

**PRINCE GEORGE AGGREGATE INVENTORY:
FINAL REPORT / DATABASE REPORT**



June 2000

Submitted by

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PRINCE GEORGE AGGREGATE INVENTORY: FINAL REPORT

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II. CONTACT INFORMATION

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III. INTRODUCTION

The Prince George Aggregate Inventory was initiated in May of 1999 by three partners, the City of Prince George, the Northern Land Use Institute, and the Prince George Aggregate Producers Association. The Aggregate Inventory is a complete list of known aggregate deposits in the Prince George area*, based on available information found in permitting files collected over the last 40 years by a variety of local and provincial agencies. From these existing files, quantity, quality, location, and status information was gathered for gravel pits, quarries, and prospects. The data once collected, was analyzed and compiled in this report, accompanying database and maps. This inventory should be seen as a first step to identifying the current status of aggregate reserves in the Prince George area. Site surveys of these areas with accompanying geo-technical studies would provide the most up-to-date and reliable information on the status of aggregate development in the Prince George area.

* The study area consisted of the City of Prince George plus a 15km area extending outside the City boundaries.

IV. STATEMENT OF GOALS

The following list summarizes goals for the aggregate inventory,

- 1) To create an aggregate inventory which meets the needs of the Prince George community and thereby improve the planning and management of aggregate development within the Prince George area,
- 2) To create a relational database for the storage of aggregate inventory data including, quantity, quality, location and status attributes,
- 3) To collect aggregate inventory information from all agencies with responsibilities for the planning and management of aggregate resources within the Prince George area, and store this information within the database, and
- 4) To provide recommendations for 1) future study, 2) Official Community Plan policy statements, and 3) the improved collaborative planning and management of aggregate resources.

V. SUMMARY OF RESEARCH

1) Agency Consultation

Both governmental and non-governmental agencies were contacted during the research. These agencies provided guidance in areas such as research strategy, data management, and project deliverables. The following is a list of agencies contacted during the research and some of the key contributions made by these agencies to the final product.

i) The Prince George Aggregate Producers Association

The aggregate producers assisted the researchers with research scope, data attribute list development, and potential-mapping, as well as providing base-line data on various active pits within the City of Prince George. Specifically, the aggregate producers emphasized the need to introduce issues of "development constraints" to the inventory, and provided guidance on aggregate quality definition.

ii) The City of Prince George

The Development Services Department and the Public works Department provided extensive guidance and base-line data for the development of the aggregate inventory. The researchers were able to collect data from Soil Removal Permit files, professional assessments from staff, and 1996 air-photo interpretation summaries. City staff also significantly contributed to the development of research deliverables and research methodology. Emphasis was placed on the need for 1) tools such as a database and maps that could be expanded and modified as new inventory data was collected in the future, 2) an environmental impact classification to assess aggregate pits and quarries, and 3) recommendations for the future of aggregate development within the research area.

iii) The Ministry of Transportation and Highways

Ministry staff provided the researchers with full access to aggregate files and mapping for public pits and prospects within their jurisdiction, current status evaluation of existing pits, as well as access to geotechnical reports and sub-regional surveys. Ministry staff emphasized that, except for a few noted exceptions, there was a lack of current geotechnical data on most pits and prospects within the Prince George area.

iv) The Ministry of Energy and Mines

Ministry staff provided the researchers with full access to Notice of Work files for aggregate pits and quarries, as well as mapping and inventorying data from Open-file 1996-24. Aggregate pits are considered mines and are therefore regulated by this Ministry, with the exception of public pits administered by the Ministry of Transportation and Highways. It should be noted that this Ministry holds crucial information related to mine development, reclamation and safety.

v) Ministry of Environment Lands and Parks, Lands Branch

A listing of aggregate pits permitted by the Lands Branch was provided by ministry staff. Ministry staff also acknowledged that permits were inconsistently issued due to the borrow nature of most small extraction sites on Crown lands.

vi) The Regional District of Fraser-Fort George

Information provided by the Regional District included a listing of Temporary Industrial Use Areas where gravel extraction was permitted, and a collection of aggregate potential maps. Historically, the regional district has relied on the expertise found within Provincial Ministries for inventory information.

Ministry of Forests staff were also contacted, but no designated aggregate development areas administered by the Ministry of Forests were identified within the research boundaries.

2) Literature Review

An extensive literature review was conducted for the aggregate inventory. Sources included the City of Prince George, Development Services Department library, staff reports, UNBC library, public library, as well as soils and geotechnical analysis reports from the province. The literature review focused on developing a chronology of aggregate studies in the Prince George area, a summary of potential inventory methods, options for data collection, and presentation and interpretation tools historically used with inventories conducted within and outside of Prince George. A complete bibliography can be found in section VIII of the Final Report.

