REGIONAL DISTRICT NORTH OKANAGAN

2020 Annual Report: Greater Vernon Diversion and Disposal Facility

Ministry of Environment Operational Certificate No. MR 15286

SUBMITTED TO:
Ministry of Environment, Penticton, B.C.

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1. EXECUTIVE SUMMARY

The objective of the 2020 Annual Report is to summarize and update facility operation, development, and environmental monitoring for the reporting period of 2020 in compliance with Operational Certificate MR 15826 (OC). This annual report outlines any new information that could affect the authorized works, plans, assessments, surveys, programs and reports.

In 2020, approximately 31,193 tonnes of waste was landfilled at the GVDDF, which is a 0.9 % increase from 2019. Based on the Design, Operations and Closure Plan updated in 2017, the GVDDF is estimated to reach design capacity in 2059. In 2010, the RDNO purchased the parcel of land adjacent to the GVDDF and a conceptual design for site expansion was developed in 2015 by XCG Consultants in order to determine the potential increase in site life and the expansion costs. In order to authorize disposal of Municipal Solid Waste (MSW) in this lateral expansion site investigations, preliminary design and application activities began in 2021 with the goal of starting to fill the expansion area in 2035.

A number of commodities are segregated at the GVDDF and are either shipped off site to be recycled or re-used on site. The approximate quantity of materials diverted from landfill in 2020 was 35,900 tonnes. This material includes yard and garden waste (which is accepted free of charge and is composted at the Regional Yard Waste Composting Facility located at the GVDDF), crushable materials (concrete, asphalt, masonry), wood waste, tires, propane tanks, scrap metals, etc.

Environmental monitoring in 2020 included groundwater and surface water sampling and landfill gas monitoring. Water quality data collected as part of the environmental monitoring program is compared to historical values to monitor trends and to determine potential site impacts to groundwater. The 2020 Environmental Monitoring Report is provided as Attachment A.

Regular facility operations at the GVDDF remained unchanged in 2020, however, additional operational activities that took place at the GVDDF in 2020 included Unexploded Explosive Ordnance (UXO) clearing, construction of an access road around the NE perimeter of the authorized fill area, and leachate pond investigations. Total operation and maintenance expenditures at the GVDDF during 2020 were $1,926,702, capital works expenditures were $733,833, and approximately $5,408 was spent on environmental monitoring.

2. INTRODUCTION

The Greater Vernon Diversion and Disposal Facility (GVDDF), owned by the Regional District of North Okanagan (RDNO), is located within Electoral Area “B” at 120 Birnie Road, approximately 5 km south of the City of Vernon (centre).

The legal description of the property on which current GVDDF operations are situated is Lot A, Plan KAP83248, Section 16, Township 9, Osoyoos Division Yale District. In 2012 the RDNO purchased the adjacent 40 ha parcel (Lot B, Plan KAP83248) for potential future expansion of the GVDDF. The site is approximately 60 hectares and serves the communities of Vernon and Coldstream and the surrounding Electoral Areas (B and C). The location plan is presented as part of the 2020 Environmental Monitoring Report, Attachment A.

The GVDDF was operated by GFL Environmental Inc. under a contract with the RDNO during 2020. The Scale Attendant and Inspector positions at the GVDDF were filled by RDNO staff.

The GVDDF has a maximum permitted filling rate of 45,000 tonnes per year. The works authorized are a sanitary landfill, leachate control works, and related appurtenances.

3. QUANTITIES DISPOSED AND DIVERTED

The quantity of MSW disposed (discharged) at the GVDDF in 2019 was 31,193 tonnes, which represents a 0.9% increase from 2018. This equates to an estimated fill volume of 64,985 cubic metres. The calculated apparent density for this site, as determined in the 2017 DOCP is 0.48 tonnes per cubic metre. The DOCP also lists a target apparent density of 0.70 tonnes per cubic metre to ensure compaction is maximized. The materials stored on site include those listed below in Table 1 as well as soil and blast rock used for a variety of projects.

