



RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:
Bid Receiving Public Works and Government
Services Canada/Réception des soumissions Travaux
publics et Services gouvernementaux Canada
800 Burrard Street, Room 219
800, rue Burrard, pièce 219
Vancouver
British Columbia
V6Z 0B9
Bid Fax: (604) 775-9381

SOLICITATION AMENDMENT MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

Vendor/Firm Name and Address
Raison sociale et adresse du
fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution
Public Works and Government Services Canada -
Pacific Region
800 Burrard Street, Room 219
800, rue Burrard, pièce 219
Vancouver
British C
V6Z 0B9

Title - Sujet Wall B Rejuvenation	
Solicitation No. - N° de l'invitation EZ897-171173/A	Amendment No. - N° modif. 003
Client Reference No. - N° de référence du client	Date 2016-08-25
GETS Reference No. - N° de référence de SEAG PW-\$PWY-022-7844	
File No. - N° de dossier PWY-6-39120 (022)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2016-08-31	Time Zone Fuseau horaire Pacific Daylight Saving Time PDT
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Arthur (PWY), Carolyn	Buyer Id - Id de l'acheteur pwy022
Telephone No. - N° de téléphone (604) 364-2752 ()	FAX No. - N° de FAX (604) 775-6633
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: PWGSC - PEC Site - West Vancouver, BC	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

Solicitation No. - N° de l'invitation
EZ897-171173/A
Client Ref. No. - N° de réf. du client

Amd. No. - N° de la modif.
File No. - N° du dossier
PWY-6-39120 (022)

Buyer ID - Id de l'acheteur
pwy022
CCC No./N° CCC - FMS No./N° VME

AVIS AUX SOUMISSIONNAIRES: Veuillez utiliser l'étiquette d'adresse ci-dessous et bien l'affixer à l'extérieur de l'enveloppe ou du paquet renfermant votre offre. Dans le cas de modifications à des offres soumises par télécopieur (Fax: (604) 775-9381), servez-vous de la feuille comme page couverture. Assurez-vous de toujours inscrire lisiblement le nom de votre compagnie, l'adresse de retour, le numéro de l'offre et la date limite sur l'extérieur de votre offre.

**Marchés immobiliers
Travaux publics et Services gouvernementaux Canada
800, rue Burrard, bureau 219
Vancouver (C.-B.) V6Z 0B9**

Offre n°: EZ897-171173/A

Date et heure limites de réception des soumissions: 31 août 2016, 1400 h HADP

Sujet: Rénovation de la paroi drainante en 2016

Site du Centre environnemental du Pacifique, West Vancouver (Colombie-Britannique)

CA

Les documents français seront disponibles sur demande.

Amendment 003

Amendment 003 is raised to:

- 1) Extend the solicitation closing date
- 2) Provide Revised Appendix 1 of the Combined Price Form
- 3) Incorporate addendum #1
- 4) Provide a response to bidder questions

- 1) Extend the solicitation closing date

Extension of Time for Tenderers

Pacific Environment Centre (PEC) Site Remediation - 2016 Treatment Wall B Rejuvenation
Pacific Environment Centre (PEC) Site, West Vancouver, BC

Solicitation No: **EZ897-171173/A**

Notice is hereby given that the time for reception of tenders previously due at 2:00pm
PDST on 29 August 2016 is extended to 2:00pm PDST **31 August 2016**

- 2) Provide Revised Appendix 1 of the Combined Price Form

Previously issued Appendix 1 of the Combined Price Form is now replaced with the Revised
Appendix 1 dated 25 August 2016.

The revised Appendix 1 of the Combined Price Form (dated 25 August 2016) must be used
when submitting your bid. Any bid submitted on a previous version of Appendix 1 –
Combined Price Form will be considered non-compliant and therefore disqualified.

The following changes have been made to Appendix 1 of the Combined Price Form.

In the Unit Price Table Base Work (A);

Replace Item #10 "Excavation, Management, and Stockpiling On site –Wall B, and Wall
B Extension"

With "Management and Stockpiling On site –Wall B, and Wall B Extension"

In the Unit Price Table, Optional Work (B)

Replace Item #16 "Excavation, Management, and Stockpiling On site for -10.5 to -12.5
m NVD Extension –Wall B, and Wall B Extension"

With "Management and Stockpiling On site for -10.5 to -12.5 m NVD Extension –Wall B,
and Wall B Extension"

3) Incorporate Addendum #1

Please see attached Addendum #1

4) Responses to Bidder Questions

Q1: Can the client give an estimate for the cost associated with testing of alternative ZVI suppliers?

A1: No, the Contractor is responsible for determining these costs.

Q2: Can excavated material be temporary stockpiled without a liner on the ground before being taken to the newly lined cell?

A2: Yes.

Q3: Is there a specification for the poly cover for the stockpiles?

A3: There is no requirement to cover any of the stockpiles.