3) Data Collection/File Review

The data gathering portion of the aggregate inventory centred around a review of permit files as these were deemed to hold the most comprehensive existing inventory information. Agencies that maintain permit files include the City of Prince George, the Ministry of Transportation and Highways, the Ministry of Mines, The Ministry of Environment Lands and Parks, and the Regional District of Fraser-Fort George. Inventory data was then collected from these files and compiled in the aggregate inventory database and accompanying maps.

4) Survey of other Jurisdictions

In June and July of 1999 an aggregate management and planning survey was conducted with other similar jurisdictions throughout British Columbia. This open-ended phone survey targeted municipal administrators of aggregate development, and was designed to obtain information related to the state of current inventories and the regulation of aggregate resources. In May of 2000 an aggregate inventory information request was sent to all Regional Districts in British Columbia.

VI. RESULTS

1) Data attribute list/inventory database structure

Agency consultation and the permit file review informed the development of the data attribute list and database structure. (See section VII of the Database Report.) This list included numerous quantity, quality, location, and status attributes and acted as a guide for inventory data collection. The relational database structure developed for the aggregate inventory was designed to be a flexible data storage and analysis tool that will allow for multiple avenues for querying. The complete database [a97_agg_inv.mdb] can be found contained within the diskette found with this report.

2) Discussion paper

A review of previous aggregate and soil reports was conducted for the Prince George area and summarized in a discussion paper. The various reports' contents and findings were summarized and presented to Development Services staff for comment on June 9, 1999. The focus of this background research was to identify previous inventory's strengths and weaknesses, and therefore inform the current research. City staff reviewed the discussion paper and instructed the researchers as to the requirements for data collection and presentation.

3) Survey Results

Of the fourteen (14) municipal administrators contacted, only one (1) had knowledge of an ongoing aggregate inventory in their jurisdiction (Kelowna). All of the administrators contacted (14) identified that their municipality had current Soil Removal and Deposit Bylaws, though many municipalities had few, or no active pit operations. Many municipalities in the Lower Mainland acquire their aggregates from suppliers outside of their jurisdiction, as aggregate supply was minimal or non-existent within their city boundaries. In municipalities where aggregate production occurred, information collected for each pit was limited to the Soil Removal Permit, as well as volume information where the city collected royalties. As inventories were not the common practice with the municipalities contacted, aggregate quality, quantity, location and status information was collected in an ad hoc manner, based on need. One exception was the City of Nanaimo, where soil removal and deposit was recorded in a relational database.

Of the twenty eight (28) Regional Districts contacted thirteen (13) responded. Of those, ten (10) had conducted no studies to date, one (1) had conducted an inventory of aggregate pits within a sub-region in 1980, and two (2) had conducted recent aggregate inventory studies.

4) Recommendations

Recommendations, found in section VII of the Final Report, were developed in response to research goals. These recommendations reflect the researchers findings during the inventory process, and should be seen as suggestions for the improved management and planning of aggregate development within the study area.

5) Impact assessment/ pit classification

An impact assessment methodology was developed during the aggregate inventory. It was designed to provide a consistent classification for aggregate pits and quarries , and considers impacts in general categories including, noise, visual disturbance, pedestrian safety, dust, environment, access, and environmentally sensitive areas. Definitions for these impacts and the impact classification methodology can be found in section IX of the Final Report.

VII. RECOMMENDATIONS

1) Aggregate inventory

The information archived within the database must be updated and maintained.

The aggregate inventory will quickly become obsolete if new information is not added directly to the database when it is made available. This means that as deposits are found, used, depleted, and reclaimed, it is important for the database to be regularly updated to accurately reflect gravel usage and potential. It is recommended that a City of Prince George staff member be designated as a Database Manager who will have the responsibility to maintain the Aggregate Inventory Database. This individual should have a modest understanding of database management as they will have editing privileges to delete or add any new data.

Consistency with data collection and input is critical to maintaining and enhancing the quality of data stored within the database.

A hard-copy data input form is provided in the *Aggregate Inventory Database Report* to assist with the consistent gathering and inputting of inventory data. At regular intervals, or when convenient, the information should be input into the database by the designated Database Manager, thereby maintaining consistency.

Future aggregate inventory data collection can be facilitated through the Soil Removal and Deposit Bylaw permit application process. Some inventory data may be collected directly from the required Removal or Deposit Operation Reports, while other information will need to be obtained through discussions with the permittee. Inventory data is also available from government agencies such as the Ministry of Transportation and Highways and the Ministry of Energy and Mines, Ministry of Environment Lands and Parks, and the Ministry of Forests.

