Prepared for

Wilbur-Ellis Holdings II
345 California Street, 27th Floor
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GROUNDWATER WELL INSTALLATION AND MONITORING WORK PLAN

Nachurs Alpine Solutions
101 North 1st Street
Sunnyside, Washington

Ecology Cleanup Site ID: 14601
Facility/Site ID: 29243

Prepared by

Geosyntec consultants

engineers | scientists | innovators

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Geosyntec Project Number: PNR0696

30 April 2020

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1. INTRODUCTION

This Work Plan (Work Plan) presents the proposed scope of work for the installation and quarterly sampling of groundwater monitoring wells at the former Nachurs Alpine Solutions (NAS) site located at 101 North 1st Street in Sunnyside, Washington (Site). This Site location is shown in Figure 1. The goal of this work is to further characterize potential groundwater impacts from constituents of potential concern (COPCs) that were identified during a previous investigation at the Site. This Work Plan was prepared by Geosyntec Consultants, Inc. on behalf of NAS. This work is being completed under oversight by Washington Department of Ecology (Ecology), as part of the Voluntary Cleanup Program (VCP), for which an application is being submitted to Ecology with this Work Plan.

This work plan is organized as follows:

- Section 2 – Site Background: summarizes the relevant site use, site environmental and regulatory history, and the local geology and hydrogeology.
- Section 3 – Scope of Work: presents the planned field activities and locations and purposes of the proposed monitoring wells.
- Section 4 – Groundwater Monitoring Well Installation: outlines the preparation activities and proposed methods and activities for well installation, well development, and handling of investigation-derived waste.
- Section 5 – Groundwater Monitoring: provides the proposed methods and plans for conducting quarterly groundwater monitoring of the wells proposed to be installed in Section 4.
- Section 6 – Schedule: presents the planned schedule to complete the work proposed in this Work Plan.

2. SITE BACKGROUND

2.1 Site Use History

The Site is an approximately 0.35-acre property that is owned by BNSF and bordered by a BNSF rail corridor to the north and a rail spur to the south and west. To the east is 1st Street and approximately 100 feet to the northeast is Bee Jay Scales (a former drum storage facility that is currently being remediated). General land use in the Site vicinity is industrial.

Since approximately 1906, the surrounding area has been used for agricultural warehouses, lumber yards, coal storage, and railroad transportation activities (August Mack, 2017). Prior to NAS leasing the property, the land remained vacant since at least 1937 with the exception of a rail spur on the southern portion of the property. In 1973, NAS began leasing the Site for fertilizer storage and distribution (August Mack, 2017). NAS' operations at the Site ceased in August 2017 and by late 2017 NAS had removed all equipment, concrete, and structures associated with their

operations from the Site. NAS no longer operates at the Site and plans to terminate its lease with BNSF after completion of work under Ecology's VCP. The Site is currently a vacant lot.

During NAS operations, NAS used the Site to receive fertilizer by rail spur and then distribute locally. Nitrogen, phosphate, and potassium-based fertilizer were housed in multiple aboveground storage tanks (ASTs). The ASTs were originally staged along the northern, southern, and eastern Site boundaries without secondary containment and consequently were relocated in 1999 to within a concrete containment area on the western portion of the property. The locations of these former AST storage areas and other former Site features are shown in Figure 2.

2.2 Environmental Investigation History and VCP Enrollment

In August 1998, a Limited Environmental Site Screen (1998 Site Screen) was conducted by Paragon Consulting Group at the Site, which included a Site visit, interview with the property manager, and a records review (Paragon, 1998). The 1998 Site Screen identified minor staining in various areas of the Site, attributed to "minor" spills associated with loading or unloading fertilizer from the on-site ASTs. The report concluded that there were no "obvious indications of significant environmental liability" associated with NAS' operations. Interviews conducted during the site review indicated NAS had plans to build a contained tank farm and relocate the tanks to the west of the leased area at the time (Paragon, 1998). NAS was working with BNSF to extend the lease area west, and by 1999, the ASTs were relocated to a secondary containment area on the newly leased western portion of the property. A concrete loading pad was also installed to the east of the new AST area (Figure 2).

