

April 30, 2018

Ms. Nancy Sawka
Oregon Dept. of Environmental Quality
4026 Fairview Industrial Drive
Salem, Oregon 97302

RE: Request for Explanation of Significant Difference to FS/ROD
Re-Use of Contaminated Soil in Multi-Family Development Area
Proposed Northstar Development
Salem, Oregon
AGI Project #1503.03

Dear Ms. Sawka:

This document serves as a formal request for a limited amendment, referred to as an “Explanation of Significant Difference” (ESD) to the Feasibility Study and Record of Decision for the remediation of the Northstar Site (ECSI # 6036).

The focus of the ESC is to allow a portion of the dieldrin-contaminated soils currently located on an area of the Northstar site that is planned for single-family residential development to be relocated to another area of the site that is planned for multi-family residential use. The soils were tested during the initial assessment phase of the project and have been shown to contain dieldrin below risk-based concentrations (RBCs) for urban residential use, but above RBCs for single-family residential use.

This request consists of a detailed discussion of the proposed change, a risk evaluation, and justification for the proposed change.

ORIGINAL REMEDIATION PLAN and PROPOSED AMENDMENTS

The original remediation plan, selected after evaluation in the project Feasibility Study, included the excavation and re-use of all of the dieldrin-contaminated soil above residential risk-based concentrations (RBCs) in former gravel pits located on a farm in Keizer, Oregon known as the Zielinski Farm.

Remediation of a portion of the Northstar site in 2017 (Northstar Phase I) involved the removal of approximately 66% more contaminated soil than originally estimated. In addition to the excess volume of contaminated soil, wetlands were discovered on a portion of the farm where the soil would be re-used to fill abandoned gravel pits, which could reduce the available space for re-use of contaminated soil by 60-70%, unless a permit can be obtained for the filling of the wetland. These two issues have led the project engineers to explore additional options for the re-use and disposal of the contaminated soils excavated from the Northstar site including:

- 1) Leaving soil that contains dieldrin above the residential RBC but below the urban residential RBC in place in the multi-family residence area.
- 2) Re-locate soils that contain dieldrin below the urban residential screening level (0.085 mg/kg) from areas planned for single-family residences to areas planned for urban residential development (apartments), where the screening level is higher.

Oregon DEQ concluded that these proposed changes would not require a formal amendment to the Feasibility Study and Record of Decision, but instead would require an Explanation of Significant Difference.

The proposed change would re-locate dieldrin-contaminated soil from portions of cells 2, 21, 24, 37 and 38 of the Northstar site where dieldrin exceeds the residential RBC of 0.034 mg/kg (referred to as the “borrow areas”) to all or portions of cells 1, 2, 21, 22, 23 and 24 on the west end of the Northstar site that is planned for apartments (referred to as the “fill area”). The fill area is planned for development with apartments, including parking lots and enclosed garages, where the soils will be used for structural fill. The locations of the borrow and fill areas are shown in Figure 1.

The fill area is governed by the urban residential RBC (0.085 mg/kg). Based on previous sampling of the soils, none of the soils in either the borrow or fill areas contain dieldrin in excess of 0.085 mg/kg, except for a one-acre portion of sampling cell #23 (sub-cell #23C) which will require over-excavation to remove soil above the urban residential screening level. The excavated soil from sub-cell 23C will be loaded directly onto trucks and transported to the Zielinski farm where it will be used as fill in the gravel pits. This proposed change is intended to supplement, and not to replace, other disposal and re-use options.

REASON FOR THE PROPOSED CHANGE

Exercising this change would 1) reduce the need to transport the soil on public roads and through residential neighborhoods, and 2) conserve space in the proposed on-site soil disposal cell where soils that exceed the urban residential RBC can be placed, and 3) reduce remediation costs to the property

owner, which have increased substantially due to the unexpected increase in volume of soil requiring disposal or re-use.

The dimensions of the multifamily residential area are approximately 500 feet (east-west) by 1,350 feet (north-south), or approximately 15.5 acres. The development of this area originally involved raising the elevation of the entire area with fill to aid in water runoff and to enhance the appearance of the development. The proposed re-use of the contaminated soils in this area as fill would raise the elevation of area 2-3 feet and meets a need for structural fill that avoids the need to haul 30,000 to 40,000 cubic yards of fill to the site at a cost savings of \$260,000 to \$350,000. All areas within the multi-family area will be covered with buildings, pavement, or landscaping. No bare or exposed soil will be left upon completion of the development.

