



Periodic Review

Robertson Elementary School
Facility/Site ID # 2322990
Cleanup Site ID # 3087
2807 West Lincoln Avenue
Yakima, Washington 98902

Prepared by:
Washington State Department of Ecology
Central Region Office
Toxics Cleanup Program

November 2015

1.0	INTRODUCTION.....	1
2.0	SUMMARY OF SITE CONDITIONS.....	2
2.1	Site History	2
2.2	Site Investigations	2
2.3	Cleanup Levels and Point of Compliance.....	3
2.4	Remedial Actions.....	3
2.5	Institutional Controls	4
3.0	FIVE-YEAR REVIEW.....	6
3.1	Effectiveness of completed cleanup actions	6
3.2	New scientific information for individual hazardous substances for mixtures present at the Site	6
3.3	New applicable state and federal laws for hazardous substances present at the Site	6
3.4	Current and projected Site use	6
3.5	Availability and practicability of higher preference technologies	7
3.6	Availability of improved analytical techniques to evaluate compliance with cleanup levels	7
4.0	CONCLUSIONS	8
5.0	REFERENCES.....	9
6.0	APPENDICES	10
6.1	Site Plan	11
6.2	Vicinity Map	12
6.3	Pre-Remediation Sample Data.....	13
6.4	Restrictive Covenant.....	15
6.5	Photo log	19

1.0 INTRODUCTION

This document is the Washington State Department of Ecology's periodic review of post-cleanup site conditions and monitoring data to assure that human health and the environment are being protected at the Robertson Elementary School site (Site). The cleanup at this Site was implemented under the Model Toxics Control Act (MTCA), Chapter 173-340 of the Washington Administrative Code (WAC).

Cleanup activities at this Site were completed as an interim action by Ecology. The cleanup actions resulted in residual concentrations of lead and arsenic that exceed MTCA Method A cleanup levels for soil established under WAC 173-340-740(2). As a result of residual contamination, institutional controls were required for the Site to be eligible for a no further action (NFA) determination. WAC 173-340-420(2) requires that Ecology conduct a periodic review of a site every five years under the following conditions:

- (a) Whenever the department conducts a cleanup action
- (b) Whenever the department approves a cleanup action under an order, agreed order or consent decree
- (c) Or, as resources permit, whenever the department issues a no further action opinion
- (d) And one of the following conditions exists:
 - 1. Institutional controls or financial assurance are required as part of the cleanup
 - 2. Where the cleanup level is based on a practical quantitation limit
 - 3. Where, in the department's judgment, modifications to the default equations or assumptions using site-specific information would significantly increase the concentration of hazardous substances remaining at the site after cleanup or the uncertainty in the ecological evaluation or the reliability of the cleanup action is such that additional review is necessary to assure long-term protection of human health and the environment.

When evaluating whether human health and the environment are being protected, the factors the department shall consider include [WAC 173-340-420(4)]:

- (a) The effectiveness of ongoing or completed cleanup actions;
- (b) New scientific information for individual hazardous substances or mixtures present at the Site;
- (c) New applicable state and federal laws for hazardous substances present at the Site;
- (d) Current and projected Site use;
- (e) Availability and practicability of higher preference technologies; and
- (f) The availability of improved analytical techniques to evaluate compliance with cleanup levels.

The department shall publish a notice of all periodic reviews in the Site Register and provide an opportunity for public comment.

2.0 SUMMARY OF SITE CONDITIONS

2.1 Site History

Robertson Elementary is located at 2807 West Lincoln, Yakima, Washington. The school is situated in a residential area in the NW quarter of Section 23, Township 13N, and Range 18E. The portion of the school grounds remediated for lead and arsenic includes the grass-covered play area and sports fields to the north and to the south of the school buildings. Robertson Elementary hosts approximately 488 students. A Site plan is available as Appendix 6.1 and a vicinity map is available as Appendix 6.2.

According to the NRCS Soil Survey for the Yakima County Area, soil at the Site is predominantly classified as Logy silt loam (69), 0 to 2 percent slopes. Logy silt loam is formed on flood plains from a parent material of alluvium. Logy silt loam is well drained with a depth to restrictive feature of 20 to 40 inches and depth to water table of more than 80 inches.