In 2017, NAS removed all structures from the Site per BNSF's request as part of the lease termination. Additionally, BNSF requested Phase I and II Environmental Site Assessments (ESA) prior to lease termination, which were completed by August Mack in December 2017 and February 2018, respectively. The 2017 Phase I ESA summarized historical fertilizer storage and transportation activities and did not identify any Recognized Environmental Conditions (RECs) at the Site (August Mack, 2017). The Limited Phase II Subsurface Investigation (2018 Phase II Report) identified arsenic concentrations in shallow soil above United States Environmental Protection Agency (EPA) Industrial Regional Screening Levels (RSLs), but were consistent with background concentrations for Washington soils and below the Washington Model Toxics Control Act (MTCA) Method A cleanup level for industrial properties. Arsenic (total and dissolved), lead (total), and nitrate concentrations in shallow groundwater were reported to be above EPA maximum contaminant levels (MCLs). No other constituents analyzed for exceeded the EPA RSLs or the MCLs. August Mack concluded that "due to the limited nature of analytical concentrations observed in soil and groundwater, the shallow depth of groundwater at the Site, and the distance to the nearest potential receptors, there is no threat to human health or the environment" (August Mack, 2018). As a result, August Mack did not recommend further investigation of soil or groundwater at the Site.

Geosyntec understands that the 2017 Phase I ESA and 2018 Phase II ESA were provided to Ecology by BNSF. After reviewing these reports, Ecology provided early notice to BNSF in July

2018, indicating that additional investigation activities were necessary to characterize impacts to the Site and perform a cleanup action. In its letter, Ecology noted that arsenic, nickel, and zinc in soil as well as arsenic, lead, molybdenum, nickel, and nitrate in groundwater were at concentrations exceeding Ecology's MTCA Method B cleanup levels. Ecology suggested and BNSF has requested that NAS participate in the VCP to obtain a No Further Action (NFA) letter. Geosyntec notes that concentrations of metals in soil and dissolved nickel and lead in groundwater from the 2018 Phase II ESA are below MTCA Method A cleanup levels for industrial land use.

On 11 February 2020, Geosyntec and Wilbur-Ellis participated in a phone call with Frank Winslow, Ecology's VCP program lead for the Central Region, to inquire about Ecology's preliminary thoughts on this Site, plans to install groundwater monitoring wells at the Site, and the process of VCP enrollment. During that call, Ecology outlined the primary COPCs at the Site as nitrate and dissolved arsenic and molybdenum in groundwater and that metals and nitrate concentrations in the soil indicated that there were no State of Washington MTCA Method A soil cleanup level exceedances. Ecology suggested establishing a background well location to evaluate background/upgradient levels of metals and nitrate. Based on Ecology's knowledge of the area, groundwater is expected to flow towards the southeast.

Subsequent to this call and concurrent with this Work Plan, NAS is submitting a VCP application to Ecology.

2.3 Local Geology/Hydrogeology

The Site topography is generally flat with an average surface elevation of approximately 745 feet above mean sea level (August Mack, 2017). The regional topographical gradient is to the southeast, toward the Snipes Mountain Lateral, a tributary of the Yakima River (SECOR, 2007). The Site is located within the Yakima Fold Belt, a structural sub province of the Columbia Basin, characterized by east-west trending anticlinal ridges and synclinal valleys. Surficial geology at the Site and vicinity is Quaternary alluvium, which consists of unconsolidated sand, gravel, and cobbles with minor lenses of silt and clay. Underlying Site soils are interpreted to be the Cleman and Outlook very fine sandy loams, which are classified as poorly drained and well drained soils, respectively (August Mack, 2017).

Groundwater at the Site was first encountered between 7 and 10 feet below ground surface (ft bgs) during the Phase II ESA (August Mack, 2018), and water level measurements within a 0.5-mile radius of the Site vary from 4 to 13 ft bgs.[1] Site groundwater is inferred to flow to the southeast based on Site water level measurements, water level measurements at wells within 0.2 miles (SECOR, 2007 and HDR, 2018), and surface topography. However, there could be some localized variations in groundwater flow direction, which will be assessed during the implementation of the scope described in this Work Plan.