Table 1
Comparison of Options for Disposal/Re-Use of Portion of Soils that Exceed Residential RBCs

	Original Remediation Plan	Proposed Modified Remediation Plan
Soil Disposal/Re-Use	Place all dieldrin-contaminated soils in pits on Zielinski Farm, Keizer. Total estimated volume: 227,500 cy.	Re-use 30,000-40,000 cubic yards of soil that exceed Residential RBCs but does not exceed Urban Residential RBCs in multi-family area. Place all remaining dieldrin-contaminated soil in pits on Zielinski Farm. Estimated volume: 197,500 – 187,500 cy.
Estimated Project Cost	\$2,730,000	\$2,380,000 – \$2,467,500
Advantages	-Beneficial use of soil as farmland -Disposal in urban area = less opportunity for human exposure	-More economical and efficient -Less material and fewer loads trucked through neighborhoods and congested areas. -Frees up space in disposal pits and containment cell for contaminated material.
Disadvantages	-Higher cost -More truck traffic through neighborhoods and congested areas.	Contaminated material remains on the Northstar site.

PROPOSED REMEDIATION

Scrapers will remove contaminated soil from the borrow area to the approximate depths indicated on Figure 1. The material will be wetted and handled as described in the Work Plan addendum dated August 6, 2017.

All of the scrapers will remain on the Northstar site on temporary haul roads. The scrapers will travel over designated haul roads to minimize cross-contamination between cells. After the soil removal is completed, the upper 2-3 inches of soil will be scraped from the haul roads in the borrow areas and placed in the fill area. All heavy equipment will be decontaminated as described in the Remedial Action Work Plan before leaving the fill area.

Air monitoring for exposure to neighboring properties to the south and west of the site will be conducted as described in the Work Plan addendum.

The excavated soils will be spread evenly over the entire 500' by 1,350' fill area and compacted with rollers to an average thickness of 2-3 feet. Dust will be controlled as needed by applying water to the ground surface, as described in the Work Plan addendum. Erosion control will follow standard construction practices and the contractor's erosion control plan.

Confirmation soil samples will be collected from the borrow area as described in the Remedial Action Work Plan. Areas in the borrow area where dieldrin concentrations exceed the residential RBC will be over-excavated and resampled until the residential RBC is met.

HUMAN HEALTH RISK RE-EVALUATION

The human health risk associated with dieldrin in the shallow soil was evaluated for residential and urban residential receptors in the Remedial Investigation/Feasibility Study report by AGI (August 9, 2016). The Conceptual Site Model has been modified to reflect the post-remediation exposure pathways and receptors for the multifamily use area only, which includes urban residential, construction worker, excavation worker, and occupational receptors (Table 2).

Following the completion of the fill placement, no soils will be located in the multi-family area that exceed risk-based concentrations for urban residential receptors, there will therefore be no need for any institutional or engineering controls.

Table 2 - Conceptual Site Model – Multi-Family Residence Area (Post-Remediation)
 Proposed Northstar Development

	Pathway	Receptor				
			Is Pathway Complete?	Is GRBC Exceeded?	Comments	
Soil	Ingestion, Dermal Contact and Inhalation	Urban Residential	Yes	No	Area is zoned for multifamily residential. Contaminants in soil will be below DEQ GRBCs for urban residential use	
		Occupational	Yes	No		
		Construction Work	Yes	No		
		Excavation Worker	Yes	No		
	Volatilization to Outdoor Air	Residential and/or Urban Residential	No	No	Contaminants in soil are considered to be non-volatile	
		Occupational	No	No		
	Vapor Intrusion Into Buildings	Urban Residential	No	No		
		Occupational	No	No		
	Leaching to Groundwater	Residential and/or Urban Residential	No	Yes		Groundwater is deep (60-70 feet bgs) and the COPCs are considered to be very immobile in soil. Groundwater impact is very unlikely, therefore pathway is incomplete.
		Occupational	No	Yes		
Groundwater	Ingestion & Inhalation From Tap Water	Urban Residential	No	No	Groundwater is deep and the COPCs are considered to be very immobile in soil. Groundwater impact is very unlikely, therefore pathway is incomplete.	
		Occupational	No	No		
	Volatilization to Outdoor Air	Urban Residential	No	No		
		Occupational	No	No		
	Vapor Intrusion Into Buildings	Urban Residential	No	No		
		Occupational	No	No		
	Groundwater in Excavation	Occupational	No	No		
	Ecological		Terrestrial, Surface Water, Sediment	Yes		No

Notes:

GRBC - Generic Risk Based Concentration
 COPCs- Contaminants of Potential Concern

Based on the revised Conceptual Site Model, the proposed amended remedy is expected to remain protective of human health and the environment and meets the remedial action goals.