The mutually advantageous working relationships developed through the aggregate inventory process should be maintained and enhanced by developing a formalized agreement between the various permitting agencies.

Permitting agencies will find that continued collaboration will improve the efficiency and effectiveness of aggregate management in the Prince George area. An example of one such formalized arrangement is *An Agreement Between the Regional District of Nanaimo and the Ministry of Energy and Mines Regarding Aggregate Resource Management: March, 2000*. The purpose of this agreement is to define the interests of both parties with regard to improving the management of aggregate resources. This agreement includes statements of legislative responsibility and agency interests, as well as shared or common interests. Local examples where formalized agreements should be developed include 1) a referral protocol between the various agencies, and 2) a protocol for letters of credit between the Ministry of Energy and Mines and the City of Prince George.

2) Future study

The City of Prince George should invest in an aggregate supply and demand study.

An aggregate supply and demand study should be conducted in order to collect up-to-date supply volumes, which are currently not available for many active pits and prospects. Future information gathering through the Soil Removal and Deposit Bylaw and site-testing will make this type of study possible. Furthermore, the results of the ongoing Official Community Plan review process will inform the City on future levels of aggregate demand. For example, once established goals for development patterns have been finalized a fair assessment can be made about the future demand for aggregate products.

A future supply and demand study should include, 1) population projections correlated with average per-capita consumption of aggregate products in Canada, 2) an economic impact summary detailing numbers of jobs in the aggregate industry, average costs of various aggregate products and cost projections, and 3) estimations of future housing starts, road maintenance, and major industrial developments to aid with demand prediction.

The City of Prince George will need to invest in geotechnical site-testing in order to verify the existence of economical reserves for future use, and confirm reserves in pits currently used by the City.

As a consumer of aggregate the City has an interest in maintaining an adequate supply of good quality aggregate for infrastructure maintenance, replacement and development. Therefore, the City will need secure potential aggregate resources, which will require financial investment in on-site geotechnical evaluation to quantitatively confirm the aggregate potential of specific sites.

3) City of Prince George

It is recommended that identified areas having large volumes of accessible, good quality aggregates should be, 1) Protected from encroaching development that would otherwise sterilize the resource, and 2) Be designated in the Official Community Plan for future aggregate resource development as significant areas of potential.

Likely, the most important application of data interpretation for the near future will be to evaluate those pits which are currently active, or have future potential, and compare these with the Designation Map - Schedule 'A' of the Official Community Plan Bylaw # 5909, 1993. This is because, the continued or future use of these sites will require not only the pit operator to acquire a valid Soil Removal Permit, but also an amendment to the Designated Soil Removal and Deposit Area in Schedule 'A', as per the Soil Removal Bylaw # 7022.

This aggregate inventory has confirmed that the locations of accessible, good quality aggregate deposits within the City of Prince George are found

"in the Nechako and Fraser river valleys, along river terraces:

- the south side of the Nechako along Otway
- the north side of the Nechako in the area of Foothills Boulevard and HWY 97 North
- the west side of the Fraser below College Heights
- in the esker complex in the uplands north of the Nechako"

Supplement to the Official Community Plan, Bylaw #5909, 1993.

Significant pits (currently active with high potential 10yrs +) surrounding the City include,

- South of the City (Cale Creek),
- West of the City (Lower Mud Pit),
- East of the City (Pinko Pit),
- North of the City (Reid Lake Pit, Beale Pit, and Wright Creek Pit)

The City of Prince George Soil Removal Files will need to be updated through the new permit application process, and consolidated with files collected during the inventory process.

A new file-numbering system should be established for Soil Removal Files, which is compatible with existing file-numbering structures and database requirements. These new files should be started and maintained indefinitely for each pit, quarry and prospect. Only certain inventory information can be stored in the Aggregate Inventory Database, such as location, quantity, quality, and status. Therefore, site plans, maps, geotechnical reports, and photographs should be carefully stored in chronological order within the new Soil Removal Files. Accurate filing systems will assist in reducing the occurrence of re-testing or re-evaluating sites where suitable information already exists. Furthermore, aggregate prospects need to be recorded as their existence may become extremely important to the long-term

economic security of the City, and viability of the resource.

Recommended Criteria for evaluating Official Community Plan designations include,

- 1) The location of the proposed development considering, the form and character of surrounding land uses, the proximity to points of consumption, and proximity to environmentally sensitive areas,
- 2) Pit characteristics including size, volume of removal, final configuration, use of the site, and duration of work,
- 3) Proposed on-site development related activities,
- 4) Predicted environmental and social impacts,
- 5) Proposed mitigative measures, and
- 6) Reclamation potential.

A clear direction for the form and character of future aggregate development should be included in the Official Community Plan.