Q4: If the media fails the consultants testing and the proper proportions have been used will the client pay for additional mixing time?

A4: No, the Contractor is responsible for not just adding the correct proportions but mixing the treatment material sufficiently to produce a homogeneous material.

Q5: Can there be a 2 week extension to the bid?

A5: No.

Q6: Are there any limitations on the weight that can cross the Metro Vancouver ROW?

A6: No.

Q7: Can you confirm if the attached specification will be acceptable?

A7: PWGSC does not pre-qualify suppliers. The supplied material must meet the specifications; the Contractor is responsible for any screening of material to meet the gradation requirements.

Q8: Can you provide a copy of the Connelly iron filing specification and particle size distribution?

A8: See attached.

Q9: Should we wish to suggest an alternate ZVI source, what kind of testing is required to verify it's viability?

A9: As per the document "IRON AGGREGATE PKT CC-1004 REV060215", the alternate source must meet the grain size and chemical analysis of the iron aggregate.

Q10: What size should the compost be shredded to?

A10: As per Specifications Appendix B-Wall Mixing Specification, the mixed media must "create a homogeneous permeable reactive wall mixture", and the compost must be shredded to meet this requirement.

Q11: What is the "Percent by Volume" testing regime for the mixed media? How are the percentages of the constituent products determined?

A11: As per Specifications Appendix B-Wall Mixing Specification, the Departmental Representative will perform the sampling to ensure the mixed wall media meets the Specifications. The samples will be collected by the Departmental Representative's environmental consultant, and analysed using a third party independent accredited laboratory

Q12: Is there any requirement to prepare the existing contaminated stockpile areas before placing the excavated media on them, and what preparation (other than poly on the material) is required after the excavated media is stockpiled?

A12: As per Specifications 013513.43-1.3, the Contractor is to determine the stockpile requirements in their Contaminated Material and Non-Contaminated Material Management Plan.

Q13: Construction Facilities: Can we use the truck wash already on-site? Does it have a water hook-up to it?

A13: Yes the existing truck wash facility is available for use by the Contractor. No it does not have water hook-up; the standpipe identified in the Bidder's Site Visit is the only onsite water source.

Q14: What are the approximate cell volumes for the excavated media?

A14: Approximate cell capacities area as follows: Cell #1 625 square meters, Cell #2 900 square meters. The volume is determined by how high the stockpiles can be made, which is dependent on the Contractor's methodologies.

Q15: What sediment and erosion control measures are required for the wall area, the stockpile area, and the mixing area?

A15: As per Specifications 013543-1.3.1.20, the Contractor is to determine the sediment and erosion control measures in their Environmental Protection Plan.

Q16: What is the methodology for water on-site (wall, stockpile, and mixing areas)? Is it to be stored, or treated? If so, what standards are we treating the water to?

Solicitation No. - N° de l'invitation

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003

Buyer ID - Id de l'acheteur

PWY022

Client Ref. No. - N° de réf. du client

File No. - N° du dossier

CCC No./N° CCC - FMS No./N° VME

PWY-6-39120

A16: On-site water has not previously been a concern due to the permeable ground conditions. If water is generated by the Contractor's methodology, then as per Specifications 013543-1.16.1.1 a Discharge Approval is required.

Q17: Special Project Procedures for Contaminated Sites: Is the Drum Staging Pad required?

A17: As per Specifications 013513.43-1.7, the Contractor must provide a Drum Staging Pad if their methodology requires drums with contaminated or hazardous material to be stockpiled onsite.

All other terms and conditions remain unchanged.

APPENDIX 1 - COMBINED PRICE FORM (2 pages)

REVISED 25 AUGUST 2016

- 1) The prices per unit shall govern in establishing the Total Extended Amount. Any arithmetical errors in this Appendix will be corrected by Canada.
- 2) Canada may reject the bid if any of the prices submitted do not reasonably reflect the cost of performing the part of the work to which that price applies.

UNIT PRICE TABLE

The Unit Price Table designates Work to which a Unit Price Arrangement applies.

- (a) Work included in each item is as described in the referenced specification section.
- (b) The Price per Unit shall not include any amounts for Work that is not included in that unit price Item.

Item	Class of Labour, Plant or Material	Unit of Measure-ment	Estimated Quantity (EQ)	Price per Unit applicable taxes extra (PU)	Extended amount (EQ x PU) applicable taxes extra
1	Pre-Mobilization Submittals	Lump Sum	1		
2	Mobilization	Lump Sum	1		
3	Site Preparation	Lump Sum	1		
4	Site Facilities Provision	Lump Sum	1		
5	Site Facilities Operation	Week	17		
6	Standby Time	Day	5		
7	Treatment Media Supply	Lump Sum	1		
8	Wall B Excavation and Treatment Media Placement	Lump Sum	1		
9	Wall B Extension to the Eastern Property Boundary	Lump Sum	1		
10	Management and Stockpiling On site –Wall B, and Wall B	m3	3,100		
11	Demobilization	Lump Sum	1		
12	Closeout Submittals	Lump Sum	1		
BASE WORK (A): TOTAL EXTENDED AMOUNT Excluding applicable taxes					

OPTIONAL WORK (B)

Pricing described in OPTIONAL WORK (B) must be provided by the bidder.