As shown in Table 3, the proposed amended remedy scores the same as the original selected remedy in effectiveness, long-term reliability and implementability. The proposed remedy receives a higher score for implementation threat given that the contaminated soil is not transported across public roads. As a result, the proposed remedy (Alternative #6) scores one point higher than the original remedy (Alternative #5).

Table 3 – Comparison of Remedy Selection Factors (Alternatives 5 and 6)
 Northstar Development
 Salem, Oregon

Remedial Option	Effectiveness	Long-Term Reliability	Implementability	Implementation Threat	Cost (Total \$/Cost per Cubic Yard)	Score	Comments
<u>Alternative #5</u> Excavation and Re-Use at Local Farms	High (5)	High (5)	High (5)	Low to Moderate (4)	Low (\$2,700,000) (4)	23	Alternative involves placing all contaminated soil (up to 227,000 cy in approved location where it will be re-used as farm land.
<u>Alternative #6</u> Same as Alternative #5, plus Re-Use of soils On Site in Multi-Unit Residential Area	High (5)	High (4)	High (5)	Low (5)	Low (\$2,400,000 to \$2,500,000) (4)	24	Alternative involves placing 187,000-197,000 cy of contaminated soil in approved location where it will be re-used as farm land and relocation of up to 40,000 cy of soils contaminated below Urban Residential RBC to multi-family residential area.

Each factor is assigned a score from 0-5, with “0” being least desirable and “5” being most desirable.

Based on this information, Anderson Geological requests on behalf of I&E Construction that this Explanation of Significant Difference be approved that will allow the proposed modification to the FS/ROD.

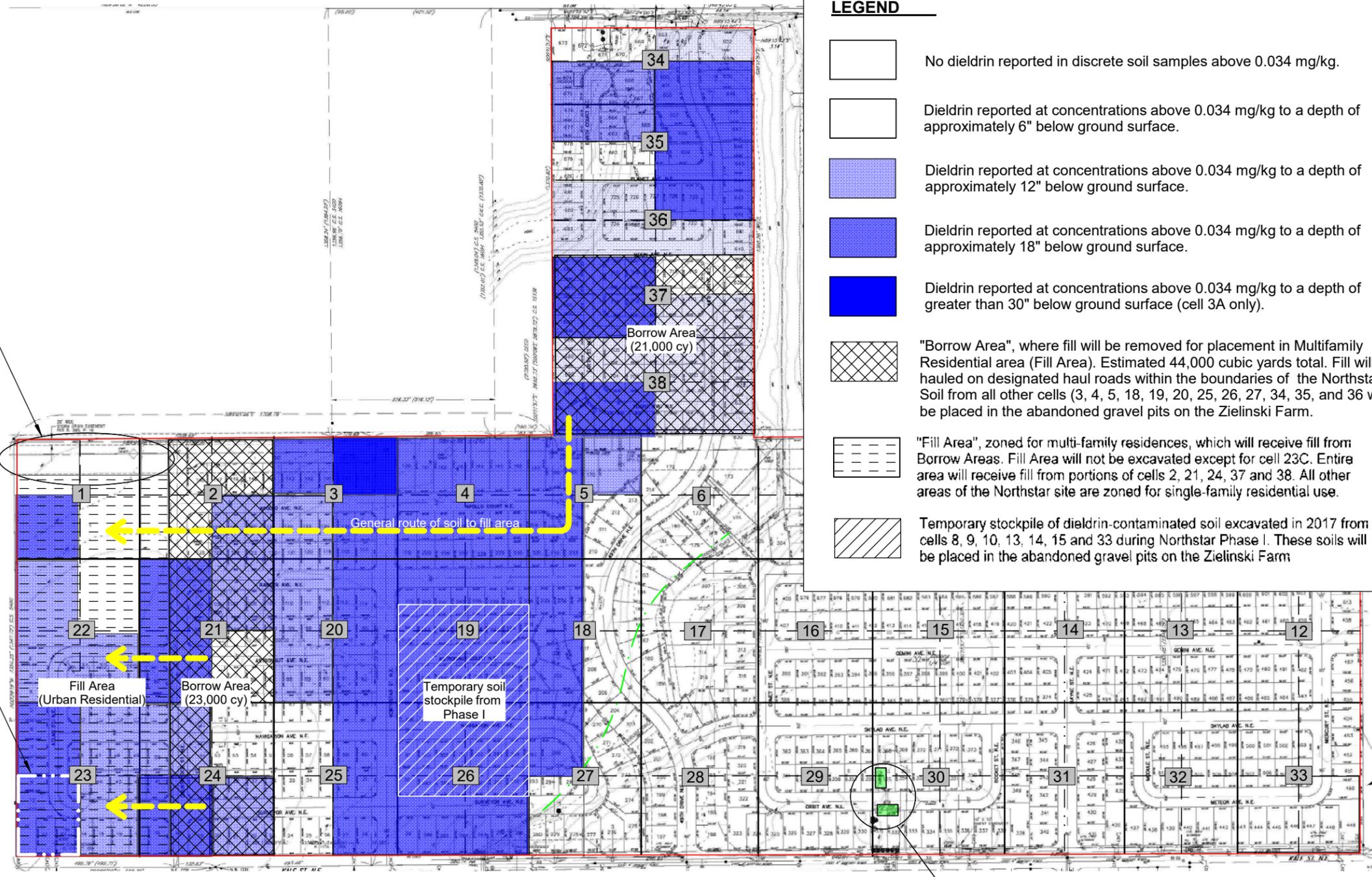
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Sincerely,