[1] Ecology What's in My Neighborhood Database, https://apps.ecology.wa.gov/neighborhood/?lat=46.32794&lon=-120.01987

3. SCOPE OF WORK SUMMARY

The Work Plan includes the installation and development of four groundwater monitoring wells and at least four subsequent quarters of groundwater monitoring. The four monitoring wells, MW-1 through MW-4, are proposed at to be installed in first encountered groundwater at the Site and to span the Site, providing groundwater elevation and COPC concentration data at locations upgradient and downgradient of former Site operations. Well locations are based on the background information summarized in Section 2 above. Specifically, the wells are proposed to be installed at the following locations, as shown in Figure 2:

- MW-1 will be an upgradient well installed approximately 30 feet to the west-northwest corner of the Site, proximal to the railroad track, and is designed to monitor groundwater flowing into the Site and assess background groundwater conditions. This well is upgradient to the tank farm installed with secondary containment in 1999 and upgradient to the previous tank storage areas prior to 1999.
- MW-2 will be installed in the center of the Site, immediately downgradient of the area that formerly housed multiple fertilizer ASTs and within the area that formerly contained a concrete pad likely used for loading of fertilizer at the site. This well is also adjacent and downgradient to the sampling location with the highest groundwater COPC concentrations in the August Mack Phase II (August Mack, 2018). The purpose of this monitoring well is to assess potential groundwater impact from historical fertilizer storage and loading/unloading activities.
- MW-3 will be installed in the northeast corner of the Site. The purpose of this well is to achieve spatial distribution for evaluating groundwater gradients at the Site and to monitor COPC concentrations in cross-gradient/upgradient groundwater, providing additional information on background concentrations in the Site vicinity.
- MW-4 will be installed in the southeast corner of the Site and downgradient of historical Site operations. The purpose of this well is to evaluate COPC concentrations in groundwater leaving the Site.

Each of these four wells will be installed with a 10-foot screen placed at a depth depending on the Site conditions (lithology and first encountered groundwater). Geosyntec plans to install the top of the well screen at least 2 feet above first encountered groundwater, but no shallower than 5 ft bgs. These wells will be monitored quarterly for a minimum of four quarters. The total number of quarterly groundwater monitoring events will depend on variability in the groundwater data.

4. GROUNDWATER MONITORING WELL INSTALLATION

4.1 Preparation Activities

Prior to beginning well installation, the following tasks will be completed:

- Geosyntec will prepare a site-specific health and safety plan (HASP) for the field activities presented herein.
- Geosyntec will contract a private underground utility locating service and notify the 811 Washington Utility Notification Center. A private utility locator will clear the proposed boring locations of potential utilities and subsurface obstructions. Geosyntec will also coordinate with BNSF to identify and clear underground signal lines associated with the railroad.
- Geosyntec will coordinate with a Washington State-licensed and bonded driller to schedule the drilling and plan the staging, sequencing, well construction specifications, and well development.
- Geosyntec will coordinate with NAS for Site access and with BNSF to coordinate flaggers when working within 25 feet of rail lines.
- Geosyntec will coordinate with NAS and a licensed waste hauler regarding storage, pickup, and disposal of investigation-derived waste (IDW).

4.2 Monitoring Well Installation

Drilling will be performed using hollow-stem auger drilling methods. Drilling activities will be conducted by a State of Washington-licensed driller with direct oversight by a Geosyntec field personnel, who will be supervised of a State of Washington licensed Professional Geologist. Boreholes will be advanced to approximately 8 to 10 feet below first encountered groundwater or 25 ft bgs, whichever comes first. The total depths may be adjusted based on field observations of lithology and depth to first groundwater. Soil cores will be logged by visual-manual methods using the United Soil Classification System (USCS). Field screening and classification information will be recorded on a field boring log, along with additional drill rig observations.

Monitoring wells will be constructed of two-inch schedule 40 polyvinylchloride (PVC) casing and screen, with 10 feet of 10-slot (or 0.01-inch slotted) PVC screen with flush-threaded joints and a bottom cap. The total depth of the wells and the screen intervals will be based on field observations of soil and groundwater conditions during drilling and logging activities, targeting the top of the well screen approximately 2 feet above first encountered groundwater, but no shallower than 5 ft bgs. Monitoring well filter packs will be constructed using a graded silica sand filter pack tremied to approximately 2 feet above the top of the well screen, followed by at least 2 feet of hydrated bentonite chips , and finished with cement grout to the ground surface. The tops of the well casings will be fitted with expandable-gasket lockable caps. Monitoring wells will be completed at the surface with a flush heavy-duty traffic-grade vault set in a concrete pad.