The following work shall be considered an optional addition to this tender package. Any bid without the inclusion of the following lines will be considered non-compliant and therefore disqualified.

The Contractor grants to Canada the irrevocable option to acquire the goods and /or services described below as Optional Work and as described in the Specification and Drawings of the Contract under the same conditions and at the prices and/or rates stated in Contract. The exercise of any option will be at Canada's sole discretion, the options may only be exercised by the Contracting Authority and will be evidenced through a contract amendment for administrative purposes only.

The Contracting Authority may exercise the option during the period from contract award to contractor mobilization by sending a written notice to the Contractor.

OPTIONAL WORK (B)					
Item	Class of Labour, Plant or Material	Unit of Measurement	Estimated Quantity (EQ)	Price per Unit applicable taxes extra (PU)	Extended amount (EQ x PU) applicable taxes extra
13	Supply Treatment Media to Extend Wall B and Wall B Extension to -12.5 m NVD	Lump Sum	1		
14	Wall B Excavation and Treatment Media Placement for -10.5 to -12.5 mNVD Extension	Lump Sum	1		
15	Wall B Extension to the Eastern Property Boundary for -10.5 to -12.5 mNVD Extension	Lump Sum	1		
16	Management and Stockpiling On site for - 10.5 to -12.5 m NVD Extension –Wall B, and Wall B Extension	m3	500		
OPTIONAL WORK (B): TOTAL EXTENDED AMOUNT Excluding applicable taxes					
				TOTAL BID AMOUNT	
				Base Work (A) + Optional Work (B)	
				(Excluding applicable taxes)	

NOTE: The pricing for Optional Work (B) is included in the bid evaluation. Optional Work (B) may be requested in part or whole of Estimated Quantity.

The following changes in the tender documents are effective immediately. This addendum will form part of the contract documents.

SPECIFICATIONS

01 11 00 Summary of Work

DELETE 1.1 Measurement Procedures

REPLACE with the attached 1.1 Measurement Procedures

End of Addendum #1

1. PART 1 - GENERAL

1.1. Measurement Procedures

- 1.1.1. Pre-mobilization Submittals will be paid in accordance with lump sum price established for all Preconstruction Meetings, final design, planning, health and safety, and other Submittals in accordance with the Contract or required and accepted by the Departmental Representative as in accordance with the Contract prior to mobilization to Site.
- 1.1.2. Mobilization will be paid in accordance with lump sum price established for mobilizing all necessary equipment, materials, supplies, facilities, and personnel associated with the Works to the Site. Includes initial insurance, bonding, and permits. Additional insurance, bonding, and permits due to changes in scope, cost, and schedule as accepted by the Departmental Representative will be included in Contract amendments.
- 1.1.3. Site Preparation will be paid in accordance with lump sum price established to prepare the Site for planned construction works. Includes clearing and grubbing, temporary removal of existing infrastructure, utility location, rerouting, and protection, and construction of temporary onsite access roads. Also includes removal of any incidental or generated material.
- 1.1.4. Site Facilities Provision will be paid in accordance with lump sum price established to design, temporarily provide for duration of Work, and erect all infrastructure in accordance with the Contract. Includes temporary structures and facilities, temporary hoarding, security fencing, federal signage, sanitary facilities, stormwater management infrastructure, and utility installation.
- 1.1.5. Site Facilities Operation will be paid in accordance with unit rate price established for time to operate and maintain all infrastructure between mobilization and demobilization. Measurement as recorded time by Departmental Representative. Includes temporary structures and facilities including temporary hoarding, security fencing, federal signage, sanitary facilities, stormwater management infrastructure, and utility installation. Also includes ongoing services including project management, security, surveying, noise monitoring, vibration monitoring, utilities, project meetings, inspections, progress Submittals, traffic control, health and safety, Environmental Protection and cleaning. Also, includes living out allowances, travel and room and board. Rate must not vary even if hours of work and/or days of work vary. Time will only be paid for duration in accordance with the Contract and changes in schedule as accepted by the Departmental Representative and included in Extension of Time on Contracts.
- 1.1.6. Standby Time will be paid in accordance with unit rate price established, for time when construction Work is unable to proceed, and that is directly attributable to any neglect or delay that occurs after the date of the Contract on

the part of the Departmental Representative in providing any information or in doing any act that the Contract expressly requires the Departmental Representative. Measurement as recorded time by Departmental Representative. Includes machinery and labour standby costs. Does not include items covered by Site Facilities Operation. Standby Time may be pro-rated based on hours of work. Make all efforts to minimize impacts due to delays caused by the Departmental Representative, including re-sequencing Work. Provide documentation of a sufficient description of the facts and circumstances of the occurrence to enable the Departmental Representative to determine whether or not the Standby Time is justified. Reviews, sampling, or other work conducted by the Departmental Representative with time allowances in accordance with the Contract will result in no increase to the Contract Amount nor Extension of Time for completion of the Work.