According to 2016 census data and subsequent Stats BC estimates, the population in the service area for the GVDDF (Vernon, Coldstream, Electoral Area B, Electoral Area C, and part of the Okanagan Indian Band lands) is 61,655. The per capita disposal rate in 2020 was therefore 0.51 tonnes, representing a small increase from 2019. The per capita disposal rate in this area has been relatively stable for a number of years. When compared with the 1991 per capita filling rate of 1.1 tonnes per capita per year it appears that waste reduction programs in Greater Vernon are effective.

The quantity and types of materials diverted from the site or recycled on site are listed in the table below.

Table 1 - Quantities of Material Recycled or Reused from GVDDF in 2020

Material/Product	Quantity	Units
Crushable Materials	4,257	Tonnes
Glass	0[1]	Tonnes
Gypsum	0	Tonnes
Tires	3.53	Tonnes
Wood and yard	27,965.16	Tonnes
Asphalt Shingles	1,240.73	Tonnes
Metal	2,325.34	Tonnes

Material/Product	Quantity	Units
Refrigerated Appliances	2,727[2]	Units
Mattresses and Box Springs	7,692[3]	Units
Propane Tanks	3,843	Units

1 – Glass was collected and added to crushable materials onsite (and was not weighed).
2 – Quantity of refrigerated appliances of which Freon was recovered.
3 – Regional quantity of mattresses and box springs deconstructed and recyclable material diverted.

Drywall has not been recycled since 2017 due to issues related to the potential presence of asbestos in the material. All new drywall cut ends received in 2020 were stockpiled. The RDNO continues to investigate recycling options for new drywall. If these opportunities are not technically or economically feasible, new drywall will be disposed onsite. Used drywall that has been tested and known to contain asbestos is buried in the asbestos cell and covered immediately as per the RDNO's asbestos handling protocol. All other drywall received at the GVDDF is considered refuse and is disposed.

4. OPERATIONAL STATUS UPDATE

This section provides an update on the status of authorized work and related appurtenances, including information on operations, construction, inspections, emergencies, maintenance work and repair activities during 2020. The authorized works and related appurtenances include the following:

- Leachate Control System (including pond, pump station, dam, irrigation system, other collection works such as the intake at the composting facility);
- Landfill Gas Management System (including plant, pipes, wells, condensate structures);
- Surface Water Management System (including ditches, culverts, pipes, manholes, catch basins, outflow structures);
- Filling Plan (including cells built – bases, berms, cover, access roads, stockpile area pads, bunkers, etc.);
- Fencing and Gates (including site security);
- Weigh Scale (including on/off ramps, bypass roads, scale software, building, signage);
- Regional Yard Waste Composting Facility; and
- Environmental Monitoring System (including wells, sample sites, LFG probes as described in Attachment A and the Environmental Monitoring Plan).

4.1 OPERATIONS

As in previous years the GVDDF operated under the following hours:

"Summer Hours" (March 1 - November 30)
Monday to Friday from 8:00 a.m. to 4:30 p.m.
Saturday and Sunday from 8:30 a.m. to 4:00 p.m.
"Winter Hours" (January 1 - February 28 and December 1 - December 31)
Monday to Friday from 8:00 a.m. to 4:30 p.m.
Saturday 9:30 a.m. to 3:30 p.m.

The GVDDF entrance facilities included a lockable entrance gate, scale house, two vehicle scales (one for inbound traffic and one for outbound traffic), and electronic weighing and reporting software (Auto Scale 2000). Customers using the facility, with the exception of customers dropping off Yard & Garden Waste were required to stop at the scale house and pay the specified disposal fee based on the type and weight of material disposed. All site visitors, suppliers, consultants and contractors were required to check in and out of the site at the scale house to ensure they were familiar with the emergency, health and safety protocols and so that they were all accounted for at the end of the day.

Municipal Solid Waste Management Bylaw No. 2832, 2019, establishes fees and sets standards for the use of diversion and disposal facilities owned and operated by the regional district. A copy of the Bylaw is provided as Attachment B.

Filling and waste covering in the upper level continued in accordance with the 2017 Design, Operations and Closure Plan (DOCP) with a focus on completing lifts above the three horizontal Landfill Gas (LFG) collection loops. The Contractor installed side berms prior to filling close to the south slope and maintained access roads to all tipping areas (including diverted material stockpiles). Litter control fencing was installed around filling areas as necessary.