Optional supporting statements for the City of Prince George Official Community Plan's *description of form and character of existing and future land use* include, 1) identifying and preserving aggregate sites for future development, 2) recognize and acknowledge the jurisdictional control of the various permitting agencies, 3) acknowledge land uses that are compatible with aggregate extraction and processing, 4) a statement of cooperation to assist with future study, and 5) a statement of support for aggregate extraction in designated soil removal and deposit areas.

- 4) Resource stewardship

The City of Prince George should act as stewards of public lands when managing soil deposit and removal. The City should uphold the highest standards of stewardship when extracting and processing aggregates on public lands.

Stewardship is the management of the environment for, 1) protection of the environment, 2) protection of resources to support commercial, recreational, and traditional activities, 3) retention of natural vegetation, to connect people to nature, to moderate climate, and process pollutants, 4) provide safety from hazardous areas, 5) lower development costs, and improve the potential for increased value of development and tax base.

The public should have the opportunity to participate openly and meaningfully in decision making processes.

It should be recognized that the public has a legitimate interest in decision making involving aggregate development. In order to participate with decision making processes the public must have all the information necessary in order to provide informed input. Options for public input into soil deposit and removal include, 1) OCP open-house or workshop, 2) public or neighbourhood meetings, and 3) informational brochures, or newspaper inserts.

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IX. IMPACT ASSESSMENT

PRINCE GEORGE CONSTRUCTION AGGREGATE INVENTORY IMPACT CLASSIFICATION for PIT & QUARRY DEVELOPMENTS

PIT #:

EVALUATION DATE:

CLASS

PIT NAME:

GUIDE:
 1 - 14 = CLASS 1 = LOW
 15 - 28 = CLASS 2 = MODERATE
 29 - 42 = CLASS 3 = MEDIUM
 43 - 56 = CLASS 4 = HIGH

INSTRUCTIONS:

- 1 Rank each Impact out of 4, and place in cooresponding cell
- 2 Sum the cells and place total in cooresponding TOTAL cell.
- 3 Determine CLASS using guide, and fill-in CLASS cell (1,2,3, or 4)

TOTAL

SOCIAL IMPACTS	In Situ Operation	Off Site/ Trucking
1 Noise	<input type="text"/>	<input type="text"/>
2 Visual Disturbance	<input type="text"/>	<input type="text"/>
3 Pedestrian Safety	<input type="text"/>	<input type="text"/>
4 Dust	<input type="text"/>	<input type="text"/>

SOCIAL
TOTAL

PHYSICAL IMPACTS	In Situ Operation	Off Site/ Trucking
1 Environment	<input type="text"/>	<input type="text"/>
2 Access	<input type="text"/>	<input type="text"/>
3 Environmentally Sensitive Areas	<input type="text"/>	<input type="text"/>

PHYSICAL
TOTAL

NOTES/COMMENTS:

* See reverse for IMPACT definitions

IMPACT DEFINITIONS:

****Impact quantities are calculated considering current and/or proposed development activities including mitigative measures.****

SOCIAL IMPACTS

- 1 | Noise = based on the intensity and duration of noise levels, considering the ambient noise levels prior to development, as well as the proximity and type of surrounding land users.
- 2 | Visual Disturbance = the impact on the aesthetic appeal of the viewscape, considering the viewscape prior to development, as well as proximity and type of surrounding land users. Examples may include scarring of landscape, site operations, loss of trees, or loss of natural features.
- 3 | Pedestrian Safety = reflects the increase in risk to pedestrian safety, considering the pre-existing risks to pedestrian safety, as well as proximity and type of surrounding land users.
- 4 | Dust = reflects an increase in dust and particulate levels, considering the pre-existing dust and particulate levels, as well as proximity and type of surrounding land users.

PHYSICAL IMPACTS

- 1 | Environment = the degradation of ecosystem health including impacts on biodiversity and habitat, which result from site development.
- 2 | Access = the associated impacts resulting from an increase to, and modification of, access routes and corridors. Examples may include increased maintenance, servicing cost, and increased public access to environmentally sensitive areas.
- 3 | Environmentally Sensitive Areas = the proximity of development activity to identified areas of significant environmental importance or sensitivity.

PRINCE GEORGE AGGREGATE INVENTORY: DATABASE REPORT

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II. CONTACT INFORMATION

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III. INTRODUCTION: WHAT IS IT?

The Prince George Aggregate Inventory Database is a relational data storage and retrieval tool. It was built in 1999 to store data collected during the inventory process, which lasted from May 1999 – June 2000. The information stored in the database was collected from a wide variety of responsible agencies in government and private industry. The data represents what is known about the state of aggregate development in Prince George, including 50 different attributes collected on approximately 140 pits, prospects, and quarries. This database was designed in conjunction with the City of Prince George Soil Removal Bylaw so that inventory information, collected through this permitting process, can be stored and reviewed efficiently.