- 1.1.7. Treatment Media Supply will be paid in accordance with lump sum price established for supply of treatment media. Includes supply, mixing, handling, and testing of media.
- 1.1.8. Wall B Excavation and Treatment Media Placement will be paid in accordance with lump sum price established for excavation of existing media and adjacent soils to extents according to Drawings, and replacement with new Treatment Media according to Contract. Excavation must be by caisson. Includes removal of overburden and placing overburden back on top of wall.
- 1.1.9. Wall B Extension to the Eastern Property Boundary will be paid in accordance with lump sum price established for excavation of soils to extents according to Drawings, and replacement with grout wall according to Contract.
- 1.1.10. Management and Stockpiling On site –Wall B, and Wall B Extension will be paid in accordance with unit rate price established for volume of material handled, hauled stockpiled and covered onsite.
- 1.1.11. Demobilization will be paid in accordance with lump sum price established for demobilizing all equipment and personnel associated with the Works from the Site. Includes decontaminating all equipment prior to removal from Site.
- 1.1.12. Closeout Submittals will be paid in accordance with lump sum price established for Final Site Inspection (for Certificate of Completion purposes), Closeout Meetings, provision of final as-built documents and completion documents as instructed by the Departmental Representative.
- 1.1.13. Supply Treatment Media to Extend Wall B and Wall B Extension to -12.5 m NVD will be paid in accordance with lump sum price established for supply of treatment media for extension of wall to depth. Includes supply, mixing, handling, and testing of media.
- 1.1.14. Wall B Excavation and Treatment Media Placement for -10.5 to -12.5 mNVD Extension will be paid in accordance with lump sum price established for excavation of soils for extension of wall to depth according to Drawings, and

01 11 00
SUMMARY OF WORK

replacement with new Treatment Media according to Contract. Excavation must be by caisson.

- 1.1.15. Wall B Extension to the Eastern Property Boundary for -10.5 to -12.5 mNVD Extension will be paid in accordance with lump sum price established for excavation of soils for extension of wall to depth according to Drawings, and replacement with grout wall according to Contract.
- 1.1.16. Management and Stockpiling On site for -10.5 to -12.5 mNVD Extension –Wall B, and Wall B Extension will be paid in accordance with unit rate price established for volume of material handled, hauled stockpiled and covered onsite for extension of wall to depth.



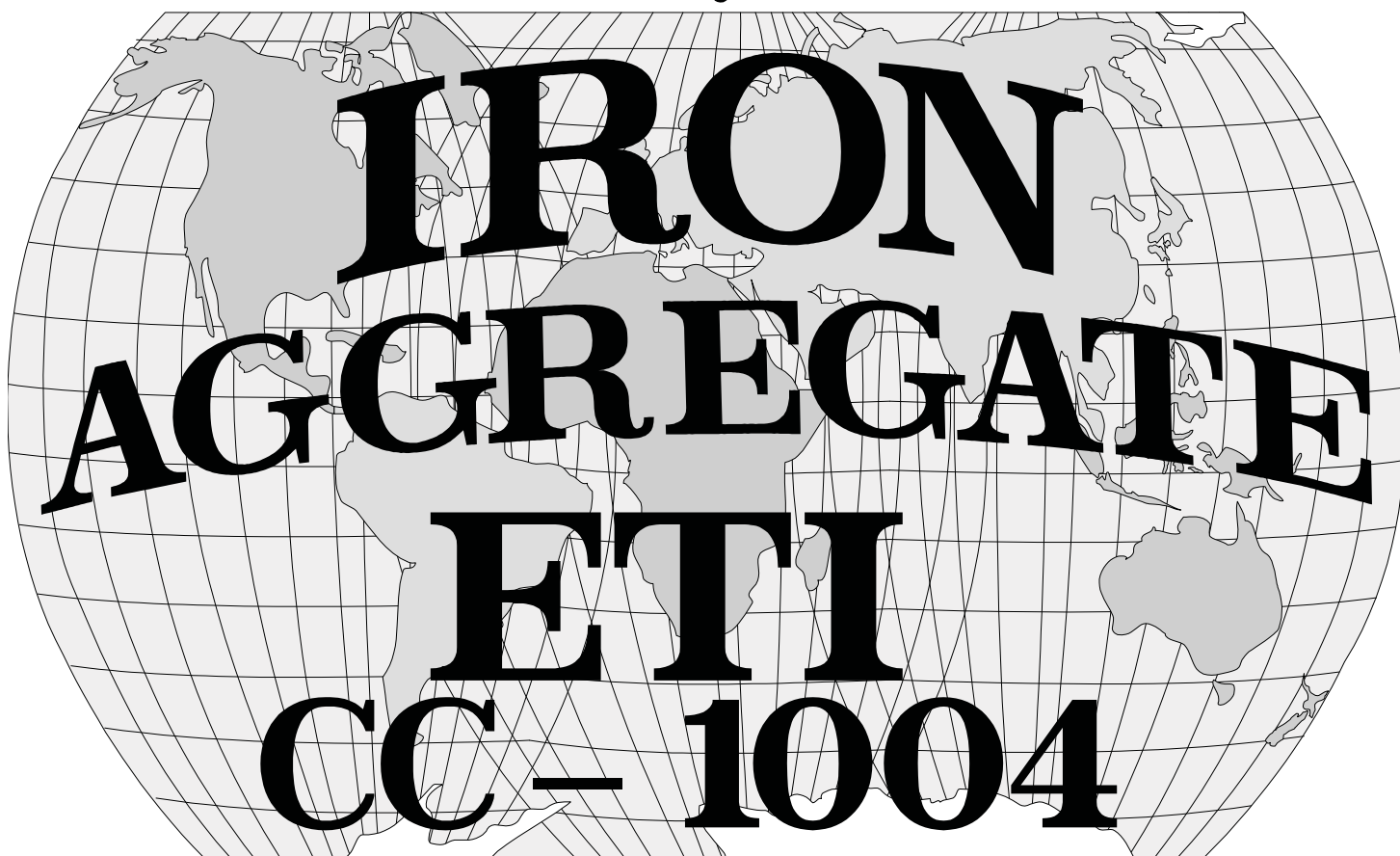
CONNELLY-GPM, INC.