The following commodities were segregated at the GVDDF and shipped off-site for recycling or reused on-site:

- Tires: Passenger and truck tires with and without rims were accepted near the Residential Drop-Off (RDO) and recycled under the Provincial Tire Recycling Program.
- Yard and Garden Waste: yard and garden waste was stockpiled and ground by the RDNO's grinding contractor. Ground yard and garden waste was composted at the RDNO Regional Yard Waste Composting Facility located at the northwest corner of the site. Class A compost was produced by turning and watering windrows and then screening prior to distribution or use on site.
- Wood Waste: dimensional wood waste (clean and dirty) was stockpiled on both the mid and upper benches of the site and ground by RDNO's grinding contractor on a regular basis prior to being used on site for cover, bio-filtration and aesthetics on finished slopes.

- Propane Tanks: various sizes of tanks (1lb to 40lb) were received and stockpiled. The tanks were removed by a contractor for recertification or recycling.
- White Goods and Other Scrap Metals: refrigeration units were decommissioned and refrigerant removed by a qualified contractor under contract before being added to the scrap metal stockpile. Metals are sold to a recycling contractor. The GVDDF is a Major Appliance Recycling Roundtable (MARR) depot.
- Old Corrugated Cardboard (OCC): OCC is collected in two compactor bins at a location adjacent to the scale house at a Recyclable Materials Drop Center. OCC was then transported to a materials recovery facility (MRF) for processing and marketing.
- Glass Jars and Bottles: glass jars and bottles were collected in a small roll off container situated near the Recyclable Materials Drop Centre. This material was added to the crushable material pile, crushed and used onsite for roads and tipping pads.
- New Drywall: new drywall cut ends are stockpiled, the RDNO continues to investigate recycling options for this material.
- Asphalt Shingles: shingles were collected in a lock block bunker and shipped to a recycler for processing (for use in paving primarily).
- Concrete and other Crushable Material: crushable material was stockpiled and crushed for use onsite for roads and tipping pads.

More than 74,000 m^3 of Class A compost has been produced since the Regional Yard Waste Composting Facility opened in 2012. Approximately 30,887 m^3 of chipped Yard and Garden Waste was composted at the GVDDF compost facility in 2020. The Class A compost was also provided to GVDDF customers free of charge (via self-loading). The facility was inspected by Ministry staff in the summer of 2018 with no compliance issues noted.

4.2 CONSTRUCTION

The following construction activities took place in 2020:

- Further renovation of the offices attached to the Quonset building to accommodate the relocation of solid waste management staff from the RDNO head office;
- Construction of the materials stockpiling storage pad beside the Regional Yard Waste Composting Facility was completed in 2020;
- Installation of an automatic condensate drain at the landfill gas plant flare base;
- Construction of an access road around the NE perimeter of the authorized fill area to provide access to the north property boundary and the leachate irrigation tanks; andInstallation of approximately 200 m of 150 mm DR18 watermain running from the leachate pond to a connection point with the aboveground aluminum leachate distribution system.

4.3 INSPECTIONS

The following inspection activities took place in 2020:

- Construction inspections by staff and consultants (see list above);
- Leachate Pond Dam inspection (see below); and
- Regular operational inspections by RDNO staff.

As per the Leachate Pond Dam Operations, Maintenance and Surveillance Manual, monthly inspections of the dam were performed by the RDNO's Engineering Technician and these inspections will continue in 2021 on a monthly basis. The 2020 GVDDF leachate pond, dam, and spray irrigation inspection records are provided as Attachment C.

The leachate storage pond water elevation is required to be kept below 594.5 masl to ensure the integrity of the pond is maintained. This elevation was surpassed from March to July in 2020. Over the last few years, an unanticipated increase in leachate inflow has been observed. Measures are taken to reduce the leachate storage pond volume as much as possible while following the spray irrigation requirements. A portion of the volume of storm water entering the pond has been redirected in 2018, as part of the entrance upgrade storm water collection system. Enhanced irrigation measures were implemented in 2019, including irrigating back onto the surface of the pond to increase evaporation.

