																	
Site name: Northwestern States Portland Cement Company	Date of inspection: 5/24/2012																
Location and Region: Mason City, IA	EPA ID: IAD980852461																
Agency, office, or company leading the five-year review: EPA-Region 7	Weather/temperature: Low 70s°F, windy																
Remedy Includes: (Check all that apply) <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <input checked="" type="checkbox"/> Landfill cover/containment <input checked="" type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input checked="" type="checkbox"/> Groundwater pump and treatment <input checked="" type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____ </td> <td style="width: 50%; vertical-align: top;"> <input type="checkbox"/> Monitored natural attenuation <input checked="" type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls </td> </tr> </table>		<input checked="" type="checkbox"/> Landfill cover/containment <input checked="" type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input checked="" type="checkbox"/> Groundwater pump and treatment <input checked="" type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____	<input type="checkbox"/> Monitored natural attenuation <input checked="" type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls														
<input checked="" type="checkbox"/> Landfill cover/containment <input checked="" type="checkbox"/> Access controls <input checked="" type="checkbox"/> Institutional controls <input checked="" type="checkbox"/> Groundwater pump and treatment <input checked="" type="checkbox"/> Surface water collection and treatment <input type="checkbox"/> Other _____	<input type="checkbox"/> Monitored natural attenuation <input checked="" type="checkbox"/> Groundwater containment <input type="checkbox"/> Vertical barrier walls																
II. INTERVIEWS (Check all that apply)																	
1. O&M site manager <u>John Flores, Holcim</u> Site Manager 5-24-2012 <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Phone no. <u>734-529-7754</u> Problems, suggestions; <input type="checkbox"/> Report attached _____																	
2. O&M staff <u>Dave Franken, Holcim</u> 5-24-2012 <div style="display: flex; justify-content: space-between; font-size: small;"> Name Title Date </div> Interviewed <input checked="" type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone Problems, suggestions; <input type="checkbox"/> Report attached _____																	
III. ON-SITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)																	
1. O&M Documents <table style="width: 100%; border: none; font-size: small;"> <tr> <td style="width: 33%;"><input type="checkbox"/> O&M manual</td> <td style="width: 33%;"><input type="checkbox"/> Readily available</td> <td style="width: 17%;"><input type="checkbox"/> Up to date</td> <td style="width: 17%;"><input type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> As-built drawings</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Maintenance logs</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input type="checkbox"/> N/A</td> </tr> </table> Remarks <u>On-site documents were not reviewed during site inspection.</u>		<input type="checkbox"/> O&M manual	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A	<input type="checkbox"/> As-built drawings	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A	<input type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A				
<input type="checkbox"/> O&M manual	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A														
<input type="checkbox"/> As-built drawings	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A														
<input type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A														
2. Site-Specific Health and Safety Plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A <input type="checkbox"/> Contingency plan/emergency response plan <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> N/A Remarks <u>On-site documents were not reviewed during site inspection.</u>																	
3. O&M and OSHA Training Records <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A Remarks _____																	
4. Permits and Service Agreements <table style="width: 100%; border: none; font-size: small;"> <tr> <td style="width: 33%;"><input type="checkbox"/> Air discharge permit</td> <td style="width: 33%;"><input type="checkbox"/> Readily available</td> <td style="width: 17%;"><input type="checkbox"/> Up to date</td> <td style="width: 17%;"><input checked="" type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Effluent discharge</td> <td><input type="checkbox"/> Readily available</td> <td><input checked="" type="checkbox"/> Up to date</td> <td><input type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Waste disposal, POTW</td> <td><input type="checkbox"/> Readily available</td> <td><input checked="" type="checkbox"/> Up to date</td> <td><input type="checkbox"/> N/A</td> </tr> <tr> <td><input type="checkbox"/> Other permits _____</td> <td><input type="checkbox"/> Readily available</td> <td><input type="checkbox"/> Up to date</td> <td><input checked="" type="checkbox"/> N/A</td> </tr> </table> Remarks <u>NPDES permit was reviewed with IDNR staff prior to site visit. Holcim was in compliance with permit and had been inspected recently.</u>		<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> Effluent discharge	<input type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A	<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A	<input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A														
<input type="checkbox"/> Effluent discharge	<input type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A														
<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A														
<input type="checkbox"/> Other permits _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A														