4.3 Monitoring Well Development

After a minimum of 24 hours following well installation, monitoring wells will be developed by the driller under oversight by the Geosyntec field personnel. Development may consist of a

combination of bailing, surging, and pumping. Groundwater quality parameters (temperature, pH, specific conductance, and turbidity) will be measured during purging activities. Wells will be developed to remove the fine-grained materials inside the filter pack and casing, stabilize the filter pack around the well screen, and produce representative water samples from the water-bearing zone. The turbidity of the water purged from the well during well development will be measured and documented until low turbidity conditions are measured (<50 nephelometric turbidity units [NTUs]) or 10 well casing volumes have been removed.

Following development, the north side of each well box and the top of the well casing will be surveyed for elevation and location by a Washington State-licensed surveyor.

4.4 Investigation-Derived Wastes

IDW during installation and development activities, including soil drill cuttings and decontamination and purge water, will be containerized in labeled Department of Transportation-approved steel drums. Geosyntec will collect one composite soil and one composite water sample for waste profiling. These samples will be submitted to the analytical laboratory for analysis of Resource Conservation and Recovery Act (RCRA) 8 metals (EPA Methods 6010 and 7470), volatile organic compounds (EPA Method 8260), NWTPH (Diesel, Motor oil, and gasoline ranges). Total concentrations will be assessed first, and if needed, samples will be analyzed using the toxicity characteristic leaching procedure (TCLP; EPA Method 1311) .

Geosyntec will coordinate with NAS on IDW profiling, transportation, and disposal at an appropriate off-site facility, including the review and signature of profiles and manifests.

5. GROUNDWATER MONITORING

The groundwater monitoring plan is summarized in Table 1. Preparation and monitoring procedures are outlined below.

5.1 Preparation Activities

Prior to the quarterly groundwater monitoring events, the following tasks will be completed:

- Geosyntec will prepare a site-specific health and safety plan (HASP) that will include the field activities presented herein. The HASP will be prepared prior to the first event and used for subsequent events.
- Geosyntec will subcontract the quarterly monitoring to Blaine Tech Services of Auburn, Washington, (Blaine Tech) and coordinate with Blaine Tech regarding scope and schedule for each of the quarterly monitoring events.
- Geosyntec will coordinate with the analytical laboratory subcontractor regarding the specified sampling and analyses herein.

- Geosyntec will coordinate with NAS for Site access and with BNSF to coordinate flaggers when working within 25 feet of rail lines.
- Geosyntec will coordinate with NAS and a licensed waste hauler regarding storage, pickup, and disposal of IDW.

5.2 Depth to Groundwater Measurements

During each quarterly monitoring event, groundwater level and total depth measurements will be obtained using an electronic depth to water meter at the four monitoring wells, prior to groundwater sample collection. These measurements will be collected relative to the top of the PVC casing inside the surface monument from a marked point that has been previously surveyed (i.e., the north side of the casing) and recorded on field data collection forms. If water is observed inside the well monument, it will be removed until the level is below the top of casing such that it will not flow into the well once the well cap is removed. The depth to water meter will be decontaminated using an Alconox or Liquinox wash and rinse upon arriving on-Site and between use at each well.

5.3 Groundwater Sampling

During the quarterly sampling event, one groundwater sample will be collected from each of the four monitoring wells and one duplicate sample will be collected, for a total of five samples per event. Monitoring wells will be sampled using low-flow sampling techniques, and each well will have dedicated tubing.

Prior to sampling, wells will be purged at a rate of between 100 and 500 milliliters per minute (mL/min) with the depth to water being measured frequently and recorded on field data sheets. The purge rate will be adjusted to minimize drawdown (target of less than 0.1 feet of drawdown). A water quality meter, calibrated prior to the start of each field day, will be used to monitor field parameters during purging. Field parameters will be recorded on field data sheets approximately every five minutes while purging. Purging will continue until pH, temperature, specific conductance, oxygen reduction potential (ORP), dissolved oxygen (DO), and turbidity stabilize (three consecutive readings), which are defined as follows:

- ±0.1 units for pH;
- ±3% for specific conductance;
- ±10 mV for ORP;
- ±10% for temperature;
- ±10% for turbidity; and
- ±10% for DO.

In case the above criteria for stabilization are not met a maximum of three well volumes will be purged prior to sample collection. Samples may also be collected if stabilization has not occurred after two hours of purging, regardless of well purge volume status.

Groundwater samples will be collected in laboratory-supplied containers and as detailed in Table 1. Samples planned for dissolved metals analysis will be field filtered using a disposable 0.45-micrometer (µm) filter. Samples will be placed into a cooler with ice, shipped using standard chain-of-custody procedures, and analyzed for total and dissolved metals (arsenic and molybdenum, by EPA Method 200.8 or equivalent) and nitrate as nitrogen (EPA Method 300.0 or equivalent).