A handwritten signature in black ink, appearing to read "Erik Anderson". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Erik Anderson, R.G.
Hydrogeologist

enc: Figure 1 –Locations of Proposed Borrow and Fill Areas



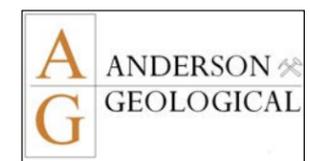
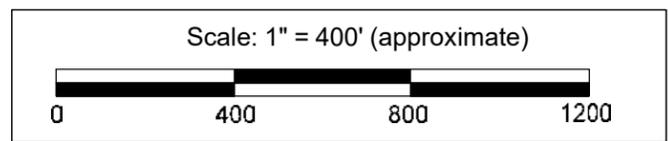
LEGEND

- No dieldrin reported in discrete soil samples above 0.034 mg/kg.
- Dieldrin reported at concentrations above 0.034 mg/kg to a depth of approximately 6" below ground surface.
- Dieldrin reported at concentrations above 0.034 mg/kg to a depth of approximately 12" below ground surface.
- Dieldrin reported at concentrations above 0.034 mg/kg to a depth of approximately 18" below ground surface.
- Dieldrin reported at concentrations above 0.034 mg/kg to a depth of greater than 30" below ground surface (cell 3A only).
- "Borrow Area", where fill will be removed for placement in Multifamily Residential area (Fill Area). Estimated 44,000 cubic yards total. Fill will be hauled on designated haul roads within the boundaries of the Northstar site. Soil from all other cells (3, 4, 5, 18, 19, 20, 25, 26, 27, 34, 35, and 36 will be placed in the abandoned gravel pits on the Zielinski Farm.
- "Fill Area", zoned for multi-family residences, which will receive fill from Borrow Areas. Fill Area will not be excavated except for cell 23C. Entire area will receive fill from portions of cells 2, 21, 24, 37 and 38. All other areas of the Northstar site are zoned for single-family residential use.
- Temporary stockpile of dieldrin-contaminated soil excavated in 2017 from cells 8, 9, 10, 13, 14, 15 and 33 during Northstar Phase I. These soils will be placed in the abandoned gravel pits on the Zielinski Farm

Stormwater swale will be excavated but not filled

Soil exceeding Urban Res. RBC will be removed to approx. depth of 12" in subcell 23C and placed in abandoned gravel pits at Zielinski Farm. Excavated surface will be sampled for confirmation before placement of fill.

NOTE: All shallow soil (0-6") in cells 3, 4, 19, 20, 25 and 26 exceeds RBC for Urban Residential use (0.085 mg/kg).



LOCATIONS OF PROPOSED BORROW AND FILL AREAS			
Proposed Northstar Development - Phase II Salem, Oregon			
SIZE	CAGE CODE	DWG NO.	PROJECT No.
B		April 2018	FIGURE 1

PRIVATE RESIDENCE