Prior to construction of the elementary school, the Site had been cultivated as fruit orchard. Prior to 1948, pear and apple orchards used lead arsenate as a pesticide to control the codling moth. By 1948, lead arsenate use generally ceased because the codling moth had developed resistance to the arsenate compound, and dichlorodiphenyltrichloroethane (DDT) was found to be a much more effective control agent.

The application of lead arsenate over several decades resulted in the accumulation of lead and arsenic in surface soils at levels that are hazardous to human health and the environment. Lead and arsenic are relatively immobile in soil and generally remain in the top 12 inches of the soil column, even though application ceased prior to 1950.

2.2 Site Investigations

This Site was included in an area-wide lead and arsenic sampling program which involved collecting samples from schools suspected of having a history of past pesticide use. Prior to the mid-1940s, lead arsenate was the most widely used chemical used to control codling moths on fruit trees. Lead and arsenic are known to be very stable in soil and tend to stay near the surface. Because of this historical background, it was suspected that the soil in the school playground might be contaminated with lead and arsenic. The Washington Department of Ecology (Ecology) obtained permission from the Yakima School District to sample and test the soils from Robertson Elementary for lead and arsenic.

The soils throughout the property were sampled by the Department of Ecology in 2005. Samples were taken at various depths from the surface using a core sampler. The samples were analyzed for lead and arsenic using X-Ray Fluorescence (XRF) Spectroscopy.

The analytic results of initial sampling at Robertson Elementary indicated that contaminant levels in soil exceeded the Model Toxics Control Act Method A cleanup levels for lead (250 parts per million [ppm]) and/or arsenic (20 ppm) in 35 of 80 soil samples. The highest levels of arsenic and lead detected at the Site were 61 ppm and 393 ppm, respectively. These concentrations required the Site be scored and ranked under the Washington Ranking Method (WARM). The Site was ranked a “3” and placed on Ecology’s Hazardous Sites List in 2006.

Additional soil sampling was conducted May through August of 2006 in order to further delineate contamination in soil for remediation. The results of the soil samples taken from the property at Robertson Elementary School showed that the lead and arsenic contamination above Method A cleanup levels extends to two feet below ground surface. The highest level of arsenic detected at the Site was 66 ppm (up from 61 ppm in previous investigations), compared to the state cleanup standard of 20 ppm for arsenic. For lead, the highest level detected was 439 ppm (up from 393 ppm in previous investigations), compared to the state cleanup standard of 250 ppm. A table containing pre-remediation sampling data is available as Appendix 6.3.

2.3 Cleanup Levels and Point of Compliance

WAC 173-340-704 states that MTCA Method A may be used to establish cleanup levels at sites that have few hazardous substances, are undergoing a routine cleanup action, and where numerical standards are available for all indicator hazardous substances in the media for which the Method A cleanup level is being used.

MTCA Method A cleanup levels for unrestricted land use were determined to be appropriate for contaminants at this Site. The cleanup actions conducted at the Site were determined to be ‘routine’, few hazardous substances were found at the Site, and numerical standards were available in the MTCA Method A table for each hazardous substance. The MTCA Method A cleanup level for arsenic is 20 ppm, the MTCA Method A cleanup level for lead is 250 ppm, and the MTCA Method A cleanup level for DDT is 3 ppm.

For soil, the point of compliance is the area where the soil cleanup levels must be attained. For this Site, the point of compliance is established as soils throughout the Site.

2.4 Remedial Actions

Capping of existing soil with clean soil was chosen as the most efficient remedial option for the Site. The remedial process was carried out as follows: The existing grass turf was tilled to a depth of approximately six inches with a tractor-drawn rototiller. The tilled surface was flattened with a roller, and a permeable geotextile fabric was installed over the existing soil surface. The geotextile was rolled out and staked in place with 12 inches of overlap at the seams. At hardscape edges such as pavement and foundations, contaminated soil was excavated to allow the clean soil cap to meet existing grade. A minimum of eight inches of clean topsoil was placed on top of the geotextile and lightly compacted. The imported topsoil was tested for the presence of lead, arsenic, pesticides, and petroleum products prior to import. No contaminants of concern

were detected. Neither lead nor arsenic were detected above background concentrations. Following topsoil import and grading, sod was installed on the remediated area. Approximately half of the sports field area was treated with hydro-seed rather than sod, and fenced off to allow for the seed to germinate and establish. Analytic sample results of the excavated soil indicated that the soil did not designate as a hazardous waste. The excavated soil was disposed of at the Terrace Heights landfill.