5.4 Investigation Derived Wastes

Blaine Tech will containerize IDW purge and decontamination water generated from each sampling event in labeled Department of Transportation-approved steel drums.

Geosyntec will coordinate with NAS on IDW profiling, transportation, and disposal at an appropriate off-site facility, including the review and signature of profiles and manifests.

5.5 Quality Assurance and Quality Control Samples and Review

Blaine Tech will collect one duplicate sample during each monitoring event, submitted blind to the analytical laboratory. The duplicate will be analyzed for the same constituents as the original sample, which will include total and dissolved metals (arsenic and molybdenum by EPA Method 200.8 or equivalent) and nitrate as nitrogen (EPA Method 300.0 or equivalent).

Upon receipt of the Blaine Tech field report and laboratory analysis results, Geosyntec will review the field records and the groundwater data for quality assurance/quality control (QA/QC). Field data sheets will be reviewed for completeness and conformance with the monitoring procedures outlined herein, and Geosyntec will complete a data validation checklist for the laboratory analytical report. The checklist will include: a review of data completeness; sample contamination; conformance with holding times; and detection limits within acceptable ranges, as well as ensuring that the associated quality control results of each sample are within the specified method criteria. Based on this checklist, laboratory data will be deemed acceptable or unacceptable for use for the purposes of this project.

5.6 Results Evaluation and Reporting

Following QA/QC of the laboratory data, Geosyntec will evaluate the groundwater results in relation to historical results and applicable State of Washington MTCA A screening levels. Each quarter, the analytical and water level results will be formatted and uploaded to Ecology's Environmental Information Management System (EIM) online database. Following the completion of at least four quarters of groundwater monitoring, the results will be incorporated into a Remedial Investigation/Feasibility Study (RI/FS), which will be submitted to Ecology.

6. SCHEDULE

Upon approval of this Work Plan and VCP application by Ecology, Geosyntec expects to schedule and complete the well installation and development activities within approximately 4 weeks,

depending on subcontractor availability. The first round of groundwater monitoring is expected to be completed within two to three weeks of well development. Subsequent quarterly groundwater sampling will occur approximately 90 days after the previous sampling event.

After at least four quarters of groundwater monitoring, Geosyntec will prepare and submit an RI/FS to Ecology, as the next step in the VCP process.

7. REFERENCES

August Mack Environmental (August Mack), 2017. Phase I Environmental Site Assessment, 101 North 1st Street, Sunnyside, Washington. 8 December.

August Mack, 2018. Limited Phase II Subsurface Investigation, 101 North 1st Street, Sunnyside, Washington, 22 February.

HDR, 2018. Monitoring Well Sampling Update, Simplot Grower Solutions, Sunnyside, Washington, June.

Paragon Consulting Group (Paragon), 1998. Limited Environmental Site Screen, Na-churs Plant Food Company, South 1st Street and Railroad, Sunnyside, Washington. 19 August.

SECOR, 2007. Phase III Remedial Investigation Report for the Bee-Jay Scales Site, Sunnyside, Washington, 26 October.