THE IRON AGGREGATE PEOPLE™

ESTABLISHED 1875

3154 SO. CALIFORNIA AVE. - CHICAGO, IL. 60608-5176
PHONE (773) 247-7231 FAX (773) 247-7239

www.ConnellyGPM.com
E-Mail: ConnellyGPM@aol.com



3000 LBS. NET

CAUTION: IRON POWDER KEEP DRY AND PREVENT ACID CONTAMINATION WHILE IN STORAGE. SWEEP UP ANY SPILLAGE PROMPTLY. WEAR APPROVED DUST MASKS, AND SAFETY GLASSES/GOGGLES TO PREVENT INHALATION, INGESTION, AND INJURY TO THE EYES. IF ANY OF THE ABOVE OCCUR, GET PROMPT MEDICAL ATTENTION. KEEP OUT OF REACH OF CHILDREN.

NEWS RELEASE



CONNELLY – GPM, INC.

ESTABLISHED 1875

3154 SOUTH CALIFORNIA AVENUE CHICAGO, ILLINOIS 60608-5176
PHONE: (773) 247-7231 • www.ConnellyGPM.com • FAX: (773) 247-7239

GROUND WATER REMEDIATION WITH ZERO-VALENT IRON

Connelly-GPM's IRON AGGREGATE is currently being used for **in-situ** treatment of contaminated groundwater at sites containing several chlorinated degreasing compounds, such as trichloroethylene (TCE), tetrachloroethylene (toxic PCE), trichloroethane (TCA), and vinyl chloride (VC), which represent the most volatile organic compounds (VOC's) contaminating groundwater.

In the past, cleanup often consisted of pumping the groundwater and treating it above ground then returning it to the environment. This pump-and-treat method is expensive, slow, and high maintenance. Now, there are also a variety of high tech approaches which involve trying to flush the pollutants with forced air or steam out where they can be brought up and treated at the surface.

In contrast, **in-situ reactive barriers** provide a passive remediation technique, which after installation, requires little maintenance. The natural flow of groundwater does all the work. After the groundwater flow of a contaminated site is determined, a trench is dug across the contaminant plume width and filled with either **IRON AGGREGATE** alone or a mix of **IRON AGGREGATE** and coarse sand. By designing the wall to allow sufficient contact time with the **IRON AGGREGATE**, the contaminants are eliminated as the water passes through the treatment material. This process produces non-toxic end products; it chemically destroys the contaminants.

This product, designed to meet standards developed using **EnviroMetal Technologies, Inc. (ETI)** patented technology, has been proven effective in laboratory testing and in over 100 full-scale treatment systems. **Connelly-GPM** produces the **IRON AGGREGATE** used in this, the most promising remediation system available for such contaminated sites.

ADVANTAGES

- ▶ Mechanically simple, long-term solution
- ▶ Cost effective compared to traditional pump & treat technology
- ▶ In-situ applications:
 - No energy consumption
 - No costs to extract & dispose groundwater
 - No operating costs
 - Low maintenance costs
- ▶ Treatment destroys contaminants
- ▶ Does not transfer chemicals from one medium to another
- ▶ Nontoxic end products
- ▶ Can be combined with other remedial technologies for full treatment of a broad range of groundwater contaminants



CONNELLY – GPM, INC.