2.5 Institutional Controls

Because soil was capped at the Site with concentrations of lead and arsenic exceeding MTCA Method A Cleanup levels, institutional controls were required for the Site to be eligible for a NFA determination. An environmental covenant was recorded for the Site in 2010, and a NFA determination was issued by Ecology in 2011. The conditions of the environmental covenant are available below:

1. Any activity on the Property that may result in the significant release or exposure to the environment of the contaminated soil that was contained as part of the Remedial Action, or create a new exposure pathway, is prohibited. Some examples of activities that are prohibited in the capped areas include: drilling, digging, placement of any objects or use of any equipment which deforms or stresses the surface beyond its load bearing capability, bulldozing or earthwork. This does not include normal maintenance activities, including: soil aeration and irrigation system repair.
2. Any activity on the Property that may interfere with the integrity of the Remedial Action and continued protection of human health and the environment is prohibited.
3. Any activity on the Property that may result in the release or exposure to the environment of a hazardous substance that remains on the Property as part of the Remedial Action, or create a new exposure pathway, is prohibited without prior written approval from Ecology.
4. The Owner of the property must give thirty (30) day advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without adequate and complete provision for continued monitoring, operation, and maintenance of the Remedial Action.
5. The Owner must restrict leases to uses and activities consistent with the Covenant and notify all lessees of the restrictions on the use of the Property.
6. The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Covenant. Ecology may approve any inconsistent use only after public notice and comment.
7. The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Remedial Action; to take samples, to inspect remedial actions conducted at the property, to determine compliance with this Covenant, and to inspect records that are related to the Remedial Action.

8. The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Covenant shall no longer limit use of the Property or be of any further force or effect. However, such an instrument may be recorded only if Ecology, after public notice and opportunity for comment, concurs.

A copy of the restrictive covenant is available as Appendix 6.4.

3.0 FIVE-YEAR REVIEW

3.1 Effectiveness of completed cleanup actions

Based upon the Site visit conducted on November 17, 2015, and interviews with School maintenance personnel, no repair, maintenance or contingency actions have been required. Sample data indicates that the clean soil cap on the Site continues to reduce the human exposure pathway to contaminated soils to acceptable levels. A photo log is available as Appendix 6.4.

The environmental covenant for the Site was recorded and remains active. There is no evidence that another instrument has been recorded that rescinds, or renders the covenant ineffective. The environmental covenant prohibits activities that will result in the release of contaminants contained as part of the cleanup without Ecology's approval, and prohibits any use of the property that is inconsistent with the covenant. The covenant serves to assure the long term integrity of the cap.

Conclusions:

Soils with residual pesticide concentrations higher than Method A cleanup levels are still present. However, the clean soil cap prevents human exposure to residual pesticides by ingestion and direct contact with soils. The environmental covenant for the Site will ensure that the integrity of the caps will be protected through restriction of certain activities and maintaining the current use of the Site.

3.2 New scientific information for individual hazardous substances for mixtures present at the Site

There is no new scientific information for the petroleum contaminants related to the Site.

3.3 New applicable state and federal laws for hazardous substances present at the Site

There are no new relevant state or federal laws for hazardous substances present at the Site.

3.4 Current and projected Site use

The Site is currently used as a public school facility. There have been no changes in current or projected future Site or resource uses.

3.5 Availability and practicability of higher preference technologies

The remedy implemented included containment of hazardous substances and it continues to be protective of human health and the environment. While higher preference cleanup technologies may be available, they are still not practicable at this Site.

3.6 Availability of improved analytical techniques to evaluate compliance with cleanup levels

The analytical methods used at the time of the remedial action were capable of detection well below MTCA Method A cleanup levels. The presence of improved analytical techniques would not affect decisions or recommendations made for the Site.

4.0 CONCLUSIONS

- The cleanup actions completed at the Site is protective of human health and the environment.
- Soil cleanup levels have not been met at the Site; however, the cleanup action is determined to comply with cleanup standards under WAC 173-340-740(6)(f), since the long-term integrity of the containment system is ensured and the requirements for containment technologies have been met.
- The environmental covenant for the Site is in place and will be effective in protecting public health and the environment from exposure to hazardous substances and protecting the integrity of the cleanup action.