TABLE

Table 1
Groundwater Monitoring Plan
Sunnyside, Washington

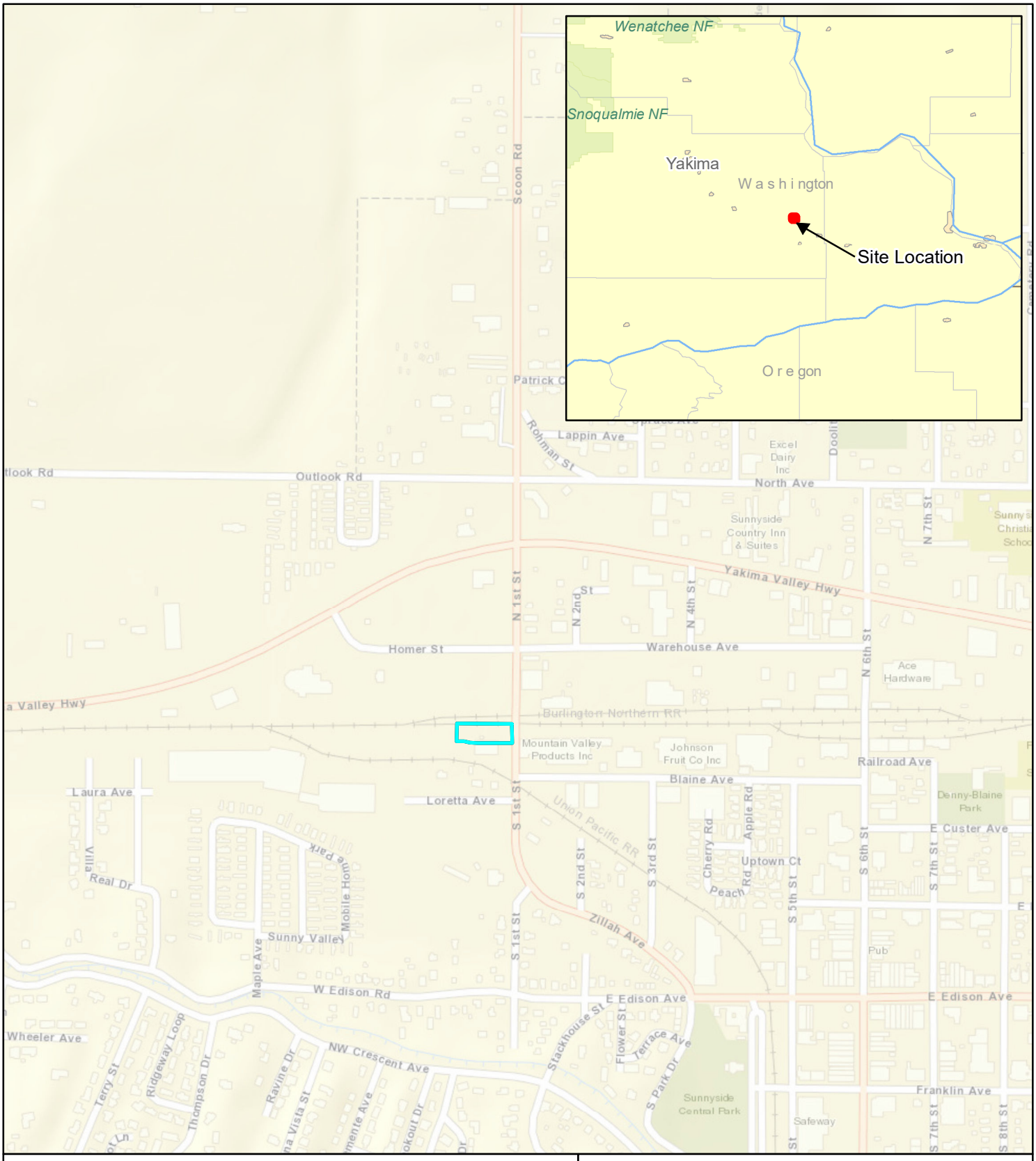
Well	Type	Monitoring Plan		
		Depth to Water Measurement	**Nitrate by EPA 300.0**	**Dissolved & Total Metals by EPA Method 200.8[1]**
MW-1	Upgradient/Background	Q	Q	Q
MW-2	On-Site	Q	Q	Q
MW-3	Cross/Upgradient/Background	Q	Q	Q
MW-4	Downgradient	Q	Q	Q

Notes:

[1] Samples will be analyzed for total and dissolved arsenic and molybendum. Dissolved metals samples will be field filtered with a 0.45-micron filter.