On April 16^{th,} 2020, a small amount of water was found seeping from the ground surface below the toe of the leachate pond dam. This seepage has occurred every spring since 2016. After a seep below the leachate pond dam was first observed in spring 2016, geotechnical investigations were completed to determine options for controlling the seepage. It was determined that a cut off wall deep into the fractured and un-fractured bedrock was needed and the secant wall was designed and tendered. The high costs of this dam repair helped staff realize that this money could be better spent on a new, higher capacity storage pond that would accommodate the 50 year life span of the site (including the proposed lateral expansion), therefore, the secant wall project was cancelled and a new leachate storage pond preliminary design project began in 2020 (and a seismic refraction, electrical resistivity tomography and ground penetrating radar survey was done for the pond area).

In 2020 additional Unexploded Explosive Ordnance (UXO) investigation and clearing was conducted on the GVDDF site by a qualified contractor under the direction of the Department of National Defense (DND). The project area surveyed was the area identified as a potential location for a new leachate storage pond, as well the previously identified potential lateral expansion area. The UXO survey and clearance was requested by the RDNO as the GVDDF property lies adjacent to the K&L Partnership property which was used as a WWI and WWII era training range until 1942.

4.4 EMERGENCIES

The following emergencies occurred at the site in 2020 and were resolved as indicated:

a. Leachate seepage down-gradient from the leachate pond dam

- Investigations have been underway since this seepage was first discovered in the spring of 2016 (an additional borehole was installed into bedrock on the dam crest)
- The site is monitored on a monthly basis including dam integrity, water levels in wells below the dam and pond levels)
- Spray irrigation quantities were increased to lower pond levels as soon as the ice came off the pond surface and the pump could be inserted into the pond
- A consultant was hired and has begun work for the preliminary engineering design for a new, higher capacity leachate storage pond, to accommodate the 50 year life span of the site (including lateral expansion).

Emergency Response Procedures will be reviewed and updated as necessary in 2021.

4.5 MAINTENANCE AND REPAIRS

The following maintenance activities and significant repairs were undertaken at the site in 2020:

- Annual mechanical and instrumentation maintenance of the LFG Plant was completed; and
- Onsite office space underwent further renovation to accommodate more solid waste management staff.

5. TOPOGRAPHIC MAP

See Attachment D for topographic map. The attached topographic map is from the aerial survey performed in 2019.

6. IN PLACE MATERIAL SUMMARY AND SITE LIFE

The remaining life of the GVDDF has been evaluated on a number of occasions. The most recent evaluation was completed as part of the 2017 update of the DOCP by XCG Consultants (XCG). In the updated DOCP, XCG re-evaluated the parameters (compaction, cover ratio, etc.) and as of 2017, the facility is estimated to reach design capacity in 2059.

The RDNO has purchased a large parcel of land to the west and adjacent to the GVDDF for future expansion of the landfill footprint (within 17 years). A conceptual design was developed at the end of 2015 by XCG in order to determine the potential increase in site life and the expansion costs. The costs and additional volume ascertained from the design will be used for planning purposes in the future. Further activities are planned in 2021 to investigate the landfill expansion options at the GVDDF site.

7. DESIGN & PERFORMANCE REQUIREMENTS

7.1 DESIGN, OPERATIONS AND CLOSURE PLAN (DOCP)

The GVDDF DOCP was reviewed and updated in 2017 by XCG. The next DOCP review and update is required by December 31st, 2022.

7.2 GROUNDWATER & SURFACE WATER QUALITY PROTECTION

BC Approved and Working Water Quality Guidelines have been exceeded in groundwater wells 150 meters from the landfill footprint. These wells are located downgradient from the leachate pond and old salt storage shed. Multiple geotechnical and hydrogeological investigations have been completed to investigate the source of the groundwater impacts at and below the pond dam.

As described in section 4.3 Inspections, a new higher capacity leachate storage pond preliminary design project is currently underway. It is expected that the new pond will capture the leachate plume downgradient of the current leachate storage pond and that groundwater quality will improve at the wells currently showing exceedances of the BC guidelines. The Environmental Monitoring Report provided as Attachment A contains detailed water quality data.

7.3 HYDROGEOLOGY AND HYDROLOGY REVIEW

The site hydrogeological and hydrological conditions were not assessed in 2020, however in 2017 as part of the DOCP Update, a data review was conducted and the existing conditions updated. The next assessment is planned for 2022.