Based on this five-year review, the Department of Ecology has determined that the requirements of the Environmental Covenant are being followed. No additional remedial actions are required by the property owner. It is the property owner's responsibility to continue to inspect the Site to assure that the integrity of the cap is maintained.

5.0 REFERENCES

Ecology. *Interim Action Plan – Gilbert Elementary School and Robertson Elementary School.* June 18, 2006.

Ecology. *Interim Action Report – Robertson Elementary School.* July 9, 2010.

Yakima School District. *Environmental Covenant.* August 12, 2010.

Ecology. *No Further Action Determination Letter.* April 25, 2011.

Ecology. *Site Visit.* November 17, 2015.

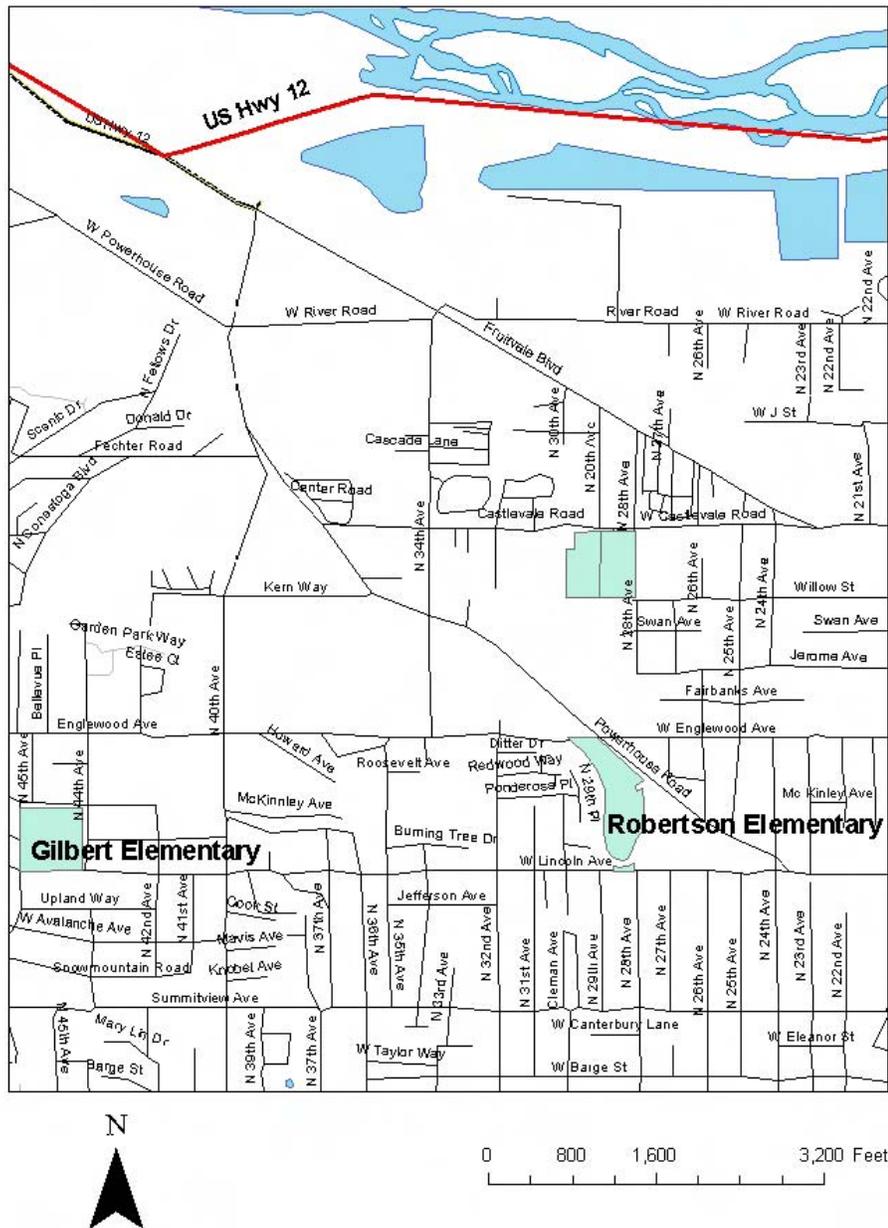
6.0 APPENDICIES

6.1 Site Plan



6.2 Vicinity Map

Yakima Schools Vicinity Map



6.3 Pre-Remediation Sample Data

Robertson Elementary School

SAMPLE ID	As (ppm)	Pb (ppm)
RES1	30.51	233.85
RES2	37.55	392.99
RES3	41.09	376.24
RES4	32.67	254.02
RES5	10.85	22.18
RES6	<LOD	39.98
RES7	27.35	164.83
RES8	31.77	185.24
RES9	24.64	102.39
RES10	19.31	90.14
RES11	22.50	109.10
RES12	38.31	262.75
RES13	20.54	109.22
RES14	31.76	216.58
RES15	13.10	47.00
RES16	16.12	81.61
RES17	33.52	318.35
RES18	16.68	106.02
RES19	26.10	104.83
RES20	36.49	126.45
RES21	40.30	219.68
RES22	36.76	332.06
RES23	20.64	157.85
RES24	14.81	76.80
RES25	14.39	105.73
RES26	<LOD	<LOD
RES27	15.79	35.41
RES28	<LOD	12.10
RES29	15.06	59.28
RES30	13.49	61.44
RES31	<LOD	51.08
RES32	18.26	95.15
RES33	<LOD	34.95
RES34	27.41	101.60
RES35	20.40	58.05
RES36	60.79	343.82
RES G36 1	20.63	114.58

RES G36 2	16.83	72.37
RES G36 3	18.88	76.88
RES G36 4	27.21	149.29
RES G36 5	<LOD	56.77
RES G36 6	9.67	35.78
RES G36 7	<LOD	29.59
RES G36 8	21.92	153.89
RES G36 9	45.82	260.25
RES G36 10	38.19	183.92
RES G36 11	28.70	177.35
RES G36 12	11.55	69.82
RES PG 1	46.71	159.18
RES PG 2	24.61	105.67
RES PG 3	12.54	55.23
RES PG 4	<LOD	<LOD
RES PG 5	<LOD	17.81
RES PG 5	<LOD	24.84
RES PG 5	<LOD	<LOD
RES PG 5	24.65	75.83
RES PG 6	27.87	111.63
Ro-1	<LOD	<LOD
Ro-2	<LOD	88.16
Ro-3	<LOD	115.46
Ro-4	<LOD	<LOD
Ro-5 0-3	52.6	217.15
Ro-5 3-6	39.92	164.25
Ro-5 6-9	28.45	106.39
Ro-5 9-12	30.54	56.94
Ro-6	<LOD	201.5
Ro-7 0-3	<LOD	153.95
Ro-7 3-6	<LOD	115.82
Ro-7 6-9	23.18	169.18
Ro-7 9-12	32.06	437.94
Ro-8 0-3	<LOD	154.21
Ro-8 3-6	27.81	183.72
Ro-8 6-9	49.4	348.86
Ro-8 9-12	48.58	406.25
Ro-9	<LOD	<LOD

Red indicates sample exceeds MTCA Method A cleanup level

<LOD indicates the analyte was not detected above laboratory detection limits

6.4 Restrictive Covenant



FILE# 7700587
YAKIMA COUNTY, WA
08/12/2010 11:31:52AM
COVENANT
PAGES: 4
DEPARTMENT OF ECOLOGY

Recording Fee: 65.00

After Recording Return to:

Valerie Bound
Department of Ecology
15 West Yakima Avenue, Suite 200
Yakima, WA 98902

Environmental Covenant

Grantor: Yakima School District
Grantee: State of Washington, Department of Ecology
Address: 2807 West Lincoln Avenue, Yakima, WA 98902-2344
Legal: Section 23 Township 13 Range 18 Quarter NW: W 94.47 FT OF NE1/4 NW1/4 LY N OF P.P. & L.CO'S CAN & S OF CO RD EX BEG 120 FT SE'LY OF NW COR, TH S 60[^] 15' 00" W 99.1 FT, TH S 28[^] 00' 00" E 69.3 FT, TH N 60[^] 15' 00" E 154.7 FT, TH N 49[^] 30' 00" W TO BEG ALSO TH PT OF E1/2 NW1/4 NW1/4 LY S'LY OF P.P.& L. CO CAN ALSO W 180 FT OF E 200 FT LY S OF P.P.& L.CO CAN EX S 33 FT ST R/W AND EX N 3 FT OF S 6 FT E 68.39 FT
Tax Parcel Number: 181323-21022
Cross Reference: N/A

Grantor, Yakima School District, hereby binds Grantor, its successors and assigns to the land use restrictions identified herein and grants such other rights under this environmental covenant (hereafter "Covenant") made this 3rd day of August, 2010 in favor of the State of Washington Department of Ecology (Ecology). Ecology shall have full right of enforcement of the rights conveyed under this Covenant pursuant to the Model Toxics Control Act, RCW 70.105D.030(1)(g), and the Uniform Environmental Covenants Act, 2007 Wash. Laws ch. 104, sec. 12.

This Declaration of Covenant is made pursuant to RCW 70.105D.030(1)(f) and (g) and WAC 173-340-440 by Yakima School District, its successors and assigns, and the State of Washington Department of Ecology, its successors and assigns (hereafter "Ecology").

A remedial action (hereafter "Remedial Action") occurred at the property that is the subject of this Covenant. The Remedial Action conducted at the property is described in the following document:

Interim Action Report for Robertson Elementary, Washington State Department of Ecology, July 9, 2010.

This document is on file at Ecology's Central Regional Office, located at 15 West Yakima Avenue, Suite 200, in Yakima, WA.

This Covenant is required because the Remedial Action resulted in residual concentrations of lead and arsenic which exceed the Model Toxics Control Act Method A Cleanup Level(s) for soil established under WAC 173-340-900.

The undersigned, Yakima School District, is the fee owner of real property (hereafter "Property") in the County of Yakima, State of Washington, that is subject to this Covenant. The Property is legally described AS FOLLOWS: Section 23 Township 13 Range 18 Quarter NW: W 94.47 FT OF NE1/4 NW1/4 LY N OF P.P. & L.CO'S CAN & S OF CO RD EX BEG 120 FT SE'LY OF NW COR, TH S 60° 15' 00" W 99.1 FT, TH S 28° 00' 00" E 69.3 FT, TH N 60° 15' 00" E 154.7 FT, TH N 49° 30' 00" W TO BEG ALSO TH PT OF E1/2 NW1/4 NW1/4 LY S'LY OF P.P.& L. CO CAN ALSO W 180 FT OF E 200 FT LY S OF P.P.& L.CO CAN EX S 33 FT ST R/W AND EX N 3 FT OF S 6 FT E 68.39 FT.

Yakima School District makes the following declaration as to limitations, restrictions, and uses to which the Property may be put and specifies that such declarations shall constitute covenants to run with the land, as provided by law and shall be binding on all parties and all persons claiming under them, including all current and future owners of any portion of or interest in the Property (hereafter "Owner").

Section 1. Any activity on the Property that may result in the significant release or exposure to the environment of the contaminated soil that was contained as part of the Remedial Action, or create a new exposure pathway, is prohibited. Some examples of activities that are prohibited in the capped areas include: drilling, digging, placement of any objects or use of any equipment which deforms or stresses the surface beyond its load bearing capability, bulldozing or earthwork. This does not include normal maintenance and/or operational activities, including: soil aeration and irrigation system repair.

Section 2. Any activity on the Property that may interfere with the integrity of the Remedial Action and continued protection of human health and the environment is prohibited.

Section 3. Any activity on the Property that may result in the significant release or exposure to the environment of a hazardous substance that remains on the Property as part of the Remedial Action, or create a new exposure pathway, is prohibited without prior written approval from Ecology.

Section 4. The Owner of the property must give thirty (30) day advance written notice to Ecology of the Owner's intent to convey any interest in the Property. No conveyance of title, easement, lease, or other interest in the Property shall be consummated by the Owner without the proper written notice to Ecology.

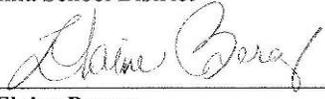
Section 5. The Owner must restrict leases to uses and activities consistent with the Covenant and notify all lessees of the restrictions on the use of the Property.

Section 6. The Owner must notify and obtain approval from Ecology prior to any use of the Property that is inconsistent with the terms of this Covenant. Ecology may approve any inconsistent use only after public notice and comment.

Section 7. The Owner shall allow authorized representatives of Ecology the right to enter the Property at reasonable times for the purpose of evaluating the Remedial Action; to take samples, to inspect remedial actions conducted at the property, to determine compliance with this Covenant, and to inspect records that are related to the Remedial Action.