ESTABLISHED 1875

3154 SOUTH CALIFORNIA AVENUE CHICAGO, ILLINOIS 60608-5176

PHONE: (773) 247-7231 • www.ConnellyGPM.com • FAX: (773) 247-7239

December 19, 2011

SCREEN SPECIFICATION **ETI CC-1004**

U.S. SCREEN

NUMBER (Opening Size)

4	(4.75 mm)	100% PASSING
8	(2.36 mm)	95 - 100% PASSING
16	(1.18 mm)	75 - 90
30	(0.600 mm)	25 - 45
50	(0.300 mm)	0 - 10
100	(0.150 mm)	0 - 5

MATERIAL WEIGHS APPROXIMATELY 140 - 160 POUNDS PER CUBIC FOOT

TYPICAL ANALYSIS OF IRON AGGREGATE

Metallic Iron	87-93%
Total Carbon	2.85-3.23
Manganese	0.14-0.60
Sulphur	0.067-0.107
Phosphorous	0.000-0.132
Silicon	1.0-1.85
Nickel	0.05-0.21
Chromium	0.03-0.23
Vanadium	ND
Molybdenum	0.08-0.15
Titanium	0.004-0.1
Copper	0.11-0.20
Aluminum	0-0.005
Cobalt	ND
Magnesium	0.01
Boron	0.01
Zinc	0.01
Zirconium	0.01

GALEN B. DIXON
Technical Director

Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200 and Canadian Hazardous Protection Act and Controlled Products Regulation.
Standard must be consulted for specific requirements.

U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory From)



Section I - Producer and Product Identification

IDENTITY (As Used on Label and List) IRON AGGREGATE Also known as Zero Valent Iron		NOTE: Blank spaces are not permitted. If an item is not applicable or information unavailable, the space must be so marked.
INTENDED USE: BLDG PROD. AGGREGATE		
Manufacturer's Name CONNELLY-GPM, INC.	Emergency Telephone Number (773) 247-7231	
Address (Number, Street, City, State, and ZIP Code) 3154 South California Avenue Chicago, IL 60608-5176	Telephone Number for Information (773) 247-7231	

Section II - Hazardous Ingredients/Identity Information

Hazardous Components

(Specific Chemical Identity; Common Name)

IRON	CAS #7439-89-6	+85%
CARBON (carbon black)**	CAS #1333-86-4	<3.5%
SILICON**	CAS #7440-21-3	<2%
CHROMIUM**	CAS #7440-47-3	<.25%
COPPER**	CAS #7440-50-8	<.25%
MANGANESE**	CAS #7439-96-5	<.75%
NICKEL **	CAS #7440-02-2	<.25%
CARBON (carbon black)	CAS #1333-86-4	<0.5%

All other constituents below 0.2%

**These are not separate components- they are alloyed constituents of the cast iron.

PRODUCT CLASSIFICATION: NON-HAZARDOUS, NO U.N. NUMBER NEEDED

SHIPPING CLASS: 50

Section III - Composition

Cast Iron (See Section II)	75-95%
Iron Oxide	5-25%
CARBON (carbon black)** CAS #1333-86-4	>0.5%

Section IV - First Aid Measures

Eye Contact: Flush with water - get medical attention

Skin Contact: Brush off excess. Wash with soap and water as soon as possible

Inhalation: Remove to fresh air.

Ingestion: DO NOT INDUCE VOMITTING! Seek medical attention.

Section V - Fire and Explosion Hazard Data

Flash Point (Method Used) Not Available	Flammable Limits	LEL	UEL
--	------------------	-----	-----

Extinguishing Media

Dry chemicals or sand or universal type foam

Special Fire Fighting Procedures

Firefighters should wear self-contained breathing apparatus and protective clothing.

Unusual Fire and Explosion Hazards

None

Section VI - Cleanup Measures

Steps to Be Taken in Case Material is Released or Spilled

If the material is spilled, normal clean up procedures may be used.

Clean up personnel should be wearing the proper protective equipment.

This includes gloves and nuisance dust protection.

Waste Disposal Method

Sanitary landfill, following Federal, State, and Local guidelines.

Other Precautions

Not Applicable

Section VII - Precautions for Safe Handling

Precautions to Be Taken In Handling and Storing

Do not store near powerful oxidizers such as strong acids. Keep material in a cool dry location.