IV. WHY USE IT?

This database will be useful for permitting agencies who wish to keep up-to-date inventory information on aggregate pit location, status, quantity and quality. Information currently available within the database can be used in conjunction with GIS to answer a number of questions such as, which pits are active, where are they, how much aggregate is available, what development impacts are evident and what kind of development constraints exist? The database also has assisted researchers to identify information gaps, and therefore inform us where to target information gathering in the future. The database provides a simple structure to archive and query inventory information. In order to maintain and enhance the quality of the database new data must be added at regular intervals.

V. WHERE IS IT?

The database is located on a floppy-disk included with this report, labeled "Prince George Aggregate Inventory". Also available on the floppy-disk is a copy of this "Database report" and the "Final report". The file-name for the database is [a97_agg_inv.mdb]

The minimum system requirements for this database include: CPU – Pentium 133 MHz, OS – Windows 97, Software – MS Access 1997, and 500 Kb of open space on your hard-drive.

VI. WHO CAN USE IT?

Every organization and agency which contributed financially, or through in-kind support to this project has full access to all the findings of the research. Final copies of the database and reports will be forwarded to these organizations. Agencies and organizations which contributed to this research include the City of Prince George, the Northern Land Use Institute, the Prince George Aggregate Producers Association, the Fraser-Fort George Regional District, the Ministry of Transportation and Highways, and the Ministry of Energy and Mines, Ministry of Forests, and the Ministry of Environment, Lands and Parks.

VII. ATTRIBUTE LIST

VIII. HARD-COPY DATA INPUT FORM

Empty form area for data input.

ATTRIBUTE LIST

FIELD NAME	POSSIBLE VALUES	FIELD DEFINITION	INSTRUCTIONS
Main Table ID	# 1 - infinity	A unique identification number for the PGAI Database	Enter the corresponding number for a new entry
Assessment Date	Month Day, Year	The date of last assessment	Enter the date when information was last updated
PIT #	# 1 - infinity	A unique identification number for each pit (note: it is the same as the PGAI Database Main Table ID)	Enter the corresponding number for a new entry (the same as the PGAI Database Main Table ID)
Pit Name	Any combination of letters or numbers, max. 40 characters	This field holds the commonly used name for the pit, prospect, or quarry	
Class	1,2,3, or 4	(1) Low, (2) Moderate, (3) Medium, (4) High impact. Based on the PGAI Impact Classification. See Appendix (n)	Follow the PGAI Impact Classification system in the Final Report
CONTACT INFORMATION:			
Pit Owner	Any combination of letters or numbers	Pit owner name, address, phone number, fax number, etc.	
Pit Operator	Any combination of letters or numbers	Pit operator name, address, phone number, fax number etc.	
LOCATION:			
In City of PG?	YES or NO	Answer whether the Pit is within the City of Prince George Boundary.	
In ALR?	YES or NO	Answer whether the Pit is within the Agricultural Land Reserve	
Street #	Any combination of numbers. Max. 10 digits	The street # assigned to the pit/prospect/or quarry	
Street Name	Any combination of letters. Max. 35 digits	The street name from which the pit/prospect/or quarry is accessed	
UTM Northing	Any combination of numbers. (7 digit)	universal transverse mercator coordinates of the pit based on nad 27. error +/- 500m	Values can be determined using GIS or from paper maps
UTM Easting	Any combination of numbers. (6 digit)	universal transverse mercator coordinates of the pit based on nad 27. error +/- 500m	Values can be determined using GIS or from paper maps
Longitude	(XXX.XX) Three digits, decimal, two digits	Between 0-180 degrees E and W from the Greenwich Observatory	Values can be determined using GIS or from paper maps
Latitude	(XX.XX) Two digits, decimal, two digits	Between 0-90 degrees N and S of the Equator	Values can be determined using GIS or from paper maps
PID #	Any combination of 9 digits	Unique ID number assigned to a property by the City of PG or RDFFG	Multiple PID's may be assigned to any one pit
Plan No.	Any combination of numbers of letters up to 9 digits	Plans covered within the property legal description of the permit area	Multiple Plans may be assigned to any one pit
Dist Lot No.	Any combination of numbers to 6 digits	District Lots covered within the property legal description of the permit area	Multiple District Lots may be assigned to any one pit