7.4 BUFFER ZONES

The GVDDF maintains at a minimum a 50 meter buffer zone between the landfill footprint and the landfill site boundary of which the 30 m closest to the landfill site boundary is reserved for natural or landscaped screening (berms and/or vegetative screens). Only the 20 meters closest to the landfill footprint is used for access roads, surface water management works, leachate

management, landfill gas management and monitoring works, firebreaks, and other ancillary works as required.

8. MONITORING DATA

The Greater Vernon Diversion and Disposal Facility, 2020 Annual Environmental Monitoring Report, dated April 2021, prepared by Regional District of North Okanagan staff, is provided as Attachment A. The ground and surface water monitoring program is described and monitoring results are provided including the status of sampling points and recommendations for monitoring program improvements, where necessary. The following list provides the recommendations from the 2020 Annual Report.

1. Continue with the currently established sampling program, and assess trends of exceedances.
2. Evaluate potential trends in Ammonia, Arsenic, Boron, Chloride, Cobalt, Conductivity, Manganese, Nickel, Nitrate, Selenium, and Uranium in 2021.
3. Continue to monitor MW10-01 to determine potential trends of some of the elevated parameters (Arsenic, Nitrate, and Selenium). A location for a different background well to the southwest of MW10-01 will be explored.
4. Continue with the new Leachate Storage Pond Project.

9. SPRAY IRRIGATION UPDATE

In 2017, an upgraded pump station and 3 large fiberglass reservoir tanks were installed to allow for automated control of the leachate distribution system. The new system was commissioned in the summer of 2017. In 2018, a pond level indicator was installed to automatically record the elevation of the leachate pond. The spray irrigation system is inspected regularly and undergoes maintenance as necessary.

The spray irrigation requirements (seasonal irrigation rate, maximum leachate application per irrigation event, frequency of irrigation and soil sampling requirements for the irrigated area) were reviewed and revised by Ruth McDougall, M.Sc., PAg, in 2019. It is required by OC 15286 that the spray irrigation requirements are reviewed and revised as applicable by a Qualified Professional (QP) every two years. The next review will occur in 2021.

Between April 2020 and October 2020, 45,206 m^3 of leachate was pumped out of the GVDDF leachate pond and was applied to the south facing slope above the pond, to the compost pad windrows, used for dust control and other non-potable operational purposes in non-public areas of the GVDDF or run thorough the evaporative sprinkler installed at the leachate pond in 2019. As is typical for MSW landfill leachate, the pond water exceeded applicable BC guidelines for a

number of parameters. A groundwater monitoring well down-gradient of the irrigation area is sampled regularly.

Soil sampling of the south facing leachate irrigated area of the GVDDF was performed in November of 2019 in the irrigated area, after irrigation had been shut off for the year. The results of this soil sampling was reported in the 2019 annual report.

The vegetation in the spray irrigation area is inspected throughout the irrigation season. Spray irrigation appears to have no impact on the health of the vegetation.

It has been recommended that soil samples are taken from the irrigated area every other fall after the irrigation has been shut off, to help determine if leachate irrigation is negatively impacting the soil on site and to be able to monitor changes over time. The next sampling will occur in the fall of 2021, including a review of application rates (irrigation requirements).

No significant operational issues which impacted compliance were experienced during 2020.

10. LANDFILL GAS MONITORING

Landfill gas was tested quarterly, at six gas monitoring wells on site. Landfill gas was detected in the two monitoring probes adjacent to the old scale house/Quonset building (MP11-3 and MP11-4) in March, June, September, and December 2020. Any potential migration into the site buildings is monitored using gas detection alarms systems inside the buildings. These gas detection sensors were tested twice in 2020 and calibrated as needed. There is no methane soil vapour detected that could migrate beyond the property boundary. No odour complaints were received, nor were the alarms set off in 2020. Table 1 below summarizes the readings from the six probes for 2020.

Table 4 - Summary of CH_4 Readings from Landfill Gas Monitoring Wells 2020

Monitoring Well ID	March 2020 CH_4 (%)	June 2020 CH_4 (%)	September 2020 CH_4 (%)	December 2020 CH_4 (%)
MP11-1A	0	0	0	0
MP11-1B	0	0	0.0	0
MP11-2	0	0	0	0
MP11-3	5.9	12.9	6.4	18.4
MP11-4	53.1	43.1	19.7	35.5
MP11-5	0	0	0	0

It is recommended that in 2021, quarterly sampling of the six landfill gas monitoring wells continues to be performed.