Section VIII - Exposure Controls/Personal Protection

Hazardous Components

(Specific Chemical Identity; Common Name)	OSHA PEL*	ACGIH*	Canada TWA/EV
IRON CAS #7439-89-6 +85%	10 mg/m ³	5 mg/m ³	10 mg/m ³
CARBON (carbon black)** CAS #1333-86-4 <3.5%	3.5 mg/m ³	3.5 mg/m ³	7 mg/m ³
SILICON** CAS #7440-21-3 <2%	(1)	(2)	20 mg/m ³
CHROMIUM** CAS #7440-47-3 <.25%	1.0 mg/m ³	0.5 mg/m ³	
COPPER** CAS #7440-50-8 <.25%	1.0 mg/m ³	1.0 mg/m ³	
MANGANESE** CAS #7439-96-5 <.75%	5 mg/m ³	5 mg/m ³	
NICKEL** CAS #7440-02-2 <.25%	1.0 mg/m ³	1.0 mg/m ³	

*8 hour time weighted average

**These are not separate components- they are alloyed constituents of the cast iron.

1) <1% Quartz 15 mg/m³ of total dust, or 5 mg/m³ respirable dust

2) >1% Quartz 10 mg/m³ of total dust, or 5 mg/m³ respirable dust

PRODUCT CLASSIFICATION: NON-HAZARDOUS, NO U.N. NUMBER NEEDED

SHIPPING CLASS: 50

Protective Gloves

Non-absorbent safety gloves

Eye Protection

OSHA approved glasses/goggles

Other Protective Clothing or Equipment

Hard hats and clothing that exposes as little skin as possible to the iron dust.

Work/Hygenic Practices

Keep dusting to a minimum.

Section IX - Physical and Chemical Properties

Boiling Point		Specific Gravity (H ₂ O = 1)	
Iron Dust	3000 °C		7.8
Vapor Pressure (mm Hg)		Melting Point	
@ 1787°C	1		1371-1480°F
Vapor Density (AIR = 1)		Evaporation Rate	
	N/A	(Butyl Acetate = 1)	N/A

Solubility in Water

Insoluble

Appearance and Odor

Odorless Brown/Black Powder

Section X - Stability and Reactivity

Stability	Unstable:		Contitions to Avoid: Keep Dry. Keep away from strong acids
	Stable:	X	

Incompatibility (Materials to Avoid)

Strong acids and other oxidizers and strong bases.

Hazardous Decomposition may form various metallic oxides

Hazardous	May Occur		Contitions to Avoid:
Polymerization	Will Not Occur	X	

Section XI - Toxicological Information

Route(s) of Entry	Inhalation?	Skin?	Ingestion?
	Yes	No	Yes (not likely)

Health Hazards (Acute and Chronic)

As a solid, cast iron is not hazardous:

Chronic overexposure to iron oxide fume may cause apparently benign pneumoconiosis.

Acute overexposure may cause eye, nose, mouth, and skin irritation. Fume may also cause metal fume fever. Typical symptoms last 12-48 hours and include metallic taste and dryness and irritation of mouth and throat and chills and fever.

Chronic inhalation of fume from these constituent elements may result in the following conditions:

Chromium: Skin and mucous membrane lesions. Possible nose or lung cancer.

Manganese: Bronchitis or pneumonitis and impaired co-ordination

Nickel: Skin and mucous membrane lesions. Possible nose or lung cancer.

Zinc: Possible gastrointestinal inflammation

Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated
NO INFORMATION AVAILABLE			

Signs and Symptoms of Exposure

Contact may cause eye or skin irritation.

Inhalation may cause nose, mouth, throat, and/or lung irritation.

Ingestion (unlikely) may cause mouth, throat, and/or stomach irritation. Large amounts may cause acute iron poisoning, which may include hemorrhagic vomiting and diarrhea, abdominal pain, acidosis, coagulaopathy, shock, coma and convulsions, followed by hepatic and renal failure and perhaps cardiovascular collapse.

Medical Conditions Generally Aggravated by Exposure

Any skin, eye, mucous membrane, or respiratory diseases sensitive to particulate dust.

Section XII - Ecological Information

LC50 >750 mg/l

LD50 Information unavailable.

Section XIII - Disposal Information

Iron Aggregate, while typically safe for landfill disposal contains small amounts of regulated substances.

Section XIV - Transport Information

Iron Aggregate is Non-Hazardous shipping class 50

Section XV - Regulatory Information

U.S. FEDERAL REGULATIONS

A: General: This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication). The following component analysis applies only to those facilities that are required to report under applicable regulations.

B. Component Analysis: This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

SARA 313 Form R Reporting Required Level (de minimus concentration)		CERCLA Final RQ
Nickel 7440-02-0	0.10%	100 lbs (if pieces are below 0.004 inches)
Aluminum 7429-90-5	1.00%	
Arsenic 7110-38-2	0.10%	1 lb (if pieces are below 0.004 inches)
Lead 7439-92-1	0.10%	10 lbs
Chromium 7440-47-3	1.00%	5000 lbs
Cobalt 7440-48-4	0.10%	
Copper 7440-50-8	1.00%	5000 lbs
Vanadium 7440-62-2	1.00%	

WARNING! This product contains a chemical know to the stat of California to cause cancer.