Block No.	Any combination of numbers of letters up to 5 digits	Blocks covered within the property legal description of the permit area	Multiple Blocks may be assigned to any one pit
Lot No.	Any combination of numbers of letters up to 5 digits	Lots covered within the property legal description of the permit area	Multiple Lots may be assigned to any one pit
Free Legal Indicator	Any combination of numbers of letters up to 4 digits		
Free Legal Descriptions	Any combination of numbers of letters up to 200 digits	Legal description of the permit property	
NTS Mapsheet #	(93 X/XX)	1:50000 NTS mapsheet number	A drop-down box in the input form provides suggested No.
City of PG Mapsheet #	Any combination of numbers of letters up to 10 digits	Mapsheet numbers based on the City of PG mapsheet grid	
STATUS:			
City of PG	Designated, Potential, Cancelled, Suspended, Disallowed, Other	Status defined by the City of BC through SR Bylaw.	Multiple statuses may be assigned to any one pit
Land Use Zone	Any combination of numbers of letters up to 7 digits	Land Use Zone defined by Bylaw No. 3482	Multiple zones may be assigned to any one pit
RDFFG	Temporary Industrial Use Permit (TIUP)	Status designated by the RDFFG	Status information to be updated when provided by RDFFG
MoTH	C, A, D, APP, APPA, PR, GPR, UR, I, U	C-pit is cancelled, A-pit is active, D-pit application is disallowed, APP-prospect under application to Sec. 16 map reserve of Notation of Interest, APPA-application for amendment to existing pit, PR-prospect or undifferentiated to date, GPR- geotechnical prospect or undifferentiated to date, UR-application for reserve may be under review by another agency, I-pit is privately owned, pit lease has expired or not secure, U-unknown	Status information to be updated when provided by MoTH
Tenure Type, Moth	R, N, PUP, L, Li, MO, FUP, MN, DU, P, PL	R-Sec. 16 Map Reserve, N- notation of interest, PUP- park use permit, L- Lease, Li- Licence, MO-Ministry owned, FUP-free use permit, MN- FOR-map notation used by M. of Forests, DU- designated use, P- privately owned but not currently leased or licenced, PL- privately leased from Crown	Tenure information to be updated when provided by MoTH
Potential, Moth	HIGH, MEDIUM, LOW, Undeveloped, Cancelled	HIGH- good gravel, high volume, long term 10yrs. +, MEDIUM- good gravel, used occasionally, 5-8 years potential, LOW- gravel marginally good, used very seldom, 1-5 years potential, Undeveloped- undeveloped potential, Cancelled- no longer considered, exhausted	This information was originally compiled by Adrian Vander-Velden, Engineering Assisant, Fort George District MoTH

Activity, Moth	YES or NO	YES- active in the last 5 years, NO- not active in the last 5 years	This information was originally compiled by Adrian Vander-Velden, Engineering Assistant, Fort George District MoTH
MINES	ACTIVE, CLOSED 'XX (XX = two-digit year designation)	Permit status as determined by the Ministry of Mines	Status information to be updated when provided by M. of Mines
MELP, Lands Branch	AMA-PDU	AMA-PDU- aggregate management area: public designation use. Permit status as determined by the Ministry of Environment, Lands, and Parks, Lands Branch	Status information to be updated when provided by MELP, Lands Branch
MoF		Permit status as determined by the Ministry of Forests	Status information to be updated when provided by MoF
FILE NUMBERS:			
City of PG	SR-XXXX...- NNNN. Max. 30 digits	SR= Soil Removal File, - XXXXX = District Lot Number where pit is found, NNNN= Name of pit where two pits exist in one District Lot, or CITY, where the City of PG has a permit for this pit	File information to be updated when provided
RDFFG	Max. 25 digits	File number assigned by the Fraser-Fort George Regional District	File information to be updated when provided
MoTH	93 X/XX NNN Max. 25 digits	1:50000 NTS mapsheet number followed by NNN = a three digit unique number for that pit/prospect/or quarry	File information to be updated when provided
MINES	Max. 25 digits	File number assigned by the M. of Mines	File information to be updated when provided
MELP, Environment Branch	Max. 25 digits	File number assigned by the MELP, Environment Branch	File information to be updated when provided
MELP, Lands Branch	Max. 25 digits	File number assigned by the MELP, Lands Branch	File information to be updated when provided
MoF	Max. 25 digits	File number assigned by the M. of Forests	File information to be updated when provided
ALC	Max. 25 digits	File number assigned by the Agricultural Land Commission	File information to be updated when provided
Environment Canda	Max. 25 digits	File number assigned by Environment Canada	File information to be updated when provided
DFO	Max. 25 digits	File number assigned by the Department of Fisheries and Oceans	File information to be updated when provided
QUALITY / QUANTITY:			
Est. Life of Pit (years)	1-infinity	The estimated number of years the pit will be in operation, from the data of assessment.	
Est. yearly extraction (m sq.)	1-infinity	The estimated yearly extraction of material removed from the pit in metres squared	
Average Overburden Thickness (m)	1-infinity	The average overburden thickness in metres	
Average Deposit Thickness (m sq.)	1-infinity	The average deposit thickness in metres	