LANDFILL GAS REGULATION COMPLIANCE

In 2020, a condensate drain was installed at the GVDDF landfill gas plant flare base so that any condensate build up can automatically drain each day into the leachate pond. In 2019, the first horizontal collection loop HOR-03 was opened in July. This horizontal loop has remained opened and feeding landfill gas to the flare station since initial opening. In June 2020, horizontal collection loop HOR-02 was opened at both ends of the loop (HOR-02A and HOR-02B) and has remained open since. Horizontal collection loop HOR-01 was opened at one end of the loop (HOR-01B) in August of 2020 and has also been open since. It is expected that the other end of HOR-01 (HOR-01A - furthest away from the landfill gas plant) will be opened in 2021.

The 2020 GVDDF Landfill Gas Collection and Efficiency Data is provided in Tables 1 through 5 in Attachment E

Landfill Gas Destruction Summary

The total volume of methane destroyed at the landfill gas flare station in 2020 was 398.7 tonnes, with a carbon dioxide equivalent of 9,967.9 tonnes (Attachment D - Table 1). This is an increase from 2019, which had a total volume of methane destroyed of 361.6 tonnes with a carbon dioxide equivalent of 9,039.3 tonnes.

Landfill Gas Operational Hours

While the system is operational, numerous parameters are recorded on the data historian. This data includes parameters relevant to system status: whether the landfill gas collected is being flared or the system is off. For 2020, the operational hours of the landfill gas system were divided as follows: down time was 8.5% and flaring was 91.5% (Attachment D - Table 2). For comparison, 2019 had 5.1% down time and 94.9% flaring.

Landfill Gas System Down Time

Attachment D - Table 3 shows a list of all system down time for periods greater than 4 hours in 2020, and the associated reason for the shut down time. It is noted that the majority of down time for the year was related to power outages, actuator valve issues, and temperature related issues. The lessons learned are helping to mitigate and solve future issues with the system.

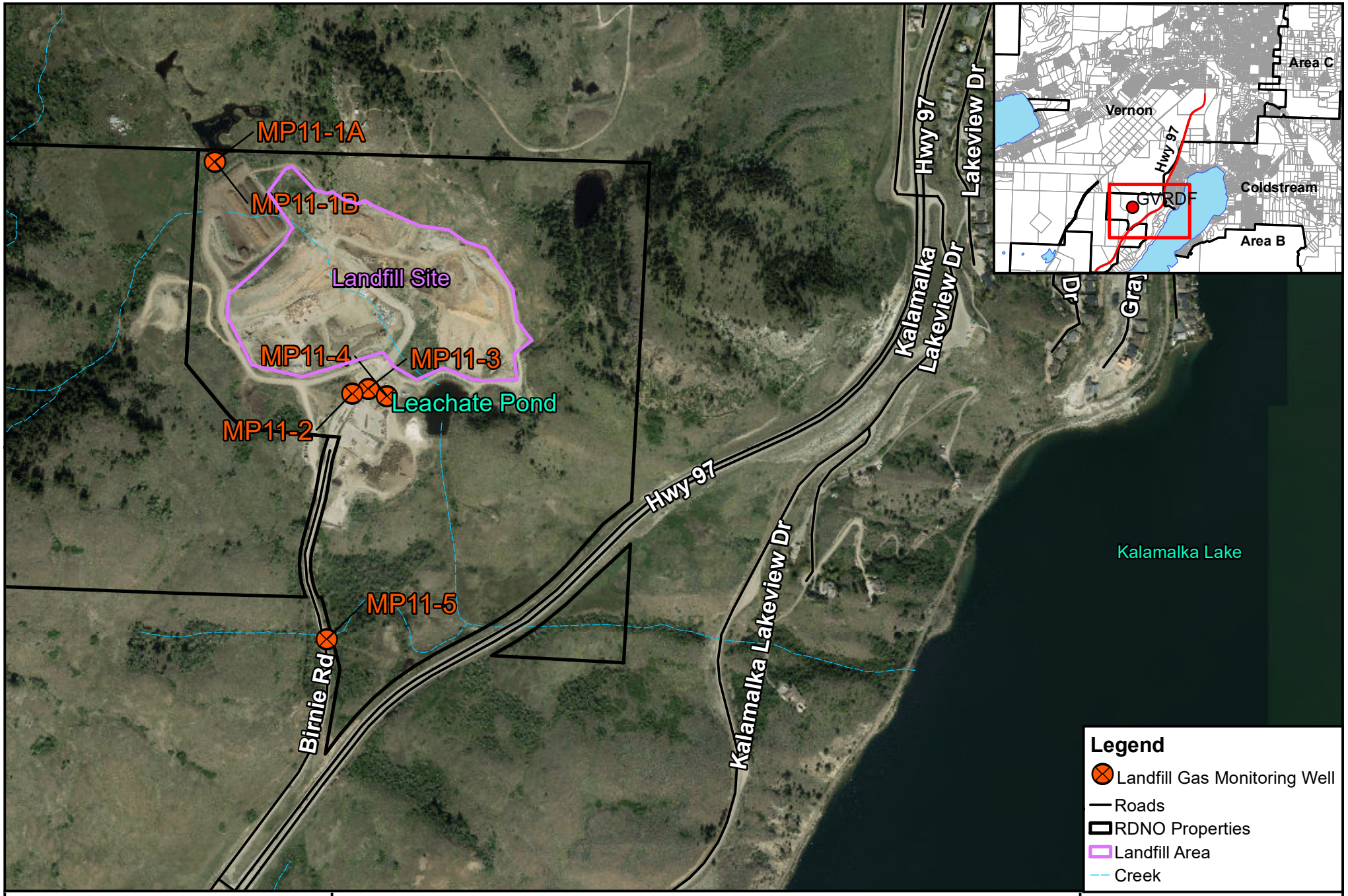
Landfill Gas System Troubleshooting

During unscheduled system down time, RDNO staff and contractors took steps to determine the reasons for the system downtime. Attachment D - Table 4 shows some of the troubleshooting that took place during landfill gas system unscheduled down time and subsequent solutions determined in 2020.

Landfill Gas Collection Efficiency

The landfill gas collection efficiency during 2020 was estimated to be 26.9%. This value was calculated based on an average methane collection rate of 128.4 cubic meters per hour and an estimated methane generation rate of 574.0 cubic meters per hour in 2020 (Attachment D - Table 5). In 2019, the landfill gas collection efficiency was estimated to be 23.7%, with an average

methane collection rate of 135.2 cubic meters per hour and an estimated methane generation rate of 570.0 cubic meters per hour. The estimated methane generation rates are based on the Landfill Gas Production Assessment completed by XCG Consultants as part of the 2017 Design, Operations and Closure Plan Update.



This map was compiled by RDNO, using data believed to be accurate; however, a margin of error is inherent in all maps. This product is distributed without warranties of any kind, either express or implied, including but not limited to warranties of sustainability or particular purpose or use.

Figure 1-1
Site Location Plan for the Greater Vernon Recycling and Disposal Facility

Plot Date: Feb 21, 2019

Scale: 1:9,000

0 200 400 800 Meters

REGIONAL DISTRICT NORTH OKANAGAN

RDNO

11. PLANNED OPERATIONAL ACTIVITIES

Planned capital works include the following:

- New Leachate Storage Pond Preliminary Design: preliminary design of a new higher capacity storage pond and this project replaces the Leachate Storage Pond Dam Upgrade;
- Parking Areas and Landscaping Upgrades; and
- Environmental Education Centre.

12. FINANCIAL ASSURANCE UPDATE

Approximately $5,408 was spent on environmental monitoring at the Greater Vernon Diversion and Disposal Facility in 2020.

A Statutory Closure Reserve was established in 2010 for closure and post closure costs at all RDNO Diversion and Disposal Facilities. The balance in the Statutory Closure Reserve at the end of 2020 was approximately $11,681,000. It is projected that the annual contribution to the Statutory Closure Reserve for 2021 will be approximately $1,360,000.