5.	Gas Generation Records Remarks	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
6.	Settlement Monument Records Remarks	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
7.	Groundwater Monitoring Records Remarks <u>On-site documents were not reviewed during site inspection.</u>	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input type="checkbox"/> N/A
8.	Leachate Extraction Records Remarks	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
9.	Discharge Compliance Records <input type="checkbox"/> Air <input type="checkbox"/> Water (effluent) Remarks	<input type="checkbox"/> Readily available <input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date <input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A <input checked="" type="checkbox"/> N/A
10.	Daily Access/Security Logs Remarks	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
IV. O&M COSTS				
1.	O&M Organization <input type="checkbox"/> State in-house <input checked="" type="checkbox"/> PRP in-house <input type="checkbox"/> Federal Facility in-house <input type="checkbox"/> Other	<input type="checkbox"/> Contractor for State <input checked="" type="checkbox"/> Contractor for PRP <input type="checkbox"/> Contractor for Federal Facility		
2.	O&M Cost Records –O&M costs discussed in the Five-Year Review Report <input checked="" type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> Funding mechanism/agreement in place Original O&M cost estimate		<input type="checkbox"/> Breakdown attached	
3.	Unanticipated or Unusually High O&M Costs During Review Period Describe costs and reasons: <u>Holcim contracted with GZA for site operation following shut down of plant operations resulting in higher cost. Holcim is now operating site with in-house personnel at reduced cost.</u>			
V. ACCESS AND INSTITUTIONAL CONTROLS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A				
A. Fencing				
1.	Fencing damaged Remarks <u>Site is within perimeter of the cement facility and access is restricted to the entire Holcim property.</u>	<input type="checkbox"/> Location shown on site map	<input type="checkbox"/> Gates secured	<input checked="" type="checkbox"/> N/A
B. Other Access Restrictions				
1.	Signs and other security measures Remarks	<input type="checkbox"/> Location shown on site map		<input checked="" type="checkbox"/> N/A

C. Institutional Controls (ICs)			
1.	Implementation and enforcement Site conditions imply ICs are properly implemented <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Site conditions imply ICs are being fully enforced <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Type of monitoring (e.g., self-reporting, drive by) <u>Self-reporting</u> Frequency <u>As requested</u> Responsible party/agency <u>Holcim/EPA</u> Contact <u>John Flores-Holcim</u> Name		
	Reporting is up-to-date <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Reports are verified by the lead agency <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Specific requirements in deed or decision documents have been met <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Violations have been reported <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A Other problems or suggestions: <input type="checkbox"/> Report attached		
2.	Adequacy <input checked="" type="checkbox"/> ICs are adequate <input type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A Remarks		
D. General			
1.	Vandalism/trespassing <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> No vandalism evident Remarks		
2.	Land use changes on site <input checked="" type="checkbox"/> N/A Remarks		
3.	Land use changes off site <input checked="" type="checkbox"/> N/A Remarks		
VI. GENERAL SITE CONDITIONS			
A. Roads <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Road condition <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Roads adequate <input type="checkbox"/> N/A Remarks		
B. Other Site Conditions			
Remarks <u>None</u>			
VII. LANDFILL COVERS <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
A. Landfill Surface			
1.	Settlement (Low spots) <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Settlement not evident Areal extent _____ Depth _____ Remarks		
2.	Cracks <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Cracking not evident Lengths _____ Widths _____ Depths _____ Remarks		
3.	Erosion <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Erosion not evident Areal extent _____ Depth _____ Remarks		
4.	Holes <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> Holes not evident Areal extent _____ Depth _____ Remarks		
5.	Vegetative Cover <input checked="" type="checkbox"/> Grass <input checked="" type="checkbox"/> Cover properly established <input checked="" type="checkbox"/> No signs of stress <input type="checkbox"/> Trees/Shrubs (indicate size and locations on a diagram) Remarks		

6.	Alternative Cover (armored rock, concrete, etc.) <input type="checkbox"/> N/A		
Remarks _____			
7.	Bulges Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map Height _____	<input checked="" type="checkbox"/> Bulges not evident
8.	Wet Areas/Water Damage <input type="checkbox"/> Wet areas <input type="checkbox"/> Ponding <input type="checkbox"/> Seeps <input type="checkbox"/> Soft subgrade Remarks _____	<input checked="" type="checkbox"/> Wet areas/water damage not evident <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Location shown on site map	Areal extent _____ Areal extent _____ Areal extent _____ Areal extent _____
9.	Slope Instability <input type="checkbox"/> Slides Areal extent _____ Remarks _____	<input type="checkbox"/> Location shown on site map	<input checked="" type="checkbox"/> No evidence of slope instability
B. Benches <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
C. Letdown Channels <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
D. Cover Penetrations <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Gas Vents <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration <input checked="" type="checkbox"/> N/A Remarks _____	<input type="checkbox"/> Active <input type="checkbox"/> Functioning <input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> Passive <input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition
2.	Gas Monitoring Probes <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration Remarks _____	<input type="checkbox"/> Functioning <input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input checked="" type="checkbox"/> N/A
3.	Monitoring Wells (within surface area of landfill) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration Remarks _____	<input type="checkbox"/> Functioning <input type="checkbox"/> Needs Maintenance	<input checked="" type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input type="checkbox"/> N/A
4.	Groundwater Extraction Wells <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Evidence of leakage at penetration Remarks _____	<input checked="" type="checkbox"/> Functioning <input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> Routinely sampled <input type="checkbox"/> Good condition <input checked="" type="checkbox"/> N/A
5.	Settlement Monuments Remarks _____	<input type="checkbox"/> Located	<input type="checkbox"/> Routinely surveyed <input checked="" type="checkbox"/> N/A
E. Gas Collection and Treatment <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
F. Cover Drainage Layer <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
G. Detention/Sedimentation Ponds <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
1.	Siltation Areal extent _____ <input checked="" type="checkbox"/> Siltation not evident Remarks _____	Depth _____	<input type="checkbox"/> N/A
2.	Erosion Areal extent _____ <input checked="" type="checkbox"/> Erosion not evident Remarks _____	Depth _____	
3.	Outlet Works Remarks _____	<input type="checkbox"/> Functioning	<input checked="" type="checkbox"/> N/A