MW = monitoring well
Q = quarterly
EPA = Environmental Protection Agency

FIGURES



Legend

Site Location

N

0 0.05 0.1 0.2 0.3 Miles

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

Site Location Map

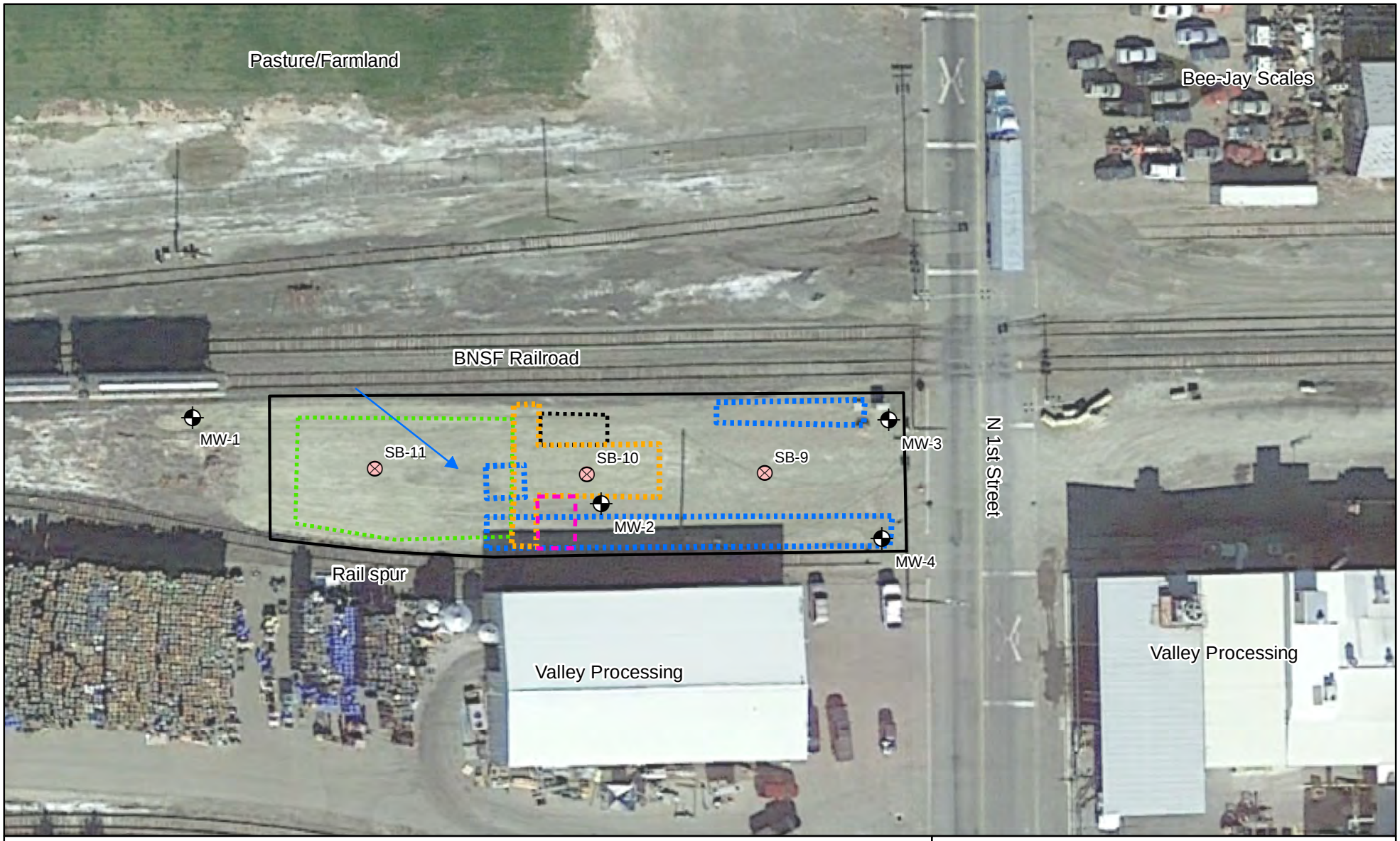
101 North 1st Street
Sunnyside, Washington

Geosyntec consultants

PNR0696-01	March 2020

Figure 1

S:\CAD_GIS\Projects\PNR0696_Sunnyside\MXDs\Figure 1 Site Location Map.mxd



Legend

- Proposed Monitoring Well Location
- Phase II Grab Groundwater Sample Location (2018)
- General Groundwater Flow Direction
- Site Boundary
- Former AST Area (Pre-1999)
- Former Building Location (Pre-1999)
- Former AST Area with Secondary Containment (1999-2017)
- Former Building Location (1999-2017)
- Former Concrete Loading Pad (1999-2017)

Notes:
Map provided by ESRI Basemaps 2016.
AST = Aboveground Storage Tank
General groundwater flow direction based on gradients reported at Bee Jay Scales and Simplot Soilbuilders Sunnyside (https://apps.ecology.wa.gov/neighborhood/).
The Site Boundary is the approximate area leased by NAS from BNSF, per the Environmental Site Assessment (August Mack, 2017)

N

0 50 Feet

Proposed Monitoring Well Locations

101 North 1st Street
Sunnyside, Washington

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Figure 2

P:\CAD_GIS\Projects\PNR0696_Sunnyside\MXDs\Figure 1 Proposed Well Locations.mxd