13. SOLID WASTE MANAGEMENT PLAN PROGRESS

The RDNO Solid Waste Management Plan (SWMP) was updated in 2017-2018, endorsed by the Board of Directors, and submitted to the ENV for approval in June 2018. The SWMP was approved by the ENV in October 2019. The original plan implemented in 1996 has been reviewed and updated in 2002, 2011, and 2018. Tetra Tech Inc. was contracted by the RDNO and a Regional Solid Waste Advisory Working Group (RSWAWG) was established in 2017 to assist in the plan review and update. The plan review and update took place throughout 2017 and into 2018, and included an assessment of the current system, detailed analysis and evaluation of options, and community and stakeholder consultation. The final SWMP update includes a plan implementation schedule for 5 years from 2018 to 2022. A Plan Monitoring Working Group (PMWG) was appointed and meetings were expected to begin in 2020 but were postponed due to the COVID-19 pandemic. PMWG meetings are anticipated to begin in the latter part of 2021. There were no site specific objectives for the GVDDF in the implementation plan for 2020.

14. WILDLIFE

Birds of many different species frequent the facility, but were not observed to be a hazard in 2019. Bald eagles are intermingled with crows, ravens, sea gulls and other species. The RDNO does not have a bird management plan for this site. Other wildlife occurrences include marmots and occasional deer around the site boundary. No incidents of bears were observed. There were no perceived hazards from wildlife at this site in 2020.

15. ENVIRONMENTAL COMPLAINTS

No environmental complaints were received in 2020.

16. TRAINING PROGRAMS

In 2020, all GFL Environmental Inc. landfill operators completed the required training courses as part of their workplace safety program, SafetySync.

17. NEW INFORMATION

Information regarding site upgrades and operational changes are included in the previous sections.

18. NON-COMPLIANCE WITH THE OPERATIONAL CERTIFICATE

Further to the inspection completed by ENV in July 2018 the following OC sections were noted as being out of compliance. Provided here is an explanation of the issue and an update of any resolutions already undertaken or in progress in 2020. Non-compliances that were resolved in 2019 were described in the 2019 Annual Report and therefore removed from this list.

Section 2.2 Groundwater and Surface Water Quality Protection:

BC Approved and Working Water Quality Guidelines have been exceeded in groundwater wells 150 meters from the landfill footprint. These wells are located downgradient from the leachate storage pond and old salt storage shed. As described in section 4.3 Inspections, a new higher capacity leachate storage pond project is currently underway. It is expected that the new pond will capture the leachate plume downgradient of the current leachate storage pond and that groundwater quality will improve at the wells currently showing exceedances of the BC guidelines.

Section 3.1.2 Inspections of Authorized Works:

Regular inspections of authorized works and property boundaries were not taken or recorded at the GVDDF in 2020. A site inspection form was developed in 2019, and some inspections were completed. A regular frequency of inspections will be scheduled for 2021. Records are stored at the site office.

Section 3.5/3.7: Electric Fencing/Litter, Wildlife & Vector Control:

The GVDDF does not have an electrified bear fence around the landfill perimeter at this time. Installation of a perimeter bear fence has been included in the 2021 GVDDF capital budget and should be completed in 2021.

Section 3.14 Spray Irrigation:

a) The Leachate Pond elevation exceeded the permitted elevation from March to July in 2020. Over the last four years, an unanticipated increase in leachate inflow has caused increased pond elevations. In 2020, the pond elevation was kept much lower than in the last four years. Remedial action taken to reduce the pond elevation included redirecting a portion of the volume of storm water entering the pond, irrigating the compost and spray irrigation area as much as possible while following the spray irrigation requirements, and enhancing evaporation by irrigating back onto the surface of the pond. Enhanced irrigation measures will continue to be used in 2021 to decrease the pond elevation as much as possible should it be necessary.

b) There was no signage around the outer boundary of the spray irrigation area in 2020. Signage will be installed in 2021 before irrigation begins to inform the public that the area is being used to dispose of leachate. There is no public access to the leachate irrigation areas.

c) The RDNO did not have a leachate management contingency plan in 2020. A contingency plan is currently being developed that can be deployed in the event that the spray irrigation system cannot be utilized for the ground disposal of leachate.

19. ADDITIONAL INFORMATION

No additional information is provided at this time.