4.	Dam	<input type="checkbox"/> Functioning	<input checked="" type="checkbox"/> N/A
	Remarks	_____	
<hr/>			
H. Retaining Walls		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
I. Perimeter Ditches/Off-Site Discharge		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
VIII. VERTICAL BARRIER WALLS		<input type="checkbox"/> Applicable	<input checked="" type="checkbox"/> N/A
IX. GROUNDWATER/SURFACE WATER REMEDIES		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
A. Groundwater Extraction Wells, Pumps, and Pipelines		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Pumps, Wellhead Plumbing, and Electrical	<input checked="" type="checkbox"/> Good condition	<input checked="" type="checkbox"/> All required wells properly operating
	Remarks	<input type="checkbox"/> Needs Maintenance	<input type="checkbox"/> N/A
2.	Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances	<input checked="" type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance
	Remarks		
B. Surface Water Collection Structures, Pumps, and Pipelines		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Collection Structures, Pumps, and Electrical	<input checked="" type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance
	Remarks		
2.	Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances	<input checked="" type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance
	Remarks		
C. Treatment System		<input checked="" type="checkbox"/> Applicable	<input type="checkbox"/> N/A
1.	Treatment Train (Check components that apply)		
	<input type="checkbox"/> Metals removal	<input type="checkbox"/> Oil/water separation	<input type="checkbox"/> Bioremediation
	<input type="checkbox"/> Air stripping	<input type="checkbox"/> Carbon adsorbers	
	<input type="checkbox"/> Filters		
	<input checked="" type="checkbox"/> Additive (e.g., chelation agent, flocculent) <u>Acid</u>		
	<input type="checkbox"/> Others _____		
	<input checked="" type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance	
	<input type="checkbox"/> Sampling ports properly marked and functional		
	<input type="checkbox"/> Sampling/maintenance log displayed and up to date		
	<input type="checkbox"/> Equipment properly identified		
	<input checked="" type="checkbox"/> Quantity of groundwater treated annually See <u>annual report</u>		
	<input type="checkbox"/> Quantity of surface water treated annually _____		
	Remarks		
2.	Electrical Enclosures and Panels (properly rated and functional)		
	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance
	Remarks		
3.	Tanks, Vaults, Storage Vessels		
	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Good condition	<input checked="" type="checkbox"/> Proper secondary containment
	Remarks	<input type="checkbox"/> Needs Maintenance	
4.	Discharge Structure and Appurtenances		
	<input type="checkbox"/> N/A	<input type="checkbox"/> Good condition	<input type="checkbox"/> Needs Maintenance
	Remarks	<u>Did not inspect discharge point at Calmus Creek. Recently inspected by IDNR.</u>	
5.	Treatment Building(s)		
	<input type="checkbox"/> N/A	<input checked="" type="checkbox"/> Good condition (esp. roof and doorways)	<input type="checkbox"/> Needs repair
	<input checked="" type="checkbox"/> Chemicals and equipment properly stored		
	Remarks		

6.	Monitoring Wells (pump and treatment remedy) <input type="checkbox"/> Properly secured/locked <input type="checkbox"/> Functioning <input checked="" type="checkbox"/> Routinely sampled <input checked="" type="checkbox"/> Good condition <input type="checkbox"/> All required wells located <input type="checkbox"/> Needs Maintenance <input type="checkbox"/> N/A Remarks
D. Monitoring Data	
1.	Monitoring Data <input checked="" type="checkbox"/> Is routinely submitted on time <input checked="" type="checkbox"/> Is of acceptable quality
2.	Monitoring data suggests: <input checked="" type="checkbox"/> Groundwater plume is effectively contained <input type="checkbox"/> Contaminant concentrations are declining
X. OVERALL OBSERVATIONS	
A. Implementation of the Remedy	
Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.). <u>The remedy is functioning as designed. The landfill cap is limiting infiltration. Surface water is being collected. The extraction and treatment system is functioning as designed.</u>	
B. Adequacy of O&M	
Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy. <u>The site is well maintained. Since ceasing cement production Holcim has continued to retain the employee who operated and maintained the site to continue in this capacity. There is no observed change to the manner in which this work is performed. The remedy is protective and is anticipated to continue to be protective in the future if managed and operated in the same manner.</u>	
C. Early Indicators of Potential Remedy Problems	
Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future. None	
D. Opportunities for Optimization	
Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy. <u>Changes in groundwater sampling are discussed in the report which will result in a reduction in the number of samples collected and analyzed.</u>	