Periodic Review

Gilbert Elementary School
Facility/Site ID # 5154076
Cleanup Site ID # 2254
4400 Douglas Drive
Yakima, Washington 98908

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

November 2015

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 Gilbert 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 of 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

Gilbert Elementary is located at 4400 Douglas Drive, Yakima, Washington. The school is situated in a residential area in the NW quarter of Section 22, Township 13N, and Range 18E. The portion of the school grounds remediated for lead and arsenic includes virtually all of the grass area surrounding the school buildings, including the sports fields and grass courtyards between buildings. Gilbert Elementary hosts approximately 450 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 Ritzville silt loam (99), 2 to 5 percent slopes. Ritzville silt loam is formed on slopes from a parent material of loess. Ritzville silt loam is well drained with a depth to restrictive feature of more than 80 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 Gilbert 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 Gilbert 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 parts per million [ppm]) in 50 of 54 soil samples. The highest levels of arsenic and lead detected at the Site were 286 ppm and 804 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 in May through August 2006 in order to further delineate contamination in soil for remediation. The results of the 168 soil samples taken from the property at Gilbert Elementary School showed that the lead and arsenic contamination above Method A cleanup levels extends to two and a half feet below ground surface. The highest level of arsenic detected at the Site was 286 ppm (up from 146 ppm in previous investigations). For lead, the highest level detected was 1041 ppm (up from 804 ppm in previous investigations). 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 mg/kg and the MTCA Method A cleanup level for lead is 250 mg/kg.

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 6.5.

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 pertinent scientific information for the contaminants related to the Site.

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

There have not been any relevant changes to state or federal laws regarding 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 – Gilbert Elementary School.* July 9, 2010.

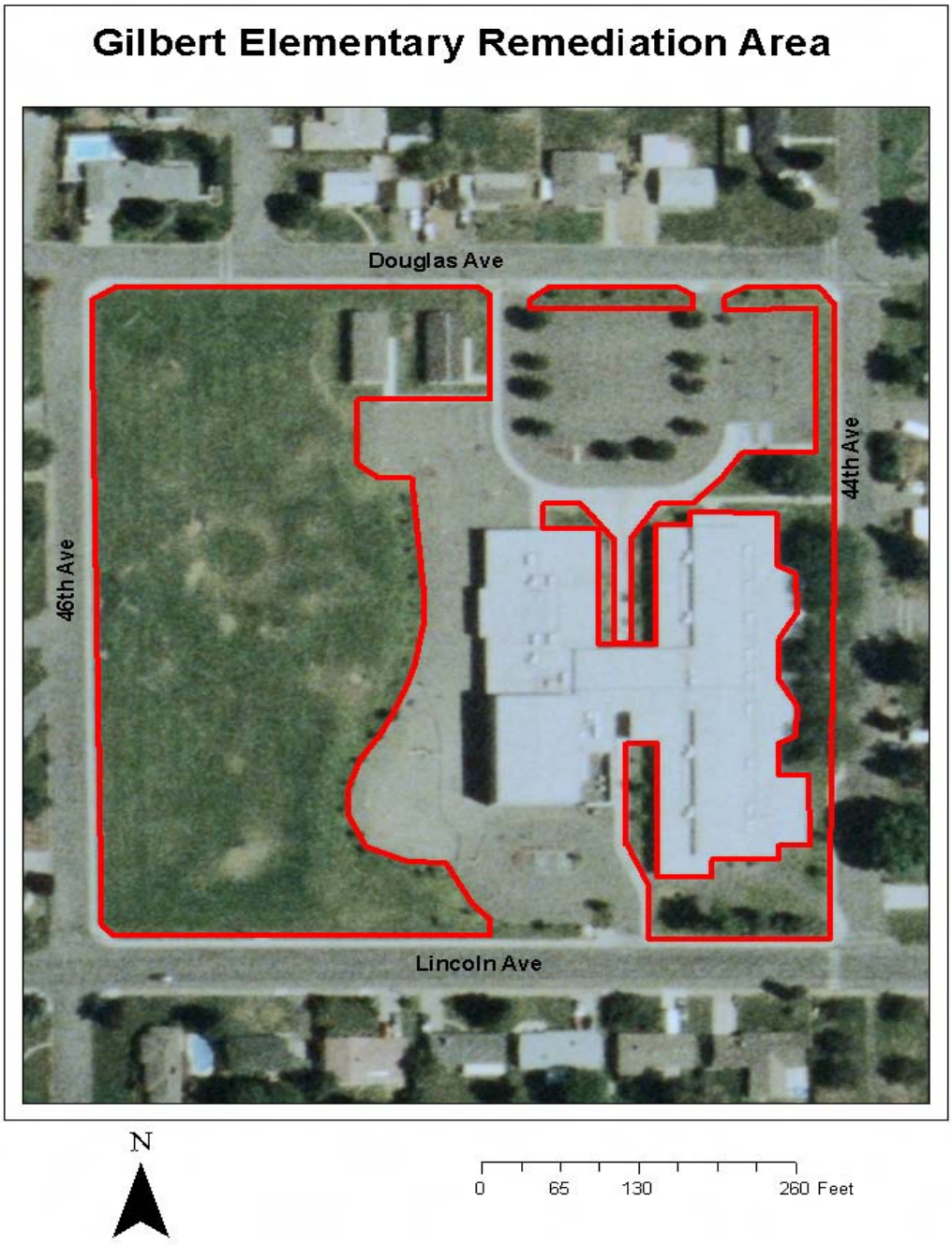
Yakima School District. *Environmental Covenant.* August 12, 2010.