WARNING! This product contains a chemical know to the stat of California to cause reproductive/developmental effects.

No regulatory Information Available.

Section XVI - Other Information

Date REVISED	<u>5/18/2015</u>
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Date Printed	<u>5/18/2015</u>
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Signature of Preparer (optional)	
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CONNELLY – GPM, INC.

ESTABLISHED 1875

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April 19, 2004

COMPANY BACKGROUND

CONNELLY was founded in 1875, known as the CONNELLY IRON SPONGE & GOVERNOR COMPANY. In 1946, when they divested themselves of the Governor business, the Company name was changed to CONNELLY, INC. The primary business of the Company was to manufacture IRON SPONGE for the removal of hydrogen sulfide from illuminating gas and other gases.

GAS PURIFYING MATERIALS COMPANY, INC., was founded in 1919 and, until 1958, manufactured an IRON SPONGE material known as GPM IRON HYDROXIDE.

In the 1930's, CONNELLY also began producing Metallic and Non-Metallic Building Products on a private-label basis for the heavy construction industry, and Chemical Iron for reduction purposes in chemical plants. GAS PURIFYING MATERIALS COMPANY did likewise starting in 1950.

In 1956, GAS PURIFYING MATERIALS COMPANY, INC. purchased CONNELLY, INC. and operated CONNELLY as a wholly owned subsidiary, with the GAS PURIFYING MATERIALS plant located in Long Island City, New York, and the CONNELLY plants in Elizabeth, New Jersey, and Chicago, Illinois - all three plants producing and selling Building Products, Iron Sponge and Chemical Iron.

In 1970, the parent company - GAS PURIFYING MATERIALS COMPANY, INC., was merged into the subsidiary, CONNELLY, INC., and the name changed to CONNELLY-GPM, INC. The GAS PURIFYING MATERIALS plant in Long Island City was shut down.

In 1991 it was determined that our customers' needs could be more efficiently served by consolidating our operations in the more centrally located Chicago plant and leasing the New Jersey site to other business interests.

CONNELLY-GPM, INC. manufactures the following products: METALLIC and NON-METALLIC BUILDING PRODUCTS for the industrial construction industry on a private-label basis only: IRON SPONGE for the removal of hydrogen sulfide (H₂S) from gases; CHEMICAL IRON for reduction purposes for the chemical industry, and IRON AGGREGATE for groundwater remediation.

The CHEMICAL IRON products and IRON AGGREGATE for groundwater remediation are the result of many years of research and development by our own Technical Department in conjunction with many governmental and private enterprises. Current environmental concerns have opened new and exciting uses for our IRON AGGREGATE. We have the capabilities to custom-grind IRON AGGREGATE to any specification for both the Chemical Iron and environmental markets.

In our many years of producing iron products (for Chemical Iron, Building Products, Environmental, or other uses) we have often found it necessary to sit down with our customers and design specific products to meet their needs. It is this experience, both in iron production and in the co-operative process itself, which enable us to efficiently and effectively meet the needs of our customers. This flexibility is of particular value in the industries we serve, which are marked by frequently changing and improving techniques and where each site provides unique design and implementation challenges.

The success of CONNELLY-GPM, INC. is based on the original policies of the founders of GAS PURIFYING MATERIALS COMPANY, INC. - Oliver H. Smith and Bernard D. Klein, and their successors, to offer to the Gas, Chemical, Building and Environmental industries the best products for the dollar, and to develop a relationship with our customers and suppliers which is based on respect and confidence. The logical thinking and extensive research and business acumen of the management and the efforts of its employees in the fields of research, manufacturing, purchasing, and sales have been devoted to realizing those goals.

Basically, our policy has been to concentrate on good, solid products and pursue practical specialties, which require repeat business. Our customers are very dependent on the quality of our products and services as we play a very vital part in their operations.

Research and Development is currently working on new products for the Gas Industry, Building Products Industry, as well as working on new applications of its present products to the Petrochemical and Environmental industries.

In December 1986, Mr. B.L. Klein retired from the Company as President, after serving for fifty years. Upon Mr. B.L. Klein's retirement, Mr. Miles M. Klein became Chairman of the Board and Chief Executive Officer. In May 1994, Mr. Stephen M. Klein became President.

In 1997 Mr. Miles M. Klein, who had been with the Company since 1950, officially retired, and Mr. Stephen M. Klein succeeded his father to become the third generation to carry on CONNELLY-GPM's mission of fulfilling the needs of our customers in a broad range of industries. Mr. Stephen M. Klein has been with the Company in various management positions since 1971.

CONNELLY-GPM, INC.'s nucleus of well-trained, experienced people, with many years of accumulated knowledge and know-how, stands ready to direct that experience to help industries meet a variety of challenges in an ever-changing market.