Est. Volume of Deposit (m cu.)	1-infinity	The estimated volume of the deposit in metres	
License Area (m sq.)	1-infinity	The area of the property licensed for aggregate removal in metres squared	
Area Disturbed (m sq.)	1-infinity	The area of the property which is disturbed by existing or past development activity in metres squared	
Area Reclaimed (m sq.)	1-infinity	The area of the property which has been reclaimed in metres squared	
Landform Type	Any combination of letters. Max. 10 digits	Refer to Howes, D.E. and Kenk, E. (1988) terrain classification system for bc (rev.)1988,moe manual 10	
Material Type	GW, GP, GM, GC, SW, SP, SM, SC, ML, CL, OL, MH, CH, OH, PT, TS, SB, LB, BR, or Fines, Sand, Gravel	Refer to the Unified Soil Classification System, MoTH, or simply Fines, (< 0.075mm), Sand (<0.75-4.75mm), or Gravel (>4.75mm)	
Volume (%)	1-infinty	The estimated volume (%) of each Material Type, defined in the previous field.	
Material Use	ASPHALT/CONCRETE, BRIDGE END FILL, DRAIN ROCK, GRANULAR BASE, GRANULAR SUB-BASE, MINERAL FILLER, TOPSOIL, SAND, Select Granular Sub-base (SGSB), Borrow, Winter Sand	A list originally developed by the MoTH and added-to when further detail was provided	
Type of Work	ASPHALT PLANT, CRUSHING, EXTRACTION, SCREENING, STOCKPILING, SNOW STORAGE, ORGANICS STORAGE, Commercial Sales	A list developed through the PGAI process and added-to where further detail was provided	
Impacts	NOISE, VISUAL DISTURBANCE, PEDESTRIAN SAFETY, ENVIRONMENT, ACCESS, ENVIRONMENTALLY SENSITIVE AREAS	A list of potential impact associated with site development and assessed as part of the Soil Removal Impact Assessment Process.	
Comments	An infinite # of characters	Comments on site development impacts, issues, severity, dates, etc.	
GENERAL COMMENTS:			
Comments	An infinite # of characters	General comments, permit history, etc.	

PRINCE GEORGE AGGREGATE INVENTORY: DATABASE INPUT FORM

FIELD NAME	POSSIBLE VALUES	FIELD DEFINITION	FILL-IN BOXES
Assessment Date	Month Day, Year	The date of last assessment	
Pit Name	Any combination of letters or numbers, max. 40 characters	This field holds the commonly used name for the pit, prospect, or quarry	
Class	1,2,3, or 4	(1) Low, (2) Moderate, (3) Medium, (4) High impact. Based on the PGAI Impact Classification. See Appendix (n) Follow the PGAI Impact Classification system in the Final Report	Class: Physical Class: Social Class:
CONTACT INFORMATION:			
Pit Owner	Any combination of letters or numbers	Pit owner name, address, phone number, fax number, etc.	
Pit Operator	Any combination of letters or numbers	Pit operator name, address, phone number, fax number etc.	
LOCATION:			
In City of PG?	YES or NO	Answer whether the Pit is within the City of Prince George Boundary.	
In ALR?	YES or NO	Answer whether the Pit is within the Agricultural Land Reserve	
Street #	Any combination of numbers. Max. 10 digits	The street # assigned to the pit/prospect/or quarry	
Street Name	Any combination of letters. Max. 35 digits	The street name from which the pit/prospect/or quarry is accessed	
UTM Northing	Any combination of numbers. (7 digit)	universal transverse mercator coordinates of the pit based on nad 27. error +/- 500m	
UTM Easting	Any combination of numbers. (6 digit)	universal transverse mercator coordinates of the pit based on nad 27. error +/- 500m	
Longitude	(XXX.XX) Three digits, decimal, two digits	Between 0-180 degrees E and W from the Greenwich Observatory	
Latitude	(XX.XX) Two digits, decimal, two digits	Between 0-90 degrees N and S of the Equator	
PID #	Any combination of 9 digits	Unique ID number assigned to a property by the City of PG or RDFFG	
Plan No.	Any combination of numbers of letters up to 9 digits	Plans covered within the property legal description of the permit area	