Section 8. The Owner of the Property reserves the right under WAC 173-340-440 to record an instrument that provides that this Covenant shall no longer limit use of the Property or be of any further force or effect. However, such an instrument may be recorded only if Ecology, after public notice and opportunity for comment, concurs.

Yakima School District

5/22


Dr. Elaine Beraza
Superintendent

Dated: 8.5.10

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

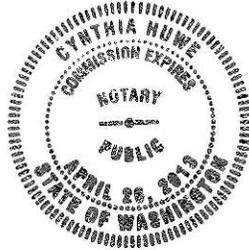
Valerie Bound

Valerie Bound
Section Manager

Dated: 8-5-10

STATE OF Washington
COUNTY OF Yakima

On this 5th day of August, 2010, I certify that Valerie Bound personally appeared before me, acknowledged that **he/she** signed this instrument, on oath stated that **he/she** was authorized to execute this instrument, and acknowledged it as the Representative [type of authority] of Ecology [name of party being represented] to be the free and voluntary act and deed of such party for the uses and purposes mentioned in the instrument.



Cynthia Huwe
Notary Public in and for the State of
Washington, residing at Yakima
My appointment expires 4/26/13

6.5 Photo log

Photo 1: Front of Robertson ES - from the south



Photo 2: School Play Equipment - from the south

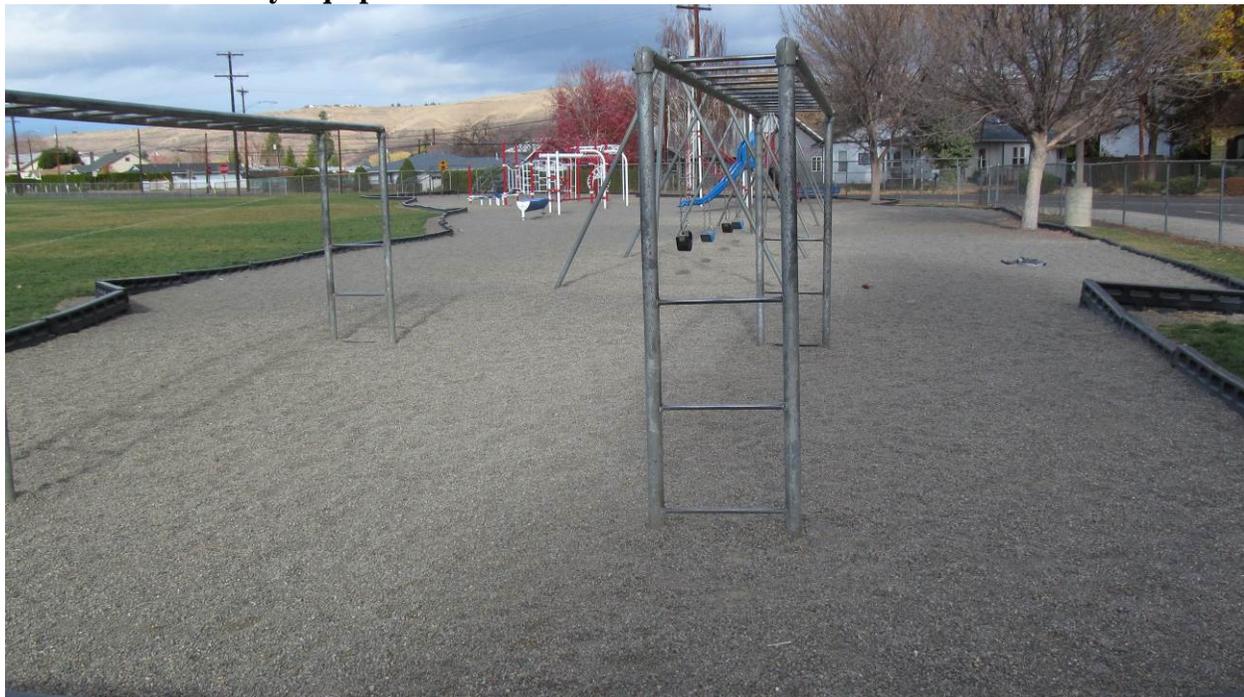


Photo 3: Play Equipment Borders and Pea Gravel Cover - from the south



Photo 4: Robertson Elementary Play Field - from the south