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

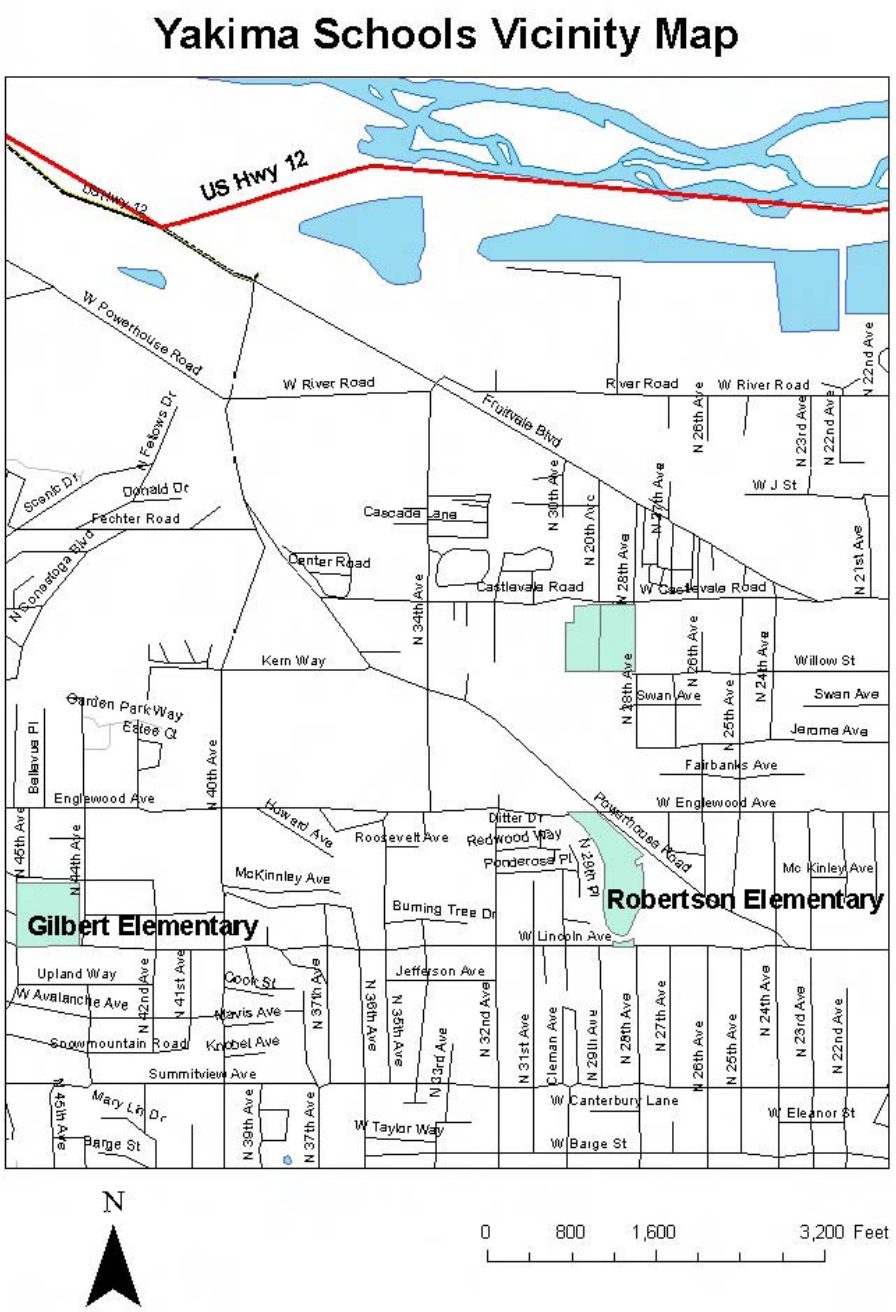
Ecology. *Site Visit.* November 17, 2015.

6.0 APPENDICIES

6.1 Site Plan


Gilbert Elementary Remediation Area
Douglas Ave
44th Ave
46th Ave
Lincoln Ave
N
0
65
130
260 Feet

6.2 Vicinity Map



6.3 Pre-Remediation Sample Data

Gilbert Elementary School

SAMPLE ID	As (ppm)	Pb (ppm)
GES1	30.51	233.85
GES2	37.55	392.99
GES3	41.09	376.24
GES4	32.67	254.02
GES5	10.85	22.18
GES5	<LOD	39.98
GES5	27.35	164.83
GES6	31.77	185.24
GES7	24.64	102.39
GES8	19.31	90.14
GES9	22.50	109.10
GES10	38.31	262.75
GES10	20.54	109.22
GES10	31.76	216.58
GES11	13.10	47.00
GES12	16.12	81.61
GES13	33.52	318.35
GES14	16.68	106.02
GES15	26.10	104.83
GES15	36.49	126.45
GES15	40.30	219.68
GES15	36.76	332.06
GES16	20.64	157.85
GES18	14.81	76.80
GES17	14.39	105.73
GES19	<LOD	<LOD
GES20	15.79	35.41
GES20	<LOD	12.10
GES20	15.06	59.28
GES20	13.49	61.44
GES21	<LOD	51.08
GES22	18.26	95.15
GES23	<LOD	34.95
GES24	27.41	101.60
GES25	20.40	58.05
GES25	60.79	343.82
GES25	20.63	114.58

GES25	16.83	72.37
GES26	18.88	76.88
GES27	27.21	149.29
GES28	<LOD	56.77
GES29	9.67	35.78
GES30	<LOD	29.59
GES30	21.92	153.89
GES30	45.82	260.25
GES30	38.19	183.92
GES31	28.70	177.35
GES32	11.55	69.82
GES33	46.71	159.18
GES34	24.61	105.67
GES35	12.54	55.23
GES35	<LOD	<LOD
GES35	<LOD	17.81
GES35	<LOD	24.84
GES1	<LOD	<LOD
GES2	24.65	75.83
GES3	27.87	111.63
GES4	<LOD	<LOD
GES5	<LOD	88.16
GES5	<LOD	115.46
GES5	<LOD	<LOD
GES6	52.6	217.15
GES7	39.92	164.25
GES8	28.45	106.39
GES9	30.54	56.94
GES10	<LOD	201.5
GES10	<LOD	153.95
GES10	<LOD	115.82
GES11	23.18	169.18
GES12	32.06	437.94
GES13	<LOD	154.21
GES14	27.81	183.72
GES15	49.4	348.86
GES15	48.58	406.25
GES15	<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

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: 4400 Douglas Drive, Yakima, WA 98908-2699
Legal: SE1/4 NW1/4 NW1/4 EX S & WCO RD R/W EX N & E 30 FT CO RD R/W
Tax Parcel Number: 181322-22013 S-22; T-13; R-18
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 third 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 Gilbert 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: SE1/4 NW1/4 NW1/4 EX S & WCO RD R/W EX N & E 30 FT CO RD R/W.

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

Elaine Burk

SOR **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, 2016, I certify that Darlene Board 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
COMMISSION EXPIRES
NOTARY
PUBLIC
APRIL 28, 2019
STATE OF WASHINGTON

Cynthia Huwe
Notary Public in and for the State of Washington, residing at Yakima
My appointment expires 4/28/19

6.5 Photo log

Photo 1: Front of Gilbert ES - from the north

Photo 2: Play Equipment - from the south

Photo 3: Play Field Turf - from the south

Photo 4: Play Field Asphalt Border - from the east