Dist Lot No.	Any combination of numbers to 6 digits	District Lots covered within the property legal description of the permit area	
Block No.	Any combination of numbers of letters up to 5 digits	Blocks covered within the property legal description of the permit area	
Lot No.	Any combination of numbers of letters up to 5 digits	Lots covered within the property legal description of the permit area	
Free Legal Indicator	Any combination of numbers of letters up to 4 digits		
Free Legal Descriptions	Any combination of numbers of letters up to 200 digits	Legal description of the permit property	
NTS Mapsheet #	(93 X/XX)	1:50000 NTS mapsheet number	
City of PG Mapsheet #	Any combination of numbers of letters up to 10 digits	Mapsheet numbers based on the City of PG mapsheet grid	
STATUS:			
City of PG	Circle <u>one or more</u> of these: Designated Potential Cancelled Suspended Disallowed Permit Issued Other		
Land Use Zone	Any combination of numbers of letters up to 7 digits	Land Use Zone defined by Bylaw No. 3482	
RDFFG	Status defined by the RDFFG		
MoTH	Circle <u>one</u> of these: (Status provided by MoTH) C -pit is cancelled, A -pit is active, D -pit application is disallowed, APP -prospect under application to Sec. 16 map reserve of Notation of Interest, APPA -application for amendment to existing pit, PR -prospect or undifferentiated to date, GPR - geotechnical prospect or undifferentiated to date, UR -application for reserve may be under review by another agency, I -pit is privately owned, pit lease has expired or not secure, U - unknown		
Tenure Type, Moth	Circle <u>one</u> of these: (Tenure Type provided by MoTH) R -Sec. 16 Map Reserve, N - notation of interest, PUP - park use permit, L - Lease, Li - Licence, MO - Ministry owned, FUP - free use permit, MN - FOR-map notation used by M. of Forests, DU - designated use, P - privately owned but not currently leased or licensed, PL - privately leased from Crown		
Potential, Moth	Circle <u>one</u> of these: (Potential provided by MoTH) HIGH - good gravel, high volume, long term 10yrs. +, MEDIUM - good gravel, used occasionally, 5-8 years potential, LOW - gravel marginally good, used very seldom, 1-5 years potential, Undeveloped - undeveloped potential, Cancelled - no longer considered, exhausted		
Activity, Moth	Circle <u>one</u> of these: (Acitivity provided by MoTH) YES - active in the last 5 years, NO - not active in the last 5 years		
MINES	ACTIVE or CLOSED 'XX (XX = two-digit year designation)	Permit status as determined by the Ministry of Mines	
MELP, Lands Branch	Permit status as determined by the Ministry of Environment, Lands, and Parks, Lands Branch		

MoF	Permit status as determined by the Ministry of Forests		
FILE NUMBERS:			
City of PG	SR-, - XXXXX = District Lot Number where pit is found, NNNN= Name of pit where two pits exist in one District Lot, or CITY, where the City of PG has a permit for this pit		
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MINES	Max. 25 digits	File number assigned by the M. of Mines	
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MELP, Lands Branch	Max. 25 digits	File number assigned by the MELP, Lands Branch	
MoF	Max. 25 digits	File number assigned by the M. of Forests	
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QUALITY / QUANTITY:			
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Area Reclaimed (m sq.)	1-infinity	The area of the property which has been reclaimed in metres squared	
Landform Type	Any combination of letters. Max. 10 digits	Refer to Howes, D.E. and Kenk, E. (1988) terrain classification system for bc (rev.)1988,MoELP manual 10	

Material Type	Circle <u>one or more</u> of the following: (Unified Soil Classification) GW, GP, GM, GC, SW, SP, SM, SC, ML, CL, OL, MH, CH, OH, PT, TS, SB, LB, BR or simply Fines , (< 0,075mm), Sand (<0.75-4.75mm), or Gravel (>4.75mm)
Volume (%)	The estimated volume in (%) of each Material Type, defined in the previous field.
Material Use	Circle <u>one or more</u> of the following: (Other products may be added to this list where necessary) ASPHALT/CONCRETE, BRIDGE END FILL, DRAIN ROCK, GRANULAR BASE, GRANULAR SUB-BASE, MINERAL FILLER, TOPSOIL, SAND, Select Granular Sub-base (SGSB), Borrow, Winter Sand
Type of Work	Circle <u>one or more</u> of the following: (Other activities may be added to this list where necessary) ASPHALT PLANT, CRUSHING, EXTRACTION, SCREENING, STOCKPILING, SNOW STORAGE, ORGANICS STORAGE, Commercial Sales
Impacts	Circle <u>one or more</u> of the following: (See impact assessment sheet for definitions) NOISE, VISUAL DISTURBANCE, PEDESTRIAN SAFETY, DUST, ENVIRONMENT, ACCESS, ENVIRONMENTALLY SENSITIVE AREAS
Comments	Comments on site development impacts, issues, severity, dates, etc.:
GENERAL COMMENTS:	
Comments	General comments, permit history, etc.: